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Project Manager
Environmental Department

February 23, 2012

Mr. Bernard Franklin
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C
625 Broadway
Albany, NY 12233-7017

Re: Initial PDI Report and Second PDI Work Plan
Ilion (East Street) Former MGP Site
Ilion, New York
Site No. 6-22-019

Dear Mr. Franklin:

On May 31, 2011, National Grid submitted the *Initial Pre-Design Investigation Work Plan* (Initial PDI Work Plan) outlining the scope of initial pre-design investigation (PDI) activities to be performed at the Ilion (East Street) former manufactured gas plant (MGP) site and off-site area (collectively, the Site) located in Ilion, New York. Those activities generally included the following:

- Verification of existing Site base mapping previously presented in the *Revised Remedial Investigation Report for the Ilion (East Street) Site* (RI Report; Tetra Tech EC, Inc. [Tetra Tech] 2009) and the *Final Feasibility Study Report for the Ilion (East Street) Site* (FS Report; Tetra Tech 2010); and

- Survey of subsurface utilities within the former MGP site and portions of the off-site area.

The Initial PDI Work Plan was approved by the New York State Department of Environmental Conservation (NYSDEC) in a June 10, 2011 letter to National Grid, and the initial PDI activities were subsequently performed by ARCADIS (on behalf of National Grid) between November 28 and December 6, 2011. Although not originally proposed in the Initial PDI Work Plan, ARCADIS also performed a monitoring well integrity assessment and full round of groundwater level measurements at the 17 Site monitoring wells depicted on Figures 1 and 2. Further, at the recommendation of the NYSDEC, the initial PDI activities also included the collection and analysis of groundwater samples from monitoring wells MW-14 through MW-17 (Figure 2).

The remainder of this letter 1) summarizes the scope and results of the initial PDI activities, and 2) identifies the proposed scope of the second phase of the PDI program.

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I. OVERVIEW OF INITIAL PDI ACTIVITIES

Survey Verification

The primary objectives of the survey verification were to 1) resolve discrepancies identified in the locations of certain sample locations, and 2) confirm the accuracy of the surface features and topography depicted in the Site base mapping. The scope of survey activities generally included the following:

- Preliminary horizontal limits of excavation depicted in the March 2011 *Record of Decision* (ROD);
- Sample locations that were the basis for the preliminary excavation limits (horizontal and vertical) specified in the ROD;
- Sample locations where survey discrepancies were identified;
- Monitoring well locations, ground surface elevations, and measuring point elevations;
- Certain surface features, including buildings, culvert pipes, and fence posts; and
- Spot elevations at 41 locations across the Site.

The results of these activities generally confirmed the existing base mapping shown on Figure 4-7 of the RI Report and in the ROD for both the former MGP site and the off-site area. However, while establishing survey control at the Site and marking out the initial survey locations, ARCADIS field staff identified discrepancies in the actual locations of several site features and monitoring wells relative to their coordinates, which were provided by National Grid's prior consultant (Tetra Tech). Specifically, actual locations in the field were consistently appearing 32 feet west and 139 feet south of the coordinates provided by Tetra Tech with respect to the North American Datum of 1983 (NAD 83). Upon further review, the discrepancy between the actual field locations and coordinates was attributed to the existing base mapping, which appeared to have been inadvertently shifted. The base mapping was subsequently corrected, and the remaining survey verification activities were completed by December 6, 2012.

Existing topography was assessed at 41 locations across the Site where spot elevations had previously been surveyed in 2004 by C.T. Male Associates, P.C. Once collected, spot elevations from the two survey events were compared to identify any significant changes in topography. The differences in ground surface elevation between the 2004 and 2011 survey events ranged from -2.77 feet to 0.90 feet, but were generally less than 0.25 feet. Those differences greater than 0.25 feet were all located in the off-site area, and are likely due to the on-going addition or removal of materials from the various Village of Ilion Department of Public Works (DPW) stockpiles in this area.

Utility Survey

The utility survey was performed by Underground Services, Inc. (USI) between November 28 and November 30, 2011 within the former MGP site and portions of the off-site area. The purpose of the utility survey was to identify the locations and type (to the extent practicable) of subsurface utilities in the areas where future PDI and remediation activities (e.g., drilling, soil excavation, surface cover installation, etc.) may be performed. The locations of the identified subsurface utilities and associated structures (e.g., valves, manholes, etc.) are depicted on the USI survey drawings provided in Attachment A (on CD). Within the former MGP site, the identified subsurface utilities include several natural gas lines, a storm sewer line, and two utilities of unknown type (one running generally north-south between the former gas house and State Street and the other running generally east-west between the former gas house the area of the former 200,000 cubic-foot gas holder). In the off-site area, the majority of identified subsurface utilities are related to the City's storm water drainage system.

Monitoring Well Integrity Assessment, Gauging, and Groundwater Sampling

At each of the 17 Site monitoring wells, ARCADIS personnel measured the depth to groundwater and total well depth, and evaluated the overall condition of the well (including bolts, locks, well caps, etc.). The results of these activities are summarized in Table 1. Where appropriate, Table 1 also identifies recommended well maintenance activities.

Groundwater samples were collected from monitoring wells MW-14 through MW-17 using low-flow sampling procedures and were submitted to TestAmerica Laboratories, Inc. (TestAmerica) for analysis of 1) benzene, toluene, ethylbenzene, and xylenes (collectively, BTEX) by EPA SW-846 Method 8260, and 2) polycyclic aromatic hydrocarbons (PAHs) by EPA SW-846 Method 8270. The results of these analyses are summarized in Table 2. Table 2 also identifies the Class GA groundwater standards and guidance values (where available) from the NYSDEC's Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, titled *Ambient Water Quality Standards and Guidance Values* (NYSDEC 1998).

As indicated in Table 2, the BTEX and PAH results for the samples collected from monitoring wells MW-14 through MW-17 were all non-detect with respect to their reporting limits, and were below their respective Class GA groundwater standards or guidance values. These results are generally consistent with the results of the February 2008 groundwater sampling event, which were presented in Tables O-8 and O-9 of the RI Report and are provided herein as Attachment B (on CD). As indicated in those tables, the February 2008 sample results were also non-detect for BTEX and all analyzed PAHs with the exception of naphthalene, which was detected at a concentration of 13 micrograms per liter (ug/L) in the sample collected from monitoring well MW-15.

The laboratory data report and a data usability summary report (DUSR) for the 2011 groundwater data are provided in Attachments C and D, respectively (on CD). As discussed in DUSR, all of the groundwater data is considered usable.

II. SCOPE OF PROPOSED PDI ACTIVITIES

The scope of proposed PDI activities includes supplemental soil investigations, well decommissioning, and well maintenance. ARCADIS' *Health and Safety Plan* (HASP) is provided in Attachment E (on CD), and identifies the health and safety protocols to be followed by ARCADIS field personnel and subcontractors during these PDI activities.

Community air monitoring will be performed on a daily basis during ground intrusive or dust-generating PDI activities to provide real-time measurements of total volatile organic compounds (VOCs) and particulate matter less than 10 microns in diameter (PM_{10}) at the upwind and downwind perimeter of the work area. The general community air monitoring procedures and action levels for total VOCs and PM_{10} are identified in Appendix 1A of NYSDEC's *Technical Guidance for Site Investigation and Remediation* (DER-10), which has been provided herein as Attachment F (on CD).

Supplemental Soil Investigations

Supplemental soil investigations will be performed within portions of the former MGP site and off-site area to:

- Confirm or better define certain preliminary horizontal and vertical limits of excavation depicted in the ROD;
- Collect geotechnical data necessary to evaluate and design minimum required excavation support system(s) for those excavation areas; and
- Further understand the presence of shallow foundations and obstructions located within/adjacent to the anticipated excavation areas.

As further described below, the supplemental soil investigations will include the: 1) collection and analysis of surface soil samples; 2) drilling of additional soil borings, and collection and analysis of soil samples at certain soil boring locations; and 3) excavation of test pits. The proposed surface soil sample, soil boring, and test pit locations are shown in orange on Figures 1 through 3. These locations may be repositioned in the field based on accessibility, obstructions encountered, or other factors.

Off-Site Surface Soil Samples

Four off-site surface soil samples (identified as PDI-SS1 through PDI-SS4 on Figure 1) will be collected from the 0- to 2-foot depth interval to better define the limits of the preliminary 2-foot excavation area located to the west of the former MGP site. Samples collected at PDI-SS1 and PDI-SS2 will be submitted for laboratory analysis of PAHs by EPA SW-846 Method 8270 and total petroleum hydrocarbons (TPHs) by EPA Method 8015. Samples collected at PDI-SS3 and PDI-SS4 will be extracted and held at the laboratory pending the results of the analyses for PDI-SS1 and PDI-SS2.

Soil Borings

Soil borings will be drilled to depths ranging from approximately 14 to 52 feet below ground surface (bgs) using hollow-stem auger (HSA) methods. At each location, Standard Penetration Testing (ASTM D1586) will be performed to assess the relative density of the in-place soils. Soil samples will be collected at the intervals specified in Table 3 using a 2-inch diameter split spoon. Each soil sample will be screened with a photoionization detector and visually characterized for soil type and the presence of non-aqueous phase liquid (NAPL). Except as explicitly identified in this letter, soil samples collected during the PDI program will not be submitted for laboratory analysis of PAHs. As previously discussed and agreed upon with the NYSDEC, the proposed excavation limits will be delineated during the PDI program based upon the following:

- For the on-site area, the presence or absence of soils visibly saturated with NAPL. This does not include soils exhibiting odors, or containing sheens or NAPL blebs/globules.

- For the off-site area, the presence or absence of soils visibly saturated with NAPL, and/or containing NAPL blebs/globules. This does not include soils exhibiting odors, or containing sheens. In the case of the preliminary Contingency Excavation Area (which is discussed in further detail below), the criteria will also include the presence or absence of total MGP-related PAHs at concentrations greater than 500 parts per million in the soil samples collected during the PDI program.

It is also assumed that the proposed excavations will be sheeted, and soil removal will be limited to within the sheeted cells.

National Grid will address the elevated concentration of total PAHs within the 4- to 6-foot depth interval at monitoring well MW-02 through the placement of an environmental easement, the installation of a 2-foot-thick soil cover, and implementation of a site management plan, which will restrict and/or limit the potential for future contact with subsurface soils. The total PAH concentration in soil at this location and depth interval was attributed to an apparent layer of ash and fill material, but there was no NAPL observed.

For those soil borings to be drilled within the limits of the preliminary Contingency Excavation Area (identified as PDI-SB21 through PDI-SB35 on Figure 2), sampling will not begin until native material is encountered (as previously noted, this area has historically been used by the DPW for the stockpiling of materials). Samples collected from the 0- to 2-foot, 4- to 6-foot, 8- to 10-foot, and 12- to 14-foot depth intervals at these locations will be submitted for laboratory analysis of PAHs and TPHs. Samples collected from the 2- to 4-foot, 6- to 8-foot, and 10- to 12-foot intervals will be extracted and held at the laboratory pending the results of the analyses for the samples collected from the other depth intervals. Sample intervals that are observed to contain NAPL will not be submitted for analysis.

Certain samples collected from soil borings PDI-SB1, PDI-SB7, PDI-SB13, PDI-SB15, PDI-SB19, PDI-SB20, PDI-SB23, PDI-SB24, PDI-SB32, PDI-SB33, and PDI-SB36 through PDI-SB39 will be submitted for one or more of the following geotechnical analyses:

- Grain size distribution by ASTM D422;
- Atterberg limits by ASTM D4318;
- Specific gravity by ASTM D854;
- Moisture content by ASTM D2216;
- Unconsolidated-undrained triaxial compression by ASTM D2850; and
- In-place density by ASTM D2937.

The number of samples to be submitted and specific geotechnical analyses to be performed will be determined based on the conditions observed in the field.

Once complete, each borehole will be: 1) backfilled to existing grade with grout; 2) staked in the field; and 3) surveyed for location and elevation. Soil cuttings and other investigation-derived waste will be stored in 55-gallon drums within the limits of the former MGP site for subsequent characterization and off-site disposal in accordance with applicable rules and regulations.

Test Pits

Four test pits (identified as PDI-TP1 through PDI-TP4 on Figure 1) will be excavated in the former MGP site in an attempt to locate/identify the extent of shallow foundations and obstructions (including materials of construction, thickness, and depth) in and around the area of the former octagonal gas holder. Each test pit will be excavated (if possible) to depths ranging from approximately 5 to 8 feet bgs and/or to the top of the holder foundation. In the off-site area, test pits PDI-TP5 through PDI-TP8 (shown on Figure 2) will each be excavated to a depth of approximately 8 feet bgs along the preliminary limits of the southernmost 8-foot excavation area to confirm the NAPL observations previously made at the other test pits in this area.

Test pits will be excavated using a rubber-tired backhoe or small excavator. At each location, excavated materials will be visually examined and logged by the field geologist and temporarily staged on polyethylene sheeting adjacent to the test pit. Once complete, test pits will be sketched and photographed, as appropriate, to record significant subsurface features. Excavated materials will then be placed back into the test pits at approximately the same depth and location from which they were removed. The backfilled test pits will be staked and surveyed for location and elevation.

Well Decommissioning and Maintenance

As previously discussed and agreed upon with the NYSDEC, National Grid will decommission monitoring wells MW-14 through MW-17 during the PDI program. Recent and historical sampling results have shown that groundwater in the area of these wells generally meets the NYSDEC Class GA groundwater standards or guidance values. Decommissioning activities will be performed in accordance with the NYSDEC *Groundwater Monitoring Well Decommissioning Policy* (CP-43). In conjunction with these activities, National Grid will also complete the recommended well maintenance activities identified in Table 1.

III. SCHEDULE

National Grid is prepared to initiate the proposed PDI activities within 30 days of NYSDEC approval, weather/access permitting. NYSDEC will be notified a minimum of five working days before the start of field activities.

Please feel free to contact me by phone at 315-428-5652, or by email at steven.stucker@us.ngrid.com if you have any questions.

Sincerely,

Steven P. Stucker/NJB

Steven P. Stucker
Environmental Department

Attachments

cc: Amen Omorogbe, NYSDEC
Nathan Freeman, NYSDOH
Michael Benoit, P.E., ARCADIS

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Tables

TABLE 1

MONITORING WELL CONSTRUCTION SUMMARY, GAUGING RESULTS, AND RECOMMENDED MAINTENANCE ACTIVITIES
INITIAL PDI REPORT AND SECOND PDI WORK PLAN

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK

Well ID	Date Completed	Coordinates		Well Casing	Surface Completion	Ground Surface Elevation (feet)	Measuring Point Elevation (feet)	Screened Interval (feet bgs)	Total Depth of Well (feet bgs)	November 30 and December 1, 2011		Recommended Maintenance Activities
		Northing	Easting							Depth to Groundwater (feet bmp)	Groundwater Elevation (feet)	
MW-1	July 11, 1997	1522744.8	350917.4	2" PVC	FM	398.11	397.63	13-23	26.00	10.03	387.60	Replace missing bolt for well cover.
MW-2	July 14, 1997	1522769.8	351053.2	2" PVC	SU	398.5	400.32	8-18	21.00	11.59	388.73	Install lock for well cover.
MW-3	July 10, 1997	1522917.4	351079.8	2" PVC	SU	392.1	393.91	15-25	28.00	6.95	386.96	Replace existing lock for well cover.
MW-4	July 9, 1997	1522880.9	350904.3	2" PVC	SU	395.4	397.09	15-25	28.00	10.02	387.07	Replace existing lock for well cover.
MW-5	July 15, 1997	1522682.3	351042.5	2" PVC	SU	401.7	403.52	5-10	10.00	7.95	395.57	Replace existing lock for well cover.
MW-6	July 14, 1997	1522663.6	351021.5	2" PVC	SU	402.6	404.23	15-25	28.00	15.65	388.58	None.
MW-7	September 1, 1999	1522867.7	350976.5	2" PVC	FM	394.60	394.23	8.4-18.4	18.40	6.98	387.25	Replace missing bolt for well cover.
MW-8	September 8, 1999	1522794.9	351086.4	2" PVC	FM	396.05	395.64	10-20	20.00	7.76	387.88	Replace existing bolts for well cover.
MW-9	December 8, 2001	1522911.2	350953.8	2" PVC	FM	391.88	391.50	3-13	15.00	3.60	387.90	Replace existing lock for well cover.
MW-10	October 18, 2004	1522759.6	351141.6	2" PVC	FM	394.50	393.95	5-15	15.00	6.46	387.49	Replace existing lock for well cover.
MW-11	October 18, 2004	1522848.5	351153.7	2" PVC	FM	391.83	391.56	3-13	13.00	4.95	386.61	None.
MW-12	August 8, 2006	1522911.8	351004.1	2" PVC	FM	392.17	391.99	4-14	14.00	4.42	387.57	None.
MW-13	August 8, 2006	1522819.0	351148.7	2" PVC	FM	392.59	392.20	14-24	24.00	5.33	386.87	Replace missing bolt for well cover.
MW-14	February 13, 2008	1523142.9	351570.4	2" PVC	SU	386.7	390.15	5-15	15.00	5.85	384.30	None.
MW-15	February 13, 2008	1523177.1	351615.4	2" PVC	SU	386.8	390.16	5-15	15.00	5.93	384.23	None.
MW-16	February 12, 2008	1523153.6	351720.4	2" PVC	SU	385.8	389.36	5-15	15.00	5.57	383.79	None.
MW-17	February 13, 2008	1523083.0	351578.1	2" PVC	SU	386.6	389.89	5-15	15.00	5.41	384.48	None.

Notes:
1. Coordinates are referenced to the North American Datum of 1983 (NAD 83).
2. Elevation data are referenced to the North American Vertical Datum of 1988 (NAVD 88).
3. FM - Flush-mount.
4. SU - Stick-up.
5. bgs - Below ground surface.
6. bmp - Below measuring point.

TABLE 2

SUMMARY OF 2011 OFF-SITE GROUNDWATER SAMPLING DATA
INITIAL PDI REPORT AND SECOND PDI WORK PLAN

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK

Location ID: / Date Collected:	Units	New York State Ambient Groundwater Standard or Guidance Value[1]	MW-14 12/01/11	MW-15 12/01/11	MW-16 12/01/11	MW-17 11/30/11
Volatile Organics						
Benzene	ug/L	1	1 U	1 U [1 U]	1 U	1 U
Ethylbenzene	ug/L	5	1 U	1 U [1 U]	1 U	1 U
m&p-Xylene	ug/L	5 (See Note 6)	2 U	2 U [2 U]	2 U	2 U
o-Xylene	ug/L	5	1 U	1 U [1 U]	1 U	1 U
Toluene	ug/L	5	1 U	1 U [1 U]	1 U	1 U
Xylenes (total)	ug/L	-- (See Note 6)	2 U	2 U [2 U]	2 U	2 U
Semivolatile Organics						
2-Methylnaphthalene	ug/L	--	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Acenaphthene	ug/L	20	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Acenaphthylene	ug/L	--	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Anthracene	ug/L	50	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Benzo(a)anthracene	ug/L	0.002	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Benzo(a)pyrene	ug/L	ND	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Benzo(b)fluoranthene	ug/L	0.002	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Benzo(g,h,i)perylene	ug/L	--	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Benzo(k)fluoranthene	ug/L	0.002	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Chrysene	ug/L	0.002	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Dibenzo(a,h)anthracene	ug/L	--	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Fluoranthene	ug/L	50	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Fluorene	ug/L	50	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Indeno(1,2,3-cd)pyrene	ug/L	0.002	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Naphthalene	ug/L	10	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Phenanthrene	ug/L	50	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U
Pyrene	ug/L	50	6.7 U	4.7 U [4.8 U]	4.7 U	4.8 U

Notes:

1. Groundwater standards and guidance values are from the New York State Department of Environmental Conservation's Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, titled *Ambient Water Quality Standards and Guidance Values* (NYSDEC 1998).
2. ug/L - Micrograms per liter.
3. Field duplicate sample results are presented in brackets.
4. -- - No standard or guidance value listed in TOGS 1.1.1 for this analyte.
5. ND - Non-detect.
6. TOGs 1.1.1 does not include Class GA groundwater standards or guidance values for m&p-xylene and total xylenes; the principa organic contaminant (POC) standard of 5 ug/L applies to the individual isomers of m-, o-, and p-xylene. For the purposes of this table, a screening value of 5 ug/L has been used for m&p-xylene to identify results that may indicate an exceedance of the POC standard for either m- or p-xylene.

Data Qualifiers:

U - Analyte was not detected. The associated value is the analyte Reporting Limit.

TABLE 3

SUMMARY OF PROPOSED PDI SOIL BORINGS
INITIAL PDI REPORT AND SECOND PDI WORK PLAN

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK

Location ID	Preliminary Depth of Excavation Specified in the ROD (feet bgs)	Total Depth of Boring (feet bgs)	Sample Intervals (feet bgs)
PDI-SB1	17	52	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22, 25-27, 30-32, 35-37, 40-42, 45-47, and 50-52
PDI-SB2	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB3	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB4	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB5	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB6	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB7	17	52	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, 18-20, 20-22, 25-27, 30-32, 35-37, 40-42, 45-47, and 50-52
PDI-SB8	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB9	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB10	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB11	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB12	17	20	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 16-18, and 18-20
PDI-SB13	13	52	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 20-22, 25-27, 30-32, 35-37, 40-42, 45-47, and 50-52
PDI-SB14	13	16	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, and 14-16
PDI-SB15	13	52	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 14-16, 20-22, 25-27, 30-32, 35-37, 40-42, 45-47, and 50-52
PDI-SB16	13	16	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, and 14-16
PDI-SB17	13	16	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, and 14-16
PDI-SB18	13	16	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, and 14-16
PDI-SB19	8	32	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 15-17, 20-22, 25-27, and 30-32
PDI-SB20	NA	32	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 15-17, 20-22, 25-27, and 30-32
PDI-SB21*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB22*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB23*	11	37	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 20-22, 25-27, 30-32, and 35-
PDI-SB24*	11	37	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 20-22, 25-27, 30-32, and 35-
PDI-SB25*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB26*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB27*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB28*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB29*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB30*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB31*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB32*	11	37	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 20-22, 25-27, 30-32, and 35-
PDI-SB33*	11	37	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 20-22, 25-27, 30-32, and 35-
PDI-SB34*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB35*	11	14	0-2, 2-4, 4-6, 6-8, 8-10, 10-12, and 12-14
PDI-SB36	4	37	0-2, 2-4, 4-6, 6-8, 8-10, 15-17, 20-22, 25-27, 30-32, and 35-37
PDI-SB37	4	37	0-2, 2-4, 4-6, 6-8, 8-10, 15-17, 20-22, 25-27, 30-32, and 35-37
PDI-SB38	4	37	0-2, 2-4, 4-6, 6-8, 8-10, 15-17, 20-22, 25-27, 30-32, and 35-37
PDI-SB39	4	37	0-2, 2-4, 4-6, 6-8, 8-10, 15-17, 20-22, 25-27, 30-32, and 35-37

Notes:
1. Refer to Figures 1 through 3 for proposed soil boring locations.
2. bgs - Below ground surface.
3. NA - Not applicable. Soil boring is not located within or adjacent to one of the preliminary excavation areas specified in the ROD.
4. * - Sampling will not begin at these locations until native material is encountered. Boring depths and sampling intervals represent feet below the start of native material.

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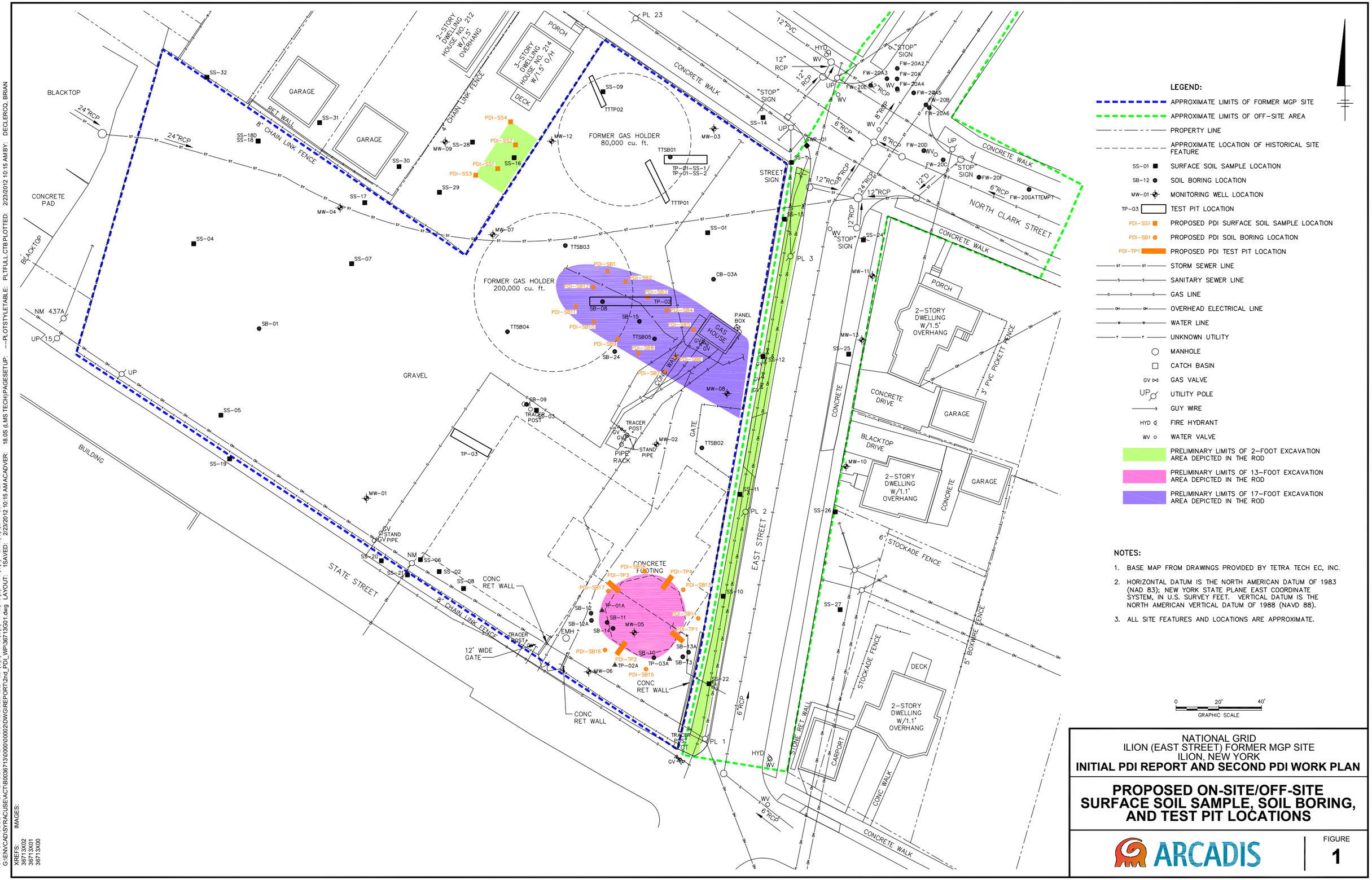
Figures



NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK
INITIAL PDI REPORT AND SECOND PDI WORK PLAN

PROPOSED ON-SITE/OFF-SITE SURFACE SOIL SAMPLE, SOIL BORING, AND TEST PIT LOCATIONS

ARCADIS

FIGURE
1

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: B.DECLERCQ LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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IMAGES:
XREFS:
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36713X01
36713X00

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: B.DECLERCQ LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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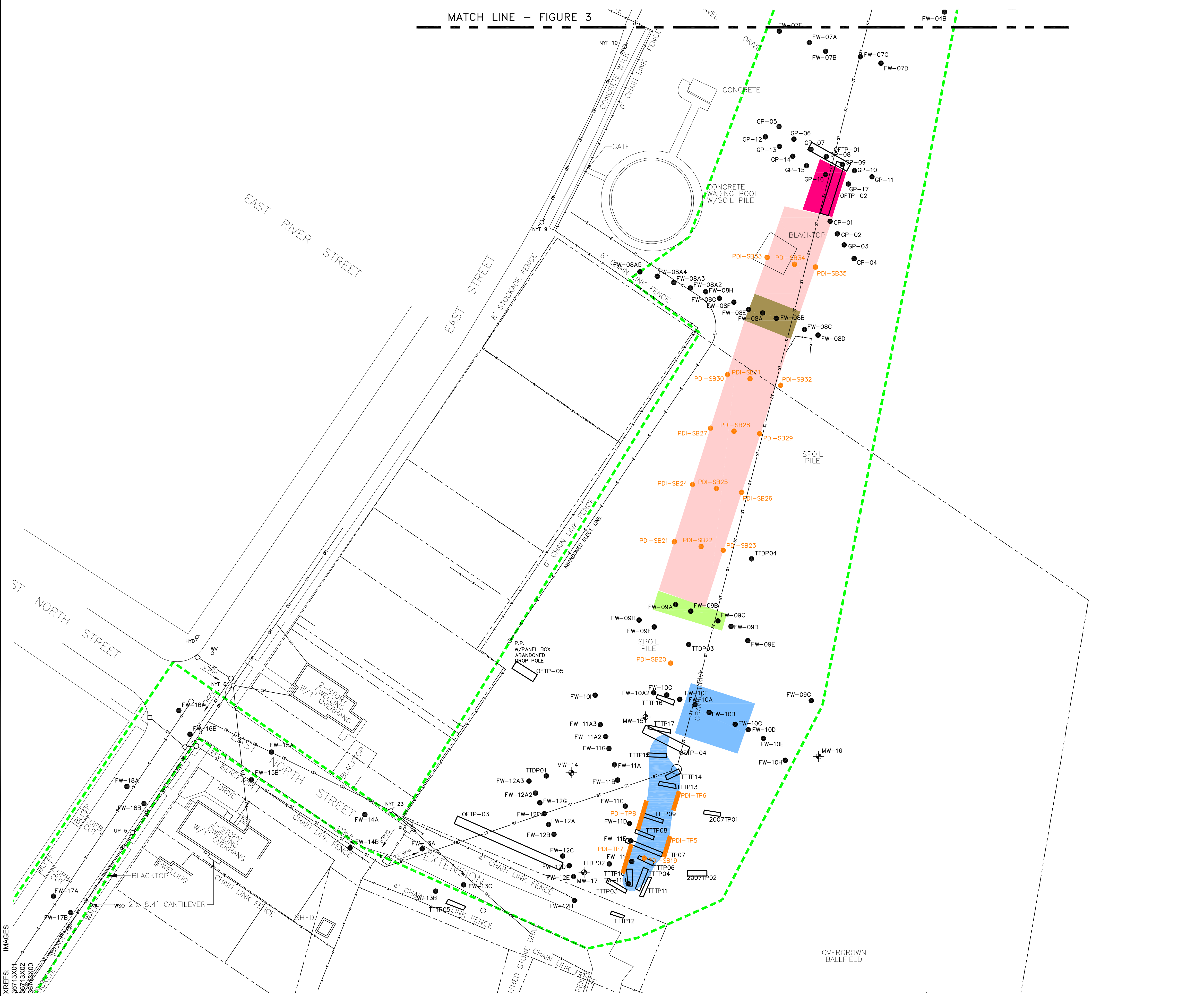

LEGEND:

- APPROXIMATE LIMITS OF OFF-SITE AREA
- PROPERTY LINE
- FW-09H ● SOIL BORING LOCATION
- MW-16 MONITORING WELL LOCATION
- OFTP-01 TEST PIT LOCATION
- PDI-SB25 ● PROPOSED PDI SOIL BORING LOCATION
- PDI-TP5 PROPOSED PDI TEST PIT LOCATION
- ST STORM SEWER LINE
- S SANITARY SEWER LINE
- OH OVERHEAD ELECTRICAL LINE
- MANHOLE
- CATCH BASIN
- UP UTILITY POLE
- GUY WIRE
- HYD FIRE HYDRANT
- WV WATER VALVE
- PRELIMINARY LIMITS OF 7-FOOT EXCAVATION AREA DEPICTED IN THE ROD
- PRELIMINARY LIMITS OF 8-FOOT EXCAVATION AREA DEPICTED IN THE ROD
- PRELIMINARY LIMITS OF 10-FOOT EXCAVATION AREA DEPICTED IN THE ROD
- PRELIMINARY LIMITS OF 11-FOOT EXCAVATION AREA DEPICTED IN THE ROD
- PRELIMINARY LIMITS OF 11-FOOT CONTINGENCY EXCAVATION AREA DEPICTED IN THE ROD

NOTES:

1. BASE MAP FROM DRAWINGS PROVIDED BY TETRA TECH EC, INC.
2. HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD 83); NEW YORK STATE PLANE EAST COORDINATE SYSTEM, IN U.S. SURVEY FEET. VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. ALL SITE FEATURES AND LOCATIONS ARE APPROXIMATE.

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK
INITIAL PDI REPORT AND SECOND PDI WORK PLAN

PROPOSED OFF-SITE SOIL BORING AND TEST PIT LOCATIONS

ARCADIS

FIGURE
2

LEGEND:

- APPROXIMATE LIMITS OF OFF-SITE AREA
- PROPERTY LINE
- OUTLINE OF SWALE
- DRAINAGE DITCH/CHANNEL
- FW-02 SOIL BORING LOCATION
- DPW-MW-01 MONITORING WELL LOCATION
- PDI-SB37 PDI SOIL BORING LOCATION
- ST STORM SEWER LINE
- OH OVERHEAD ELECTRICAL LINE
- MANHOLE
- UP UTILITY POLE
- GUY WIRE
- PRELIMINARY LIMITS OF 4-FOOT EXCAVATION AREA DEPICTED IN THE ROD

NOTES:

1. BASE MAP FROM DRAWINGS PROVIDED BY TETRA TECH EC, INC.
2. HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD 83); NEW YORK STATE PLANE EAST COORDINATE SYSTEM, IN U.S. SURVEY FEET. VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. ALL SITE FEATURES AND LOCATIONS ARE APPROXIMATE.

0 30' 60'
GRAPHIC SCALE

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK
INITIAL PDI REPORT AND SECOND PDI WORK PLAN

PROPOSED OFF-SITE SOIL BORING LOCATIONS

ARCADIS

FIGURE 3

CITY: SYRACUSE-NY DIV/GROUP: 141/ENV DB: B.DECLERCQ LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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XREFS:
36713X01
36713X02
36713X00
IMAGES:

ARCADIS

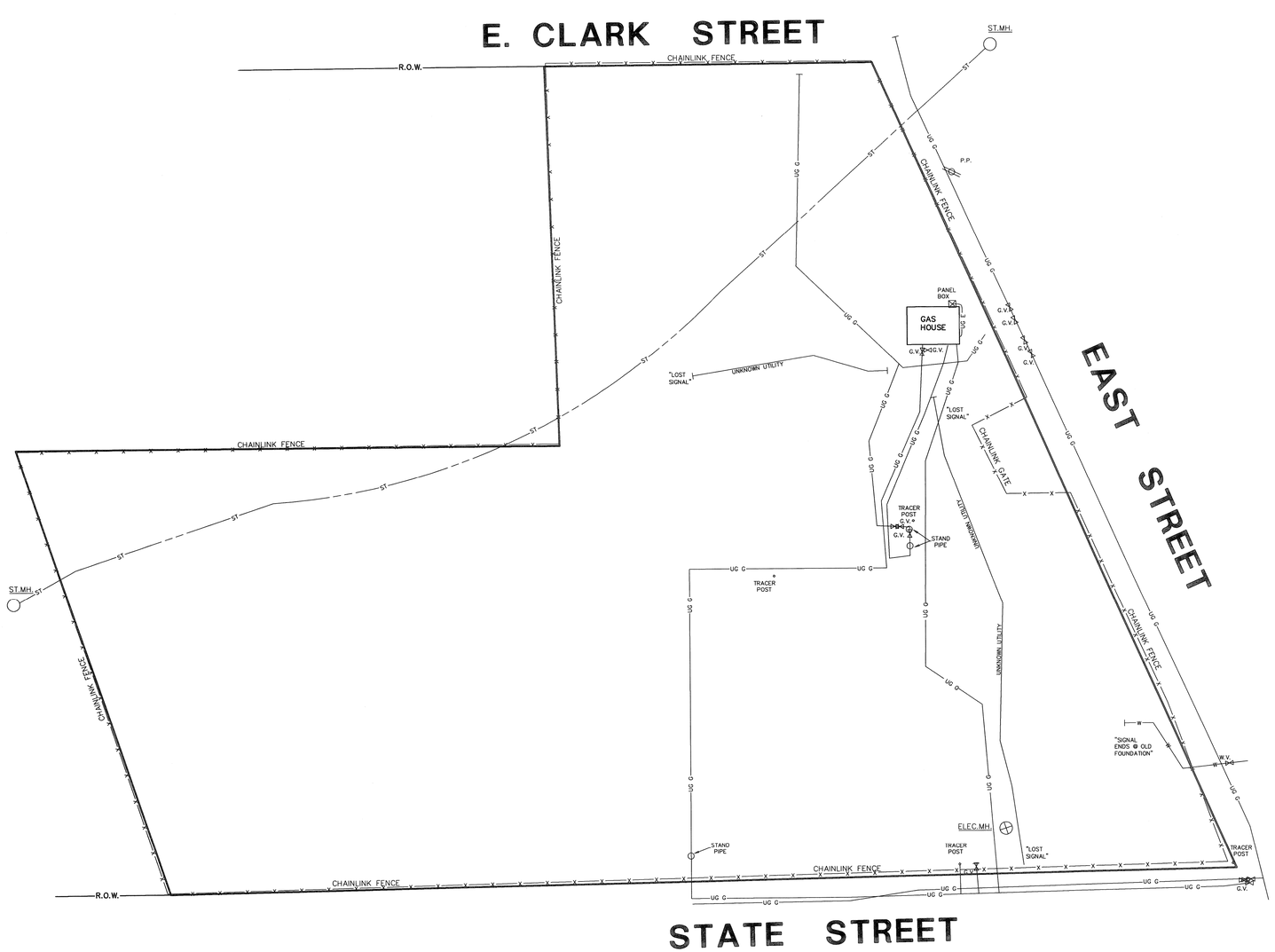
Attachments

Attachment A

USI Utility Survey Drawings

LEGEND:

SYMBOL	DESCRIPTION
	POWER POLE
4"G	GAS MAIN & VALVE
E	ELECTRIC CONDUIT & STRUCTURE
	RIGHT-OF-WAY OR PROPERTY LINE
X	FENCE (CHAIN LINK)
8"ST	STORM SEWER, MANHOLE & FIELD/DROP INLET
8"W	WATER MAIN WITH HYDRANT & GATE VALVE



ANY UNAUTHORIZED ALTERATION OR ADDITION TO THIS MAP IS A VIOLATION OF ARTICLE 145, SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.

WE, PARRONE ENGINEERING, HEREBY CERTIFY THAT THIS MAP WAS PREPARED FROM NOTES OF AN SURVEY COMPLETED ON NOVEMBER 29, 2011.

DAVID S. STAERR, P.L.S. LIC. NO. 049962
PARRONE ENGINEERING

STATE OF NEW YORK · DAVID S. STAERR · NO. 049962 · LICENSED LAND SURVEYOR

NOTE:
UNDERGROUND LOCATION OF UTILITIES PROVIDED BY UNDERGROUND SERVICES INC./SOFTDIG, JOB #711270, DATED NOVEMBER 29, 2011.

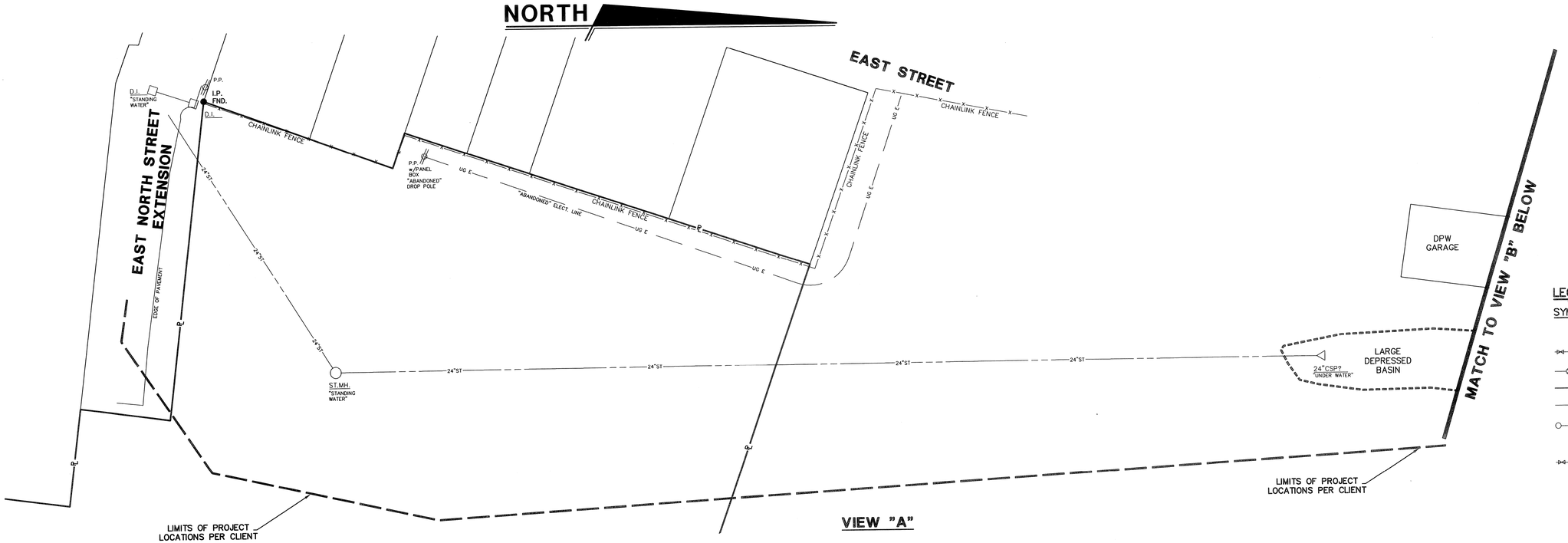
REVISIONS:	BY: DATE:

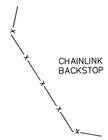
PARRONE engineering
THE PIANO WORKS
349 WEST COMMERCIAL STREET
SUITE 3200
EAST ROCHESTER, NY 14445
T 585.586.0200
F 585.586.6752

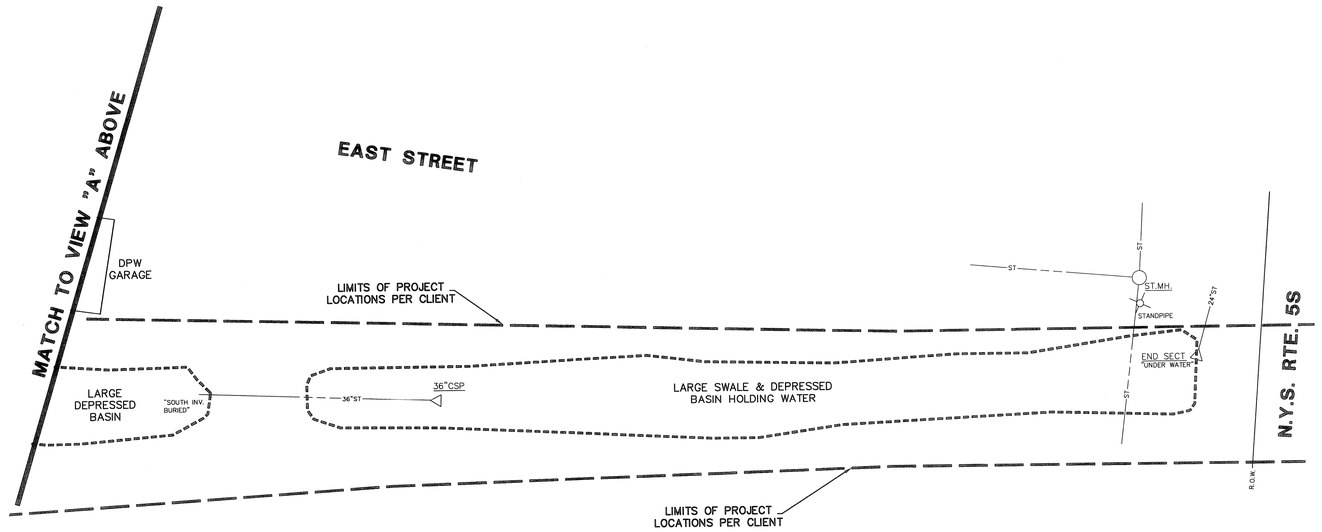
Designed By:	
Drawn By:	B.C.K.
Checked By:	D.S.
DATE:	DEC. 9, 2011
SCALE:	1" = 20'
JOB No.:	6837

UNDERGROUND UTILITY RECORD MAP
FOR:
STATE STREET
SITUATE IN:
VILLAGE OF ILION HERKIMER COUNTY NEW YORK

P:\DJP-Hold\6837\DWG\6837 STATE REC MAP.dwg December 29, 2011







NOTE:
UNDERGROUND LOCATION OF UTILITIES PROVIDED BY UNDERGROUND SERVICES INC./SOFTDIG, JOB #711270, DATED NOVEMBER 29, 2011.

WE, PARRONE ENGINEERING, HEREBY CERTIFY THAT THIS MAP WAS PREPARED FROM NOTES OF AN SURVEY COMPLETED ON NOVEMBER 29, 2011.

DAVID S. STAERR, P.L.S. LIC. NO. 049962
PARRONE ENGINEERING

STATE OF NEW YORK · DAVID S. STAERR · NO. 049962 · LICENSED LAND SURVEYOR

REVISIONS:	BY: DATE:

PARRONE engineering
THE PIANO WORKS
349 WEST COMMERCIAL STREET
SUITE 3200
EAST ROCHESTER, NY 14445
T 585.586.0200
F 585.586.6752

UNDERGROUND UTILITY RECORD MAP
FOR:

EAST STREET

SITUATE IN:
VILLAGE OF ILION HERKIMER COUNTY NEW YORK

Designed By:	
Drawn By:	B.C.K.
Checked By:	D.S.
DATE:	DEC. 9, 2011
SCALE:	1" = 20'
JOB No.:	6837

P:\DJP-Hold\6837\DWG\6837 EAST REC MAP.dwg December 29, 2011

Attachment B

Tables O-8 and O-9 of RI Report

O-8

BTEX in Off-Site Groundwater Samples

2008 Supplemental Investigation

Ilion (East Street) Site

PERIOD: From 02/26/2008 thru 02/28/2008 - Inclusive

SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE RESULT TYPE	NY-GWQS	MW-14 IL-GWMW14 02/27/2008 Primary	MW-15 IL-GWMW15 02/28/2008 Primary	MW-16 IL-GWMW16 02/28/2008 Primary	MW-17 IL-GWMW17 02/27/2008 Primary
Benzene	(ug/l)	1	0.25 U	0.25 U	0.25 U	0.25 U
Ethylbenzene	(ug/l)	5	0.23 U	0.23 U	0.23 U	0.23 U
Toluene	(ug/l)	5	0.24 U	0.24 U	0.24 U	0.24 U
Xylene (total)	(ug/l)	5	0.55 U	0.55 U	0.55 U	0.55 U

O-9

PAHs in Off-Site Groundwater Samples

2008 Supplemental Investigation

Ilion (East Street) Site

PERIOD: From 02/26/2008 thru 02/28/2008 - Inclusive

SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE RESULT TYPE	NY-GWQS	MW-14 IL-GWMW14 02/27/2008 Primary	MW-14 IL-GWMW24 02/27/2008 Duplicate 1	MW-15 IL-GWMW15 02/28/2008 Primary	MW-16 IL-GWMW16 02/28/2008 Primary	MW-17 IL-GWMW17 02/27/2008 Primary
Acenaphthene	(ug/l)	20	0.27 U	0.27 U	0.3 U	0.3 U	0.46 U
Acenaphthylene	(ug/l)		0.26 U	0.26 U	0.28 U	0.28 U	0.44 U
Anthracene	(ug/l)	50	0.11 U	0.11 U	0.12 U	0.12 U	0.19 U
Benzo(a)anthracene	(ug/l)	0.002	0.2 U	0.2 U	0.21 U	0.21 U	0.32 U
Benzo(a)pyrene	(ug/l)	0.001	0.25 U	0.25 U	0.28 U	0.28 U	0.42 U
Benzo(b)fluoranthene	(ug/l)	0.002	0.28 U	0.28 U	0.31 U	0.31 U	0.48 U
Benzo(g,h,i)perylene	(ug/l)		0.32 U	0.32 U	0.35 U	0.35 U	0.54 U
Benzo(k)fluoranthene	(ug/l)	0.002	0.21 U	0.21 U	0.23 U	0.23 U	0.36 U
Chrysene	(ug/l)	0.002	0.3 U	0.3 U	0.33 U	0.33 U	0.51 U
Dibenz(a,h)anthracene	(ug/l)		0.46 U	0.46 U	0.51 U	0.51 U	0.78 U
Fluoranthene	(ug/l)	50	0.21 U	0.21 U	0.23 U	0.23 U	0.36 U
Fluorene	(ug/l)	50	0.18 U	0.18 U	0.2 U	0.2 U	0.31 U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.002	0.33 U	0.33 U	0.36 U	0.36 U	0.56 U
Naphthalene	(ug/l)	10	0.26 U	0.26 U	[13]	0.28 U	0.44 U
Phenanthrene	(ug/l)	50	0.24 U	0.24 U	0.26 U	0.26 U	0.41 U
Pyrene	(ug/l)	50	0.21 U	0.21 U	0.23 U	0.23 U	0.36 U

[x]=Greater than Action Level

Attachment C

TestAmerica Groundwater
Laboratory Data Report

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 480-13366-1

Job Description: National Grid - Ilion, NY

For:
ARCADIS U.S. Inc
6723 Towpath Road
PO BOX 66
Syracuse, NY 13214

Attention: Mr. Douglas Nodine

Approved for release.
Candace Fox
Project Manager II
12/27/2011 2:15 PM

Candace Fox
Project Manager II
candace.fox@testamericainc.com
12/27/2011

The test results in this report meet all NELAP requirements for analytes for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this test report should be directed to the TestAmerica Project Manager who has signed this report.

TestAmerica Buffalo NELAC Certifications: CADPH 01169CA, FLDOH E87672, ILEPA 200003, KSDOH E-10187, LADEQ 30708, MDH 036-999-337, NHELAP 2973, NJDEP NY455, NHDOH 10026, ORELAP NY200003, PADEP 68-00281, TXCEQ T-104704412-10-1

Table of Contents

Table of Contents

Job Narrative
480-13366-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

GC/MS VOA
Method(s) 8260B: The matrix spike(MS) precision for batch 43413 was outside control limits. The associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision met acceptance criteria.

No other analytical or quality issues were noted.

GC/MS Semi VOA
Method(s) 8270C: The following compound was outside control limits in the continuing calibration verification (CCV) associated with batch 43264: 2-Fluorophenol. This compound is not classified as Calibration Check Compound (CCC) in the reference method. Due to the large number of analytes contained in the CCV, the laboratory's SOP allows for four analytes to be outside limits; therefore, the data have been reported.

No other analytical or quality issues were noted.

Organic Prep
Method(s) 3510C: Elevated reporting limits are provided for the following sample due to the volume of sample provided for preparation: MW-14 (480-13430-1)

No other analytical or quality issues were noted.

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973S Analysis Batch Number: 42429

Lab Sample ID: STD 480-42429/4 IC Client Sample ID:

Date Analyzed: 12/01/11 12:00 Lab File ID: S9318.D GC Column: ZB-624 (60) ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,1,2-Trichloro-1,2,2-trifluoroethane	2.53	Split Peak	coderd	12/01/11 15:11

Lab Sample ID: STD 480-42429/5 IC Client Sample ID:

Date Analyzed: 12/01/11 12:22 Lab File ID: S9319.D GC Column: ZB-624 (60) ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,1,2-Trichloro-1,2,2-trifluoroethane	2.53	Assign Peak	coderd	12/01/11 15:11

GC/MS SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973U Analysis Batch Number: 42934

Lab Sample ID: IC 480-42934/2 Client Sample ID:

Date Analyzed: 12/06/11 13:27 Lab File ID: U6913.D GC Column: RXI-5Sil MS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
N-Nitrosodimethylamine	2.77	Assign Peak	mckernar	12/06/11 13:52
Pyridine	2.84	Peak Tail	mckernar	12/06/11 13:52
2,4-Dichlorophenol	7.54	Peak Tail	mckernar	12/06/11 13:52
2,4,5-Trichlorophenol	9.08	Assign Peak	mckernar	12/06/11 13:52
2-Nitroaniline	9.41	Assign Peak	mckernar	12/06/11 13:52
3-Nitroaniline	9.96	Assign Peak	mckernar	12/06/11 13:52
2,4-Dinitrophenol	10.09	Assign Peak	mckernar	12/06/11 13:52
4-Nitrophenol	10.25	Assign Peak	mckernar	12/06/11 13:52

Lab Sample ID: IC 480-42934/3 Client Sample ID:

Date Analyzed: 12/06/11 13:50 Lab File ID: U6914.D GC Column: RXI-5Sil MS ID: 0.25(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
N-Nitrosodimethylamine	2.75	Peak Tail	mckernar	12/06/11 14:15
Pyridine	2.83	Peak Tail	mckernar	12/06/11 14:15
2,4-Dinitrophenol	10.08	Split Peak	mckernar	12/06/11 14:15

SAMPLE SUMMARY

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-13366-1	MW-17	Water	11/30/2011 1155	12/01/2011 1430
480-13366-1MS	MW-17	Water	11/30/2011 1155	12/01/2011 1430
480-13366-1MSD	MW-17	Water	11/30/2011 1155	12/01/2011 1430
480-13366-2TB	TRIP BLANK	Water	11/30/2011 0000	12/01/2011 1430
480-13430-1	MW-14	Water	12/01/2011 0930	12/02/2011 1130
480-13430-2	MW-15	Water	12/01/2011 0940	12/02/2011 1130
480-13430-3	MW-16	Water	12/01/2011 1045	12/02/2011 1130
480-13430-4FD	BD-120111	Water	12/01/2011 0000	12/02/2011 1130
480-13430-5TB	TRIP BLANK	Water	12/01/2011 0000	12/02/2011 1130

EXECUTIVE SUMMARY - Detections

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method

No Detections

METHOD SUMMARY

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Description	Lab Location	Method	Preparation Method
Matrix Water			
Volatile Organic Compounds (GC/MS)	TAL BUF	SW846 8260B	
Purge and Trap	TAL BUF		SW846 5030B
Semivolatile Organic Compounds (GC/MS)	TAL BUF	SW846 8270C	
Liquid-Liquid Extraction (Separatory Funnel)			SW846 3510C

Lab References:

TAL BUF = TestAmerica Buffalo

Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Method	Analyst	Analyst ID
SW846 8260B	Coder, David	DC
SW846 8270C	McKernan, Ryan	RMM

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **MW-17**

Lab Sample ID: 480-13366-1 | Date Sampled: 11/30/2011 1155
Client Matrix: Water | Date Received: 12/01/2011 1430

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9502.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1510			Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1510				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	104		66 - 137
Toluene-d8 (Surr)	98		71 - 126
4-Bromofluorobenzene (Surr)	87		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **TRIP BLANK**

Lab Sample ID: 480-13366-2TB
Client Matrix: Water

Date Sampled: 11/30/2011 0000
Date Received: 12/01/2011 1430

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9505.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1617			Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1617				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **MW-14**

Lab Sample ID: 480-13430-1 | Date Sampled: 12/01/2011 0930
Client Matrix: Water | Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9522.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1306			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1306				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	96		66 - 137
Toluene-d8 (Surr)	99		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **MW-15**

Lab Sample ID: 480-13430-2 | Date Sampled: 12/01/2011 0940
Client Matrix: Water | Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9523.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1328			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1328				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	97		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	92		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-16**

Lab Sample ID: 480-13430-3
Client Matrix: Water

Date Sampled: 12/01/2011 1045
Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9524.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1350			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1350				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	91		73 - 120

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **BD-120111**

Lab Sample ID: 480-13430-4FD | Date Sampled: 12/01/2011 0000
Client Matrix: Water | Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9525.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1412			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1412				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 137
Toluene-d8 (Surr)	99		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **TRIP BLANK**

Lab Sample ID: 480-13430-5TB | Date Sampled: 12/01/2011 0000
Client Matrix: Water | Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9526.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1434			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1434				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	99		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **MW-17**

Lab Sample ID: 480-13366-1 | Date Sampled: 11/30/2011 1155
Client Matrix: Water | Date Received: 12/01/2011 1430

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-42934	Instrument ID:	HP5973U
Prep Method:	3510C	Prep Batch:	480-42575	Lab File ID:	U6937.D
Dilution:	1.0			Initial Weight/Volume:	1040 mL
Analysis Date:	12/06/2011 2245			Final Weight/Volume:	1 mL
Prep Date:	12/02/2011 0638			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.8
Acenaphthylene	ND		0.37	4.8
Anthracene	ND		0.27	4.8
Benz(a)anthracene	ND		0.35	4.8
Benzo(a)pyrene	ND		0.45	4.8
Benzo(b)fluoranthene	ND		0.33	4.8
Benzo(g,h,i)perylene	ND		0.34	4.8
Benzo(k)fluoranthene	ND		0.70	4.8
Chrysene	ND		0.32	4.8
Dibenz(a,h)anthracene	ND		0.40	4.8
Fluoranthene	ND		0.38	4.8
Fluorene	ND		0.35	4.8
Indeno(1,2,3-c,d)pyrene	ND		0.45	4.8
Naphthalene	ND		0.73	4.8
Phenanthrene	ND		0.42	4.8
Pyrene	ND		0.33	4.8
2-Methylnaphthalene	ND		0.58	4.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	80		46 - 120
2-Fluorobiphenyl	87		48 - 120
p-Terphenyl-d14	49		24 - 136

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **MW-14**

Lab Sample ID: 480-13430-1 | Date Sampled: 12/01/2011 0930
Client Matrix: Water | Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1564.D
Dilution:	1.0			Initial Weight/Volume:	750 mL
Analysis Date:	12/07/2011 2128			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.55	6.7
Acenaphthylene	ND		0.51	6.7
Anthracene	ND		0.37	6.7
Benz(a)anthracene	ND		0.48	6.7
Benzo(a)pyrene	ND		0.63	6.7
Benzo(b)fluoranthene	ND		0.45	6.7
Benzo(g,h,i)perylene	ND		0.47	6.7
Benzo(k)fluoranthene	ND		0.97	6.7
Chrysene	ND		0.44	6.7
Dibenz(a,h)anthracene	ND		0.56	6.7
Fluoranthene	ND		0.53	6.7
Fluorene	ND		0.48	6.7
Indeno(1,2,3-c,d)pyrene	ND		0.63	6.7
Naphthalene	ND		1.0	6.7
Phenanthrene	ND		0.59	6.7
Pyrene	ND		0.45	6.7
2-Methylnaphthalene	ND		0.80	6.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	49		46 - 120
2-Fluorobiphenyl	65		48 - 120
p-Terphenyl-d14	132		24 - 136

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **MW-15**

Lab Sample ID: 480-13430-2 | Date Sampled: 12/01/2011 0940
Client Matrix: Water | Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1565.D
Dilution:	1.0			Initial Weight/Volume:	1055 mL
Analysis Date:	12/07/2011 2151			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.7
Acenaphthylene	ND		0.36	4.7
Anthracene	ND		0.27	4.7
Benz(a)anthracene	ND		0.34	4.7
Benzo(a)pyrene	ND		0.45	4.7
Benzo(b)fluoranthene	ND		0.32	4.7
Benzo(g,h,i)perylene	ND		0.33	4.7
Benzo(k)fluoranthene	ND		0.69	4.7
Chrysene	ND		0.31	4.7
Dibenz(a,h)anthracene	ND		0.40	4.7
Fluoranthene	ND		0.38	4.7
Fluorene	ND		0.34	4.7
Indeno(1,2,3-c,d)pyrene	ND		0.45	4.7
Naphthalene	ND		0.72	4.7
Phenanthrene	ND		0.42	4.7
Pyrene	ND		0.32	4.7
2-Methylnaphthalene	ND		0.57	4.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	64		46 - 120
2-Fluorobiphenyl	76		48 - 120
p-Terphenyl-d14	116		24 - 136

Client: ARCADIS U.S. Inc | Job Number: 480-13366-1

Client Sample ID: **MW-16**

Lab Sample ID: 480-13430-3 | Date Sampled: 12/01/2011 1045
Client Matrix: Water | Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1566.D
Dilution:	1.0			Initial Weight/Volume:	1060 mL
Analysis Date:	12/07/2011 2214			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.7
Acenaphthylene	ND		0.36	4.7
Anthracene	ND		0.26	4.7
Benz(a)anthracene	ND		0.34	4.7
Benzo(a)pyrene	ND		0.44	4.7
Benzo(b)fluoranthene	ND		0.32	4.7
Benzo(g,h,i)perylene	ND		0.33	4.7
Benzo(k)fluoranthene	ND		0.69	4.7
Chrysene	ND		0.31	4.7
Dibenz(a,h)anthracene	ND		0.40	4.7
Fluoranthene	ND		0.38	4.7
Fluorene	ND		0.34	4.7
Indeno(1,2,3-c,d)pyrene	ND		0.44	4.7
Naphthalene	ND		0.72	4.7
Phenanthrene	ND		0.42	4.7
Pyrene	ND		0.32	4.7
2-Methylnaphthalene	ND		0.57	4.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	46		46 - 120
2-Fluorobiphenyl	63		48 - 120
p-Terphenyl-d14	91		24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **BD-120111**

Lab Sample ID: 480-13430-4FD
Client Matrix: Water

Date Sampled: 12/01/2011 0000
Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1567.D
Dilution:	1.0			Initial Weight/Volume:	1050 mL
Analysis Date:	12/07/2011 2237			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.8
Acenaphthylene	ND		0.36	4.8
Anthracene	ND		0.27	4.8
Benz(a)anthracene	ND		0.34	4.8
Benzo(a)pyrene	ND		0.45	4.8
Benzo(b)fluoranthene	ND		0.32	4.8
Benzo(g,h,i)perylene	ND		0.33	4.8
Benzo(k)fluoranthene	ND		0.70	4.8
Chrysene	ND		0.31	4.8
Dibenz(a,h)anthracene	ND		0.40	4.8
Fluoranthene	ND		0.38	4.8
Fluorene	ND		0.34	4.8
Indeno(1,2,3-c,d)pyrene	ND		0.45	4.8
Naphthalene	ND		0.72	4.8
Phenanthrene	ND		0.42	4.8
Pyrene	ND		0.32	4.8
2-Methylnaphthalene	ND		0.57	4.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	51		46 - 120
2-Fluorobiphenyl	72		48 - 120
p-Terphenyl-d14	115		24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Surrogate Recovery Report

8260B Volatile Organic Compounds (GC/MS)

Client Matrix: Water

Lab Sample ID	Client Sample ID	DCA %Rec	TOL %Rec	BFB %Rec
480-13366-1	MW-17	104	98	87
480-13366-2	TRIP BLANK	100	100	90
480-13430-1	MW-14	96	99	90
480-13430-2	MW-15	97	100	92
480-13430-3	MW-16	98	100	91
480-13430-4	BD-120111	100	99	90
480-13430-5	TRIP BLANK	99	100	90
MB 480-43413/5		100	102	90
MB 480-43660/5		97	102	90
LCS 480-43413/4		99	101	96
LCS 480-43660/4		95	104	94
480-13366-1 MS	MW-17 MS	105	99	94
480-13366-1 MSD	MW-17 MSD	99	99	93

Surrogate	Acceptance Limits
DCA = 1,2-Dichloroethane-d4 (Surr)	66-137
TOL = Toluene-d8 (Surr)	71-126
BFB = 4-Bromofluorobenzene (Surr)	73-120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Surrogate Recovery Report

8270C Semivolatile Organic Compounds (GC/MS)

Client Matrix: Water

Lab Sample ID	Client Sample ID	NBZ %Rec	FBP %Rec	TPH %Rec
480-13366-1	MW-17	80	87	49
480-13430-1	MW-14	49	65	132
480-13430-2	MW-15	64	76	116
480-13430-3	MW-16	46	63	91
480-13430-4	BD-120111	51	72	115
MB 480-42575/1-A		74	77	130
MB 480-42840/1-A		77	76	105
LCS 480-42575/2-A		95	94	133
LCS 480-42840/2-A		66	80	117
LCSD 480-42840/3-A		61	75	118
480-13366-1 MS	MW-17 MS	95	97	110
480-13366-1 MSD	MW-17 MSD	93	100	114

Surrogate	Acceptance Limits
NBZ = Nitrobenzene-d5	46-120
FBP = 2-Fluorobiphenyl	48-120
TPH = p-Terphenyl-d14	24-136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Method Blank - Batch: 480-43413

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 480-43413/5	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	S9491.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1055	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1055				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	100	66 - 137
Toluene-d8 (Surr)	102	71 - 126
4-Bromofluorobenzene (Surr)	90	73 - 120

Lab Control Sample - Batch: 480-43413

Method: 8260B
Preparation: 5030B

Lab Sample ID:	LCS 480-43413/4	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	S9490.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1033	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1033				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Benzene	25.0	26.1	104	71 - 124	
Toluene	25.0	26.0	104	70 - 122	
Ethylbenzene	25.0	26.5	106	77 - 123	
m-Xylene & p-Xylene	50.0	54.3	109	76 - 122	
o-Xylene	25.0	27.5	110	76 - 122	

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	99	66 - 137
Toluene-d8 (Surr)	101	71 - 126
4-Bromofluorobenzene (Surr)	96	73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 480-43413

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	480-13366-1	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	S9503.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1533			Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1533				
Leach Date:	N/A				

MSD Lab Sample ID:	480-13366-1	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	S9504.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1555			Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1555				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Benzene	130	124	71 - 124	4	13	F	
Toluene	118	116	70 - 122	1	15		
Ethylbenzene	124	120	77 - 123	3	15	F	
m-Xylene & p-Xylene	122	118	76 - 122	3	16		
o-Xylene	121	119	76 - 122	2	16		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	105	99	66 - 137
Toluene-d8 (Surr)	99	99	71 - 126
4-Bromofluorobenzene (Surr)	94	93	73 - 120

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 480-43413

Method: 8260B
Preparation: 5030B

MS Lab Sample ID:	480-13366-1	Units:	ug/L	MSD Lab Sample ID:	480-13366-1
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	12/08/2011 1533			Analysis Date:	12/08/2011 1555
Prep Date:	12/08/2011 1533			Prep Date:	12/08/2011 1555
Leach Date:	N/A			Leach Date:	N/A

	Sample	MS Spike	MSD Spike	MS		MSD
Analyte	Result/Qual	Amount	Amount	Result/Qual		Result/Qual
Benzene	ND	25.0	25.0	32.4	F	31.1
Toluene	ND	25.0	25.0	29.5		29.1
Ethylbenzene	ND	25.0	25.0	30.9	F	30.1
m-Xylene & p-Xylene	ND	50.0	50.0	61.0		59.1
o-Xylene	ND	25.0	25.0	30.2		29.7

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Method Blank - Batch: 480-43660

Method: 8260B
Preparation: 5030B

Lab Sample ID:	MB 480-43660/5	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	S9517.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	12/09/2011 1057	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	12/09/2011 1057				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	97	66 - 137
Toluene-d8 (Surr)	102	71 - 126
4-Bromofluorobenzene (Surr)	90	73 - 120

Lab Control Sample - Batch: 480-43660

Method: 8260B
Preparation: 5030B

Lab Sample ID:	LCS 480-43660/4	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	S9516.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	5 mL
Analysis Date:	12/09/2011 1035	Units:	ug/L	Final Weight/Volume:	5 mL
Prep Date:	12/09/2011 1035				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Benzene	25.0	26.7	107	71 - 124	
Toluene	25.0	26.1	104	70 - 122	
Ethylbenzene	25.0	27.0	108	77 - 123	
m-Xylene & p-Xylene	50.0	55.0	110	76 - 122	
o-Xylene	25.0	27.7	111	76 - 122	

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	95	66 - 137
Toluene-d8 (Surr)	104	71 - 126
4-Bromofluorobenzene (Surr)	94	73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Method Blank - Batch: 480-42575

Method: 8270C
Preparation: 3510C

Lab Sample ID:	MB 480-42575/1-A	Analysis Batch:	480-42934	Instrument ID:	HP5973U
Client Matrix:	Water	Prep Batch:	480-42575	Lab File ID:	U6923.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	12/06/2011 1719	Units:	ug/L	Final Weight/Volume:	1 mL
Prep Date:	12/02/2011 0638			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acenaphthene	ND		0.41	5.0
Acenaphthylene	ND		0.38	5.0
Anthracene	ND		0.28	5.0
Benz(a)anthracene	ND		0.36	5.0
Benzo(a)pyrene	ND		0.47	5.0
Benzo(b)fluoranthene	ND		0.34	5.0
Benzo(g,h,i)perylene	ND		0.35	5.0
Benzo(k)fluoranthene	ND		0.73	5.0
Chrysene	ND		0.33	5.0
Dibenz(a,h)anthracene	ND		0.42	5.0
Fluoranthene	ND		0.40	5.0
Fluorene	ND		0.36	5.0
Indeno(1,2,3-c,d)pyrene	ND		0.47	5.0
Naphthalene	ND		0.76	5.0
Phenanthrene	ND		0.44	5.0
Pyrene	ND		0.34	5.0
2-Methylnaphthalene	ND		0.60	5.0

Surrogate	% Rec	Acceptance Limits
Nitrobenzene-d5	74	46 - 120
2-Fluorobiphenyl	77	48 - 120
p-Terphenyl-d14	130	24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Lab Control Sample - Batch: 480-42575

Method: 8270C
Preparation: 3510C

Lab Sample ID:	LCS 480-42575/2-A	Analysis Batch:	480-42934	Instrument ID:	HP5973U
Client Matrix:	Water	Prep Batch:	480-42575	Lab File ID:	U6924.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	12/06/2011 1742	Units:	ug/L	Final Weight/Volume:	1 mL
Prep Date:	12/02/2011 0638			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	100	103	103	60 - 120	
Acenaphthylene	100	108	108	63 - 120	
Anthracene	100	120	120	69 - 131	
Benz(a)anthracene	100	117	117	73 - 138	
Benzo(a)pyrene	100	108	108	74 - 126	
Benzo(b)fluoranthene	100	98.7	99	75 - 133	
Benzo(g,h,i)perylene	100	106	106	66 - 152	
Benzo(k)fluoranthene	100	106	106	75 - 133	
Chrysene	100	119	119	69 - 140	
Dibenz(a,h)anthracene	100	111	111	67 - 144	
Fluoranthene	100	109	109	67 - 133	
Fluorene	100	110	110	66 - 129	
Indeno(1,2,3-c,d)pyrene	100	108	108	69 - 146	
Naphthalene	100	80.8	81	48 - 120	
Phenanthrene	100	107	107	67 - 130	
Pyrene	100	125	125	58 - 136	

Surrogate	% Rec	Acceptance Limits
Nitrobenzene-d5	95	46 - 120
2-Fluorobiphenyl	94	48 - 120
p-Terphenyl-d14	133	24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 480-42575

Method: 8270C
Preparation: 3510C

MS Lab Sample ID:	480-13366-1	Analysis Batch:	480-42934	Instrument ID:	HP5973U
Client Matrix:	Water	Prep Batch:	480-42575	Lab File ID:	U6925.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	950 mL
Analysis Date:	12/06/2011 1806			Final Weight/Volume:	1 mL
Prep Date:	12/02/2011 0638			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	480-13366-1	Analysis Batch:	480-42934	Instrument ID:	HP5973U
Client Matrix:	Water	Prep Batch:	480-42575	Lab File ID:	U6926.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	970 mL
Analysis Date:	12/06/2011 1829			Final Weight/Volume:	1 mL
Prep Date:	12/02/2011 0638			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	106	107	60 - 120	2	24		
Acenaphthylene	110	110	63 - 120	2	18		
Anthracene	127	119	69 - 131	8	15		
Benz(a)anthracene	121	119	73 - 138	4	15		
Benzo(a)pyrene	109	106	74 - 126	5	15		
Benzo(b)fluoranthene	99	99	75 - 133	2	15		
Benzo(g,h,i)perylene	109	107	66 - 152	4	15		
Benzo(k)fluoranthene	108	104	75 - 133	6	22		
Chrysene	125	121	69 - 140	5	15		
Dibenz(a,h)anthracene	113	110	67 - 144	5	15		
Fluoranthene	116	111	67 - 133	7	15		
Fluorene	111	112	66 - 129	1	15		
Indeno(1,2,3-c,d)pyrene	111	107	69 - 146	5	15		
Naphthalene	86	86	48 - 120	2	29		
Phenanthrene	111	106	67 - 130	7	15		
Pyrene	133	133	58 - 136	3	19		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Nitrobenzene-d5	95	93	46 - 120
2-Fluorobiphenyl	97	100	48 - 120
p-Terphenyl-d14	110	114	24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 480-42575

Method: 8270C
Preparation: 3510C

MS Lab Sample ID:	480-13366-1	Units: ug/L	MSD Lab Sample ID:	480-13366-1	
Client Matrix:	Water		Client Matrix:	Water	
Dilution:	1.0		Dilution:	1.0	
Analysis Date:	12/06/2011 1806		Analysis Date:	12/06/2011 1829	
Prep Date:	12/02/2011 0638		Prep Date:	12/02/2011 0638	
Leach Date:	N/A		Leach Date:	N/A	

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Acenaphthene	ND	105	103	112	110
Acenaphthylene	ND	105	103	115	114
Anthracene	ND	105	103	134	123
Benz(a)anthracene	ND	105	103	128	122
Benzo(a)pyrene	ND	105	103	115	109
Benzo(b)fluoranthene	ND	105	103	104	102
Benzo(g,h,i)perylene	ND	105	103	114	110
Benzo(k)fluoranthene	ND	105	103	114	107
Chrysene	ND	105	103	131	125
Dibenz(a,h)anthracene	ND	105	103	119	113
Fluoranthene	ND	105	103	122	114
Fluorene	ND	105	103	117	115
Indeno(1,2,3-c,d)pyrene	ND	105	103	117	111
Naphthalene	ND	105	103	90.5	89.0
Phenanthrene	ND	105	103	117	109
Pyrene	ND	105	103	140	137

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Method Blank - Batch: 480-42840

Method: 8270C
Preparation: 3510C

Lab Sample ID:	MB 480-42840/1-A	Analysis Batch:	480-44096	Instrument ID:	HP5973X
Client Matrix:	Water	Prep Batch:	480-42840	Lab File ID:	X1733.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	12/12/2011 2121	Units:	ug/L	Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acenaphthene	ND		0.41	5.0
Acenaphthylene	ND		0.38	5.0
Anthracene	ND		0.28	5.0
Benz(a)anthracene	ND		0.36	5.0
Benzo(a)pyrene	ND		0.47	5.0
Benzo(b)fluoranthene	ND		0.34	5.0
Benzo(g,h,i)perylene	ND		0.35	5.0
Benzo(k)fluoranthene	ND		0.73	5.0
Chrysene	ND		0.33	5.0
Dibenz(a,h)anthracene	ND		0.42	5.0
Fluoranthene	ND		0.40	5.0
Fluorene	ND		0.36	5.0
Indeno(1,2,3-c,d)pyrene	ND		0.47	5.0
Naphthalene	ND		0.76	5.0
Phenanthrene	ND		0.44	5.0
Pyrene	ND		0.34	5.0
2-Methylnaphthalene	ND		0.60	5.0

Surrogate	% Rec	Acceptance Limits
Nitrobenzene-d5	77	46 - 120
2-Fluorobiphenyl	76	48 - 120
p-Terphenyl-d14	105	24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 480-42840

Method: 8270C
Preparation: 3510C

LCS Lab Sample ID:	LCS 480-42840/2-A	Analysis Batch:	480-44096	Instrument ID:	HP5973X
Client Matrix:	Water	Prep Batch:	480-42840	Lab File ID:	X1734.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	12/12/2011 2144	Units:	ug/L	Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 480-42840/3-A	Analysis Batch:	480-44096	Instrument ID:	HP5973X
Client Matrix:	Water	Prep Batch:	480-42840	Lab File ID:	X1735.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1000 mL
Analysis Date:	12/12/2011 2206	Units:	ug/L	Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.					
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acenaphthene	90	88	60 - 120	3	24		
Acenaphthylene	85	84	63 - 120	2	18		
Anthracene	102	105	69 - 131	3	15		
Benz(a)anthracene	108	110	73 - 138	2	15		
Benzo(a)pyrene	101	104	74 - 126	3	15		
Benzo(b)fluoranthene	99	100	75 - 133	2	15		
Benzo(g,h,i)perylene	112	116	66 - 152	3	15		
Benzo(k)fluoranthene	98	103	75 - 133	5	22		
Chrysene	100	102	69 - 140	2	15		
Dibenz(a,h)anthracene	99	102	67 - 144	3	15		
Fluoranthene	106	106	67 - 133	1	15		
Fluorene	99	100	66 - 129	1	15		
Indeno(1,2,3-c,d)pyrene	106	110	69 - 146	4	15		
Naphthalene	54	48	48 - 120	11	29		
Phenanthrene	102	104	67 - 130	2	15		
Pyrene	98	101	58 - 136	3	19		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
Nitrobenzene-d5	66	61	46 - 120
2-Fluorobiphenyl	80	75	48 - 120
p-Terphenyl-d14	117	118	24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 480-42840

Method: 8270C
Preparation: 3510C

LCS Lab Sample ID:	LCS 480-42840/2-A	Units: ug/L		LCSD Lab Sample ID:	LCSD 480-42840/3-A
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	12/12/2011 2144			Analysis Date:	12/12/2011 2206
Prep Date:	12/05/2011 0905			Prep Date:	12/05/2011 0905
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Acenaphthene	100	100	90.3	87.7
Acenaphthylene	100	100	84.8	83.5
Anthracene	100	100	102	105
Benz(a)anthracene	100	100	108	110
Benzo(a)pyrene	100	100	101	104
Benzo(b)fluoranthene	100	100	98.5	100
Benzo(g,h,i)perylene	100	100	112	116
Benzo(k)fluoranthene	100	100	98.4	103
Chrysene	100	100	100	102
Dibenz(a,h)anthracene	100	100	99.0	102
Fluoranthene	100	100	106	106
Fluorene	100	100	98.9	100
Indeno(1,2,3-c,d)pyrene	100	100	106	110
Naphthalene	100	100	53.9	48.3
Phenanthrene	100	100	102	104
Pyrene	100	100	98.4	101

DATA REPORTING QUALIFIERS

Client: ARCADIS U.S. Inc Job Number: 480-13366-1

Lab Section	Qualifier	Description
GC/MS VOA		
	F	MS or MSD exceeds the control limits

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:480-43413					
LCS 480-43413/4	Lab Control Sample	T	Water	8260B	
MB 480-43413/5	Method Blank	T	Water	8260B	
480-13366-1	MW-17	T	Water	8260B	
480-13366-1MS	Matrix Spike	T	Water	8260B	
480-13366-1MSD	Matrix Spike Duplicate	T	Water	8260B	
480-13366-2TB	TRIP BLANK	T	Water	8260B	
Analysis Batch:480-43660					
LCS 480-43660/4	Lab Control Sample	T	Water	8260B	
MB 480-43660/5	Method Blank	T	Water	8260B	
480-13430-1	MW-14	T	Water	8260B	
480-13430-2	MW-15	T	Water	8260B	
480-13430-3	MW-16	T	Water	8260B	
480-13430-4FD	BD-120111	T	Water	8260B	
480-13430-5TB	TRIP BLANK	T	Water	8260B	

Report Basis

T = Total

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS Semi VOA					
Prep Batch: 480-42575					
LCS 480-42575/2-A	Lab Control Sample	T	Water	3510C	
MB 480-42575/1-A	Method Blank	T	Water	3510C	
480-13366-1	MW-17	T	Water	3510C	
480-13366-1MS	Matrix Spike	T	Water	3510C	
480-13366-1MSD	Matrix Spike Duplicate	T	Water	3510C	
Prep Batch: 480-42840					
LCS 480-42840/2-A	Lab Control Sample	T	Water	3510C	
LCSD 480-42840/3-A	Lab Control Sample Duplicate	T	Water	3510C	
MB 480-42840/1-A	Method Blank	T	Water	3510C	
480-13430-1	MW-14	T	Water	3510C	
480-13430-2	MW-15	T	Water	3510C	
480-13430-3	MW-16	T	Water	3510C	
480-13430-4FD	BD-120111	T	Water	3510C	
Analysis Batch:480-42934					
LCS 480-42575/2-A	Lab Control Sample	T	Water	8270C	480-42575
MB 480-42575/1-A	Method Blank	T	Water	8270C	480-42575
480-13366-1	MW-17	T	Water	8270C	480-42575
480-13366-1MS	Matrix Spike	T	Water	8270C	480-42575
480-13366-1MSD	Matrix Spike Duplicate	T	Water	8270C	480-42575
Analysis Batch:480-43264					
480-13430-1	MW-14	T	Water	8270C	480-42840
480-13430-2	MW-15	T	Water	8270C	480-42840
480-13430-3	MW-16	T	Water	8270C	480-42840
480-13430-4FD	BD-120111	T	Water	8270C	480-42840
Analysis Batch:480-44096					
LCS 480-42840/2-A	Lab Control Sample	T	Water	8270C	480-42840
LCSD 480-42840/3-A	Lab Control Sample Duplicate	T	Water	8270C	480-42840
MB 480-42840/1-A	Method Blank	T	Water	8270C	480-42840

Report Basis

T = Total

Client: ARCADIS U.S. Inc Job Number: 480-13366-1

Laboratory Chronicle

Lab ID: 480-13366-1 **Client ID:** MW-17

Sample Date/Time: 11/30/2011 11:55 Received Date/Time: 12/01/2011 14:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13366-C-1		480-43413		12/08/2011 15:10	1	TAL BUF	DC
A:8260B	480-13366-C-1		480-43413		12/08/2011 15:10	1	TAL BUF	DC
P:3510C	480-13366-B-1-A		480-42934	480-42575	12/02/2011 06:38	1	TAL BUF	KV
A:8270C	480-13366-B-1-A		480-42934	480-42575	12/06/2011 22:45	1	TAL BUF	RMM

Lab ID: 480-13366-1 **Client ID:** MW-17

Sample Date/Time: 11/30/2011 11:55 Received Date/Time: 12/01/2011 14:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13366-E-1 MS		480-43413		12/08/2011 15:33	1	TAL BUF	DC
A:8260B	480-13366-E-1 MS		480-43413		12/08/2011 15:33	1	TAL BUF	DC
P:3510C	480-13366-A-1-A MS		480-42934	480-42575	12/02/2011 06:38	1	TAL BUF	KV
A:8270C	480-13366-A-1-A MS		480-42934	480-42575	12/06/2011 18:06	1	TAL BUF	RMM

Lab ID: 480-13366-1 **Client ID:** MW-17

Sample Date/Time: 11/30/2011 11:55 Received Date/Time: 12/01/2011 14:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13366-E-1 MSD		480-43413		12/08/2011 15:55	1	TAL BUF	DC
A:8260B	480-13366-E-1 MSD		480-43413		12/08/2011 15:55	1	TAL BUF	DC
P:3510C	480-13366-A-1-B MSD		480-42934	480-42575	12/02/2011 06:38	1	TAL BUF	KV
A:8270C	480-13366-A-1-B MSD		480-42934	480-42575	12/06/2011 18:29	1	TAL BUF	RMM

Lab ID: 480-13366-2 **Client ID:** TRIP BLANK

Sample Date/Time: 11/30/2011 00:00 Received Date/Time: 12/01/2011 14:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13366-B-2		480-43413		12/08/2011 16:17	1	TAL BUF	DC
A:8260B	480-13366-B-2		480-43413		12/08/2011 16:17	1	TAL BUF	DC

Lab ID: 480-13430-1 **Client ID:** MW-14

Sample Date/Time: 12/01/2011 09:30 Received Date/Time: 12/02/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13430-C-1		480-43660		12/09/2011 13:06	1	TAL BUF	DC
A:8260B	480-13430-C-1		480-43660		12/09/2011 13:06	1	TAL BUF	DC
P:3510C	480-13430-A-1-A		480-43264	480-42840	12/05/2011 09:05	1	TAL BUF	KV
A:8270C	480-13430-A-1-A		480-43264	480-42840	12/07/2011 21:28	1	TAL BUF	RMM

Client: ARCADIS U.S. Inc Job Number: 480-13366-1

Laboratory Chronicle

Lab ID: 480-13430-2 **Client ID:** MW-15

Sample Date/Time: 12/01/2011 09:40 Received Date/Time: 12/02/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13430-C-2		480-43660		12/09/2011 13:28	1	TAL BUF	DC
A:8260B	480-13430-C-2		480-43660		12/09/2011 13:28	1	TAL BUF	DC
P:3510C	480-13430-B-2-A		480-43264	480-42840	12/05/2011 09:05	1	TAL BUF	KV
A:8270C	480-13430-B-2-A		480-43264	480-42840	12/07/2011 21:51	1	TAL BUF	RMM

Lab ID: 480-13430-3 **Client ID:** MW-16

Sample Date/Time: 12/01/2011 10:45 Received Date/Time: 12/02/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13430-C-3		480-43660		12/09/2011 13:50	1	TAL BUF	DC
A:8260B	480-13430-C-3		480-43660		12/09/2011 13:50	1	TAL BUF	DC
P:3510C	480-13430-A-3-A		480-43264	480-42840	12/05/2011 09:05	1	TAL BUF	KV
A:8270C	480-13430-A-3-A		480-43264	480-42840	12/07/2011 22:14	1	TAL BUF	RMM

Lab ID: 480-13430-4 **Client ID:** BD-120111

Sample Date/Time: 12/01/2011 00:00 Received Date/Time: 12/02/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13430-C-4		480-43660		12/09/2011 14:12	1	TAL BUF	DC
A:8260B	480-13430-C-4		480-43660		12/09/2011 14:12	1	TAL BUF	DC
P:3510C	480-13430-A-4-A		480-43264	480-42840	12/05/2011 09:05	1	TAL BUF	KV
A:8270C	480-13430-A-4-A		480-43264	480-42840	12/07/2011 22:37	1	TAL BUF	RMM

Lab ID: 480-13430-5 **Client ID:** TRIP BLANK

Sample Date/Time: 12/01/2011 00:00 Received Date/Time: 12/02/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	480-13430-A-5		480-43660		12/09/2011 14:34	1	TAL BUF	DC
A:8260B	480-13430-A-5		480-43660		12/09/2011 14:34	1	TAL BUF	DC

Client: ARCADIS U.S. Inc Job Number: 480-13366-1

Laboratory Chronicle

Lab ID: MB **Client ID: N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	MB 480-43413/5		480-43413		12/08/2011 10:55	1	TAL BUF	DC
A:8260B	MB 480-43413/5		480-43413		12/08/2011 10:55	1	TAL BUF	DC
P:5030B	MB 480-43660/5		480-43660		12/09/2011 10:57	1	TAL BUF	DC
A:8260B	MB 480-43660/5		480-43660		12/09/2011 10:57	1	TAL BUF	DC
P:3510C	MB 480-42575/1-A		480-42934	480-42575	12/02/2011 06:38	1	TAL BUF	KV
A:8270C	MB 480-42575/1-A		480-42934	480-42575	12/06/2011 17:19	1	TAL BUF	RMM
P:3510C	MB 480-42840/1-A		480-44096	480-42840	12/05/2011 09:05	1	TAL BUF	KV
A:8270C	MB 480-42840/1-A		480-44096	480-42840	12/12/2011 21:21	1	TAL BUF	RMM

Lab ID: LCS **Client ID: N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	LCS 480-43413/4		480-43413		12/08/2011 10:33	1	TAL BUF	DC
A:8260B	LCS 480-43413/4		480-43413		12/08/2011 10:33	1	TAL BUF	DC
P:5030B	LCS 480-43660/4		480-43660		12/09/2011 10:35	1	TAL BUF	DC
A:8260B	LCS 480-43660/4		480-43660		12/09/2011 10:35	1	TAL BUF	DC
P:3510C	LCS 480-42575/2-A		480-42934	480-42575	12/02/2011 06:38	1	TAL BUF	KV
A:8270C	LCS 480-42575/2-A		480-42934	480-42575	12/06/2011 17:42	1	TAL BUF	RMM
P:3510C	LCS 480-42840/2-A		480-44096	480-42840	12/05/2011 09:05	1	TAL BUF	KV
A:8270C	LCS 480-42840/2-A		480-44096	480-42840	12/12/2011 21:44	1	TAL BUF	RMM

Lab ID: LCSD **Client ID: N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:3510C	LCSD 480-42840/3-A		480-44096	480-42840	12/05/2011 09:05	1	TAL BUF	KV
A:8270C	LCSD 480-42840/3-A		480-44096	480-42840	12/12/2011 22:06	1	TAL BUF	RMM

Lab References:
TAL BUF = TestAmerica Buffalo

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
60COMP_WRK_00017	12/25/11	10/25/11	Methanol, Lot DE821	20 mL	60 COMP_STK_00016	1 mL	Benzene	100 ug/mL
							Ethylbenzene	100 ug/mL
							m-Xylene & p-Xylene	200 ug/mL
							o-Xylene	100 ug/mL
							Toluene	100 ug/mL
							Xylenes, Total	300 ug/mL
.60 COMP_STK_00016	07/31/14	Ultra Scientific, Lot CH-1896			(Purchased Reagent)		Benzene	2000 ug/mL
							Ethylbenzene	2000 ug/mL
							m-Xylene & p-Xylene	4000 ug/mL
							o-Xylene	2000 ug/mL
							Toluene	2000 ug/mL
							Xylenes, Total	6000 ug/mL
60COMP_WRK_00018	01/14/12	11/14/11	Methanol, Lot DE407	20 mL	60 COMP_STK_00019	1 mL	1,1,1,2-Tetrachloroethane	100 ug/mL
							1,1,1-Trichloroethane	100 ug/mL
							1,1,2,2-Tetrachloroethane	100 ug/mL
							1,1,2-Trichloroethane	100 ug/mL
							1,1-Dichloroethane	100 ug/mL
							1,1-Dichloroethene	100 ug/mL
							1,1-Dichloropropene	100 ug/mL
							1,2,3-Trichlorobenzene	100 ug/mL
							1,2,3-Trichloropropane	100 ug/mL
							1,2,4-Trichlorobenzene	100 ug/mL
							1,2,4-Trimethylbenzene	100 ug/mL
							1,2-Dibromo-3-Chloropropane	100 ug/mL
							1,2-Dichlorobenzene	100 ug/mL
							1,2-Dichloroethane	100 ug/mL
							1,2-Dichloropropane	100 ug/mL
							1,3,5-Trimethylbenzene	100 ug/mL
							1,3-Dichlorobenzene	100 ug/mL
							1,3-Dichloropropane	100 ug/mL
							1,4-Dichlorobenzene	100 ug/mL
							2,2-Dichloropropane	100 ug/mL
							2-Chlorotoluene	100 ug/mL
							4-Chlorotoluene	100 ug/mL
							4-Isopropyltoluene	100 ug/mL
							Benzene	100 ug/mL
							Bromobenzene	100 ug/mL
							Bromoform	100 ug/mL
							Bromomethane	100 ug/mL
							Carbon tetrachloride	100 ug/mL
							Chlorobenzene	100 ug/mL
							Chlorobromomethane	100 ug/mL
							Chlorodibromomethane	100 ug/mL
							Chloroethane	100 ug/mL
							Chloroform	100 ug/mL
							Chloromethane	100 ug/mL
							cis-1,2-Dichloroethene	100 ug/mL
							cis-1,3-Dichloropropene	100 ug/mL
							Dibromomethane	100 ug/mL
							Dichlorobromomethane	100 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Dichlorodifluoromethane	100 ug/mL
							Ethylbenzene	100 ug/mL
							Ethylene Dibromide	100 ug/mL
							Hexachlorobutadiene	100 ug/mL
							Isopropylbenzene	100 ug/mL
							m-Xylene & p-Xylene	200 ug/mL
							Methylene Chloride	100 ug/mL
							n-Butylbenzene	100 ug/mL
							N-Propylbenzene	100 ug/mL
							Naphthalene	100 ug/mL
							o-Xylene	100 ug/mL
							sec-Butylbenzene	100 ug/mL
							Styrene	100 ug/mL
							tert-Butylbenzene	100 ug/mL
							Tetrachloroethene	100 ug/mL
							Toluene	100 ug/mL
							trans-1,2-Dichloroethene	100 ug/mL
							trans-1,3-Dichloropropene	100 ug/mL
							Trichloroethene	100 ug/mL
							Trichlorofluoromethane	100 ug/mL
							Vinyl chloride	100 ug/mL
.60 COMP_STK_00019	07/31/14		Ultra Scientific, Lot CH-1896		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2000 ug/mL
							1,1,1-Trichloroethane	2000 ug/mL
							1,1,2,2-Tetrachloroethane	2000 ug/mL
							1,1,2-Trichloroethane	2000 ug/mL
							1,1-Dichloroethane	2000 ug/mL
							1,1-Dichloroethene	2000 ug/mL
							1,1-Dichloropropene	2000 ug/mL
							1,2,3-Trichlorobenzene	2000 ug/mL
							1,2,3-Trichloropropane	2000 ug/mL
							1,2,4-Trichlorobenzene	2000 ug/mL
							1,2,4-Trimethylbenzene	2000 ug/mL
							1,2-Dibromo-3-Chloropropane	2000 ug/mL
							1,2-Dichlorobenzene	2000 ug/mL
							1,2-Dichloroethane	2000 ug/mL
							1,2-Dichloropropane	2000 ug/mL
							1,3,5-Trimethylbenzene	2000 ug/mL
							1,3-Dichlorobenzene	2000 ug/mL
							1,3-Dichloropropane	2000 ug/mL
							1,4-Dichlorobenzene	2000 ug/mL
							2,2-Dichloropropane	2000 ug/mL
							2-Chlorotoluene	2000 ug/mL
							4-Chlorotoluene	2000 ug/mL
							4-Isopropyltoluene	2000 ug/mL
							Benzene	2000 ug/mL
							Bromobenzene	2000 ug/mL
							Bromoform	2000 ug/mL
							Bromomethane	2000 ug/mL
							Carbon tetrachloride	2000 ug/mL
							Chlorobenzene	2000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Chlorobromomethane	2000 ug/mL
							Chlorodibromomethane	2000 ug/mL
							Chloroethane	2000 ug/mL
							Chloroform	2000 ug/mL
							Chloromethane	2000 ug/mL
							cis-1,2-Dichloroethene	2000 ug/mL
							cis-1,3-Dichloropropene	2000 ug/mL
							Dibromomethane	2000 ug/mL
							Dichlorobromomethane	2000 ug/mL
							Dichlorodifluoromethane	2000 ug/mL
							Ethylbenzene	2000 ug/mL
							Ethylene Dibromide	2000 ug/mL
							Hexachlorobutadiene	2000 ug/mL
							Isopropylbenzene	2000 ug/mL
							m-Xylene & p-Xylene	4000 ug/mL
							Methylene Chloride	2000 ug/mL
							n-Butylbenzene	2000 ug/mL
							N-Propylbenzene	2000 ug/mL
							Naphthalene	2000 ug/mL
							o-Xylene	2000 ug/mL
							sec-Butylbenzene	2000 ug/mL
							Styrene	2000 ug/mL
							tert-Butylbenzene	2000 ug/mL
							Tetrachloroethene	2000 ug/mL
							Toluene	2000 ug/mL
							trans-1,2-Dichloroethene	2000 ug/mL
							trans-1,3-Dichloropropene	2000 ug/mL
							Trichloroethene	2000 ug/mL
							Trichlorofluoromethane	2000 ug/mL
							Vinyl chloride	2000 ug/mL
8260+_SS_WRK_00017	01/02/12	11/02/11	Methanol, Lot DE407	20 mL	2-CLEVE SS_00030	1 mL	2-Chloroethyl vinyl ether	500 mg/L
					2-CLEVE SS_00033	1 mL	2-Chloroethyl vinyl ether	500 mg/L
					8260+#1 SS_ST_00038	1 mL	1,1,2-Trichloro-1,2,2-trifluoroethane	100 mg/L
							Acetonitrile	4000 mg/L
							Carbon disulfide	100 mg/L
							Cyclohexane	100 mg/L
							Ethyl methacrylate	100 mg/L
							Methyl acetate	100 mg/L
							Methyl tert-butyl ether	100 mg/L
							Methylcyclohexane	100 mg/L
							Tetrahydrofuran	500 mg/L
							trans-1,4-Dichloro-2-butene	500 mg/L
					8260+#1 SS_ST_00039	1 mL	1,1,2-Trichloro-1,2,2-trifluoroethane	100 mg/L
							Acetonitrile	4000 mg/L
							Carbon disulfide	100 mg/L
							Cyclohexane	100 mg/L
							Ethyl methacrylate	100 mg/L
							Methyl acetate	100 mg/L

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Methyl tert-butyl ether	100 mg/L
							Methylcyclohexane	100 mg/L
							Tetrahydrofuran	500 mg/L
							trans-1,4-Dichloro-2-butene	500 mg/L
					8260+#2 SS_ST_00033	1 mL	2-Butanone (MEK)	500 mg/L
							2-Hexanone	500 mg/L
							4-Methyl-2-pentanone (MIBK)	500 mg/L
							Acetone	500 mg/L
							Iodomethane	100 mg/L
							Vinyl acetate	500 mg/L
					8260+#2 SS_ST_00034	1 mL	2-Butanone (MEK)	500 mg/L
							2-Hexanone	500 mg/L
							4-Methyl-2-pentanone (MIBK)	500 mg/L
							Acetone	500 mg/L
							Iodomethane	100 mg/L
							Vinyl acetate	500 mg/L
					8260+#3SS_STK_00031	1 mL	Acrolein	2000 mg/L
							Acrylonitrile	500 mg/L
					8260+#3SS_STK_00032	1 mL	Acrolein	2000 mg/L
							Acrylonitrile	500 mg/L
.2-CLEVE SS_00030	10/31/12		Supelco, Lot LB70696		(Purchased Reagent)		2-Chloroethyl vinyl ether	5000 ug/mL
.2-CLEVE SS_00033	10/31/12		Supelco, Lot LB70696		(Purchased Reagent)		2-Chloroethyl vinyl ether	5000 ug/mL
.8260+#1 SS_ST_00038	02/29/12		Supelco, Lot LB82318		(Purchased Reagent)		1,1,2-Trichloro-1,2,2-trifluoroethane	1000 ug/mL
							Acetonitrile	40000 ug/mL
							Carbon disulfide	1000 ug/mL
							Cyclohexane	1000 ug/mL
							Ethyl methacrylate	1000 ug/mL
							Methyl acetate	1000 ug/mL
							Methyl tert-butyl ether	1000 ug/mL
							Methylcyclohexane	1000 ug/mL
							Tetrahydrofuran	5000 ug/mL
							trans-1,4-Dichloro-2-butene	5000 ug/mL
.8260+#1 SS_ST_00039	02/29/12		Supelco, Lot LB82318		(Purchased Reagent)		1,1,2-Trichloro-1,2,2-trifluoroethane	1000 ug/mL
							Acetonitrile	40000 ug/mL
							Carbon disulfide	1000 ug/mL
							Cyclohexane	1000 ug/mL
							Ethyl methacrylate	1000 ug/mL
							Methyl acetate	1000 ug/mL
							Methyl tert-butyl ether	1000 ug/mL
							Methylcyclohexane	1000 ug/mL
							Tetrahydrofuran	5000 ug/mL
							trans-1,4-Dichloro-2-butene	5000 ug/mL
.8260+#2 SS_ST_00033	03/31/12		Supelco, Lot LB83507		(Purchased Reagent)		2-Butanone (MEK)	5000 ug/mL
							2-Hexanone	5000 ug/mL
							4-Methyl-2-pentanone (MIBK)	5000 ug/mL
							Acetone	5000 ug/mL
							Iodomethane	1000 ug/mL
							Vinyl acetate	5000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.8260+#2 SS_ST_00034	03/31/12		Supelco, Lot LB83507		(Purchased Reagent)		2-Butanone (MEK)	5000 ug/mL
							2-Hexanone	5000 ug/mL
							4-Methyl-2-pentanone (MIBK)	5000 ug/mL
							Acetone	5000 ug/mL
							Iodomethane	1000 ug/mL
							Vinyl acetate	5000 ug/mL
.8260+#3SS_STK_00031	11/01/12		Supelco, Lot LB88225		(Purchased Reagent)		Acrolein	20000 ug/mL
							Acrylonitrile	5000 ug/mL
.8260+#3SS_STK_00032	11/01/12		Supelco, Lot LB88225		(Purchased Reagent)		Acrolein	20000 ug/mL
							Acrylonitrile	5000 ug/mL
MB_CAL_WRK_00112	07/12/12	11/11/11	Methylene Chloride, Lot K25502	1 mL	MB_BA/PH_STK_00010	10 uL	2,4-Dinitrophenol	10 ug/mL
							4,6-Dinitro-2-methylphenol	10 ug/mL
							4-Nitrophenol	10 ug/mL
							Benzoic acid	100 ug/mL
							Pentachlorophenol	10 ug/mL
					MB_BA_STK_00036	40 uL	Benzoic acid	100 ug/mL
					MB_CAL_INT_00013	25 uL	Aniline	5 ug/mL
							Benzyl alcohol	5 ug/mL
							Pyridine	5 ug/mL
							Benzoic acid	100 ug/mL
							3,3'-Dichlorobenzidine	5 ug/mL
							3,3'-Dimethylbenzidine	5 ug/mL
							Benzidine	5 ug/mL
							1,2,4-Trichlorobenzene	5 ug/mL
							1,2-Dichlorobenzene	5 ug/mL
							1,2-Diphenylhydrazine	5 ug/mL
							1,3-Dichlorobenzene	5 ug/mL
							1,4-Dichlorobenzene	5 ug/mL
							2,2'-oxybis[1-chloropropane]	5 ug/mL
							2,4,5-Trichlorophenol	5 ug/mL
							2,4,6-Trichlorophenol	5 ug/mL
							2,4-Dichlorophenol	5 ug/mL
							2,4-Dimethylphenol	5 ug/mL
							2,4-Dinitrophenol	10 ug/mL
							2,4-Dinitrotoluene	5 ug/mL
							2,6-Dinitrotoluene	5 ug/mL
							2-Chloronaphthalene	5 ug/mL
							2-Chlorophenol	5 ug/mL
							2-Methylnaphthalene	5 ug/mL
							2-Methylphenol	5 ug/mL
							2-Nitroaniline	5 ug/mL
							2-Nitrophenol	5 ug/mL
							3-Nitroaniline	5 ug/mL
							4,6-Dinitro-2-methylphenol	10 ug/mL
							4-Bromophenyl phenyl ether	5 ug/mL
							4-Chloro-3-methylphenol	5 ug/mL
							4-Chloroaniline	5 ug/mL
							4-Chlorophenyl phenyl ether	5 ug/mL
							4-Methylphenol	5 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Nitroaniline	5 ug/mL
							4-Nitrophenol	10 ug/mL
							Acenaphthene	5 ug/mL
							Acenaphthylene	5 ug/mL
							Anthracene	5 ug/mL
							Benz(a)anthracene	5 ug/mL
							Benzo(a)pyrene	5 ug/mL
							Benzo(b)fluoranthene	5 ug/mL
							Benzo(g,h,i)perylene	5 ug/mL
							Benzo(k)fluoranthene	5 ug/mL
							Bis(2-chloroethoxy)methane	5 ug/mL
							Bis(2-chloroethyl)ether	5 ug/mL
							Bis(2-ethylhexyl) phthalate	5 ug/mL
							Butyl benzyl phthalate	5 ug/mL
							Carbazole	5 ug/mL
							Chrysene	5 ug/mL
							Di-n-butyl phthalate	5 ug/mL
							Di-n-octyl phthalate	5 ug/mL
							Dibenz(a,h)anthracene	5 ug/mL
							Dibenzofuran	5 ug/mL
							Diethyl phthalate	5 ug/mL
							Dimethyl phthalate	5 ug/mL
							Fluoranthene	5 ug/mL
							Fluorene	5 ug/mL
							Hexachlorobenzene	5 ug/mL
							Hexachlorobutadiene	5 ug/mL
							Hexachlorocyclopentadiene	5 ug/mL
							Hexachloroethane	5 ug/mL
							Indeno(1,2,3-c,d)pyrene	5 ug/mL
							Isophorone	5 ug/mL
							N-Nitrosodi-n-propylamine	5 ug/mL
							N-Nitrosodimethylamine	5 ug/mL
							Naphthalene	5 ug/mL
							Nitrobenzene	5 ug/mL
							Pentachlorophenol	10 ug/mL
							Phenanthrene	5 ug/mL
							Phenol	5 ug/mL
							Pyrene	5 ug/mL
							N-Nitrosodiphenylamine	5 ug/mL
							2,4,6-Tribromophenol	5 ug/mL
							2-Fluorobiphenyl	5 ug/mL
							2-Fluorophenol	5 ug/mL
							Nitrobenzene-d5	5 ug/mL
							p-Terphenyl-d14	5 ug/mL
							Phenol-d5	5 ug/mL
							Tetraethyl lead	5 ug/mL
.MB_BA/PH_STK_00010	09/21/12		Supelco, Lot LB84469		(Purchased Reagent)		2,4-Dinitrophenol	500 ug/mL
							4,6-Dinitro-2-methylphenol	500 ug/mL
							4-Nitrophenol	500 ug/mL
							Benzoic acid	500 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Pentachlorophenol	500 ug/mL
.MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_#4CAL_STK_00013	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00036	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00014	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00022	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00010	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
					MB_TEL_STK_00012	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00013	11/11/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00014	11/11/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00010	07/12/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
..MB_TEL_STK_00012	01/25/16		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00113	07/12/12	11/11/11	Methylene Chloride, Lot K25502	1 mL	MB_BA_STK_00017	30 uL	Benzoic acid	120 ug/mL
					MB_CAL_INT_00013	100 uL	Aniline	20 ug/mL
							Benzyl alcohol	20 ug/mL
							Pyridine	20 ug/mL
							Benzoic acid	120 ug/mL
							3,3'-Dichlorobenzidine	20 ug/mL
							3,3'-Dimethylbenzidine	20 ug/mL
							Benzidine	20 ug/mL
							1,2,4-Trichlorobenzene	20 ug/mL
							1,2-Dichlorobenzene	20 ug/mL
							1,2-Diphenylhydrazine	20 ug/mL
							1,3-Dichlorobenzene	20 ug/mL
							1,4-Dichlorobenzene	20 ug/mL
							2,2'-oxybis[1-chloropropane]	20 ug/mL
							2,4,5-Trichlorophenol	20 ug/mL
							2,4,6-Trichlorophenol	20 ug/mL
							2,4-Dichlorophenol	20 ug/mL
							2,4-Dimethylphenol	20 ug/mL
							2,4-Dinitrophenol	20 ug/mL
							2,4-Dinitrotoluene	20 ug/mL
							2,6-Dinitrotoluene	20 ug/mL
							2-Chloronaphthalene	20 ug/mL
							2-Chlorophenol	20 ug/mL
							2-Methylnaphthalene	20 ug/mL
							2-Methylphenol	20 ug/mL
							2-Nitroaniline	20 ug/mL
							2-Nitrophenol	20 ug/mL
							3-Nitroaniline	20 ug/mL
							4,6-Dinitro-2-methylphenol	20 ug/mL
							4-Bromophenyl phenyl ether	20 ug/mL
							4-Chloro-3-methylphenol	20 ug/mL
							4-Chloroaniline	20 ug/mL
							4-Chlorophenyl phenyl ether	20 ug/mL
							4-Methylphenol	20 ug/mL
							4-Nitroaniline	20 ug/mL
							4-Nitrophenol	20 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Acenaphthene	20 ug/mL
							Acenaphthylene	20 ug/mL
							Anthracene	20 ug/mL
							Benz(a)anthracene	20 ug/mL
							Benzo(a)pyrene	20 ug/mL
							Benzo(b)fluoranthene	20 ug/mL
							Benzo(g,h,i)perylene	20 ug/mL
							Benzo(k)fluoranthene	20 ug/mL
							Bis(2-chloroethoxy)methane	20 ug/mL
							Bis(2-chloroethyl)ether	20 ug/mL
							Bis(2-ethylhexyl) phthalate	20 ug/mL
							Butyl benzyl phthalate	20 ug/mL
							Carbazole	20 ug/mL
							Chrysene	20 ug/mL
							Di-n-butyl phthalate	20 ug/mL
							Di-n-octyl phthalate	20 ug/mL
							Dibenz(a,h)anthracene	20 ug/mL
							Dibenzofuran	20 ug/mL
							Diethyl phthalate	20 ug/mL
							Dimethyl phthalate	20 ug/mL
							Fluoranthene	20 ug/mL
							Fluorene	20 ug/mL
							Hexachlorobenzene	20 ug/mL
							Hexachlorobutadiene	20 ug/mL
							Hexachlorocyclopentadiene	20 ug/mL
							Hexachloroethane	20 ug/mL
							Indeno(1,2,3-c,d)pyrene	20 ug/mL
							Isophorone	20 ug/mL
							N-Nitrosodi-n-propylamine	20 ug/mL
							N-Nitrosodimethylamine	20 ug/mL
							Naphthalene	20 ug/mL
							Nitrobenzene	20 ug/mL
							Pentachlorophenol	20 ug/mL
							Phenanthrene	20 ug/mL
							Phenol	20 ug/mL
							Pyrene	20 ug/mL
							N-Nitrosodiphenylamine	20 ug/mL
							2,4,6-Tribromophenol	20 ug/mL
							2-Fluorobiphenyl	20 ug/mL
							2-Fluorophenol	20 ug/mL
							Nitrobenzene-d5	20 ug/mL
							p-Terphenyl-d14	20 ug/mL
							Phenol-d5	20 ug/mL
							Tetraethyl lead	20 ug/mL
.MB_BA_STK_00017	09/20/12		Supelco, Lot LB73725		(Purchased Reagent)		Benzoic acid	2000 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_#4CAL_STK_00013	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					MB_BA_STK_00036	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00014	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00022	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00010	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
					MB_TEL_STK_00012	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00013	11/11/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00014	11/11/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00010	07/12/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	40000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
..MB_TEL_STK_00012	01/25/16		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00114	07/12/12	11/11/11	Methylene Chloride, Lot K25502	1 mL	MB_CAL_INT_00013	250 uL	Aniline	50 ug/mL
							Benzyl alcohol	50 ug/mL
							Pyridine	50 ug/mL
							Benzoic acid	150 ug/mL
							3,3'-Dichlorobenzidine	50 ug/mL
							3,3'-Dimethylbenzidine	50 ug/mL
							Benzidine	50 ug/mL
							1,2,4-Trichlorobenzene	50 ug/mL
							1,2-Dichlorobenzene	50 ug/mL
							1,2-Diphenylhydrazine	50 ug/mL
							1,3-Dichlorobenzene	50 ug/mL
							1,4-Dichlorobenzene	50 ug/mL
							2,2'-oxybis[1-chloropropane]	50 ug/mL
							2,4,5-Trichlorophenol	50 ug/mL
							2,4,6-Trichlorophenol	50 ug/mL
							2,4-Dichlorophenol	50 ug/mL
							2,4-Dimethylphenol	50 ug/mL
							2,4-Dinitrophenol	50 ug/mL
							2,4-Dinitrotoluene	50 ug/mL
							2,6-Dinitrotoluene	50 ug/mL
							2-Chloronaphthalene	50 ug/mL
							2-Chlorophenol	50 ug/mL
							2-Methylnaphthalene	50 ug/mL
							2-Methylphenol	50 ug/mL
							2-Nitroaniline	50 ug/mL
							2-Nitrophenol	50 ug/mL
							3-Nitroaniline	50 ug/mL
							4,6-Dinitro-2-methylphenol	50 ug/mL
							4-Bromophenyl phenyl ether	50 ug/mL
							4-Chloro-3-methylphenol	50 ug/mL
							4-Chloroaniline	50 ug/mL
							4-Chlorophenyl phenyl ether	50 ug/mL
							4-Methylphenol	50 ug/mL
							4-Nitroaniline	50 ug/mL
							4-Nitrophenol	50 ug/mL
							Acenaphthene	50 ug/mL
							Acenaphthylene	50 ug/mL
							Anthracene	50 ug/mL
							Benz(a)anthracene	50 ug/mL
							Benzo(a)pyrene	50 ug/mL
							Benzo(b)fluoranthene	50 ug/mL
							Benzo(g,h,i)perylene	50 ug/mL
							Benzo(k)fluoranthene	50 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Bis(2-chloroethoxy)methane	50 ug/mL
							Bis(2-chloroethyl)ether	50 ug/mL
							Bis(2-ethylhexyl) phthalate	50 ug/mL
							Butyl benzyl phthalate	50 ug/mL
							Carbazole	50 ug/mL
							Chrysene	50 ug/mL
							Di-n-butyl phthalate	50 ug/mL
							Di-n-octyl phthalate	50 ug/mL
							Dibenz(a,h)anthracene	50 ug/mL
							Dibenzofuran	50 ug/mL
							Diethyl phthalate	50 ug/mL
							Dimethyl phthalate	50 ug/mL
							Fluoranthene	50 ug/mL
							Fluorene	50 ug/mL
							Hexachlorobenzene	50 ug/mL
							Hexachlorobutadiene	50 ug/mL
							Hexachlorocyclopentadiene	50 ug/mL
							Hexachloroethane	50 ug/mL
							Indeno(1,2,3-c,d)pyrene	50 ug/mL
							Isophorone	50 ug/mL
							N-Nitrosodi-n-propylamine	50 ug/mL
							N-Nitrosodimethylamine	50 ug/mL
							Naphthalene	50 ug/mL
							Nitrobenzene	50 ug/mL
							Pentachlorophenol	50 ug/mL
							Phenanthrene	50 ug/mL
							Phenol	50 ug/mL
							Pyrene	50 ug/mL
							N-Nitrosodiphenylamine	50 ug/mL
							2,4,6-Tribromophenol	50 ug/mL
							2-Fluorobiphenyl	50 ug/mL
							2-Fluorophenol	50 ug/mL
							Nitrobenzene-d5	50 ug/mL
							p-Terphenyl-d14	50 ug/mL
							Phenol-d5	50 ug/mL
							Tetraethyl lead	50 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_#4CAL_STK_00013	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00036	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00014	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00022	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00010	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
					MB_TEL_STK_00012	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00013	11/11/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00014	11/11/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00010	07/12/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
..MB_TEL_STK_00012	01/25/16		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00115	07/12/12	11/11/11	Methylene Chloride, Lot K25502	1 mL	MB_CAL_INT_00013	400 uL	Aniline	80 ug/mL
							Benzyl alcohol	80 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Pyridine	80 ug/mL
							Benzoic acid	240 ug/mL
							3,3'-Dichlorobenzidine	80 ug/mL
							3,3'-Dimethylbenzidine	80 ug/mL
							Benzidine	80 ug/mL
							1,2,4-Trichlorobenzene	80 ug/mL
							1,2-Dichlorobenzene	80 ug/mL
							1,2-Diphenylhydrazine	80 ug/mL
							1,3-Dichlorobenzene	80 ug/mL
							1,4-Dichlorobenzene	80 ug/mL
							2,2'-oxybis[1-chloropropane]	80 ug/mL
							2,4,5-Trichlorophenol	80 ug/mL
							2,4,6-Trichlorophenol	80 ug/mL
							2,4-Dichlorophenol	80 ug/mL
							2,4-Dimethylphenol	80 ug/mL
							2,4-Dinitrophenol	80 ug/mL
							2,4-Dinitrotoluene	80 ug/mL
							2,6-Dinitrotoluene	80 ug/mL
							2-Chloronaphthalene	80 ug/mL
							2-Chlorophenol	80 ug/mL
							2-Methylnaphthalene	80 ug/mL
							2-Methylphenol	80 ug/mL
							2-Nitroaniline	80 ug/mL
							2-Nitrophenol	80 ug/mL
							3-Nitroaniline	80 ug/mL
							4,6-Dinitro-2-methylphenol	80 ug/mL
							4-Bromophenyl phenyl ether	80 ug/mL
							4-Chloro-3-methylphenol	80 ug/mL
							4-Chloroaniline	80 ug/mL
							4-Chlorophenyl phenyl ether	80 ug/mL
							4-Methylphenol	80 ug/mL
							4-Nitroaniline	80 ug/mL
							4-Nitrophenol	80 ug/mL
							Acenaphthene	80 ug/mL
							Acenaphthylene	80 ug/mL
							Anthracene	80 ug/mL
							Benz(a)anthracene	80 ug/mL
							Benzo(a)pyrene	80 ug/mL
							Benzo(b)fluoranthene	80 ug/mL
							Benzo(g,h,i)perylene	80 ug/mL
							Benzo(k)fluoranthene	80 ug/mL
							Bis(2-chloroethoxy)methane	80 ug/mL
							Bis(2-chloroethyl)ether	80 ug/mL
							Bis(2-ethylhexyl) phthalate	80 ug/mL
							Butyl benzyl phthalate	80 ug/mL
							Carbazole	80 ug/mL
							Chrysene	80 ug/mL
							Di-n-butyl phthalate	80 ug/mL
							Di-n-octyl phthalate	80 ug/mL
							Dibenz(a,h)anthracene	80 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Dibenzofuran	80 ug/mL
							Diethyl phthalate	80 ug/mL
							Dimethyl phthalate	80 ug/mL
							Fluoranthene	80 ug/mL
							Fluorene	80 ug/mL
							Hexachlorobenzene	80 ug/mL
							Hexachlorobutadiene	80 ug/mL
							Hexachlorocyclopentadiene	80 ug/mL
							Hexachloroethane	80 ug/mL
							Indeno(1,2,3-c,d)pyrene	80 ug/mL
							Isophorone	80 ug/mL
							N-Nitrosodi-n-propylamine	80 ug/mL
							N-Nitrosodimethylamine	80 ug/mL
							Naphthalene	80 ug/mL
							Nitrobenzene	80 ug/mL
							Pentachlorophenol	80 ug/mL
							Phenanthrene	80 ug/mL
							Phenol	80 ug/mL
							Pyrene	80 ug/mL
							N-Nitrosodiphenylamine	80 ug/mL
							2,4,6-Tribromophenol	80 ug/mL
							2-Fluorobiphenyl	80 ug/mL
							2-Fluorophenol	80 ug/mL
							Nitrobenzene-d5	80 ug/mL
							p-Terphenyl-d14	80 ug/mL
							Phenol-d5	80 ug/mL
							Tetraethyl lead	80 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_#4CAL_STK_00013	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00036	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00014	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00022	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					MB_NNI_STK_00010	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
					MB_TEL_STK_00012	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00013	11/11/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00014	11/11/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00010	07/12/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
..MB_TEL_STK_00012	01/25/16		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00116	07/12/12	11/11/11	Methylene Chloride, Lot K25502	0.5 mL	MB_CAL_INT_00013	300 uL	Aniline	120 ug/mL
							Benzyl alcohol	120 ug/mL
							Pyridine	120 ug/mL
							Benzoic acid	360 ug/mL
							3,3'-Dichlorobenzidine	120 ug/mL
							3,3'-Dimethylbenzidine	120 ug/mL
							Benzidine	120 ug/mL
							1,2,4-Trichlorobenzene	120 ug/mL
							1,2-Dichlorobenzene	120 ug/mL
							1,2-Diphenylhydrazine	120 ug/mL
							1,3-Dichlorobenzene	120 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,4-Dichlorobenzene	120 ug/mL
							2,2'-oxybis[1-chloropropane]	120 ug/mL
							2,4,5-Trichlorophenol	120 ug/mL
							2,4,6-Trichlorophenol	120 ug/mL
							2,4-Dichlorophenol	120 ug/mL
							2,4-Dimethylphenol	120 ug/mL
							2,4-Dinitrophenol	120 ug/mL
							2,4-Dinitrotoluene	120 ug/mL
							2,6-Dinitrotoluene	120 ug/mL
							2-Chloronaphthalene	120 ug/mL
							2-Chlorophenol	120 ug/mL
							2-Methylnaphthalene	120 ug/mL
							2-Methylphenol	120 ug/mL
							2-Nitroaniline	120 ug/mL
							2-Nitrophenol	120 ug/mL
							3-Nitroaniline	120 ug/mL
							4,6-Dinitro-2-methylphenol	120 ug/mL
							4-Bromophenyl phenyl ether	120 ug/mL
							4-Chloro-3-methylphenol	120 ug/mL
							4-Chloroaniline	120 ug/mL
							4-Chlorophenyl phenyl ether	120 ug/mL
							4-Methylphenol	120 ug/mL
							4-Nitroaniline	120 ug/mL
							4-Nitrophenol	120 ug/mL
							Acenaphthene	120 ug/mL
							Acenaphthylene	120 ug/mL
							Anthracene	120 ug/mL
							Benz(a)anthracene	120 ug/mL
							Benzo(a)pyrene	120 ug/mL
							Benzo(b)fluoranthene	120 ug/mL
							Benzo(g,h,i)perylene	120 ug/mL
							Benzo(k)fluoranthene	120 ug/mL
							Bis(2-chloroethoxy)methane	120 ug/mL
							Bis(2-chloroethyl)ether	120 ug/mL
							Bis(2-ethylhexyl) phthalate	120 ug/mL
							Butyl benzyl phthalate	120 ug/mL
							Carbazole	120 ug/mL
							Chrysene	120 ug/mL
							Di-n-butyl phthalate	120 ug/mL
							Di-n-octyl phthalate	120 ug/mL
							Dibenz(a,h)anthracene	120 ug/mL
							Dibenzofuran	120 ug/mL
							Diethyl phthalate	120 ug/mL
							Dimethyl phthalate	120 ug/mL
							Fluoranthene	120 ug/mL
							Fluorene	120 ug/mL
							Hexachlorobenzene	120 ug/mL
							Hexachlorobutadiene	120 ug/mL
							Hexachlorocyclopentadiene	120 ug/mL
							Hexachloroethane	120 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Indeno(1,2,3-c,d)pyrene	120 ug/mL
							Isophorone	120 ug/mL
							N-Nitrosodi-n-propylamine	120 ug/mL
							N-Nitrosodimethylamine	120 ug/mL
							Naphthalene	120 ug/mL
							Nitrobenzene	120 ug/mL
							Pentachlorophenol	120 ug/mL
							Phenanthrene	120 ug/mL
							Phenol	120 ug/mL
							Pyrene	120 ug/mL
							N-Nitrosodiphenylamine	120 ug/mL
							2,4,6-Tribromophenol	120 ug/mL
							2-Fluorobiphenyl	120 ug/mL
							2-Fluorophenol	120 ug/mL
							Nitrobenzene-d5	120 ug/mL
							p-Terphenyl-d14	120 ug/mL
							Phenol-d5	120 ug/mL
							Tetraethyl lead	120 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_#4CAL_STK_00013	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00036	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00014	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00022	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00010	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
					MB_TEL_STK_00012	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00013	11/11/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00014	11/11/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00010	07/12/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
..MB_TEL_STK_00012	01/25/16		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00117	07/12/12	11/11/11	Methylene Chloride, Lot K25502	0.5 mL	MB_CAL_INT_00013	400 uL	Aniline	160 ug/mL
							Benzyl alcohol	160 ug/mL
							Pyridine	160 ug/mL
							Benzoic acid	480 ug/mL
							3,3'-Dichlorobenzidine	160 ug/mL
							3,3'-Dimethylbenzidine	160 ug/mL
							Benzidine	160 ug/mL
							1,2,4-Trichlorobenzene	160 ug/mL
							1,2-Dichlorobenzene	160 ug/mL
							1,2-Diphenylhydrazine	160 ug/mL
							1,3-Dichlorobenzene	160 ug/mL
							1,4-Dichlorobenzene	160 ug/mL
							2,2'-oxybis[1-chloropropane]	160 ug/mL
							2,4,5-Trichlorophenol	160 ug/mL
							2,4,6-Trichlorophenol	160 ug/mL
							2,4-Dichlorophenol	160 ug/mL
							2,4-Dimethylphenol	160 ug/mL
							2,4-Dinitrophenol	160 ug/mL
							2,4-Dinitrotoluene	160 ug/mL
							2,6-Dinitrotoluene	160 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Chloronaphthalene	160 ug/mL
							2-Chlorophenol	160 ug/mL
							2-Methylnaphthalene	160 ug/mL
							2-Methylphenol	160 ug/mL
							2-Nitroaniline	160 ug/mL
							2-Nitrophenol	160 ug/mL
							3-Nitroaniline	160 ug/mL
							4,6-Dinitro-2-methylphenol	160 ug/mL
							4-Bromophenyl phenyl ether	160 ug/mL
							4-Chloro-3-methylphenol	160 ug/mL
							4-Chloroaniline	160 ug/mL
							4-Chlorophenyl phenyl ether	160 ug/mL
							4-Methylphenol	160 ug/mL
							4-Nitroaniline	160 ug/mL
							4-Nitrophenol	160 ug/mL
							Acenaphthene	160 ug/mL
							Acenaphthylene	160 ug/mL
							Anthracene	160 ug/mL
							Benz(a)anthracene	160 ug/mL
							Benzo(a)pyrene	160 ug/mL
							Benzo(b)fluoranthene	160 ug/mL
							Benzo(g,h,i)perylene	160 ug/mL
							Benzo(k)fluoranthene	160 ug/mL
							Bis(2-chloroethoxy)methane	160 ug/mL
							Bis(2-chloroethyl)ether	160 ug/mL
							Bis(2-ethylhexyl) phthalate	160 ug/mL
							Butyl benzyl phthalate	160 ug/mL
							Carbazole	160 ug/mL
							Chrysene	160 ug/mL
							Di-n-butyl phthalate	160 ug/mL
							Di-n-octyl phthalate	160 ug/mL
							Dibenz(a,h)anthracene	160 ug/mL
							Dibenzofuran	160 ug/mL
							Diethyl phthalate	160 ug/mL
							Dimethyl phthalate	160 ug/mL
							Fluoranthene	160 ug/mL
							Fluorene	160 ug/mL
							Hexachlorobenzene	160 ug/mL
							Hexachlorobutadiene	160 ug/mL
							Hexachlorocyclopentadiene	160 ug/mL
							Hexachloroethane	160 ug/mL
							Indeno(1,2,3-c,d)pyrene	160 ug/mL
							Isophorone	160 ug/mL
							N-Nitrosodi-n-propylamine	160 ug/mL
							N-Nitrosodimethylamine	160 ug/mL
							Naphthalene	160 ug/mL
							Nitrobenzene	160 ug/mL
							Pentachlorophenol	160 ug/mL
							Phenanthrene	160 ug/mL
							Phenol	160 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Pyrene	160 ug/mL
							N-Nitrosodiphenylamine	160 ug/mL
							2,4,6-Tribromophenol	160 ug/mL
							2-Fluorobiphenyl	160 ug/mL
							2-Fluorophenol	160 ug/mL
							Nitrobenzene-d5	160 ug/mL
							p-Terphenyl-d14	160 ug/mL
							Phenol-d5	160 ug/mL
							Tetraethyl lead	160 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_#4CAL_STK_00013	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00036	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00014	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00022	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00010	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
					MB_TEL_STK_00012	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00013	11/11/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00014	11/11/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00010	07/12/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
..MB_TEL_STK_00012	01/25/16		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00118	07/12/12	11/11/11	Methylene Chloride, Lot K25502	1 mL	MB_CAL_INT_00013	250 uL	2-Methylnaphthalene	50 ug/mL
							Acenaphthene	50 ug/mL
							Acenaphthylene	50 ug/mL
							Anthracene	50 ug/mL
							Benz(a)anthracene	50 ug/mL
							Benzo(a)pyrene	50 ug/mL
							Benzo(b)fluoranthene	50 ug/mL
							Benzo(g,h,i)perylene	50 ug/mL
							Benzo(k)fluoranthene	50 ug/mL
							Chrysene	50 ug/mL
							Dibenz(a,h)anthracene	50 ug/mL
							Fluoranthene	50 ug/mL
							Fluorene	50 ug/mL
							Indeno(1,2,3-c,d)pyrene	50 ug/mL
							Naphthalene	50 ug/mL
							Phenanthrene	50 ug/mL
							Pyrene	50 ug/mL
							2,4,6-Tribromophenol	50 ug/mL
							2-Fluorobiphenyl	50 ug/mL
							2-Fluorophenol	50 ug/mL
							Nitrobenzene-d5	50 ug/mL
							p-Terphenyl-d14	50 ug/mL
							Phenol-d5	50 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_ICV_STK_00022	400 uL	2-Methylnaphthalene	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Chrysene	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Naphthalene	200 ug/mL
							Phenanthrene	200 ug/mL
							Pyrene	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		2-Methylnaphthalene	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Chrysene	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Naphthalene	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
MB_CAL_WRK_00119	07/12/12	12/05/11	Methylene Chloride, Lot K25502	0.6 mL	MB_CAL_INT_00013	150 uL	Aniline	50 ug/mL
							Benzyl alcohol	50 ug/mL
							Pyridine	50 ug/mL
							Benzoic acid	150 ug/mL
							3,3'-Dichlorobenzidine	50 ug/mL
							3,3'-Dimethylbenzidine	50 ug/mL
							Benzidine	50 ug/mL
							1,2,4-Trichlorobenzene	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2-Dichlorobenzene	50 ug/mL
							1,2-Diphenylhydrazine	50 ug/mL
							1,3-Dichlorobenzene	50 ug/mL
							1,4-Dichlorobenzene	50 ug/mL
							2,2'-oxybis[1-chloropropane]	50 ug/mL
							2,4,5-Trichlorophenol	50 ug/mL
							2,4,6-Trichlorophenol	50 ug/mL
							2,4-Dichlorophenol	50 ug/mL
							2,4-Dimethylphenol	50 ug/mL
							2,4-Dinitrophenol	50 ug/mL
							2,4-Dinitrotoluene	50 ug/mL
							2,6-Dinitrotoluene	50 ug/mL
							2-Chloronaphthalene	50 ug/mL
							2-Chlorophenol	50 ug/mL
							2-Methylnaphthalene	50 ug/mL
							2-Methylphenol	50 ug/mL
							2-Nitroaniline	50 ug/mL
							2-Nitrophenol	50 ug/mL
							3-Nitroaniline	50 ug/mL
							4,6-Dinitro-2-methylphenol	50 ug/mL
							4-Bromophenyl phenyl ether	50 ug/mL
							4-Chloro-3-methylphenol	50 ug/mL
							4-Chloroaniline	50 ug/mL
							4-Chlorophenyl phenyl ether	50 ug/mL
							4-Methylphenol	50 ug/mL
							4-Nitroaniline	50 ug/mL
							4-Nitrophenol	50 ug/mL
							Acenaphthene	50 ug/mL
							Acenaphthylene	50 ug/mL
							Anthracene	50 ug/mL
							Benz(a)anthracene	50 ug/mL
							Benzo(a)pyrene	50 ug/mL
							Benzo(b)fluoranthene	50 ug/mL
							Benzo(g,h,i)perylene	50 ug/mL
							Benzo(k)fluoranthene	50 ug/mL
							Bis(2-chloroethoxy)methane	50 ug/mL
							Bis(2-chloroethyl)ether	50 ug/mL
							Bis(2-ethylhexyl) phthalate	50 ug/mL
							Butyl benzyl phthalate	50 ug/mL
							Carbazole	50 ug/mL
							Chrysene	50 ug/mL
							Di-n-butyl phthalate	50 ug/mL
							Di-n-octyl phthalate	50 ug/mL
							Dibenz(a,h)anthracene	50 ug/mL
							Dibenzofuran	50 ug/mL
							Diethyl phthalate	50 ug/mL
							Dimethyl phthalate	50 ug/mL
							Fluoranthene	50 ug/mL
							Fluorene	50 ug/mL
							Hexachlorobenzene	50 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachlorobutadiene	50 ug/mL
							Hexachlorocyclopentadiene	50 ug/mL
							Hexachloroethane	50 ug/mL
							Indeno(1,2,3-c,d)pyrene	50 ug/mL
							Isophorone	50 ug/mL
							N-Nitrosodi-n-propylamine	50 ug/mL
							N-Nitrosodimethylamine	50 ug/mL
							Naphthalene	50 ug/mL
							Nitrobenzene	50 ug/mL
							Pentachlorophenol	50 ug/mL
							Phenanthrene	50 ug/mL
							Phenol	50 ug/mL
							Pyrene	50 ug/mL
							N-Nitrosodiphenylamine	50 ug/mL
							2,4,6-Tribromophenol	50 ug/mL
							2-Fluorobiphenyl	50 ug/mL
							2-Fluorophenol	50 ug/mL
							Nitrobenzene-d5	50 ug/mL
							p-Terphenyl-d14	50 ug/mL
							Phenol-d5	50 ug/mL
							Tetraethyl lead	50 ug/mL
.MB_CAL_INT_00013	07/12/12	11/11/11	Methylene Chloride, Lot K25502	2 mL	MB_#4CAL_STK_00013	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00036	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00014	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00022	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00010	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_SURR_STK_00006	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Phenol-d5	200 ug/mL
					MB_TEL_STK_00012	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00013	11/11/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00036	11/11/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00014	11/11/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00022	11/11/12		Supelco, Lot LB81857		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00010	07/12/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_SURR_STK_00006	08/25/12		Supelco, Lot LB73910		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
..MB_TEL_STK_00012	01/25/16		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00120	09/21/12	12/09/11	Methylene Chloride, Lot K35E22	1 mL	MB_BA/PH_STK_00010	10 uL	2,4-Dinitrophenol	10 ug/mL
							4,6-Dinitro-2-methylphenol	10 ug/mL
							4-Nitrophenol	10 ug/mL
							Benzoic acid	100 ug/mL
							Pentachlorophenol	10 ug/mL
					MB_BA_STK_00022	40 uL	Benzoic acid	100 ug/mL
					MB_CAL_INT_00014	25 uL	Aniline	5 ug/mL
							Benzyl alcohol	5 ug/mL
							Pyridine	5 ug/mL
							Benzoic acid	100 ug/mL
							3,3'-Dichlorobenzidine	5 ug/mL
							3,3'-Dimethylbenzidine	5 ug/mL
							Benzidine	5 ug/mL
							1,2,4-Trichlorobenzene	5 ug/mL
							1,2-Dichlorobenzene	5 ug/mL
							1,2-Diphenylhydrazine	5 ug/mL
							1,3-Dichlorobenzene	5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,4-Dichlorobenzene	5 ug/mL
							2,2'-oxybis[1-chloropropane]	5 ug/mL
							2,4,5-Trichlorophenol	5 ug/mL
							2,4,6-Trichlorophenol	5 ug/mL
							2,4-Dichlorophenol	5 ug/mL
							2,4-Dimethylphenol	5 ug/mL
							2,4-Dinitrophenol	10 ug/mL
							2,4-Dinitrotoluene	5 ug/mL
							2,6-Dinitrotoluene	5 ug/mL
							2-Chloronaphthalene	5 ug/mL
							2-Chlorophenol	5 ug/mL
							2-Methylnaphthalene	5 ug/mL
							2-Methylphenol	5 ug/mL
							2-Nitroaniline	5 ug/mL
							2-Nitrophenol	5 ug/mL
							3-Nitroaniline	5 ug/mL
							4,6-Dinitro-2-methylphenol	10 ug/mL
							4-Bromophenyl phenyl ether	5 ug/mL
							4-Chloro-3-methylphenol	5 ug/mL
							4-Chloroaniline	5 ug/mL
							4-Chlorophenyl phenyl ether	5 ug/mL
							4-Methylphenol	5 ug/mL
							4-Nitroaniline	5 ug/mL
							4-Nitrophenol	10 ug/mL
							Acenaphthene	5 ug/mL
							Acenaphthylene	5 ug/mL
							Anthracene	5 ug/mL
							Benz(a)anthracene	5 ug/mL
							Benzo(a)pyrene	5 ug/mL
							Benzo(b)fluoranthene	5 ug/mL
							Benzo(g,h,i)perylene	5 ug/mL
							Benzo(k)fluoranthene	5 ug/mL
							Bis(2-chloroethoxy)methane	5 ug/mL
							Bis(2-chloroethyl)ether	5 ug/mL
							Bis(2-ethylhexyl) phthalate	5 ug/mL
							Butyl benzyl phthalate	5 ug/mL
							Carbazole	5 ug/mL
							Chrysene	5 ug/mL
							Di-n-butyl phthalate	5 ug/mL
							Di-n-octyl phthalate	5 ug/mL
							Dibenz(a,h)anthracene	5 ug/mL
							Dibenzofuran	5 ug/mL
							Diethyl phthalate	5 ug/mL
							Dimethyl phthalate	5 ug/mL
							Fluoranthene	5 ug/mL
							Fluorene	5 ug/mL
							Hexachlorobenzene	5 ug/mL
							Hexachlorobutadiene	5 ug/mL
							Hexachlorocyclopentadiene	5 ug/mL
							Hexachloroethane	5 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Indeno(1,2,3-c,d)pyrene	5 ug/mL
							Isophorone	5 ug/mL
							N-Nitrosodi-n-propylamine	5 ug/mL
							N-Nitrosodimethylamine	5 ug/mL
							Naphthalene	5 ug/mL
							Nitrobenzene	5 ug/mL
							Pentachlorophenol	10 ug/mL
							Phenanthrene	5 ug/mL
							Phenol	5 ug/mL
							Pyrene	5 ug/mL
							N-Nitrosodiphenylamine	5 ug/mL
							Tetraethyl lead	5 ug/mL
.MB_BA/PH_STK_00010	09/21/12		Supelco, Lot LB84469		(Purchased Reagent)		2,4-Dinitrophenol	500 ug/mL
							4,6-Dinitro-2-methylphenol	500 ug/mL
							4-Nitrophenol	500 ug/mL
							Benzoic acid	500 ug/mL
							Pentachlorophenol	500 ug/mL
.MB_BA_STK_00022	12/09/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
.MB_CAL_INT_00014	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	2 mL	MB_#4CAL_STK_00010	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00022	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00017	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00025	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00012	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_TEL_STK_00013	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00010	12/09/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00022	12/09/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00017	12/09/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzidine	2000 ug/mL
..MB_ICV_STK_00025	12/09/12		Supelco, Lot LB87087		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00012	12/09/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_TEL_STK_00013	12/09/12		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00121	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	1 mL	MB_BA_STK_00022	30 uL	Benzoic acid	120 ug/mL
					MB_CAL_INT_00014	100 uL	Aniline	20 ug/mL
							Benzyl alcohol	20 ug/mL
							Pyridine	20 ug/mL
							Benzoic acid	120 ug/mL
							3,3'-Dichlorobenzidine	20 ug/mL
							3,3'-Dimethylbenzidine	20 ug/mL
							Benzidine	20 ug/mL
							1,2,4-Trichlorobenzene	20 ug/mL
							1,2-Dichlorobenzene	20 ug/mL
							1,2-Diphenylhydrazine	20 ug/mL
							1,3-Dichlorobenzene	20 ug/mL
							1,4-Dichlorobenzene	20 ug/mL
							2,2'-oxybis[1-chloropropane]	20 ug/mL
							2,4,5-Trichlorophenol	20 ug/mL
							2,4,6-Trichlorophenol	20 ug/mL
							2,4-Dichlorophenol	20 ug/mL
							2,4-Dimethylphenol	20 ug/mL
							2,4-Dinitrophenol	20 ug/mL
							2,4-Dinitrotoluene	20 ug/mL
							2,6-Dinitrotoluene	20 ug/mL
							2-Chloronaphthalene	20 ug/mL
							2-Chlorophenol	20 ug/mL
							2-Methylnaphthalene	20 ug/mL
							2-Methylphenol	20 ug/mL
							2-Nitroaniline	20 ug/mL
							2-Nitrophenol	20 ug/mL
							3-Nitroaniline	20 ug/mL
							4,6-Dinitro-2-methylphenol	20 ug/mL
							4-Bromophenyl phenyl ether	20 ug/mL
							4-Chloro-3-methylphenol	20 ug/mL
							4-Chloroaniline	20 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Chlorophenyl phenyl ether	20 ug/mL
							4-Methylphenol	20 ug/mL
							4-Nitroaniline	20 ug/mL
							4-Nitrophenol	20 ug/mL
							Acenaphthene	20 ug/mL
							Acenaphthylene	20 ug/mL
							Anthracene	20 ug/mL
							Benz(a)anthracene	20 ug/mL
							Benzo(a)pyrene	20 ug/mL
							Benzo(b)fluoranthene	20 ug/mL
							Benzo(g,h,i)perylene	20 ug/mL
							Benzo(k)fluoranthene	20 ug/mL
							Bis(2-chloroethoxy)methane	20 ug/mL
							Bis(2-chloroethyl)ether	20 ug/mL
							Bis(2-ethylhexyl) phthalate	20 ug/mL
							Butyl benzyl phthalate	20 ug/mL
							Carbazole	20 ug/mL
							Chrysene	20 ug/mL
							Di-n-butyl phthalate	20 ug/mL
							Di-n-octyl phthalate	20 ug/mL
							Dibenz(a,h)anthracene	20 ug/mL
							Dibenzofuran	20 ug/mL
							Diethyl phthalate	20 ug/mL
							Dimethyl phthalate	20 ug/mL
							Fluoranthene	20 ug/mL
							Fluorene	20 ug/mL
							Hexachlorobenzene	20 ug/mL
							Hexachlorobutadiene	20 ug/mL
							Hexachlorocyclopentadiene	20 ug/mL
							Hexachloroethane	20 ug/mL
							Indeno(1,2,3-c,d)pyrene	20 ug/mL
							Isophorone	20 ug/mL
							N-Nitrosodi-n-propylamine	20 ug/mL
							N-Nitrosodimethylamine	20 ug/mL
							Naphthalene	20 ug/mL
							Nitrobenzene	20 ug/mL
							Pentachlorophenol	20 ug/mL
							Phenanthrene	20 ug/mL
							Phenol	20 ug/mL
							Pyrene	20 ug/mL
							N-Nitrosodiphenylamine	20 ug/mL
							Tetraethyl lead	20 ug/mL
.MB_BA_STK_00022	12/09/12	Supelco, Lot LB85563			(Purchased Reagent)		Benzoic acid	2000 ug/mL
.MB_CAL_INT_00014	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	2 mL	MB_#4CAL_STK_00010	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00022	400 uL	Benzoic acid	600 ug/mL
					MB_BN_STK_00017	200 uL	3,3'-Dichlorobenzidine	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00025	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00012	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_TEL_STK_00013	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00010	12/09/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00022	12/09/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00017	12/09/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00025	12/09/12		Supelco, Lot LB87087		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00012	12/09/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_TEL_STK_00013	12/09/12		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00122	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	1 mL	MB_CAL_INT_00014	250 uL	Aniline	50 ug/mL
							Benzyl alcohol	50 ug/mL
							Pyridine	50 ug/mL
							Benzoic acid	150 ug/mL
							3,3'-Dichlorobenzidine	50 ug/mL
							3,3'-Dimethylbenzidine	50 ug/mL
							Benzidine	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,4-Trichlorobenzene	50 ug/mL
							1,2-Dichlorobenzene	50 ug/mL
							1,2-Diphenylhydrazine	50 ug/mL
							1,3-Dichlorobenzene	50 ug/mL
							1,4-Dichlorobenzene	50 ug/mL
							2,2'-oxybis[1-chloropropane]	50 ug/mL
							2,4,5-Trichlorophenol	50 ug/mL
							2,4,6-Trichlorophenol	50 ug/mL
							2,4-Dichlorophenol	50 ug/mL
							2,4-Dimethylphenol	50 ug/mL
							2,4-Dinitrophenol	50 ug/mL
							2,4-Dinitrotoluene	50 ug/mL
							2,6-Dinitrotoluene	50 ug/mL
							2-Chloronaphthalene	50 ug/mL
							2-Chlorophenol	50 ug/mL
							2-Methylnaphthalene	50 ug/mL
							2-Methylphenol	50 ug/mL
							2-Nitroaniline	50 ug/mL
							2-Nitrophenol	50 ug/mL
							3-Nitroaniline	50 ug/mL
							4,6-Dinitro-2-methylphenol	50 ug/mL
							4-Bromophenyl phenyl ether	50 ug/mL
							4-Chloro-3-methylphenol	50 ug/mL
							4-Chloroaniline	50 ug/mL
							4-Chlorophenyl phenyl ether	50 ug/mL
							4-Methylphenol	50 ug/mL
							4-Nitroaniline	50 ug/mL
							4-Nitrophenol	50 ug/mL
							Acenaphthene	50 ug/mL
							Acenaphthylene	50 ug/mL
							Anthracene	50 ug/mL
							Benz(a)anthracene	50 ug/mL
							Benzo(a)pyrene	50 ug/mL
							Benzo(b)fluoranthene	50 ug/mL
							Benzo(g,h,i)perylene	50 ug/mL
							Benzo(k)fluoranthene	50 ug/mL
							Bis(2-chloroethoxy)methane	50 ug/mL
							Bis(2-chloroethyl)ether	50 ug/mL
							Bis(2-ethylhexyl) phthalate	50 ug/mL
							Butyl benzyl phthalate	50 ug/mL
							Carbazole	50 ug/mL
							Chrysene	50 ug/mL
							Di-n-butyl phthalate	50 ug/mL
							Di-n-octyl phthalate	50 ug/mL
							Dibenz(a,h)anthracene	50 ug/mL
							Dibenzofuran	50 ug/mL
							Diethyl phthalate	50 ug/mL
							Dimethyl phthalate	50 ug/mL
							Fluoranthene	50 ug/mL
							Fluorene	50 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachlorobenzene	50 ug/mL
							Hexachlorobutadiene	50 ug/mL
							Hexachlorocyclopentadiene	50 ug/mL
							Hexachloroethane	50 ug/mL
							Indeno(1,2,3-c,d)pyrene	50 ug/mL
							Isophorone	50 ug/mL
							N-Nitrosodi-n-propylamine	50 ug/mL
							N-Nitrosodimethylamine	50 ug/mL
							Naphthalene	50 ug/mL
							Nitrobenzene	50 ug/mL
							Pentachlorophenol	50 ug/mL
							Phenanthrene	50 ug/mL
							Phenol	50 ug/mL
							Pyrene	50 ug/mL
							N-Nitrosodiphenylamine	50 ug/mL
							Tetraethyl lead	50 ug/mL
.MB_CAL_INT_00014	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	2 mL	MB_#4CAL_STK_00010	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00022	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00017	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00025	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00012	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_TEL_STK_00013	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00010	12/09/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00022	12/09/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00017	12/09/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00025	12/09/12		Supelco, Lot LB87087		(Purchased Reagent)		1,2,4-Trichlorobenzene	2000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00012	12/09/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_TEL_STK_00013	12/09/12		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00123	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	1 mL	MB_CAL_INT_00014	400 uL	Aniline	80 ug/mL
							Benzyl alcohol	80 ug/mL
							Pyridine	80 ug/mL
							Benzoic acid	240 ug/mL
							3,3'-Dichlorobenzidine	80 ug/mL
							3,3'-Dimethylbenzidine	80 ug/mL
							Benzidine	80 ug/mL
							1,2,4-Trichlorobenzene	80 ug/mL
							1,2-Dichlorobenzene	80 ug/mL
							1,2-Diphenylhydrazine	80 ug/mL
							1,3-Dichlorobenzene	80 ug/mL
							1,4-Dichlorobenzene	80 ug/mL
							2,2'-oxybis[1-chloropropane]	80 ug/mL
							2,4,5-Trichlorophenol	80 ug/mL
							2,4,6-Trichlorophenol	80 ug/mL
							2,4-Dichlorophenol	80 ug/mL
							2,4-Dimethylphenol	80 ug/mL
							2,4-Dinitrophenol	80 ug/mL
							2,4-Dinitrotoluene	80 ug/mL
							2,6-Dinitrotoluene	80 ug/mL
							2-Chloronaphthalene	80 ug/mL
							2-Chlorophenol	80 ug/mL
							2-Methylnaphthalene	80 ug/mL
							2-Methylphenol	80 ug/mL
							2-Nitroaniline	80 ug/mL
							2-Nitrophenol	80 ug/mL
							3-Nitroaniline	80 ug/mL
							4,6-Dinitro-2-methylphenol	80 ug/mL
							4-Bromophenyl phenyl ether	80 ug/mL
							4-Chloro-3-methylphenol	80 ug/mL
							4-Chloroaniline	80 ug/mL
							4-Chlorophenyl phenyl ether	80 ug/mL
							4-Methylphenol	80 ug/mL
							4-Nitroaniline	80 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Nitrophenol	80 ug/mL
							Acenaphthene	80 ug/mL
							Acenaphthylene	80 ug/mL
							Anthracene	80 ug/mL
							Benz(a)anthracene	80 ug/mL
							Benzo(a)pyrene	80 ug/mL
							Benzo(b)fluoranthene	80 ug/mL
							Benzo(g,h,i)perylene	80 ug/mL
							Benzo(k)fluoranthene	80 ug/mL
							Bis(2-chloroethoxy)methane	80 ug/mL
							Bis(2-chloroethyl)ether	80 ug/mL
							Bis(2-ethylhexyl) phthalate	80 ug/mL
							Butyl benzyl phthalate	80 ug/mL
							Carbazole	80 ug/mL
							Chrysene	80 ug/mL
							Di-n-butyl phthalate	80 ug/mL
							Di-n-octyl phthalate	80 ug/mL
							Dibenz(a,h)anthracene	80 ug/mL
							Dibenzofuran	80 ug/mL
							Diethyl phthalate	80 ug/mL
							Dimethyl phthalate	80 ug/mL
							Fluoranthene	80 ug/mL
							Fluorene	80 ug/mL
							Hexachlorobenzene	80 ug/mL
							Hexachlorobutadiene	80 ug/mL
							Hexachlorocyclopentadiene	80 ug/mL
							Hexachloroethane	80 ug/mL
							Indeno(1,2,3-c,d)pyrene	80 ug/mL
							Isophorone	80 ug/mL
							N-Nitrosodi-n-propylamine	80 ug/mL
							N-Nitrosodimethylamine	80 ug/mL
							Naphthalene	80 ug/mL
							Nitrobenzene	80 ug/mL
							Pentachlorophenol	80 ug/mL
							Phenanthrene	80 ug/mL
							Phenol	80 ug/mL
							Pyrene	80 ug/mL
							N-Nitrosodiphenylamine	80 ug/mL
							Tetraethyl lead	80 ug/mL
.MB_CAL_INT_00014	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	2 mL	MB_#4CAL_STK_00010	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00022	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00017	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00025	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00012	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_TEL_STK_00013	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00010	12/09/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00022	12/09/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00017	12/09/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00025	12/09/12		Supelco, Lot LB87087		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00012	12/09/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_TEL_STK_00013	12/09/12		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00124	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	0.5 mL	MB_CAL_INT_00014	300 uL	Aniline	120 ug/mL
							Benzyl alcohol	120 ug/mL
							Pyridine	120 ug/mL
							Benzoic acid	360 ug/mL
							3,3'-Dichlorobenzidine	120 ug/mL
							3,3'-Dimethylbenzidine	120 ug/mL
							Benzidine	120 ug/mL
							1,2,4-Trichlorobenzene	120 ug/mL
							1,2-Dichlorobenzene	120 ug/mL
							1,2-Diphenylhydrazine	120 ug/mL
							1,3-Dichlorobenzene	120 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,4-Dichlorobenzene	120 ug/mL
							2,2'-oxybis[1-chloropropane]	120 ug/mL
							2,4,5-Trichlorophenol	120 ug/mL
							2,4,6-Trichlorophenol	120 ug/mL
							2,4-Dichlorophenol	120 ug/mL
							2,4-Dimethylphenol	120 ug/mL
							2,4-Dinitrophenol	120 ug/mL
							2,4-Dinitrotoluene	120 ug/mL
							2,6-Dinitrotoluene	120 ug/mL
							2-Chloronaphthalene	120 ug/mL
							2-Chlorophenol	120 ug/mL
							2-Methylnaphthalene	120 ug/mL
							2-Methylphenol	120 ug/mL
							2-Nitroaniline	120 ug/mL
							2-Nitrophenol	120 ug/mL
							3-Nitroaniline	120 ug/mL
							4,6-Dinitro-2-methylphenol	120 ug/mL
							4-Bromophenyl phenyl ether	120 ug/mL
							4-Chloro-3-methylphenol	120 ug/mL
							4-Chloroaniline	120 ug/mL
							4-Chlorophenyl phenyl ether	120 ug/mL
							4-Methylphenol	120 ug/mL
							4-Nitroaniline	120 ug/mL
							4-Nitrophenol	120 ug/mL
							Acenaphthene	120 ug/mL
							Acenaphthylene	120 ug/mL
							Anthracene	120 ug/mL
							Benz(a)anthracene	120 ug/mL
							Benzo(a)pyrene	120 ug/mL
							Benzo(b)fluoranthene	120 ug/mL
							Benzo(g,h,i)perylene	120 ug/mL
							Benzo(k)fluoranthene	120 ug/mL
							Bis(2-chloroethoxy)methane	120 ug/mL
							Bis(2-chloroethyl)ether	120 ug/mL
							Bis(2-ethylhexyl) phthalate	120 ug/mL
							Butyl benzyl phthalate	120 ug/mL
							Carbazole	120 ug/mL
							Chrysene	120 ug/mL
							Di-n-butyl phthalate	120 ug/mL
							Di-n-octyl phthalate	120 ug/mL
							Dibenz(a,h)anthracene	120 ug/mL
							Dibenzofuran	120 ug/mL
							Diethyl phthalate	120 ug/mL
							Dimethyl phthalate	120 ug/mL
							Fluoranthene	120 ug/mL
							Fluorene	120 ug/mL
							Hexachlorobenzene	120 ug/mL
							Hexachlorobutadiene	120 ug/mL
							Hexachlorocyclopentadiene	120 ug/mL
							Hexachloroethane	120 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Indeno(1,2,3-c,d)pyrene	120 ug/mL
							Isophorone	120 ug/mL
							N-Nitrosodi-n-propylamine	120 ug/mL
							N-Nitrosodimethylamine	120 ug/mL
							Naphthalene	120 ug/mL
							Nitrobenzene	120 ug/mL
							Pentachlorophenol	120 ug/mL
							Phenanthrene	120 ug/mL
							Phenol	120 ug/mL
							Pyrene	120 ug/mL
							N-Nitrosodiphenylamine	120 ug/mL
							Tetraethyl lead	120 ug/mL
.MB_CAL_INT_00014	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	2 mL	MB_#4CAL_STK_00010	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00022	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00017	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00025	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00012	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_TEL_STK_00013	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00010	12/09/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00022	12/09/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00017	12/09/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00025	12/09/12		Supelco, Lot LB87087		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00012	12/09/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_TEL_STK_00013	12/09/12		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00125	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	0.5 mL	MB_CAL_INT_00014	400 uL	Aniline	160 ug/mL
							Benzyl alcohol	160 ug/mL
							Pyridine	160 ug/mL
							Benzoic acid	480 ug/mL
							3,3'-Dichlorobenzidine	160 ug/mL
							3,3'-Dimethylbenzidine	160 ug/mL
							Benzidine	160 ug/mL
							1,2,4-Trichlorobenzene	160 ug/mL
							1,2-Dichlorobenzene	160 ug/mL
							1,2-Diphenylhydrazine	160 ug/mL
							1,3-Dichlorobenzene	160 ug/mL
							1,4-Dichlorobenzene	160 ug/mL
							2,2'-oxybis[1-chloropropane]	160 ug/mL
							2,4,5-Trichlorophenol	160 ug/mL
							2,4,6-Trichlorophenol	160 ug/mL
							2,4-Dichlorophenol	160 ug/mL
							2,4-Dimethylphenol	160 ug/mL
							2,4-Dinitrophenol	160 ug/mL
							2,4-Dinitrotoluene	160 ug/mL
							2,6-Dinitrotoluene	160 ug/mL
							2-Chloronaphthalene	160 ug/mL
							2-Chlorophenol	160 ug/mL
							2-Methylnaphthalene	160 ug/mL
							2-Methylphenol	160 ug/mL
							2-Nitroaniline	160 ug/mL
							2-Nitrophenol	160 ug/mL
							3-Nitroaniline	160 ug/mL
							4,6-Dinitro-2-methylphenol	160 ug/mL
							4-Bromophenyl phenyl ether	160 ug/mL
							4-Chloro-3-methylphenol	160 ug/mL
							4-Chloroaniline	160 ug/mL
							4-Chlorophenyl phenyl ether	160 ug/mL
							4-Methylphenol	160 ug/mL
							4-Nitroaniline	160 ug/mL
							4-Nitrophenol	160 ug/mL
							Acenaphthene	160 ug/mL
							Acenaphthylene	160 ug/mL
							Anthracene	160 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benz(a)anthracene	160 ug/mL
							Benzo(a)pyrene	160 ug/mL
							Benzo(b)fluoranthene	160 ug/mL
							Benzo(g,h,i)perylene	160 ug/mL
							Benzo(k)fluoranthene	160 ug/mL
							Bis(2-chloroethoxy)methane	160 ug/mL
							Bis(2-chloroethyl)ether	160 ug/mL
							Bis(2-ethylhexyl) phthalate	160 ug/mL
							Butyl benzyl phthalate	160 ug/mL
							Carbazole	160 ug/mL
							Chrysene	160 ug/mL
							Di-n-butyl phthalate	160 ug/mL
							Di-n-octyl phthalate	160 ug/mL
							Dibenz(a,h)anthracene	160 ug/mL
							Dibenzofuran	160 ug/mL
							Diethyl phthalate	160 ug/mL
							Dimethyl phthalate	160 ug/mL
							Fluoranthene	160 ug/mL
							Fluorene	160 ug/mL
							Hexachlorobenzene	160 ug/mL
							Hexachlorobutadiene	160 ug/mL
							Hexachlorocyclopentadiene	160 ug/mL
							Hexachloroethane	160 ug/mL
							Indeno(1,2,3-c,d)pyrene	160 ug/mL
							Isophorone	160 ug/mL
							N-Nitrosodi-n-propylamine	160 ug/mL
							N-Nitrosodimethylamine	160 ug/mL
							Naphthalene	160 ug/mL
							Nitrobenzene	160 ug/mL
							Pentachlorophenol	160 ug/mL
							Phenanthrene	160 ug/mL
							Phenol	160 ug/mL
							Pyrene	160 ug/mL
							N-Nitrosodiphenylamine	160 ug/mL
							Tetraethyl lead	160 ug/mL
.MB_CAL_INT_00014	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	2 mL	MB_#4CAL_STK_00010	200 uL	Aniline	200 ug/mL
							Benzoic acid	600 ug/mL
							Benzyl alcohol	200 ug/mL
							Pyridine	200 ug/mL
					MB_BA_STK_00022	400 uL	Benzoic acid	600 ug/mL
					MB_BENZ_STK_00017	200 uL	3,3'-Dichlorobenzidine	200 ug/mL
							3,3'-Dimethylbenzidine	200 ug/mL
							Benzidine	200 ug/mL
					MB_ICV_STK_00025	400 uL	1,2,4-Trichlorobenzene	200 ug/mL
							1,2-Dichlorobenzene	200 ug/mL
							1,2-Diphenylhydrazine	200 ug/mL
							1,3-Dichlorobenzene	200 ug/mL
							1,4-Dichlorobenzene	200 ug/mL
							2,2'-oxybis[1-chloropropane]	200 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,4,5-Trichlorophenol	200 ug/mL
							2,4,6-Trichlorophenol	200 ug/mL
							2,4-Dichlorophenol	200 ug/mL
							2,4-Dimethylphenol	200 ug/mL
							2,4-Dinitrophenol	200 ug/mL
							2,4-Dinitrotoluene	200 ug/mL
							2,6-Dinitrotoluene	200 ug/mL
							2-Chloronaphthalene	200 ug/mL
							2-Chlorophenol	200 ug/mL
							2-Methylnaphthalene	200 ug/mL
							2-Methylphenol	200 ug/mL
							2-Nitroaniline	200 ug/mL
							2-Nitrophenol	200 ug/mL
							3-Nitroaniline	200 ug/mL
							4,6-Dinitro-2-methylphenol	200 ug/mL
							4-Bromophenyl phenyl ether	200 ug/mL
							4-Chloro-3-methylphenol	200 ug/mL
							4-Chloroaniline	200 ug/mL
							4-Chlorophenyl phenyl ether	200 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	200 ug/mL
							4-Nitrophenol	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Bis(2-chloroethoxy)methane	200 ug/mL
							Bis(2-chloroethyl)ether	200 ug/mL
							Bis(2-ethylhexyl) phthalate	200 ug/mL
							Butyl benzyl phthalate	200 ug/mL
							Carbazole	200 ug/mL
							Chrysene	200 ug/mL
							Di-n-butyl phthalate	200 ug/mL
							Di-n-octyl phthalate	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Dibenzofuran	200 ug/mL
							Diethyl phthalate	200 ug/mL
							Dimethyl phthalate	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Hexachlorobenzene	200 ug/mL
							Hexachlorobutadiene	200 ug/mL
							Hexachlorocyclopentadiene	200 ug/mL
							Hexachloroethane	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Isophorone	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-Nitrosodi-n-propylamine	200 ug/mL
							N-Nitrosodimethylamine	200 ug/mL
							Naphthalene	200 ug/mL
							Nitrobenzene	200 ug/mL
							Pentachlorophenol	200 ug/mL
							Phenanthrene	200 ug/mL
							Phenol	200 ug/mL
							Pyrene	200 ug/mL
					MB_NNI_STK_00012	80 uL	N-Nitrosodiphenylamine	200 ug/mL
					MB_TEL_STK_00013	400 uL	Tetraethyl lead	200 ug/mL
..MB_#4CAL_STK_00010	12/09/12		Supelco, Lot LB77667		(Purchased Reagent)		Aniline	2000 ug/mL
							Benzoic acid	2000 ug/mL
							Benzyl alcohol	2000 ug/mL
							Pyridine	2000 ug/mL
..MB_BA_STK_00022	12/09/12		Supelco, Lot LB85563		(Purchased Reagent)		Benzoic acid	2000 ug/mL
..MB_BENZ_STK_00017	12/09/12		Supelco, Lot LB79050		(Purchased Reagent)		3,3'-Dichlorobenzidine	2000 ug/mL
							3,3'-Dimethylbenzidine	2000 ug/mL
							Benzidine	2000 ug/mL
..MB_ICV_STK_00025	12/09/12		Supelco, Lot LB87087		(Purchased Reagent)		1,2,4-Trichlorobenzene	1000 ug/mL
							1,2-Dichlorobenzene	1000 ug/mL
							1,2-Diphenylhydrazine	1000 ug/mL
							1,3-Dichlorobenzene	1000 ug/mL
							1,4-Dichlorobenzene	1000 ug/mL
							2,2'-oxybis[1-chloropropane]	1000 ug/mL
							2,4,5-Trichlorophenol	1000 ug/mL
							2,4,6-Trichlorophenol	1000 ug/mL
							2,4-Dichlorophenol	1000 ug/mL
							2,4-Dimethylphenol	1000 ug/mL
							2,4-Dinitrophenol	1000 ug/mL
							2,4-Dinitrotoluene	1000 ug/mL
							2,6-Dinitrotoluene	1000 ug/mL
							2-Chloronaphthalene	1000 ug/mL
							2-Chlorophenol	1000 ug/mL
							2-Methylnaphthalene	1000 ug/mL
							2-Methylphenol	1000 ug/mL
							2-Nitroaniline	1000 ug/mL
							2-Nitrophenol	1000 ug/mL
							3-Nitroaniline	1000 ug/mL
							4,6-Dinitro-2-methylphenol	1000 ug/mL
							4-Bromophenyl phenyl ether	1000 ug/mL
							4-Chloro-3-methylphenol	1000 ug/mL
							4-Chloroaniline	1000 ug/mL
							4-Chlorophenyl phenyl ether	1000 ug/mL
							4-Methylphenol	1000 ug/mL
							4-Nitroaniline	1000 ug/mL
							4-Nitrophenol	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Bis(2-chloroethoxy)methane	1000 ug/mL
							Bis(2-chloroethyl)ether	1000 ug/mL
							Bis(2-ethylhexyl) phthalate	1000 ug/mL
							Butyl benzyl phthalate	1000 ug/mL
							Carbazole	1000 ug/mL
							Chrysene	1000 ug/mL
							Di-n-butyl phthalate	1000 ug/mL
							Di-n-octyl phthalate	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Dibenzofuran	1000 ug/mL
							Diethyl phthalate	1000 ug/mL
							Dimethyl phthalate	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Hexachlorobenzene	1000 ug/mL
							Hexachlorobutadiene	1000 ug/mL
							Hexachlorocyclopentadiene	1000 ug/mL
							Hexachloroethane	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Isophorone	1000 ug/mL
							N-Nitrosodi-n-propylamine	1000 ug/mL
							N-Nitrosodimethylamine	1000 ug/mL
							Naphthalene	1000 ug/mL
							Nitrobenzene	1000 ug/mL
							Pentachlorophenol	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Phenol	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_NNI_STK_00012	12/09/12		Supleco, Lot LB76738		(Purchased Reagent)		N-Nitrosodiphenylamine	5000 ug/mL
..MB_TEL_STK_00013	12/09/12		Absolute, Lot 012511		(Purchased Reagent)		Tetraethyl lead	1000 ug/mL
MB_CAL_WRK_00126	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	1 mL	MB_CAL_INT_00014	250 uL	2-Methylnaphthalene	50 ug/mL
							Acenaphthene	50 ug/mL
							Acenaphthylene	50 ug/mL
							Anthracene	50 ug/mL
							Benz(a)anthracene	50 ug/mL
							Benzo(a)pyrene	50 ug/mL
							Benzo(b)fluoranthene	50 ug/mL
							Benzo(g,h,i)perylene	50 ug/mL
							Benzo(k)fluoranthene	50 ug/mL
							Chrysene	50 ug/mL
							Dibenz(a,h)anthracene	50 ug/mL
							Fluoranthene	50 ug/mL
							Fluorene	50 ug/mL
							Indeno(1,2,3-c,d)pyrene	50 ug/mL
							Naphthalene	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Phenanthrene	50 ug/mL
							Pyrene	50 ug/mL
							2,4,6-Tribromophenol	50 ug/mL
							2-Fluorobiphenyl	50 ug/mL
							2-Fluorophenol	50 ug/mL
							Nitrobenzene-d5	50 ug/mL
							p-Terphenyl-d14	50 ug/mL
							Phenol-d5	50 ug/mL
.MB_CAL_INT_00014	12/09/12	12/09/11	Methylene Chloride, Lot K35E22	2 mL	MB_ICV_STK_00025	400 uL	2-Methylnaphthalene	200 ug/mL
							Acenaphthene	200 ug/mL
							Acenaphthylene	200 ug/mL
							Anthracene	200 ug/mL
							Benz(a)anthracene	200 ug/mL
							Benzo(a)pyrene	200 ug/mL
							Benzo(b)fluoranthene	200 ug/mL
							Benzo(g,h,i)perylene	200 ug/mL
							Benzo(k)fluoranthene	200 ug/mL
							Chrysene	200 ug/mL
							Dibenz(a,h)anthracene	200 ug/mL
							Fluoranthene	200 ug/mL
							Fluorene	200 ug/mL
							Indeno(1,2,3-c,d)pyrene	200 ug/mL
							Naphthalene	200 ug/mL
							Phenanthrene	200 ug/mL
							Pyrene	200 ug/mL
					MB_SURR_STK_00012	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_ICV_STK_00025	12/09/12		Supelco, Lot LB87087		(Purchased Reagent)		2-Methylnaphthalene	1000 ug/mL
							Acenaphthene	1000 ug/mL
							Acenaphthylene	1000 ug/mL
							Anthracene	1000 ug/mL
							Benz(a)anthracene	1000 ug/mL
							Benzo(a)pyrene	1000 ug/mL
							Benzo(b)fluoranthene	1000 ug/mL
							Benzo(g,h,i)perylene	1000 ug/mL
							Benzo(k)fluoranthene	1000 ug/mL
							Chrysene	1000 ug/mL
							Dibenz(a,h)anthracene	1000 ug/mL
							Fluoranthene	1000 ug/mL
							Fluorene	1000 ug/mL
							Indeno(1,2,3-c,d)pyrene	1000 ug/mL
							Naphthalene	1000 ug/mL
							Phenanthrene	1000 ug/mL
							Pyrene	1000 ug/mL
..MB_SURR_STK_00012	12/09/12		Supelco, Lot LB83373		(Purchased Reagent)		2,4,6-Tribromophenol	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
MB_CALSS_WRK_00013	07/24/12	11/15/11	Methylene Chloride, Lot n/a	1 mL	O_8270full#1_00014	500 uL	2-Methylnaphthalene	50 ug/mL
							Acenaphthene	50 ug/mL
							Acenaphthylene	50 ug/mL
							Anthracene	50 ug/mL
							Benz(a)anthracene	50 ug/mL
							Benzo(a)pyrene	50 ug/mL
							Benzo(b)fluoranthene	50 ug/mL
							Benzo(g,h,i)perylene	50 ug/mL
							Benzo(k)fluoranthene	50 ug/mL
							Chrysene	50 ug/mL
							Dibenz(a,h)anthracene	50 ug/mL
							Fluoranthene	50 ug/mL
							Fluorene	50 ug/mL
							Indeno(1,2,3-c,d)pyrene	50 ug/mL
							Naphthalene	50 ug/mL
							Phenanthrene	50 ug/mL
							Pyrene	50 ug/mL
.O_8270full#1_00014	07/31/12		Supelco, Lot LB86310		(Purchased Reagent)		2-Methylnaphthalene	100 ug/mL
							Acenaphthene	100 ug/mL
							Acenaphthylene	100 ug/mL
							Anthracene	100 ug/mL
							Benz(a)anthracene	100 ug/mL
							Benzo(a)pyrene	100 ug/mL
							Benzo(b)fluoranthene	100 ug/mL
							Benzo(g,h,i)perylene	100 ug/mL
							Benzo(k)fluoranthene	100 ug/mL
							Chrysene	100 ug/mL
							Dibenz(a,h)anthracene	100 ug/mL
							Fluoranthene	100 ug/mL
							Fluorene	100 ug/mL
							Indeno(1,2,3-c,d)pyrene	100 ug/mL
							Naphthalene	100 ug/mL
							Phenanthrene	100 ug/mL
							Pyrene	100 ug/mL
MB_IS_STK_00040	09/23/12		SUPELCO, Lot LB80019		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ng/uL
							Acenaphthene-d10	2000 ng/uL
							Chrysene-d12	2000 ng/uL
							Naphthalene-d8	2000 ng/uL
							Perylene-d12	2000 ng/uL
							Phenanthrene-d10	2000 ng/uL
MB_IS_STK_00042	11/15/12		SUPELCO, Lot LB80019		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ng/uL
							Acenaphthene-d10	2000 ng/uL
							Chrysene-d12	2000 ng/uL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Naphthalene-d8	2000 ng/uL
							Perylene-d12	2000 ng/uL
							Phenanthrene-d10	2000 ng/uL
MB_IS_STK_00051	11/21/12		SUPELCO, Lot LB80019		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2000 ng/uL
							Acenaphthene-d10	2000 ng/uL
							Chrysene-d12	2000 ng/uL
							Naphthalene-d8	2000 ng/uL
							Perylene-d12	2000 ng/uL
							Phenanthrene-d10	2000 ng/uL
MB_SCAL_WRK_00001	12/09/12	12/10/11	Methylene Chloride, Lot k35e22	1 mL	MB_SCAL_INT_00001	25 uL	2,4,6-Tribromophenol	5 ug/mL
							2-Fluorobiphenyl	5 ug/mL
							2-Fluorophenol	5 ug/mL
							Nitrobenzene-d5	5 ug/mL
							p-Terphenyl-d14	5 ug/mL
							Phenol-d5	5 ug/mL
.MB_SCAL_INT_00001	12/09/12	12/10/11	Methylene Chloride, Lot K35E22	2 mL	MB_SURR_STK_00012	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_SURR_STK_00012	12/09/12		Supelco, Lot LB83373		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
MB_SCAL_WRK_00002	12/09/12	12/10/11	Methylene Chloride, Lot k35e22	1 mL	MB_SCAL_INT_00001	100 uL	2,4,6-Tribromophenol	20 ug/mL
							2-Fluorobiphenyl	20 ug/mL
							2-Fluorophenol	20 ug/mL
							Nitrobenzene-d5	20 ug/mL
							p-Terphenyl-d14	20 ug/mL
							Phenol-d5	20 ug/mL
.MB_SCAL_INT_00001	12/09/12	12/10/11	Methylene Chloride, Lot K35E22	2 mL	MB_SURR_STK_00012	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_SURR_STK_00012	12/09/12		Supelco, Lot LB83373		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
MB_SCAL_WRK_00003	12/09/12	12/10/11	Methylene Chloride, Lot k35e22	1 mL	MB_SCAL_INT_00001	250 uL	2,4,6-Tribromophenol	50 ug/mL
							2-Fluorobiphenyl	50 ug/mL
							2-Fluorophenol	50 ug/mL
							Nitrobenzene-d5	50 ug/mL
							p-Terphenyl-d14	50 ug/mL
							Phenol-d5	50 ug/mL
.MB_SCAL_INT_00001	12/09/12	12/10/11	Methylene Chloride, Lot K35E22	2 mL	MB_SURR_STK_00012	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_SURR_STK_00012	12/09/12		Supelco, Lot LB83373		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
MB_SCAL_WRK_00004	12/09/12	12/10/11	Methylene Chloride, Lot k35e22	1 mL	MB_SCAL_INT_00001	400 uL	2,4,6-Tribromophenol	80 ug/mL
							2-Fluorobiphenyl	80 ug/mL
							2-Fluorophenol	80 ug/mL
							Nitrobenzene-d5	80 ug/mL
							p-Terphenyl-d14	80 ug/mL
							Phenol-d5	80 ug/mL
.MB_SCAL_INT_00001	12/09/12	12/10/11	Methylene Chloride, Lot K35E22	2 mL	MB_SURR_STK_00012	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_SURR_STK_00012	12/09/12		Supelco, Lot LB83373		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
MB_SCAL_WRK_00005	12/09/12	12/10/11	Methylene Chloride, Lot k35e22	0.5 mL	MB_SCAL_INT_00001	300 uL	2,4,6-Tribromophenol	120 ug/mL
							2-Fluorobiphenyl	120 ug/mL
							2-Fluorophenol	120 ug/mL
							Nitrobenzene-d5	120 ug/mL
							p-Terphenyl-d14	120 ug/mL
							Phenol-d5	120 ug/mL
.MB_SCAL_INT_00001	12/09/12	12/10/11	Methylene Chloride, Lot K35E22	2 mL	MB_SURR_STK_00012	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_SURR_STK_00012	12/09/12		Supelco, Lot LB83373		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
MB_SCAL_WRK_00006	12/09/12	12/10/11	Methylene Chloride, Lot k35e22	0.5 mL	MB_SCAL_INT_00001	400 uL	2,4,6-Tribromophenol	160 ug/mL
							2-Fluorobiphenyl	160 ug/mL
							2-Fluorophenol	160 ug/mL
							Nitrobenzene-d5	160 ug/mL
							p-Terphenyl-d14	160 ug/mL
							Phenol-d5	160 ug/mL
.MB_SCAL_INT_00001	12/09/12	12/10/11	Methylene Chloride, Lot K35E22	2 mL	MB_SURR_STK_00012	100 uL	2,4,6-Tribromophenol	200 ug/mL
							2-Fluorobiphenyl	200 ug/mL
							2-Fluorophenol	200 ug/mL
							Nitrobenzene-d5	200 ug/mL
							p-Terphenyl-d14	200 ug/mL
							Phenol-d5	200 ug/mL
..MB_SURR_STK_00012	12/09/12		Supelco, Lot LB83373		(Purchased Reagent)		2,4,6-Tribromophenol	4000 ug/mL
							2-Fluorobiphenyl	4000 ug/mL
							2-Fluorophenol	4000 ug/mL
							Nitrobenzene-d5	4000 ug/mL
							p-Terphenyl-d14	4000 ug/mL
							Phenol-d5	4000 ug/mL
O_8270625surr_00002	09/30/13		Ultra Scientific, Lot CH-2880		(Purchased Reagent)		2,4,6-Tribromophenol	150 ug/mL
							2-Fluorobiphenyl	100 ug/mL
							2-Fluorophenol	150 ug/mL
							Nitrobenzene-d5	100 ug/mL
							p-Terphenyl-d14	100 ug/mL
							Phenol-d5	150 ug/mL
O_8270625surr_00003	12/31/13		Ultra Scientific, Lot CH-3764		(Purchased Reagent)		2,4,6-Tribromophenol	150 ug/mL
							2-Fluorobiphenyl	100 ug/mL
							2-Fluorophenol	150 ug/mL
							Nitrobenzene-d5	100 ug/mL
							p-Terphenyl-d14	100 ug/mL
							Phenol-d5	150 ug/mL
O_8270full#1_00015	07/31/12		Supelco, Lot LB86310		(Purchased Reagent)		1,2,4-Trichlorobenzene	100 ug/mL
							1,2-Dichlorobenzene	100 ug/mL
							1,2-Dinitrobenzene	100 ug/mL
							1,2-Diphenylhydrazine	100 ug/mL
							1,3-Dichlorobenzene	100 ug/mL
							1,3-Dinitrobenzene	100 ug/mL
							1,4-Dichlorobenzene	100 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,4-Dinitrobenzene	100 ug/mL
							1-Methylnaphthalene	100 ug/mL
							2,2'-oxybis[1-chloropropane]	100 ug/mL
							2,3,4,6-Tetrachlorophenol	100 ug/mL
							2,4,5-Trichlorophenol	100 ug/mL
							2,4,6-Trichlorophenol	100 ug/mL
							2,4-Dichlorophenol	100 ug/mL
							2,4-Dimethylphenol	100 ug/mL
							2,4-Dinitrophenol	100 ug/mL
							2,4-Dinitrotoluene	100 ug/mL
							2,6-Dinitrotoluene	100 ug/mL
							2-Chloronaphthalene	100 ug/mL
							2-Chlorophenol	100 ug/mL
							2-Methylnaphthalene	100 ug/mL
							2-Methylphenol	100 ug/mL
							2-Nitroaniline	100 ug/mL
							2-Nitrophenol	100 ug/mL
							3,3'-Dichlorobenzidine	100 ug/mL
							3-Methylphenol	100 ug/mL
							3-Nitroaniline	100 ug/mL
							4,6-Dinitro-2-methylphenol	100 ug/mL
							4-Bromophenyl phenyl ether	100 ug/mL
							4-Chloro-3-methylphenol	100 ug/mL
							4-Chloroaniline	89 ug/mL
							4-Chlorophenyl phenyl ether	100 ug/mL
							4-Methylphenol	200 ug/mL
							4-Nitroaniline	100 ug/mL
							4-Nitrophenol	100 ug/mL
							Acenaphthene	100 ug/mL
							Acenaphthylene	100 ug/mL
							Aniline	80 ug/mL
							Anthracene	100 ug/mL
							Benz(a)anthracene	100 ug/mL
							Benzo(a)pyrene	100 ug/mL
							Benzo(b)fluoranthene	100 ug/mL
							Benzo(g,h,i)perylene	100 ug/mL
							Benzo(k)fluoranthene	100 ug/mL
							Benzoic acid	100 ug/mL
							Benzyl alcohol	100 ug/mL
							Bis(2-chloroethoxy)methane	100 ug/mL
							Bis(2-chloroethyl)ether	100 ug/mL
							Bis(2-ethylhexyl) phthalate	100 ug/mL
							Butyl benzyl phthalate	100 ug/mL
							Carbazole	100 ug/mL
							Chrysene	100 ug/mL
							Di-n-butyl phthalate	100 ug/mL
							Di-n-octyl phthalate	100 ug/mL
							Dibenz(a,h)anthracene	100 ug/mL
							Dibenzofuran	100 ug/mL
							Diethyl phthalate	100 ug/mL

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Dimethyl phthalate	100 ug/mL
							Fluoranthene	100 ug/mL
							Fluorene	100 ug/mL
							Hexachlorobenzene	100 ug/mL
							Hexachlorobutadiene	100 ug/mL
							Hexachlorocyclopentadiene	100 ug/mL
							Hexachloroethane	100 ug/mL
							Indeno(1,2,3-c,d)pyrene	100 ug/mL
							Isophorone	100 ug/mL
							N-Nitrosodi-n-propylamine	100 ug/mL
							N-Nitrosodimethylamine	100 ug/mL
							N-Nitrosodiphenylamine	100 ug/mL
							Naphthalene	100 ug/mL
							Nitrobenzene	100 ug/mL
							Pentachlorophenol	100 ug/mL
							Phenanthrene	100 ug/mL
							Phenol	100 ug/mL
							Pyrene	100 ug/mL
							Pyridine	100 ug/mL
O_8270full#2_00012	09/30/12		Supelco, Lot LB88023		(Purchased Reagent)		1,1'-Biphenyl	100 ug/mL
							1,4-Dioxane	100 ug/mL
							Acetophenone	100 ug/mL
							Atrazine	100 ug/mL
							Benzaldehyde	100 ug/mL
							Benzidine	100 ug/mL
							Caprolactam	100 ug/mL
							Tetraethyl lead	50 ug/mL
S_8260_IS_00014	01/02/12	11/02/11	P&T Methanol, Lot DE407	10 mL	MV_IS_STK_00111	500 uL	1,4-Dichlorobenzene-d4	125 ug/mL
							1,4-Difluorobenzene	125 ug/mL
							Chlorobenzene-d5	125 ug/mL
.MV_IS_STK_00111	08/31/16		Restek, Lot A083969		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2500 ug/mL
							1,4-Difluorobenzene	2500 ug/mL
							Chlorobenzene-d5	2500 ug/mL
S_8260_Surr_00008	02/10/12	11/10/11	P&T Methanol, Lot DE407	10 mL	MV_SURR_STK_00127	500 uL	1,2-Dichloroethane-d4 (Surr)	125 ug/mL
							4-Bromofluorobenzene (Surr)	125 ug/mL
							Toluene-d8 (Surr)	125 ug/mL
.MV_SURR_STK_00127	10/31/14		Ultra Scientific, Lot CH-2969		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL

Certification Summary

Client: ARCADIS U.S. Inc
Project/Site: National Grid - Ilion, NY

TestAmerica Job ID: 480-13366-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Buffalo	Arkansas	State Program	6	88-0686
TestAmerica Buffalo	California	NELAC	9	1169CA
TestAmerica Buffalo	Connecticut	State Program	1	PH-0568
TestAmerica Buffalo	Florida	NELAC	4	E87672
TestAmerica Buffalo	Georgia	Georgia EPD	4	N/A
TestAmerica Buffalo	Georgia	State Program	4	956
TestAmerica Buffalo	Illinois	NELAC	5	100325 / 200003
TestAmerica Buffalo	Iowa	State Program	7	374
TestAmerica Buffalo	Kansas	NELAC	7	E-10187
TestAmerica Buffalo	Kentucky	Kentucky UST	4	30
TestAmerica Buffalo	Kentucky	State Program	4	90029
TestAmerica Buffalo	Louisiana	NELAC	6	02031
TestAmerica Buffalo	Maine	State Program	1	NY0044
TestAmerica Buffalo	Maryland	State Program	3	294
TestAmerica Buffalo	Massachusetts	State Program	1	M-NY044
TestAmerica Buffalo	Michigan	State Program	5	9937
TestAmerica Buffalo	Minnesota	NELAC	5	036-999-337
TestAmerica Buffalo	New Hampshire	NELAC	1	2337
TestAmerica Buffalo	New Hampshire	NELAC	1	68-00281
TestAmerica Buffalo	New Jersey	NELAC	2	NY455
TestAmerica Buffalo	New York	NELAC	2	10026
TestAmerica Buffalo	North Dakota	State Program	8	R-176
TestAmerica Buffalo	Oklahoma	State Program	6	9421
TestAmerica Buffalo	Oregon	NELAC	10	NY200003
TestAmerica Buffalo	Pennsylvania	NELAC	3	68-00281
TestAmerica Buffalo	Tennessee	State Program	4	TN02970
TestAmerica Buffalo	Texas	NELAC	6	T104704412-08-TX
TestAmerica Buffalo	USDA	USDA		P330-08-00242
TestAmerica Buffalo	Virginia	NELAC Secondary AB	3	460185
TestAmerica Buffalo	Virginia	State Program	3	278
TestAmerica Buffalo	Washington	State Program	10	C1677
TestAmerica Buffalo	Wisconsin	State Program	5	998310390

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Method 8260B

Volatile Organic Compounds (GC/MS) by Method 8260B

FORM II
GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): ZB-624 (60) ID: 0.25 (mm)

Client Sample ID	Lab Sample ID	DCA #	TOL #	BFB #
MW-17	480-13366-1	104	98	87
TRIP BLANK	480-13366-2	100	100	90
MW-14	480-13430-1	96	99	90
MW-15	480-13430-2	97	100	92
MW-16	480-13430-3	98	100	91
BD-120111	480-13430-4	100	99	90
TRIP BLANK	480-13430-5	99	100	90
	MB 480-43413/5	100	102	90
	MB 480-43660/5	97	102	90
	LCS 480-43413/4	99	101	96
	LCS 480-43660/4	95	104	94
MW-17 MS	480-13366-1 MS	105	99	94
MW-17 MSD	480-13366-1 MSD	99	99	93

	QC LIMITS
DCA = 1,2-Dichloroethane-d4 (Surr)	66-137
TOL = Toluene-d8 (Surr)	71-126
BFB = 4-Bromofluorobenzene (Surr)	73-120

Column to be used to flag recovery values

FORM II 8260B

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: S9490.D

Lab ID: LCS 480-43413/4 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Benzene	25.0	26.1	104	71-124	
Toluene	25.0	26.0	104	70-122	
Ethylbenzene	25.0	26.5	106	77-123	
m-Xylene & p-Xylene	50.0	54.3	109	76-122	
o-Xylene	25.0	27.5	110	76-122	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: S9516.D

Lab ID: LCS 480-43660/4 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Benzene	25.0	26.7	107	71-124	
Toluene	25.0	26.1	104	70-122	
Ethylbenzene	25.0	27.0	108	77-123	
m-Xylene & p-Xylene	50.0	55.0	110	76-122	
o-Xylene	25.0	27.7	111	76-122	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: S9503.D

Lab ID: 480-13366-1 MS Client ID: MW-17 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Benzene	25.0	ND	32.4	130	71-124	F
Toluene	25.0	ND	29.5	118	70-122	
Ethylbenzene	25.0	ND	30.9	124	77-123	F
m-Xylene & p-Xylene	50.0	ND	61.0	122	76-122	
o-Xylene	25.0	ND	30.2	121	76-122	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM III
GC/MS VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: S9504.D

Lab ID: 480-13366-1 MSD Client ID: MW-17 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Benzene	25.0	31.1	124	4	13	71-124	
Toluene	25.0	29.1	116	1	15	70-122	
Ethylbenzene	25.0	30.1	120	3	15	77-123	
m-Xylene & p-Xylene	50.0	59.1	118	3	16	76-122	
o-Xylene	25.0	29.7	119	2	16	76-122	

Column to be used to flag recovery and RPD values

FORM III 8260B

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: S9491.D Lab Sample ID: MB 480-43413/5

Matrix: Water Heated Purge:(Y/N) N

Instrument ID: HP5973S Date Analyzed: 12/08/2011 10:55

GC Column: ZB-624 (60) ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 480-43413/4	S9490.D	12/08/2011 10:33
MW-17	480-13366-1	S9502.D	12/08/2011 15:10
MW-17 MS	480-13366-1 MS	S9503.D	12/08/2011 15:33
MW-17 MSD	480-13366-1 MSD	S9504.D	12/08/2011 15:55
TRIP BLANK	480-13366-2	S9505.D	12/08/2011 16:17

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: S9517.D Lab Sample ID: MB 480-43660/5

Matrix: Water Heated Purge:(Y/N) N

Instrument ID: HP5973S Date Analyzed: 12/09/2011 10:57

GC Column: ZB-624 (60) ID: 0.25(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 480-43660/4	S9516.D	12/09/2011 10:35
MW-14	480-13430-1	S9522.D	12/09/2011 13:06
MW-15	480-13430-2	S9523.D	12/09/2011 13:28
MW-16	480-13430-3	S9524.D	12/09/2011 13:50
BD-120111	480-13430-4	S9525.D	12/09/2011 14:12
TRIP BLANK	480-13430-5	S9526.D	12/09/2011 14:34

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: S9315.D BFB Injection Date: 12/01/2011

Instrument ID: HP5973S BFB Injection Time: 10:44

Analysis Batch No.: 42429

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	20.5	
75	30.0 - 60.0 % of mass 95	50.2	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.3	
173	Less than 2.0 % of mass 174	0.0	(0.0)1
174	50.0 - 120.00 % of mass 95	82.1	
175	5.0 - 9.0 % of mass 174	6.0	(7.3)1
176	95.0 - 101.0 % of mass 174	79.5	(96.9)1
177	5.0 - 9.0 % of mass 176	4.9	(6.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	STD 480-42429/3	S9317.D	12/01/2011	11:38
	STD 480-42429/4	S9318.D	12/01/2011	12:00
	STD 480-42429/5	S9319.D	12/01/2011	12:22
	STD 480-42429/6	S9320.D	12/01/2011	12:44
	STD 480-42429/7	S9321.D	12/01/2011	13:07
	STD 480-42429/8	S9322.D	12/01/2011	13:29

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: S9487.D BFB Injection Date: 12/08/2011

Instrument ID: HP5973S BFB Injection Time: 09:13

Analysis Batch No.: 43413

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	20.0	
75	30.0 - 60.0 % of mass 95	49.9	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.2	
173	Less than 2.0 % of mass 174	0.0	(0.0)1
174	50.0 - 120.00 % of mass 95	79.6	
175	5.0 - 9.0 % of mass 174	5.6	(7.1)1
176	95.0 - 101.0 % of mass 174	75.6	(95.1)1
177	5.0 - 9.0 % of mass 176	4.5	(5.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 480-43413/2	S9488.D	12/08/2011	09:35
	LCS 480-43413/4	S9490.D	12/08/2011	10:33
	MB 480-43413/5	S9491.D	12/08/2011	10:55
MW-17	480-13366-1	S9502.D	12/08/2011	15:10
MW-17 MS	480-13366-1 MS	S9503.D	12/08/2011	15:33
MW-17 MSD	480-13366-1 MSD	S9504.D	12/08/2011	15:55
TRIP BLANK	480-13366-2	S9505.D	12/08/2011	16:17

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: S9513.D BFB Injection Date: 12/09/2011

Instrument ID: HP5973S BFB Injection Time: 09:05

Analysis Batch No.: 43660

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	20.1	
75	30.0 - 60.0 % of mass 95	49.6	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.5	
173	Less than 2.0 % of mass 174	0.0	(0.0)1
174	50.0 - 120.00 % of mass 95	78.3	
175	5.0 - 9.0 % of mass 174	5.9	(7.6)1
176	95.0 - 101.0 % of mass 174	78.1	(99.7)1
177	5.0 - 9.0 % of mass 176	5.0	(6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 480-43660/2	S9514.D	12/09/2011	09:39
	LCS 480-43660/4	S9516.D	12/09/2011	10:35
	MB 480-43660/5	S9517.D	12/09/2011	10:57
MW-14	480-13430-1	S9522.D	12/09/2011	13:06
MW-15	480-13430-2	S9523.D	12/09/2011	13:28
MW-16	480-13430-3	S9524.D	12/09/2011	13:50
BD-120111	480-13430-4	S9525.D	12/09/2011	14:12
TRIP BLANK	480-13430-5	S9526.D	12/09/2011	14:34

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: STD 480-42429/6 Date Analyzed: 12/01/2011 12:44

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm)

Lab File ID (Standard): S9320.D Heated Purge: (Y/N) N

Calibration ID: 5115

		DFB		CBZ		DCB	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		485964	4.93	240087	7.13	251431	8.99
UPPER LIMIT		971928	5.43	480174	7.63	502862	9.49
LOWER LIMIT		242982	4.43	120044	6.63	125716	8.49
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVIS 480-43413/2		414121	4.93	216625	7.13	232227	8.99
CCVIS 480-43660/2		474007	4.93	236524	7.13	245660	8.99

DFB = 1,4-Difluorobenzene
CBZ = Chlorobenzene-d5
DCB = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-43413/2 Date Analyzed: 12/08/2011 09:35

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm)

Lab File ID (Standard): S9488.D Heated Purge: (Y/N) N

Calibration ID: 5118

		DFB		CBZ		DCB	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		414121	4.93	216625	7.13	232227	8.99
UPPER LIMIT		828242	5.43	433250	7.63	464454	9.49
LOWER LIMIT		207061	4.43	108313	6.63	116114	8.49
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 480-43413/4		421949	4.93	213935	7.13	229151	8.99
MB 480-43413/5		393850	4.93	190210	7.13	192176	8.99
480-13366-1	MW-17	336003	4.93	164987	7.13	165125	8.99
480-13366-1 MS	MW-17 MS	368055	4.93	198769	7.13	215341	8.99
480-13366-1 MSD	MW-17 MSD	396885	4.93	209105	7.13	221207	8.99
480-13366-2	TRIP BLANK	378953	4.93	183190	7.13	183238	8.99

DFB = 1,4-Difluorobenzene
CBZ = Chlorobenzene-d5
DCB = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-43660/2 Date Analyzed: 12/09/2011 09:39

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm)

Lab File ID (Standard): S9514.D Heated Purge: (Y/N) N

Calibration ID: 5118

		DFB		CBZ		DCB	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		474007	4.93	236524	7.13	245660	8.99
UPPER LIMIT		948014	5.43	473048	7.63	491320	9.49
LOWER LIMIT		237004	4.43	118262	6.63	122830	8.49
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 480-43660/4		474176	4.93	236475	7.13	247275	8.99
MB 480-43660/5		460748	4.93	220939	7.13	220420	8.99
480-13430-1	MW-14	445415	4.93	213204	7.13	213292	8.99
480-13430-2	MW-15	430997	4.93	203999	7.13	208114	8.99
480-13430-3	MW-16	410952	4.93	196681	7.13	200103	8.99
480-13430-4	BD-120111	399016	4.94	193361	7.13	192387	8.99
480-13430-5	TRIP BLANK	393018	4.93	188966	7.13	188021	8.99

DFB = 1,4-Difluorobenzene
CBZ = Chlorobenzene-d5
DCB = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260B

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-17 Lab Sample ID: 480-13366-1

Matrix: Water Lab File ID: S9502.D

Analysis Method: 8260B Date Collected: 11/30/2011 11:55

Sample wt/vol: 5(mL) Date Analyzed: 12/08/2011 15:10

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		66-137
2037-26-5	Toluene-d8 (Surr)	98		71-126
460-00-4	4-Bromofluorobenzene (Surr)	87		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9502.D
Lims ID: 480-13366-C-1 Client ID: MW-17
Inject. Date: 08-Dec-2011 15:10:30 Dil. Factor: 1.0000
Sample Type: Client
Sample ID: 480-13366-C-1
Misc. Info.: 480-0008065-054 =480-0008065-054
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 16
Lims Batch ID: 43413 Lims Sample ID: 54
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m
Last Update: 08-Dec-2011 11:12:08 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 08:49:44

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	336003	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	164987	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	165125	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.631	4.630	0.001	95	55578	26.1	
$ 5 Toluene-d8 (Surr)	98	6.012	6.011	0.001	93	305123	24.6	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	87	90253	21.7	
57 Benzene	78		4.630					
74 Toluene	92		6.060					
88 Ethylbenzene	91		7.216					
90 m-Xylene & p-Xylene	106		7.307					
91 o-Xylene	106		7.623					
S 123 Total BTEX	1		30.000					7
S 124 Xylenes, Total	1		30.000					7

QC Flag Legend

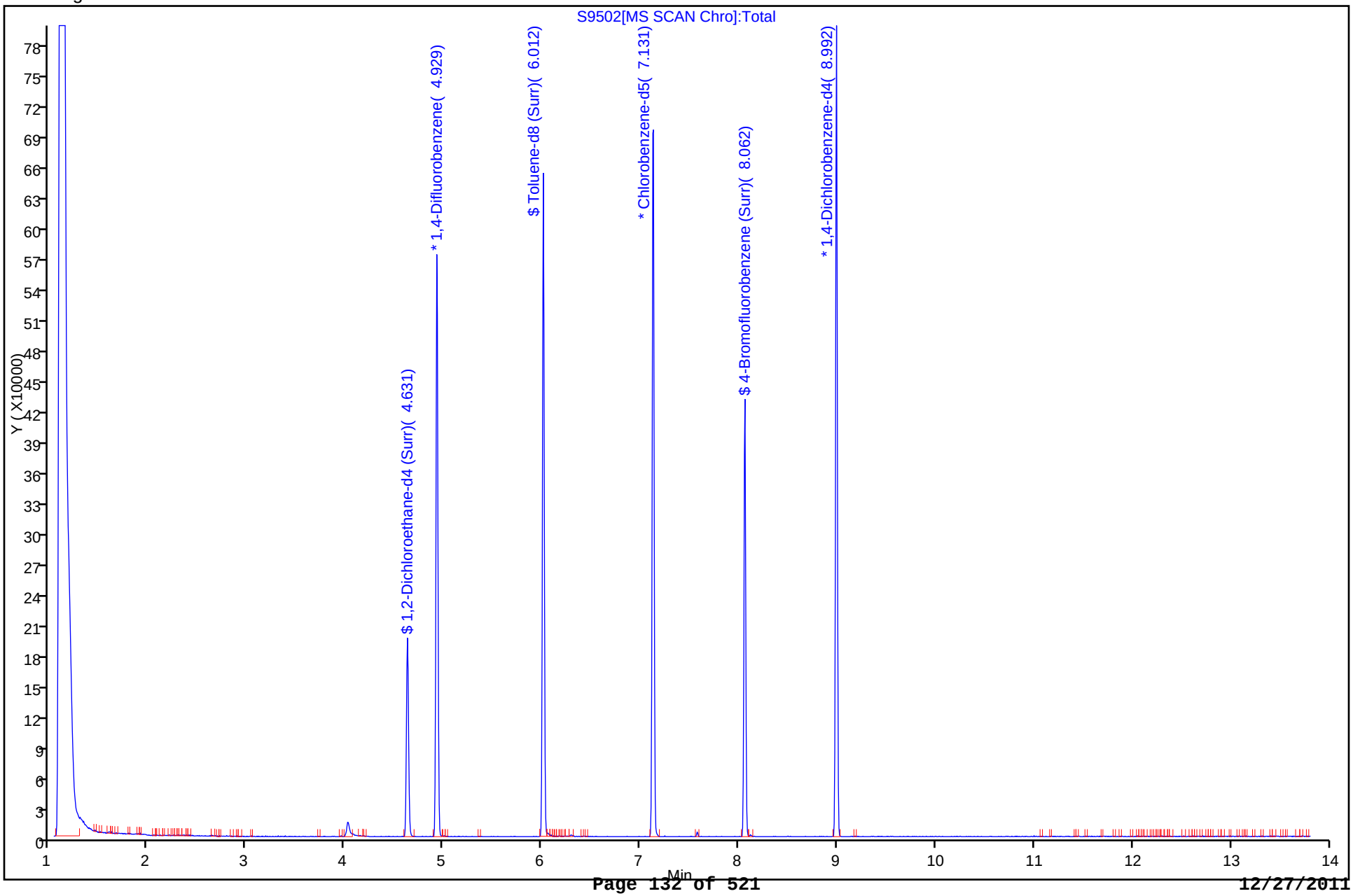
Processing Flags
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 08:49:44 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9502.D

Injection Date:	08-Dec-2011 15:10:30	Limit Group:	MV - 8260B ICAL
Client ID:	MW-17	Instrument ID:	HP5973S
Lims Batch ID:	43413	Lims Sample ID:	54
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: TRIP BLANK | Lab Sample ID: 480-13366-2

Matrix: Water | Lab File ID: S9505.D

Analysis Method: 8260B | Date Collected: 11/30/2011 00:00

Sample wt/vol: 5(mL) | Date Analyzed: 12/08/2011 16:17

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 43413 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	100		66-137
2037-26-5	Toluene-d8 (Surr)	100		71-126
460-00-4	4-Bromofluorobenzene (Surr)	90		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9505.D		
Lims ID:	480-13366-B-2	Client ID:	TRIP BLANK
Inject. Date:	08-Dec-2011 16:17:30	Dil. Factor:	1.0000
Sample Type:	Client		
Sample ID:	480-13366-B-2		
Misc. Info.:	480-0008065-057 =480-0008065-057		
Operator:	DHC	Instrument ID:	HP5973S
Vol. Injected:	1.0000	ALS Bottle#:	19
Lims Batch ID:	43413	Lims Sample ID:	57
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m		
Last Update:	08-Dec-2011 11:12:08	Calib Date:	01-Dec-2011 16:05:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D		
Limit Group:	MV - 8260B ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: coderd		Date:	09-Dec-2011 08:49:56

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	378953	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	85	183190	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	183238	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.631	4.630	0.001	96	60063	25.0	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	93	343464	25.0	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	89	104267	22.6	
57 Benzene	78		4.630					
74 Toluene	92		6.060					
88 Ethylbenzene	91		7.216					
90 m-Xylene & p-Xylene	106		7.307					
91 o-Xylene	106		7.623					
S 123 Total BTEX	1		30.000					7
S 124 Xylenes, Total	1		30.000					7

QC Flag Legend

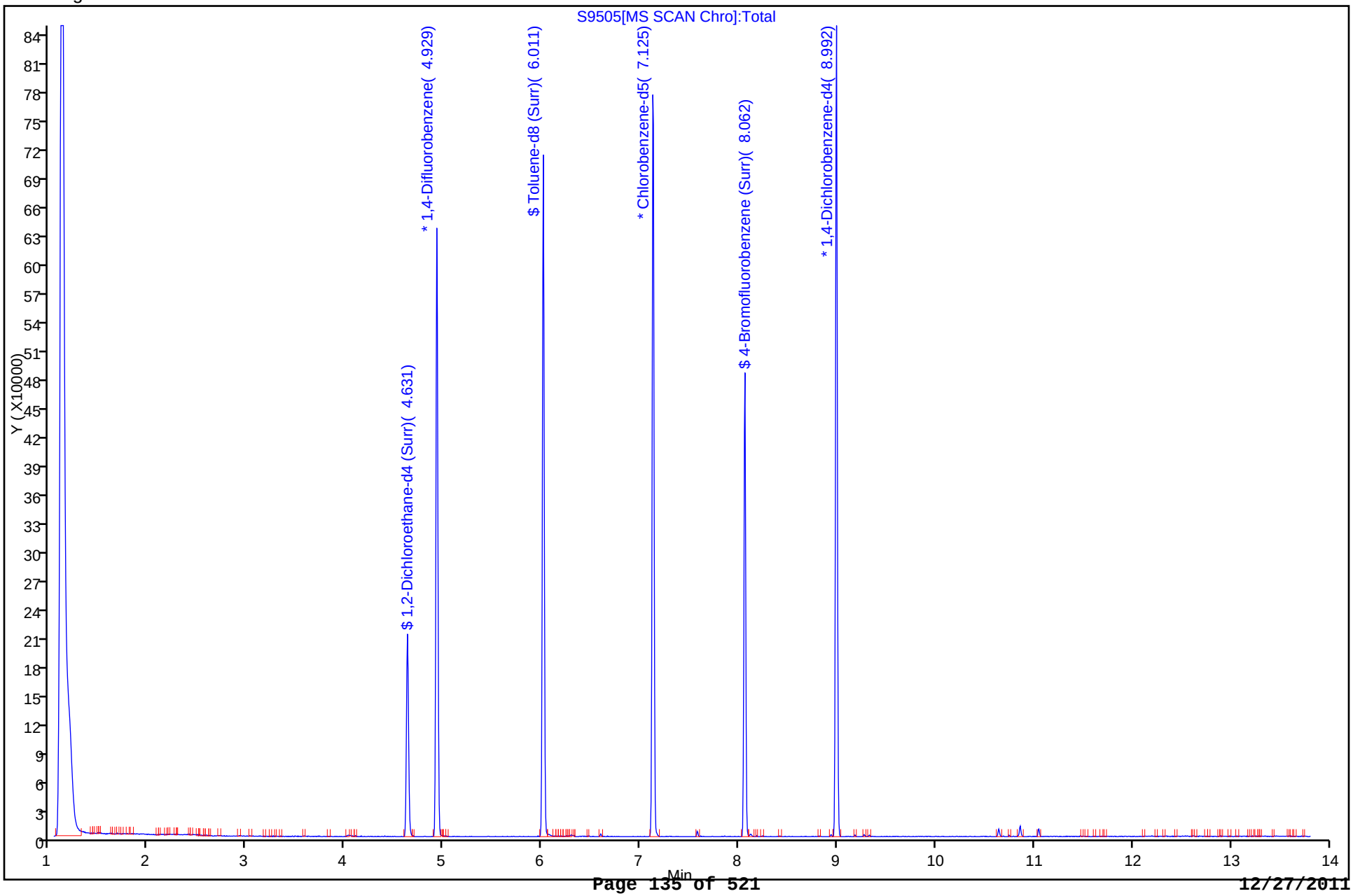
Processing Flags
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 08:49:56 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9505.D

Injection Date:	08-Dec-2011 16:17:30	Limit Group:	MV - 8260B ICAL
Client ID:	TRIP BLANK	Instrument ID:	HP5973S
Lims Batch ID:	43413	Lims Sample ID:	57
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-14 Lab Sample ID: 480-13430-1

Matrix: Water Lab File ID: S9522.D

Analysis Method: 8260B Date Collected: 12/01/2011 09:30

Sample wt/vol: 1(uL) Date Analyzed: 12/09/2011 13:06

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43660 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	96		66-137
2037-26-5	Toluene-d8 (Surr)	99		71-126
460-00-4	4-Bromofluorobenzene (Surr)	90		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9522.D		
Lims ID:	480-13430-C-1	Client ID:	MW-14
Inject. Date:	09-Dec-2011 13:06:30	Dil. Factor:	1.0000
Sample Type:	Client		
Sample ID:	480-13430-C-1		
Misc. Info.:	480-0008099-010 =480-0008099-010		
Operator:	DHC	Instrument ID:	HP5973S
Vol. Injected:	1.0000	ALS Bottle#:	10
Lims Batch ID:	43660	Lims Sample ID:	10
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m		
Last Update:	09-Dec-2011 11:23:34	Calib Date:	01-Dec-2011 16:05:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D		
Limit Group:	MV - 8260B ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: coderd		Date:	09-Dec-2011 14:41:51

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.928	4.929	-0.001	95	445415	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	213204	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	213292	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.631	-0.001	97	67920	24.0	
$ 5 Toluene-d8 (Surr)	98	6.011	6.012	-0.001	93	395721	24.7	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	89	121650	22.6	
57 Benzene	78		4.630					
74 Toluene	92		6.060					
88 Ethylbenzene	91		7.216					
90 m-Xylene & p-Xylene	106		7.307					
91 o-Xylene	106		7.624					
S 123 Total BTEX	1		30.000					7
S 124 Xylenes, Total	1		30.000					7

QC Flag Legend

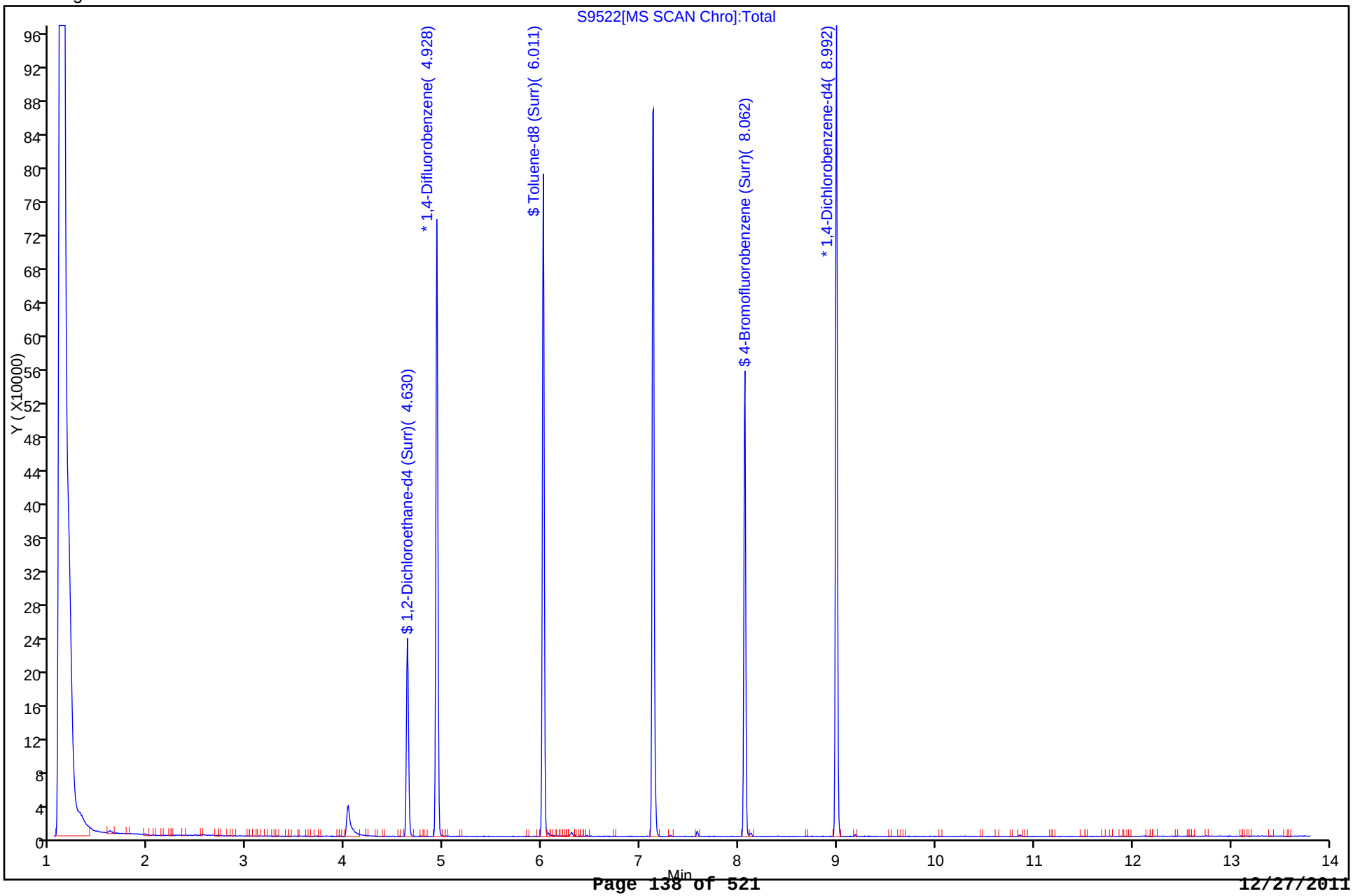
Processing Flags
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 14:41:51 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9522.D

Injection Date:	09-Dec-2011 13:06:30	Limit Group:	MV - 8260B ICAL
Client ID:	MW-14	Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	10
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-15 Lab Sample ID: 480-13430-2

Matrix: Water Lab File ID: S9523.D

Analysis Method: 8260B Date Collected: 12/01/2011 09:40

Sample wt/vol: 1(uL) Date Analyzed: 12/09/2011 13:28

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43660 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	97		66-137
2037-26-5	Toluene-d8 (Surr)	100		71-126
460-00-4	4-Bromofluorobenzene (Surr)	92		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9523.D
Lims ID: 480-13430-C-2 Client ID: MW-15
Inject. Date: 09-Dec-2011 13:28:30 Dil. Factor: 1.0000
Sample Type: Client
Sample ID: 480-13430-C-2
Misc. Info.: 480-0008099-011 =480-0008099-011
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 11
Lims Batch ID: 43660 Lims Sample ID: 11
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m
Last Update: 09-Dec-2011 11:23:34 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 14:41:53

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.929	0.0	95	430997	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	85	203999	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	208114	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.631	-0.001	97	66077	24.2	
$ 5 Toluene-d8 (Surr)	98	6.011	6.012	-0.001	92	381759	24.9	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	87	118152	23.0	
57 Benzene	78		4.630					
74 Toluene	92		6.060					
88 Ethylbenzene	91		7.216					
90 m-Xylene & p-Xylene	106		7.307					
91 o-Xylene	106		7.624					
S 123 Total BTEX	1		30.000					7
S 124 Xylenes, Total	1		30.000					7

QC Flag Legend

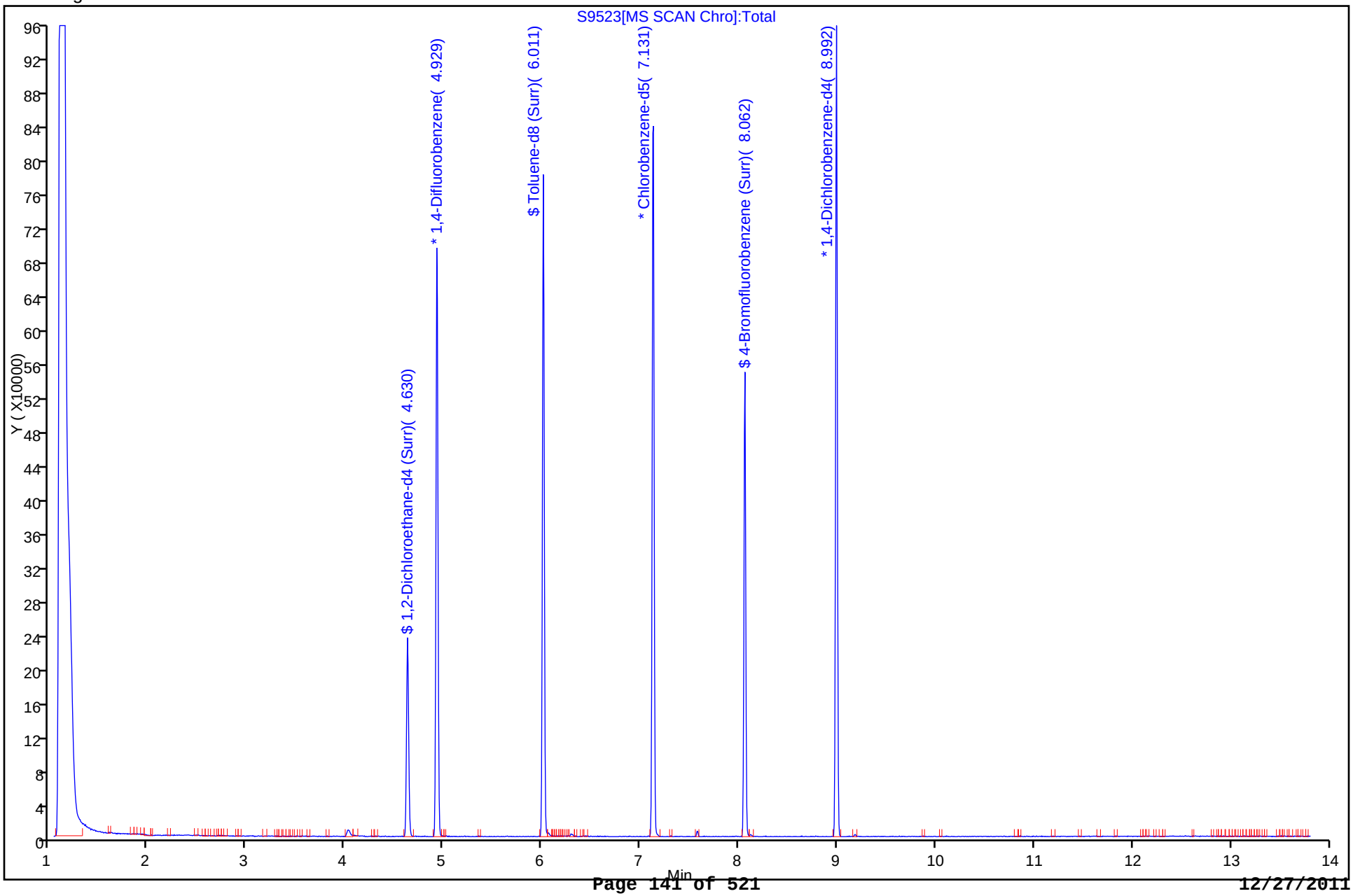
Processing Flags
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 14:41:53 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9523.D

Injection Date:	09-Dec-2011 13:28:30	Limit Group:	MV - 8260B ICAL
Client ID:	MW-15	Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	11
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-16 Lab Sample ID: 480-13430-3

Matrix: Water Lab File ID: S9524.D

Analysis Method: 8260B Date Collected: 12/01/2011 10:45

Sample wt/vol: 1(uL) Date Analyzed: 12/09/2011 13:50

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43660 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		66-137
2037-26-5	Toluene-d8 (Surr)	100		71-126
460-00-4	4-Bromofluorobenzene (Surr)	91		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9524.D
Lims ID: 480-13430-C-3 Client ID: MW-16
Inject. Date: 09-Dec-2011 13:50:30 Dil. Factor: 1.0000
Sample Type: Client
Sample ID: 480-13430-C-3
Misc. Info.: 480-0008099-012 =480-0008099-012
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 12
Lims Batch ID: 43660 Lims Sample ID: 12
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m
Last Update: 09-Dec-2011 11:23:34 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 14:41:56

	Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
*	1 1,4-Difluorobenzene	114	4.929	4.929	0.0	95	410952	25.0	
*	2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	196681	25.0	
*	3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	200103	25.0	
$	4 1,2-Dichloroethane-d4 (Surr)	67	4.631	4.631	0.0	96	63697	24.4	
$	5 Toluene-d8 (Surr)	98	6.011	6.012	-0.001	93	369565	25.0	
$	6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	87	113157	22.8	
	57 Benzene	78		4.630					
	74 Toluene	92		6.060					
	88 Ethylbenzene	91		7.216					
	90 m-Xylene & p-Xylene	106		7.307					
	91 o-Xylene	106		7.624					
S	123 Total BTEX	1		30.000					7
S	124 Xylenes, Total	1		30.000					7

QC Flag Legend

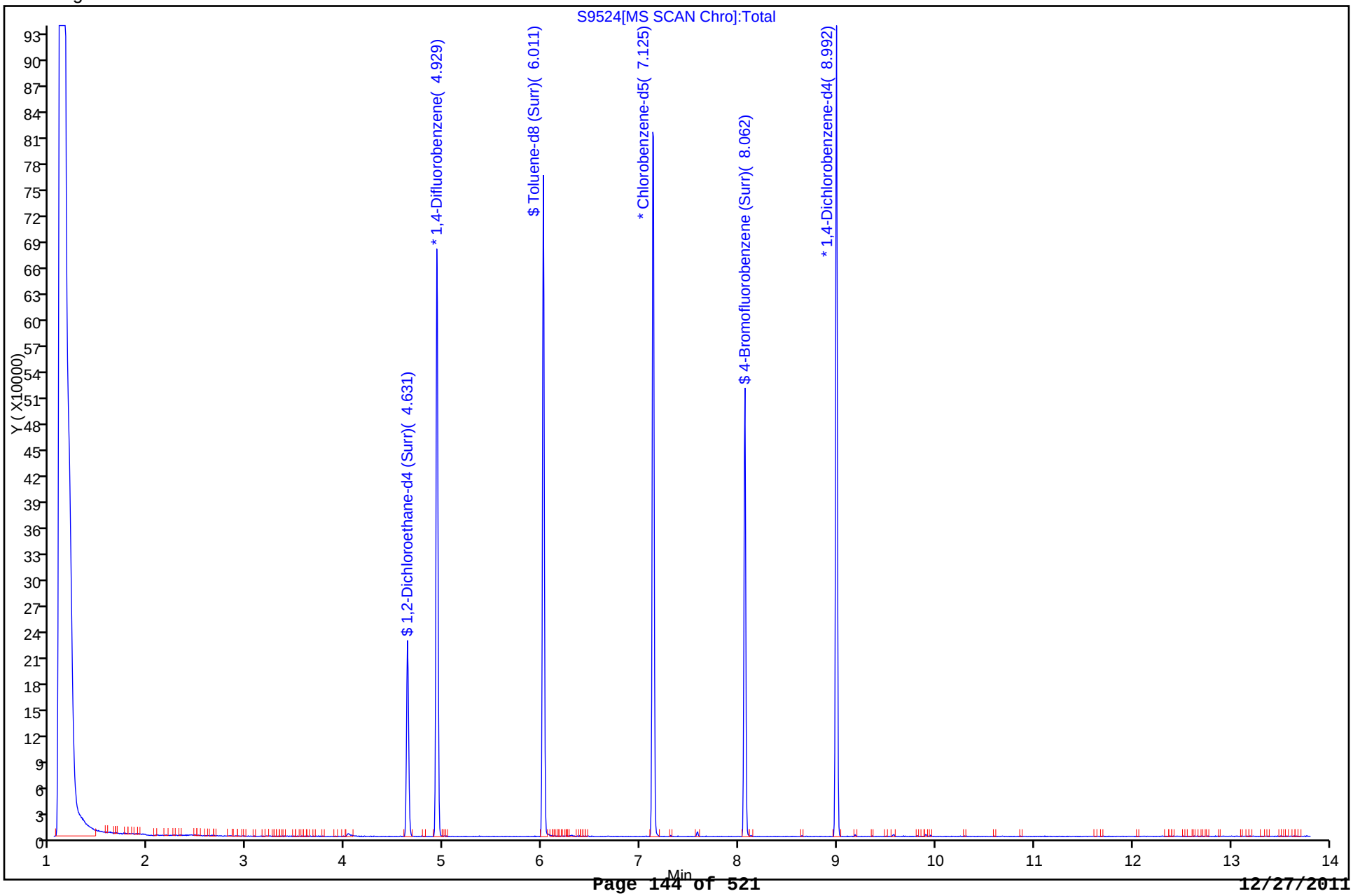
Processing Flags
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 14:41:56 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9524.D

Injection Date:	09-Dec-2011 13:50:30	Limit Group:	MV - 8260B ICAL
Client ID:	MW-16	Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	12
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: BD-120111 | Lab Sample ID: 480-13430-4

Matrix: Water | Lab File ID: S9525.D

Analysis Method: 8260B | Date Collected: 12/01/2011 00:00

Sample wt/vol: 1(uL) | Date Analyzed: 12/09/2011 14:12

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 43660 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	100		66-137
2037-26-5	Toluene-d8 (Surr)	99		71-126
460-00-4	4-Bromofluorobenzene (Surr)	90		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9525.D
Lims ID: 480-13430-C-4 Client ID: BD-120111
Inject. Date: 09-Dec-2011 14:12:30 Dil. Factor: 1.0000
Sample Type: Client
Sample ID: 480-13430-C-4
Misc. Info.: 480-0008099-013 =480-0008099-013
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 13
Lims Batch ID: 43660 Lims Sample ID: 13
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m
Last Update: 09-Dec-2011 11:23:34 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 14:41:58

	Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
*	1 1,4-Difluorobenzene	114	4.935	4.929	0.006	94	399016	25.0	
*	2 Chlorobenzene-d5	82	7.125	7.125	0.0	85	193361	25.0	
*	3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	192387	25.0	
$	4 1,2-Dichloroethane-d4 (Surr)	67	4.631	4.631	0.0	97	63045	24.9	
$	5 Toluene-d8 (Surr)	98	6.012	6.012	0.0	93	359114	24.7	
$	6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	88	110493	22.6	
	57 Benzene	78		4.630					
	74 Toluene	92		6.060					
	88 Ethylbenzene	91		7.216					
	90 m-Xylene & p-Xylene	106		7.307					
	91 o-Xylene	106		7.624					
S	123 Total BTEX	1		30.000					7
S	124 Xylenes, Total	1		30.000					7

QC Flag Legend

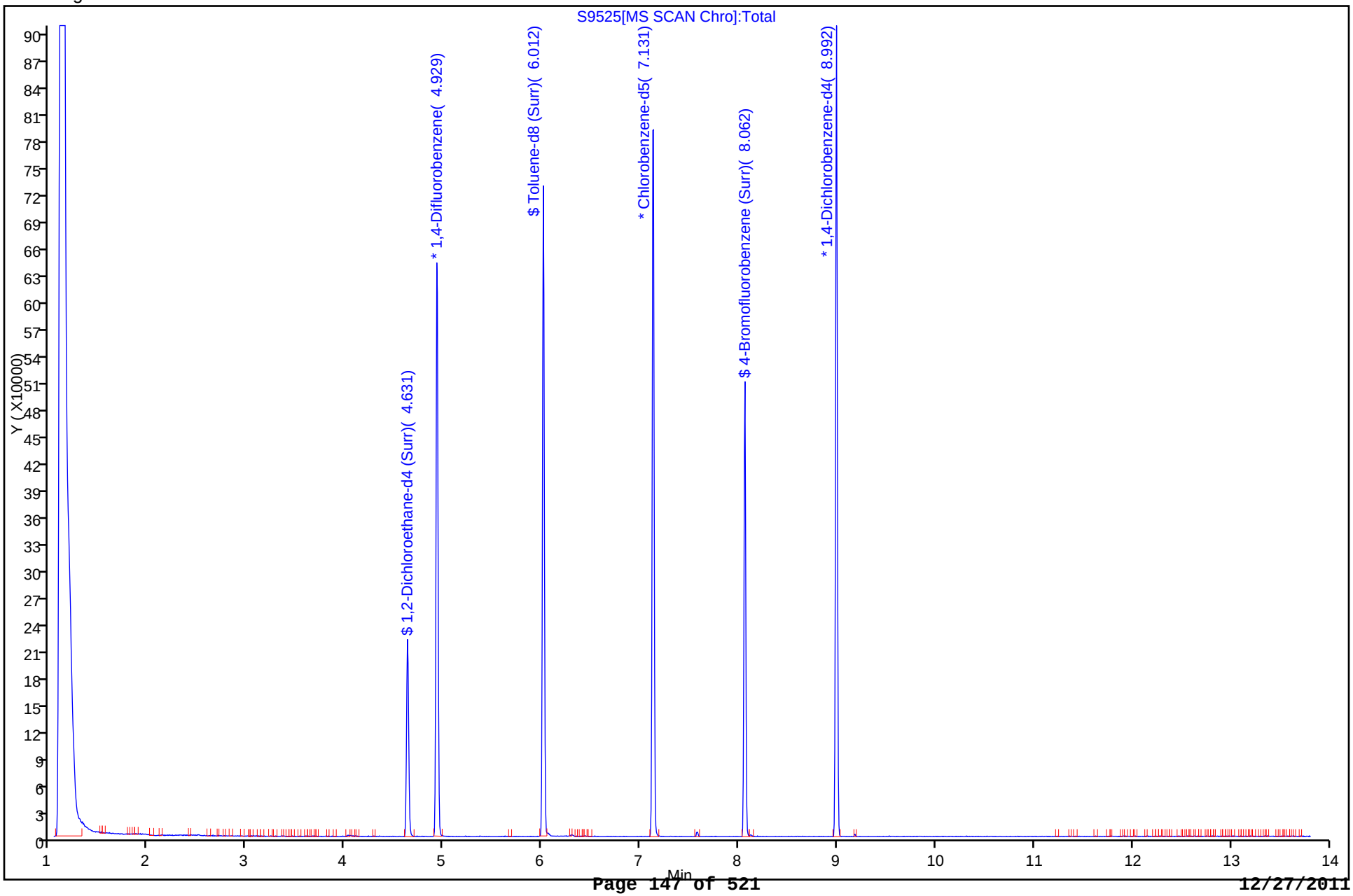
Processing Flags
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 14:41:58 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9525.D

Injection Date:	09-Dec-2011 14:12:30	Limit Group:	MV - 8260B ICAL
Client ID:	BD-120111	Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	13
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: TRIP BLANK | Lab Sample ID: 480-13430-5

Matrix: Water | Lab File ID: S9526.D

Analysis Method: 8260B | Date Collected: 12/01/2011 00:00

Sample wt/vol: 1(uL) | Date Analyzed: 12/09/2011 14:34

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 43660 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		66-137
2037-26-5	Toluene-d8 (Surr)	100		71-126
460-00-4	4-Bromofluorobenzene (Surr)	90		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9526.D
Lims ID: 480-13430-A-5 Client ID: TRIP BLANK
Inject. Date: 09-Dec-2011 14:34:30 Dil. Factor: 1.0000
Sample Type: Client
Sample ID: 480-13430-A-5
Misc. Info.: 480-0008099-014 =480-0008099-014
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 14
Lims Batch ID: 43660 Lims Sample ID: 14
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m
Last Update: 09-Dec-2011 11:23:34 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 16:30:39

	Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
*	1 1,4-Difluorobenzene	114	4.929	4.929	0.0	95	393018	25.0	
*	2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	188966	25.0	
*	3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	188021	25.0	
$	4 1,2-Dichloroethane-d4 (Surr)	67	4.631	4.631	0.0	96	61857	24.8	
$	5 Toluene-d8 (Surr)	98	6.011	6.012	-0.001	93	355031	25.0	
$	6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	87	107192	22.5	
	57 Benzene	78		4.630					
	74 Toluene	92		6.060					
	88 Ethylbenzene	91		7.216					
	90 m-Xylene & p-Xylene	106		7.307					
	91 o-Xylene	106		7.624					
S	123 Total BTEX	1		30.000					7
S	124 Xylenes, Total	1		30.000					7

QC Flag Legend

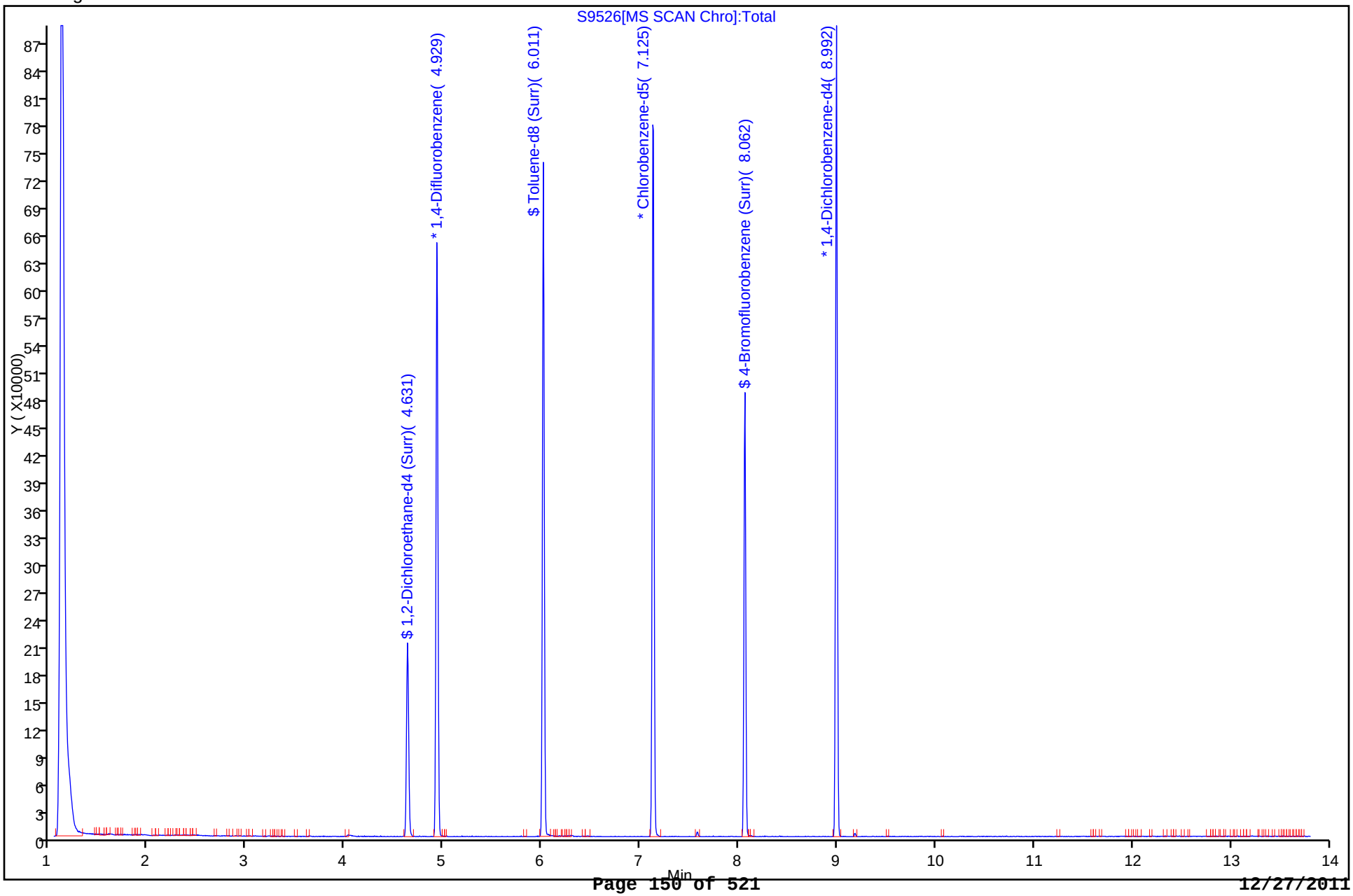
Processing Flags
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 16:30:39 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9526.D

Injection Date:	09-Dec-2011 14:34:30	Limit Group:	MV - 8260B ICAL
Client ID:	TRIP BLANK	Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	14
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 480-42429/3	S9317.D
Level 2	STD 480-42429/4	S9318.D
Level 3	STD 480-42429/5	S9319.D
Level 4	STD 480-42429/6	S9320.D
Level 5	STD 480-42429/7	S9321.D
Level 6	STD 480-42429/8	S9322.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	0.2254 0.2790	0.2571	0.2652	0.2702	0.2848	Ave		0.2636				8.0		15.0			
Chloromethane	0.3635 0.4236	0.3801	0.3758	0.4205	0.4280	Ave		0.3986			0.1000	7.2		15.0			
Vinyl chloride	0.2469 0.3206	0.2909	0.3044	0.3089	0.3200	Ave		0.2986				9.3		30.0			
Bromomethane	0.0887 0.1393	0.1128	0.1138	0.1255	0.1317	Ave		0.1186				15.0		15.0			
Chloroethane	0.1200 0.1569	0.1502	0.1472	0.1456	0.1548	Ave		0.1458				9.2		15.0			
Trichlorofluoromethane	0.2785 0.3621	0.3564	0.3575	0.3609	0.3718	Ave		0.3479				9.9		15.0			
Acrolein	0.0448 0.0350	0.0409	0.0409	0.0427	0.0363	Ave		0.0401				9.4		15.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0412 0.1783	0.1750	0.1764	0.1921	0.1647	Lin1F		0.1757							0.9940		0.9900
1,1-Dichloroethene	0.1926 0.2771	0.2463	0.2706	0.2787	0.2734	Ave		0.2564				13.0		30.0			
Acetone	0.1381 0.1148	0.1323	0.1243	0.1261	0.1182	Ave		0.1256				6.9		15.0			
Iodomethane	0.1011 0.1791	0.1917	0.1815	0.1802	0.1762	Lin1F		0.1785							0.9990		0.9900
Carbon disulfide	0.4220 0.5719	0.4822	0.4880	0.5473	0.5474	Ave		0.5098				11.0		15.0			
Methyl acetate	0.6469 0.5504	0.5737	0.5595	0.6514	0.5862	Ave		0.5947				7.4		15.0			
Acetonitrile	0.0240 0.0204	0.0242	0.0227	0.0241	0.0231	Ave		0.0231				6.3		15.0			
Methylene Chloride	0.3709 0.2834	0.3019	0.2855	0.2836	0.2814	Ave		0.3011				12.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Methyl tert-butyl ether	0.7616 0.8646	0.7797	0.8086	0.8696	0.8582	Ave		0.8237				5.7		15.0			
trans-1,2-Dichloroethene	0.2184 0.2514	0.2495	0.2570	0.2523	0.2583	Ave		0.2478				6.0		15.0			
Acrylonitrile	0.1612 0.1532	0.1566	0.1556	0.1607	0.1559	Ave		0.1572				2.0		15.0			
1,1-Dichloroethane	0.5175 0.5053	0.5027	0.5065	0.5016	0.5072	Ave		0.5068			0.1000	1.1		15.0			
Vinyl acetate	0.4556 0.5733	0.5108	0.5371	0.5766	0.5751	Ave		0.5381				9.0		15.0			
2,2-Dichloropropane	0.1870 0.2039	0.2019	0.1966	0.2036	0.2059	Ave		0.1998				3.5		15.0			
cis-1,2-Dichloroethene	0.3094 0.3012	0.2845	0.2949	0.2993	0.3071	Ave		0.2994				3.0		15.0			
2-Butanone (MEK)	0.2038 0.2057	0.2008	0.2038	0.2122	0.2072	Ave		0.2056				1.9		15.0			
Bromochloromethane	0.1602 0.1476	0.1496	0.1509	0.1491	0.1494	Ave		0.1511				3.0		15.0			
Tetrahydrofuran	0.1321 0.1356	0.1298	0.1352	0.1442	0.1382	Ave		0.1358				3.7		15.0			
Chloroform	0.5512 0.4705	0.4919	0.4837	0.4848	0.4853	Ave		0.4946				5.8		30.0			
1,1,1-Trichloroethane	0.3096 0.3267	0.3188	0.3238	0.3304	0.3337	Ave		0.3238				2.7		15.0			
Cyclohexane	0.2728 0.4274	0.4058	0.3559	0.4368	0.4334	Lin1F		0.4251							0.9970		0.9900
Carbon tetrachloride	0.2647 0.3173	0.2935	0.2950	0.3091	0.3202	Ave		0.3000				6.8		15.0			
1,1-Dichloropropene	0.3435 0.3883	0.3583	0.3781	0.3841	0.3924	Ave		0.3741				5.1		15.0			
Benzene	1.1593 1.1295	1.1411	1.1604	1.1540	1.1583	Ave		1.1504				1.1		15.0			
1,2-Dichloroethane	0.4456 0.4071	0.4293	0.4230	0.4177	0.4201	Ave		0.4238				3.1		15.0			
Trichloroethene	0.2835 0.2848	0.2737	0.2784	0.2848	0.2855	Ave		0.2818				1.7		15.0			
Methylcyclohexane	0.3420 0.4025	0.3912	0.3877	0.4223	0.4086	Ave		0.3924				7.1		15.0			
1,2-Dichloropropane	0.2895 0.2993	0.2865	0.2845	0.2964	0.3018	Ave		0.2930				2.4		30.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dibromomethane	0.1709 0.1783	0.1791	0.1762	0.1783	0.1801	Ave		0.1771				1.9		15.0			
Bromodichloromethane	0.3126 0.3673	0.3192	0.3369	0.3508	0.3669	Ave		0.3423				6.9		15.0			
2-Chloroethyl vinyl ether	0.1377 0.1996	0.1844	0.1920	0.2089	0.2048	Ave		0.1879				14.0		15.0			
cis-1,3-Dichloropropene	0.3694 0.4856	0.3952	0.4204	0.4613	0.4827	Ave		0.4358				11.0		15.0			
4-Methyl-2-pentanone (MIBK)	0.7284 0.8054	0.7936	0.8304	0.8899	0.8487	Ave		0.8161				6.7		15.0			
Toluene	1.5173 1.5046	1.4680	1.5276	1.5248	1.5348	Ave		1.5129				1.6		30.0			
trans-1,3-Dichloropropene	0.6522 0.9429	0.7214	0.7872	0.8825	0.9238	Ave		0.8184				14.0		15.0			
Ethyl methacrylate	0.5247 0.8841	0.6670	0.7439	0.8661	0.8755	Lin1F		0.8646							0.9960		0.9900
1,1,2-Trichloroethane	0.4801 0.4708	0.4583	0.4717	0.4724	0.4741	Ave		0.4712				1.5		15.0			
Tetrachloroethene	0.6448 0.6019	0.6113	0.6379	0.6134	0.6175	Ave		0.6211				2.7		15.0			
1,3-Dichloropropane	0.9980 1.0019	0.9567	0.9894	1.0077	1.0220	Ave		0.9959				2.2		15.0			
2-Hexanone	0.4962 0.6125	0.5655	0.6146	0.6683	0.6423	Ave		0.5999				10.0		15.0			
Dibromochloromethane	0.4569 0.5963	0.4731	0.5068	0.5573	0.5897	Ave		0.5300				11.0		15.0			
1,2-Dibromoethane	0.5311 0.5854	0.5351	0.5550	0.5790	0.5888	Ave		0.5624				4.6		15.0			
Chlorobenzene	1.7951 1.6739	1.7217	1.7541	1.7056	1.7121	Ave		1.7271			0.3000	2.4		15.0			
Ethylbenzene	2.5345 2.8043	2.6938	2.8387	2.8584	2.8822	Ave		2.7686				4.8		30.0			
1,1,1,2-Tetrachloroethane	0.5152 0.5541	0.5250	0.5562	0.5629	0.5737	Ave		0.5479				4.2		15.0			
m-Xylene & p-Xylene	0.9538 1.0745	1.0639	1.1277	1.1329	1.1223	Ave		1.0792				6.3		15.0			
o-Xylene	0.8729 1.0784	0.9311	1.0255	1.0863	1.1023	Ave		1.0161				9.2		15.0			
Styrene	1.3146 1.8558	1.6205	1.7304	1.8597	1.9026	Ave		1.7139				13.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Bromoform	0.2486 0.4094	0.2860	0.3144	0.3577	0.3963	Lin1F		0.3902			0.1000				0.9930		0.9900
Isopropylbenzene	1.9490 2.7994	2.3027	2.5002	2.6872	2.7794	Ave		2.5030				13.0		15.0			
Bromobenzene	0.6715 0.7122	0.6772	0.6988	0.7123	0.7261	Ave		0.6997				3.1		15.0			
1,1,2,2-Tetrachloroethane	0.7402 0.8079	0.7567	0.7559	0.8067	0.8228	Ave		0.7817			0.3000	4.4		15.0			
N-Propylbenzene	2.4430 3.3431	2.9880	3.1786	3.3738	3.4224	Ave		3.1248				12.0		15.0			
1,2,3-Trichloropropane	0.2607 0.2451	0.2567	0.2580	0.2613	0.2578	Ave		0.2566				2.3		15.0			
trans-1,4-Dichloro-2-butene	0.1353 0.2274	0.1793	0.1954	0.2292	0.2252	Lin1F		0.2236							0.9970		0.9900
2-Chlorotoluene	0.5613 0.6583	0.6237	0.6353	0.6600	0.6690	Ave		0.6346				6.3		15.0			
1,3,5-Trimethylbenzene	1.6542 2.3225	2.1124	2.2033	2.3126	2.3508	Ave		2.1593				12.0		15.0			
4-Chlorotoluene	0.6159 0.7074	0.6735	0.6893	0.7041	0.7123	Ave		0.6838				5.3		15.0			
tert-Butylbenzene	0.3460 0.5251	0.4390	0.4800	0.5166	0.5298	Ave		0.4727				15.0		15.0			
1,2,4-Trimethylbenzene	1.5601 2.3645	2.1954	2.2415	2.3537	2.4021	Ave		2.1862				14.0		15.0			
sec-Butylbenzene	2.0951 2.9926	2.5805	2.7370	2.9173	3.0323	Ave		2.7258				13.0		15.0			
1,3-Dichlorobenzene	1.3277 1.3044	1.3615	1.3730	1.3925	1.3687	Ave		1.3546				2.4		15.0			
4-Isopropyltoluene	1.6069 2.4706	2.2146	2.3429	2.4923	2.5594	Ave		2.2811				15.0		15.0			
1,4-Dichlorobenzene	1.5691 1.3904	1.4293	1.4333	1.4269	1.4252	Ave		1.4457				4.3		15.0			
n-Butylbenzene	1.4943 2.3006	1.8878	2.0696	2.2622	2.3519	Lin1F		2.2819							0.9980		0.9900
1,2-Dichlorobenzene	1.3348 1.3283	1.3223	1.3301	1.3572	1.3601	Ave		1.3388				1.2		15.0			
1,2-Dibromo-3-Chloropropane	0.1140 0.1767	0.1242	0.1303	0.1554	0.1691	Lin1F		0.1678							0.9920		0.9900
1,2,4-Trichlorobenzene	0.7466 0.8826	0.7323	0.8054	0.9021	0.9349	Ave		0.8340				10.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Hexachlorobutadiene	0.1972 0.1760	0.1943	0.1955	0.1993	0.2064	Ave		0.1948				5.2		15.0			
Naphthalene	0.6894 1.3743	1.0155	1.2101	1.3990	1.4608	Lin1F		1.3786							0.9950		0.9900
1,2,3-Trichlorobenzene	0.3497 0.4096	0.4104	0.4245	0.4560	0.4566	Ave		0.4178				9.4		15.0			
1,2-Dichloroethane-d4 (Surr)	0.1867 0.1481	0.1597	0.1534	0.1514	0.1523	Ave		0.1586				9.0		15.0			
Toluene-d8 (Surr)	2.0631 1.7935	1.8386	1.7952	1.9216	1.8500	Ave		1.8770				5.5		15.0			
4-Bromofluorobenzene (Surr)	0.6999 0.6098	0.6205	0.6239	0.6049	0.6260	Ave		0.6308				5.5		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 480-42429/3	S9317.D
Level 2	STD 480-42429/4	S9318.D
Level 3	STD 480-42429/5	S9319.D
Level 4	STD 480-42429/6	S9320.D
Level 5	STD 480-42429/7	S9321.D
Level 6	STD 480-42429/8	S9322.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Dichlorodifluoromethane	DFB	Ave	4070 574598	23430	49657	131301	283918	1.00 100	5.00	10.0	25.0	50.0
Chloromethane	DFB	Ave	6562 872516	34630	70371	204331	426659	1.00 100	5.00	10.0	25.0	50.0
Vinyl chloride	DFB	Ave	4457 660364	26505	57005	150119	319006	1.00 100	5.00	10.0	25.0	50.0
Bromomethane	DFB	Ave	1601 286854	10278	21301	60989	131301	1.00 100	5.00	10.0	25.0	50.0
Chloroethane	DFB	Ave	2166 323109	13688	27570	70763	154286	1.00 100	5.00	10.0	25.0	50.0
Trichlorofluoromethane	DFB	Ave	5029 745694	32476	66947	175404	370575	1.00 100	5.00	10.0	25.0	50.0
Acrolein	DFB	Ave	16182 1442277	74478	153274	415363	724143	20.0 2000	100	200	500	1000
1,1,2-Trichloro-1,2,2-trifluoroetha ne	DFB	Lin1F	744 367240	15946	33037	93334	164223	1.00 100	5.00	10.0	25.0	50.0
1,1-Dichloroethene	DFB	Ave	3477 570688	22441	50672	135447	272518	1.00 100	5.00	10.0	25.0	50.0
Acetone	DFB	Ave	12468 1181876	60260	116338	306432	589125	5.00 500	25.0	50.0	125	250
Iodomethane	DFB	Lin1F	1826 368829	17467	33979	87593	175661	1.00 100	5.00	10.0	25.0	50.0
Carbon disulfide	DFB	Ave	7619 1177927	43934	91380	265947	545683	1.00 100	5.00	10.0	25.0	50.0
Methyl acetate	DFB	Ave	11679 1133510	52269	104760	316536	584372	1.00 100	5.00	10.0	25.0	50.0
Acetonitrile	DFB	Ave	17366 1678383	88271	169914	468142	920849	40.0 4000	200	400	1000	2000
Methylene Chloride	DFB	Ave	6696 583775	27506	53459	137824	280535	1.00 100	5.00	10.0	25.0	50.0
Methyl tert-butyl ether	DFB	Ave	13750 1780753	71039	151410	422586	855450	1.00 100	5.00	10.0	25.0	50.0

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
trans-1,2-Dichloroethene	DFB	Ave	3943 517724	22732	48116	122586	257436	1.00 100	5.00	10.0	25.0	50.0
Acrylonitrile	DFB	Ave	14551 1577549	71355	145690	390392	777215	5.00 500	25.0	50.0	125	250
1,1-Dichloroethane	DFB	Ave	9343 1040642	45807	94831	243778	505546	1.00 100	5.00	10.0	25.0	50.0
Vinyl acetate	DFB	Ave	41129 5904381	232723	502813	1400987	2866557	5.00 500	25.0	50.0	125	250
2,2-Dichloropropane	DFB	Ave	3377 419916	18395	36802	98925	205262	1.00 100	5.00	10.0	25.0	50.0
cis-1,2-Dichloroethene	DFB	Ave	5587 620397	25919	55214	145460	306130	1.00 100	5.00	10.0	25.0	50.0
2-Butanone (MEK)	DFB	Ave	18398 2118759	91490	190782	515677	1032569	5.00 500	25.0	50.0	125	250
Bromochloromethane	DFB	Ave	2893 303935	13634	28250	72478	148927	1.00 100	5.00	10.0	25.0	50.0
Tetrahydrofuran	DFB	Ave	11923 1396032	59139	126533	350267	688705	5.00 500	25.0	50.0	125	250
Chloroform	DFB	Ave	9952 969089	44815	90569	235598	483726	1.00 100	5.00	10.0	25.0	50.0
1,1,1-Trichloroethane	DFB	Ave	5590 672888	29050	60623	160586	332641	1.00 100	5.00	10.0	25.0	50.0
Cyclohexane	DFB	Lin1F	4925 880219	36976	66633	212254	432018	1.00 100	5.00	10.0	25.0	50.0
Carbon tetrachloride	DFB	Ave	4779 653583	26746	55242	150209	319202	1.00 100	5.00	10.0	25.0	50.0
1,1-Dichloropropene	DFB	Ave	6202 799765	32650	70787	186643	391147	1.00 100	5.00	10.0	25.0	50.0
Benzene	DFB	Ave	20931 2326314	103970	217265	560824	1154590	1.00 100	5.00	10.0	25.0	50.0
1,2-Dichloroethane	DFB	Ave	8046 838370	39116	79200	202975	418786	1.00 100	5.00	10.0	25.0	50.0
Trichloroethene	DFB	Ave	5118 586483	24940	52131	138418	284551	1.00 100	5.00	10.0	25.0	50.0
Methylcyclohexane	DFB	Ave	6174 828949	35640	72592	205244	407252	1.00 100	5.00	10.0	25.0	50.0
1,2-Dichloropropane	DFB	Ave	5227 616345	26106	53269	144030	300812	1.00 100	5.00	10.0	25.0	50.0
Dibromomethane	DFB	Ave	3085 367241	16315	32985	86636	179478	1.00 100	5.00	10.0	25.0	50.0
Bromodichloromethane	DFB	Ave	5643 756410	29080	63077	170456	365756	1.00 100	5.00	10.0	25.0	50.0

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
2-Chloroethyl vinyl ether	DFB	Ave	12433 2055503	84023	179706	507583	1020486	5.00 500	25.0	50.0	125	250
cis-1,3-Dichloropropene	DFB	Ave	6670 1000189	36009	78711	224157	481123	1.00 100	5.00	10.0	25.0	50.0
4-Methyl-2-pentanone (MIBK)	CBZ	Ave	31967 4097888	180309	383206	1068255	2100822	5.00 500	25.0	50.0	125	250
Toluene	CBZ	Ave	13317 1531098	66712	140987	366081	759884	1.00 100	5.00	10.0	25.0	50.0
trans-1,3-Dichloropropene	CBZ	Ave	5724 959517	32785	72655	211882	457385	1.00 100	5.00	10.0	25.0	50.0
Ethyl methacrylate	CBZ	Lin1F	4605 899682	30310	68661	207930	433450	1.00 100	5.00	10.0	25.0	50.0
1,1,2-Trichloroethane	CBZ	Ave	4214 479040	20828	43537	113428	234736	1.00 100	5.00	10.0	25.0	50.0
Tetrachloroethene	CBZ	Ave	5659 612514	27778	58878	147270	305704	1.00 100	5.00	10.0	25.0	50.0
1,3-Dichloropropane	CBZ	Ave	8759 1019486	43476	91322	241929	505985	1.00 100	5.00	10.0	25.0	50.0
2-Hexanone	CBZ	Ave	21777 3116281	128500	283618	802284	1589987	5.00 500	25.0	50.0	125	250
Dibromochloromethane	CBZ	Ave	4010 606835	21499	46777	133808	291944	1.00 100	5.00	10.0	25.0	50.0
1,2-Dibromoethane	CBZ	Ave	4661 595677	24315	51227	139017	291501	1.00 100	5.00	10.0	25.0	50.0
Chlorobenzene	CBZ	Ave	15755 1703311	78238	161895	409498	847617	1.00 100	5.00	10.0	25.0	50.0
Ethylbenzene	CBZ	Ave	22245 2853642	122414	262001	686255	1426932	1.00 100	5.00	10.0	25.0	50.0
1,1,1,2-Tetrachloroethane	CBZ	Ave	4522 563884	23858	51333	135150	284036	1.00 100	5.00	10.0	25.0	50.0
m-Xylene & p-Xylene	CBZ	Ave	16743 2186879	96699	208163	543983	1111317	2.00 200	10.0	20.0	50.0	100
o-Xylene	CBZ	Ave	7661 1097330	42314	94654	260797	545743	1.00 100	5.00	10.0	25.0	50.0
Styrene	CBZ	Ave	11538 1888425	73643	159705	446491	941975	1.00 100	5.00	10.0	25.0	50.0
Bromoform	CBZ	Lin1F	2182 416599	12997	29015	85891	196221	1.00 100	5.00	10.0	25.0	50.0
Isopropylbenzene	DCB	Ave	17881 2885189	110218	245677	675634	1426271	1.00 100	5.00	10.0	25.0	50.0
Bromobenzene	DCB	Ave	6161 733987	32412	68663	179099	372610	1.00 100	5.00	10.0	25.0	50.0

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,1,2,2-Tetrachloroethane	DCB	Ave	6791 832706	36218	74282	202834	422222	1.00 100	5.00	10.0	25.0	50.0
N-Propylbenzene	DCB	Ave	22413 3445570	143021	312341	848267	1756216	1.00 100	5.00	10.0	25.0	50.0
1,2,3-Trichloropropane	DCB	Ave	2392 252640	12288	25353	65705	132290	1.00 100	5.00	10.0	25.0	50.0
trans-1,4-Dichloro-2-butene	DCB	Lin1F	6207 1171776	42916	95979	288110	577882	5.00 500	25.0	50.0	125	250
2-Chlorotoluene	DCB	Ave	5150 678444	29854	62422	165944	343318	1.00 100	5.00	10.0	25.0	50.0
1,3,5-Trimethylbenzene	DCB	Ave	15177 2393677	101109	216503	581460	1206332	1.00 100	5.00	10.0	25.0	50.0
4-Chlorotoluene	DCB	Ave	5651 729115	32239	67729	177034	365521	1.00 100	5.00	10.0	25.0	50.0
tert-Butylbenzene	DCB	Ave	3174 541148	21012	47166	129882	271847	1.00 100	5.00	10.0	25.0	50.0
1,2,4-Trimethylbenzene	DCB	Ave	14313 2436939	105082	220255	591789	1232663	1.00 100	5.00	10.0	25.0	50.0
sec-Butylbenzene	DCB	Ave	19222 3084361	123514	268947	733490	1556014	1.00 100	5.00	10.0	25.0	50.0
1,3-Dichlorobenzene	DCB	Ave	12181 1344435	65169	134913	350121	702351	1.00 100	5.00	10.0	25.0	50.0
4-Isopropyltoluene	DCB	Ave	14743 2546341	106002	230225	626639	1313357	1.00 100	5.00	10.0	25.0	50.0
1,4-Dichlorobenzene	DCB	Ave	14396 1432989	68415	140842	358758	731350	1.00 100	5.00	10.0	25.0	50.0
n-Butylbenzene	DCB	Lin1F	13710 2371077	90360	203364	568785	1206896	1.00 100	5.00	10.0	25.0	50.0
1,2-Dichlorobenzene	DCB	Ave	12246 1369068	63293	130703	341231	697910	1.00 100	5.00	10.0	25.0	50.0
1,2-Dibromo-3-Chloropropane	DCB	Lin1F	1046 182137	5945	12802	39064	86797	1.00 100	5.00	10.0	25.0	50.0
1,2,4-Trichlorobenzene	DCB	Ave	6850 909679	35049	79146	226806	479756	1.00 100	5.00	10.0	25.0	50.0
Hexachlorobutadiene	DFB	Ave	3561 362427	17699	36603	96858	205728	1.00 100	5.00	10.0	25.0	50.0
Naphthalene	DFB	Lin1F	12447 2830484	92527	226574	679867	1456129	1.00 100	5.00	10.0	25.0	50.0
1,2,3-Trichlorobenzene	DFB	Ave	6313 843712	37395	79489	221577	455144	1.00 100	5.00	10.0	25.0	50.0
1,2-Dichloroethane-d4 (Surr)	DFB	Ave	3371 305006	14547	28728	73590	151770	1.00 100	5.00	10.0	25.0	50.0

FORM VI
GC/MS VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42429

SDG No.:

Instrument ID: HP5973S GC Column: ZB-624 (60) ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/01/2011 12:22 Calibration End Date: 12/01/2011 13:29 Calibration ID: 5115

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Toluene-d8 (Surr)	CBZ	Ave	18108 1825030	83551	165692	461361	915909	1.00 100	5.00	10.0	25.0	50.0
4-Bromofluorobenzene (Surr)	CBZ	Ave	6143 620514	28198	57583	145224	309920	1.00 100	5.00	10.0	25.0	50.0

Curve Type Legend:

Ave = Average ISTD
Lin1F = Linear 1/conc ISTD forced zero

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9317.D
Lims ID: STD Client ID:
Inject. Date: 01-Dec-2011 11:38:30 Dil. Factor: 1.0000
Sample Type: IC Calib Level: 1
Sample ID: STD
Misc. Info.: 480-0007883-003 =480-0007883-003
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 3
Lims Batch ID: 42429 Lims Sample ID: 3
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S-8260.m
Last Update: 01-Dec-2011 15:10:28 Calib Date: 01-Dec-2011 14:36:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9325.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 01-Dec-2011 15:10:28

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	451367	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.131	-0.006	86	219422	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	229364	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	46	3371	1.18	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	51	18108	1.10	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.061	0.001	46	6143	1.11	
10 Dichlorodifluoromethane	85	1.266	1.254	0.012	1	4070	0.8551	
12 Chloromethane	50	1.418	1.418	0.0	39	6562	0.9119	
13 Vinyl chloride	62	1.497	1.503	-0.006	1	4457	0.8266	
14 Bromomethane	94	1.814	1.795	0.019	10	1601	0.7475	
15 Chloroethane	64	1.881	1.887	-0.006	1	2166	0.8229	
17 Trichlorofluoromethane	101	2.087	2.069	0.018	10	5029	0.8007	
20 Acrolein	56	2.495	2.495	0.0	84	16182	22.3	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.519	2.519	0.0	1	744	0.2860	
22 1,1-Dichloroethene	96	2.550	2.544	0.006	36	3477	0.7510	
23 Acetone	43	2.653	2.647	0.006	84	12468	5.50	
25 Iodomethane	142	2.702	2.702	0.0	1	1826	0.5665	
26 Carbon disulfide	76	2.714	2.714	0.0	35	7619	0.8278	
27 Methyl acetate	43	2.909	2.903	0.006	95	11679	1.09	
29 Acetonitrile	40	2.939	2.927	0.012	99	17366	41.7	
30 Methylene Chloride	84	3.030	3.030	0.0	59	6696	1.23	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	83	13750	0.9246	
34 trans-1,2-Dichloroethene	96	3.170	3.176	-0.006	31	3943	0.8814	
33 Acrylonitrile	53	3.249	3.243	0.006	88	14551	5.13	
39 1,1-Dichloroethane	63	3.541	3.541	0.0	40	9343	1.02	
37 Vinyl acetate	43	3.590	3.590	0.0	95	41129	4.23	
44 2,2-Dichloropropane	77	3.973	3.973	0.0	25	3377	0.9361	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	10	5587	1.03	
43 2-Butanone (MEK)	43	4.046	4.046	0.0	92	18398	4.96	
48 Chlorobromomethane	128	4.192	4.192	0.0	71	2893	1.06	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.223	4.211	0.012	87	11923	4.86	
50 Chloroform	83	4.253	4.253	0.0	57	9952	1.11	
52 Cyclohexane	56	4.344	4.344	0.0	53	4925	0.6417	
51 1,1,1-Trichloroethane	97	4.344	4.344	0.0	60	5590	0.9561	
55 Carbon tetrachloride	117	4.448	4.448	0.0	57	4779	0.8824	
54 1,1-Dichloropropene	75	4.460	4.466	-0.006	51	6202	0.9182	
57 Benzene	78	4.630	4.630	0.0	89	20931	1.01	
58 1,2-Dichloroethane	62	4.685	4.691	-0.006	59	8046	1.05	
62 Trichloroethene	95	5.105	5.105	0.0	63	5118	1.01	
64 Methylcyclohexane	83	5.202	5.196	0.006	67	6174	0.8715	
65 1,2-Dichloropropane	63	5.306	5.306	0.0	59	5227	0.9881	
67 Dibromomethane	93	5.403	5.403	0.0	70	3085	0.9647	
68 Dichlorobromomethane	83	5.519	5.519	0.0	35	5643	0.9132	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	73	12433	3.66	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	43	6670	0.8478	
73 4-Methyl-2-pentanone (MIBK)	43	5.963	5.957	0.006	93	31967	4.46	
74 Toluene	92	6.060	6.060	0.0	87	13317	1.00	
77 trans-1,3-Dichloropropene	75	6.273	6.273	0.0	51	5724	0.7969	
75 Ethyl methacrylate	69	6.303	6.303	0.0	22	4605	0.6068	
79 1,1,2-Trichloroethane	83	6.419	6.419	0.0	48	4214	1.02	
81 Tetrachloroethene	166	6.455	6.455	0.0	62	5659	1.04	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	63	8759	1.00	
80 2-Hexanone	43	6.589	6.589	0.0	78	21777	4.14	
83 Chlorodibromomethane	129	6.717	6.717	0.0	7	4010	0.8620	
84 Ethylene Dibromide	107	6.802	6.802	0.0	41	4661	0.9443	
87 Chlorobenzene	112	7.149	7.149	0.0	79	15755	1.04	
88 Ethylbenzene	91	7.216	7.216	0.0	83	22245	0.9154	
89 1,1,1,2-Tetrachloroethane	131	7.216	7.222	-0.006	16	4522	0.9404	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	95	16743	1.77	
91 o-Xylene	106	7.624	7.623	0.001	76	7661	0.8590	
92 Styrene	104	7.648	7.648	0.0	70	11538	0.7670	
95 Bromoform	173	7.830	7.836	-0.006	33	2182	0.6372	
94 Isopropylbenzene	105	7.909	7.909	0.0	71	17881	0.7787	
101 Bromobenzene	156	8.183	8.183	0.0	56	6161	0.9598	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	51	6791	0.9469	
99 N-Propylbenzene	91	8.238	8.238	0.0	92	22413	0.7818	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	57	2392	1.02	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	74	6207	3.03	
103 2-Chlorotoluene	126	8.323	8.323	0.0	69	5150	0.8845	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	54	15177	0.7661	
105 4-Chlorotoluene	126	8.414	8.414	0.0	66	5651	0.9008	
106 tert-Butylbenzene	134	8.646	8.646	0.0	61	3174	0.7318	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	45	14313	0.7136	
109 sec-Butylbenzene	105	8.822	8.816	0.006	62	19222	0.7686	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	65	12181	0.9801	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	73	14743	0.7045	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	70	14396	1.09	
115 n-Butylbenzene	91	9.278	9.278	0.0	65	13710	0.6549	
116 1,2-Dichlorobenzene	146	9.321	9.327	-0.006	71	12246	1.00	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	1	1046	0.6794	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	26	6850	0.8953	
120 Hexachlorobutadiene	225	10.750	10.750	0.0	34	3561	1.01	

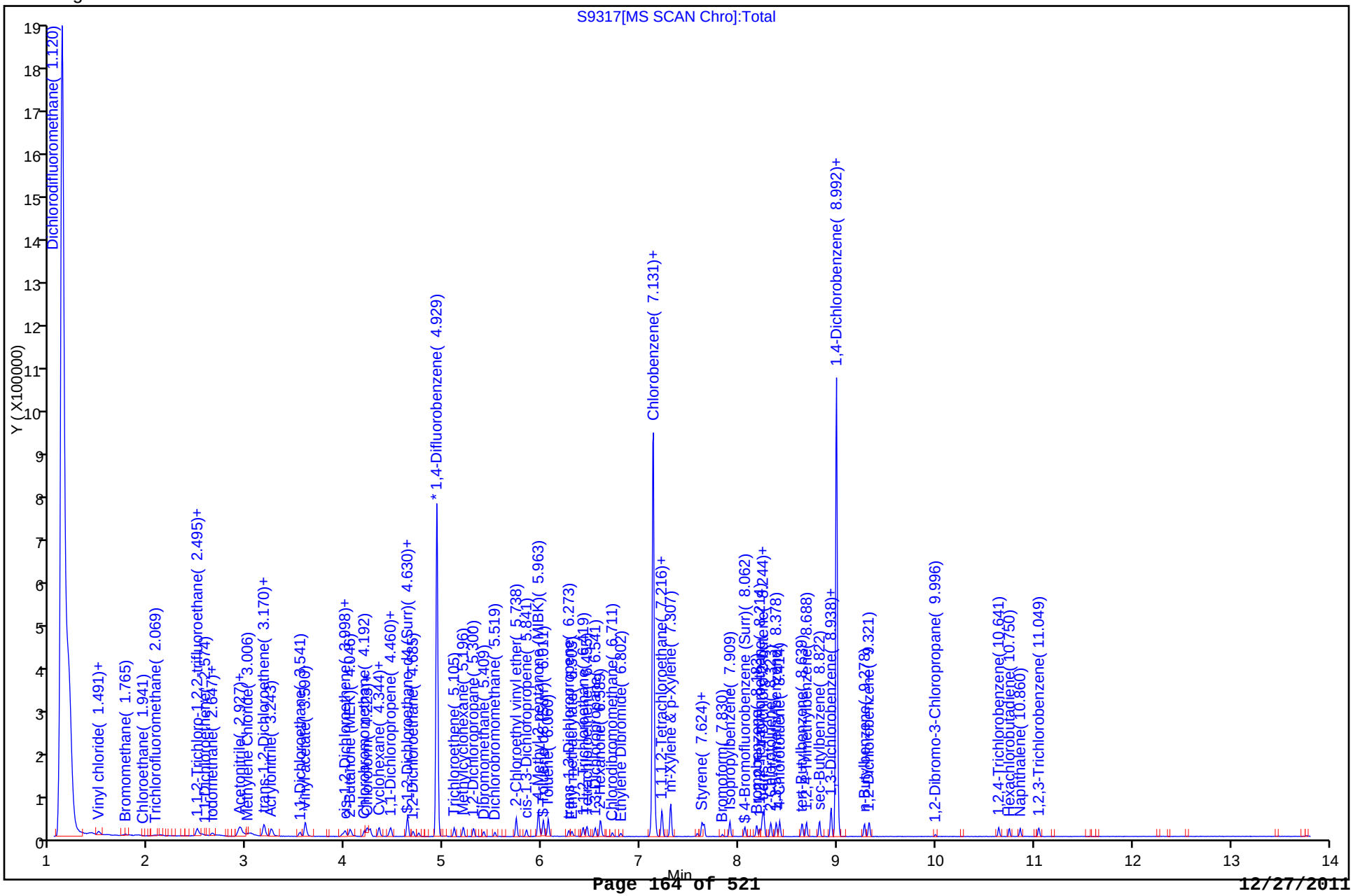
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	56	12447	0.5001	
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	34	6313	0.8369	
S 125 1,2-Dichloroethene, Total	1				0		1.91	
S 126 1,3-Dichloropropene, Total	1				0		1.64	
S 123 Total BTEX	1				0		5.55	
S 124 Xylenes, Total	1				0		2.63	

Report Date: 01-Dec-2011 15:10:28 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9317.D

Injection Date:	01-Dec-2011 11:38:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	3
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9318.D
Lims ID: STD-2 Client ID:
Inject. Date: 01-Dec-2011 12:00:30 Dil. Factor: 1.0000
Sample Type: IC Calib Level: 2
Sample ID: STD-2
Misc. Info.: 480-0007883-004 =480-0007883-004
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 4
Lims Batch ID: 42429 Lims Sample ID: 4
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S-8260.m
Last Update: 01-Dec-2011 15:11:02 Calib Date: 01-Dec-2011 14:36:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9325.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 01-Dec-2011 15:11:02

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	455572	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.131	-0.006	86	227217	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	239324	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	52	14547	5.03	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	77	83551	4.90	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.061	0.001	83	28198	4.92	
10 Dichlorodifluoromethane	85	1.266	1.254	0.012	58	23430	4.88	
12 Chloromethane	50	1.418	1.418	0.0	75	34630	4.77	
13 Vinyl chloride	62	1.510	1.503	0.007	40	26505	4.87	
14 Bromomethane	94	1.802	1.795	0.007	40	10278	4.75	
15 Chloroethane	64	1.887	1.887	0.0	40	13688	5.15	
17 Trichlorofluoromethane	101	2.069	2.069	0.0	50	32476	5.12	
20 Acrolein	56	2.495	2.495	0.0	90	74478	101.9	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.526	2.526	0.0	1	15946	4.98	M
22 1,1-Dichloroethene	96	2.550	2.544	0.006	68	22441	4.80	
23 Acetone	43	2.647	2.647	0.0	90	60260	26.3	
25 Iodomethane	142	2.714	2.702	0.012	34	17467	5.37	
26 Carbon disulfide	76	2.726	2.714	0.012	77	43934	4.73	
27 Methyl acetate	43	2.909	2.903	0.006	96	52269	4.82	
29 Acetonitrile	40	2.933	2.927	0.006	99	88271	209.8	
30 Methylene Chloride	84	3.049	3.049	0.0	70	27506	5.01	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	91	71039	4.73	
34 trans-1,2-Dichloroethene	96	3.176	3.176	0.0	60	22732	5.03	
33 Acrylonitrile	53	3.243	3.243	0.0	100	71355	24.9	
39 1,1-Dichloroethane	63	3.542	3.541	0.001	75	45807	4.96	
37 Vinyl acetate	43	3.590	3.590	0.0	97	232723	23.7	
44 2,2-Dichloropropane	77	3.973	3.973	0.0	84	18395	5.05	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	66	25919	4.75	
43 2-Butanone (MEK)	43	4.046	4.046	0.0	99	91490	24.4	
48 Chlorobromomethane	128	4.192	4.192	0.0	88	13634	4.95	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.217	4.211	0.006	89	59139	23.9	
50 Chloroform	83	4.253	4.253	0.0	67	44815	4.97	
52 Cyclohexane	56	4.345	4.344	0.001	88	36976	4.77	
51 1,1,1-Trichloroethane	97	4.345	4.344	0.001	85	29050	4.92	
55 Carbon tetrachloride	117	4.448	4.448	0.0	72	26746	4.89	
54 1,1-Dichloropropene	75	4.466	4.466	0.0	91	32650	4.79	
57 Benzene	78	4.630	4.630	0.0	95	103970	4.96	
58 1,2-Dichloroethane	62	4.691	4.691	0.0	83	39116	5.06	
62 Trichloroethene	95	5.105	5.105	0.0	88	24940	4.86	
64 Methylcyclohexane	83	5.202	5.196	0.006	88	35640	4.98	
65 1,2-Dichloropropane	63	5.306	5.306	0.0	88	26106	4.89	
67 Dibromomethane	93	5.403	5.403	0.0	83	16315	5.05	
68 Dichlorobromomethane	83	5.519	5.519	0.0	86	29080	4.66	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	92	84023	24.5	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	79	36009	4.53	
73 4-Methyl-2-pentanone (MIBK)	43	5.963	5.957	0.006	97	180309	24.3	
74 Toluene	92	6.060	6.060	0.0	93	66712	4.85	
77 trans-1,3-Dichloropropene	75	6.273	6.273	0.0	87	32785	4.41	
75 Ethyl methacrylate	69	6.303	6.303	0.0	83	30310	3.86	
79 1,1,2-Trichloroethane	83	6.419	6.419	0.0	82	20828	4.86	
81 Tetrachloroethene	166	6.456	6.455	0.001	78	27778	4.92	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	91	43476	4.80	
80 2-Hexanone	43	6.589	6.589	0.0	95	128500	23.6	
83 Chlorodibromomethane	129	6.717	6.717	0.0	77	21499	4.46	
84 Ethylene Dibromide	107	6.802	6.802	0.0	90	24315	4.76	
87 Chlorobenzene	112	7.149	7.149	0.0	85	78238	4.98	
88 Ethylbenzene	91	7.216	7.216	0.0	98	122414	4.86	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	41	23858	4.79	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	96699	9.86	
91 o-Xylene	106	7.624	7.623	0.001	95	42314	4.58	
92 Styrene	104	7.648	7.648	0.0	93	73643	4.73	
95 Bromoform	173	7.837	7.836	0.0	80	12997	3.67	
94 Isopropylbenzene	105	7.910	7.909	0.001	94	110218	4.60	
101 Bromobenzene	156	8.183	8.183	0.0	90	32412	4.84	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	80	36218	4.84	
99 N-Propylbenzene	91	8.238	8.238	0.0	98	143021	4.78	
100 1,2,3-Trichloropropane	110	8.244	8.250	-0.006	48	12288	5.00	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	84	42916	20.0	
103 2-Chlorotoluene	126	8.323	8.323	0.0	94	29854	4.91	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	83	101109	4.89	
105 4-Chlorotoluene	126	8.414	8.414	0.0	97	32239	4.93	
106 tert-Butylbenzene	134	8.646	8.646	0.0	89	21012	4.64	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	68	105082	5.02	
109 sec-Butylbenzene	105	8.816	8.816	0.0	91	123514	4.73	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	74	65169	5.03	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	93	106002	4.85	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	83	68415	4.94	
115 n-Butylbenzene	91	9.278	9.278	0.0	92	90360	4.14	
116 1,2-Dichlorobenzene	146	9.321	9.327	-0.006	93	63293	4.94	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	43	5945	3.70	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	89	35049	4.39	
120 Hexachlorobutadiene	225	10.751	10.750	0.001	86	17699	4.99	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	96	92527	3.68	
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	90	37395	4.91	
S 125 1,2-Dichloroethene, Total	1				0		9.78	
S 126 1,3-Dichloropropene, Total	1				0		8.94	
S 123 Total BTEX	1				0		29.1	
S 124 Xylenes, Total	1				0		14.4	

QC Flag Legend

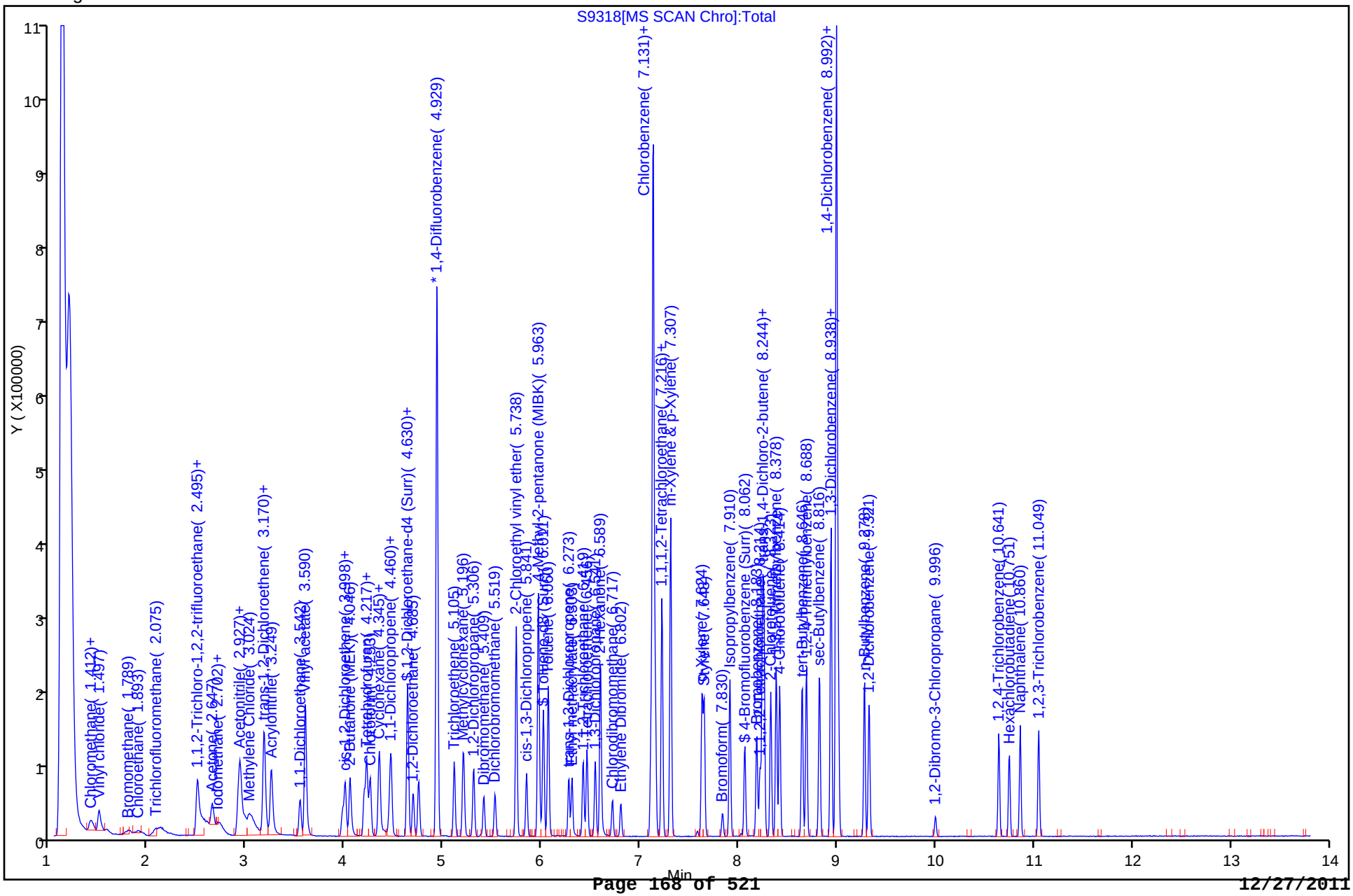
Review Flags
M - Manually Integrated

Report Date: 01-Dec-2011 15:11:02 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9318.D

Injection Date:	01-Dec-2011 12:00:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	4
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



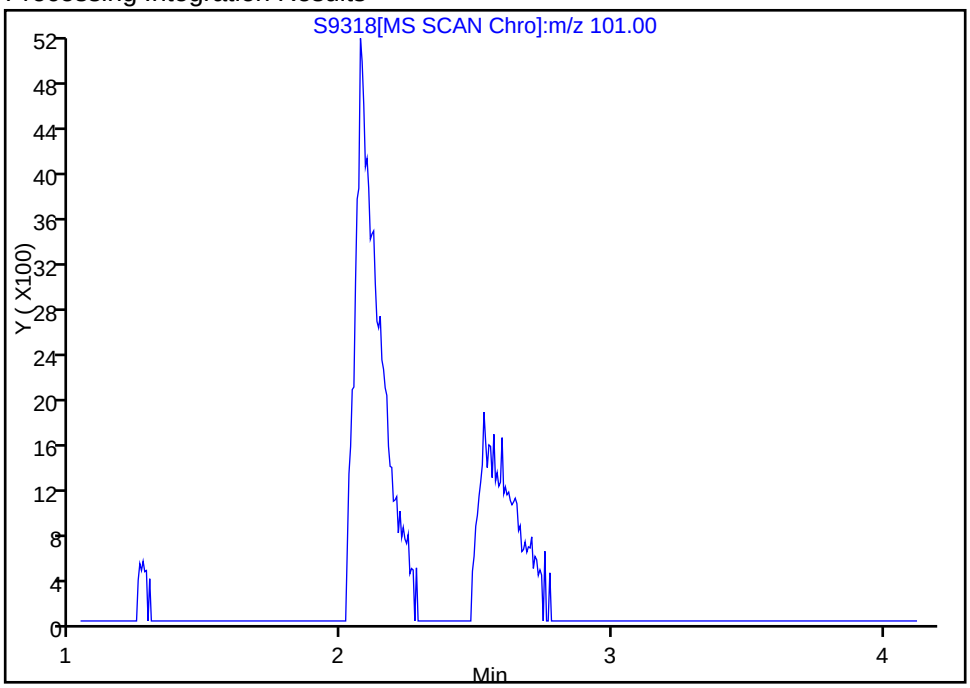
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9318.D		
Injection Date:	01-Dec-2011 12:00:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	4
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

21 1,1,2-Trichloro-1,2,2-trifluoroethane, Signal: 1, m/z: 101.0 Type: quant, RT: 2.53

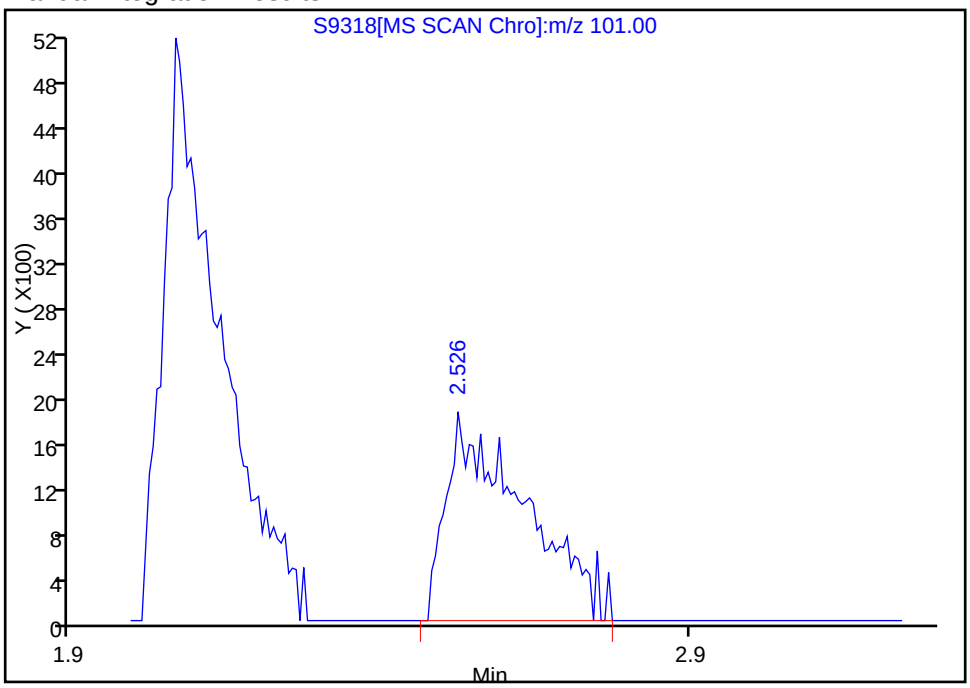
Not Detected
Expected RT: 2.53

Processing Integration Results



Manual Integration Results

RT: 2.53
Response: 15946
Amount: 4.982887



Reviewer: coderd, 01-Dec-2011 15:11:02
Audit Action: Manually Integrated
Audit Reason: Split Peak

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9319.D
Lims ID: STD-3 Client ID:
Inject. Date: 01-Dec-2011 12:22:30 Dil. Factor: 1.0000
Sample Type: IC Calib Level: 3
Sample ID: STD-3
Misc. Info.: 480-0007883-005 =480-0007883-005
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 5
Lims Batch ID: 42429 Lims Sample ID: 5
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S-8260.m
Last Update: 01-Dec-2011 15:11:30 Calib Date: 01-Dec-2011 14:36:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9325.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 01-Dec-2011 15:11:30

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.0	95	468099	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.131	-0.006	86	230740	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	71	245659	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	53	28728	9.67	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	68	165692	9.56	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.061	0.001	88	57583	9.89	
10 Dichlorodifluoromethane	85	1.260	1.254	0.006	73	49657	10.1	
12 Chloromethane	50	1.418	1.418	0.0	87	70371	9.43	
13 Vinyl chloride	62	1.497	1.503	-0.006	85	57005	10.2	
14 Bromomethane	94	1.795	1.795	0.0	71	21301	9.59	
15 Chloroethane	64	1.881	1.887	-0.006	54	27570	10.1	
17 Trichlorofluoromethane	101	2.063	2.069	-0.006	62	66947	10.3	
20 Acrolein	56	2.495	2.495	0.0	96	153274	204.1	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.532	2.532	0.0	0	33037	10.0	M
22 1,1-Dichloroethene	96	2.544	2.544	0.0	76	50672	10.6	
23 Acetone	43	2.647	2.647	0.0	98	116338	49.5	
25 Iodomethane	142	2.702	2.702	0.0	33	33979	10.2	
26 Carbon disulfide	76	2.714	2.714	0.0	93	91380	9.57	
27 Methyl acetate	43	2.909	2.903	0.006	96	104760	9.41	
29 Acetonitrile	40	2.933	2.927	0.006	99	169914	393.1	
30 Methylene Chloride	84	3.030	3.049	-0.019	78	53459	9.48	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	92	151410	9.82	
34 trans-1,2-Dichloroethene	96	3.176	3.176	0.0	56	48116	10.4	
33 Acrylonitrile	53	3.243	3.243	0.0	97	145690	49.5	
39 1,1-Dichloroethane	63	3.535	3.541	-0.006	82	94831	10.0	
37 Vinyl acetate	43	3.590	3.590	0.0	97	502813	49.9	
44 2,2-Dichloropropane	77	3.967	3.973	-0.006	88	36802	9.84	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	69	55214	9.85	
43 2-Butanone (MEK)	43	4.046	4.046	0.0	98	190782	49.6	
48 Chlorobromomethane	128	4.192	4.192	0.0	91	28250	9.98	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.217	4.211	0.006	90	126533	49.8	
50 Chloroform	83	4.253	4.253	0.0	69	90569	9.78	
52 Cyclohexane	56	4.344	4.344	0.0	88	66633	8.37	
51 1,1,1-Trichloroethane	97	4.344	4.344	0.0	90	60623	10.0	
55 Carbon tetrachloride	117	4.448	4.448	0.0	79	55242	9.83	
54 1,1-Dichloropropene	75	4.466	4.466	0.0	93	70787	10.1	
57 Benzene	78	4.630	4.630	0.0	97	217265	10.1	
58 1,2-Dichloroethane	62	4.685	4.691	-0.006	73	79200	9.98	
62 Trichloroethene	95	5.105	5.105	0.0	91	52131	9.88	
64 Methylcyclohexane	83	5.202	5.196	0.006	91	72592	9.88	
65 1,2-Dichloropropane	63	5.300	5.306	-0.006	89	53269	9.71	
67 Dibromomethane	93	5.403	5.403	0.0	87	32985	9.95	
68 Dichlorobromomethane	83	5.519	5.519	0.0	90	63077	9.84	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	91	179706	51.1	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	83	78711	9.65	
73 4-Methyl-2-pentanone (MIBK)	43	5.957	5.957	0.0	98	383206	50.9	
74 Toluene	92	6.060	6.060	0.0	94	140987	10.1	
77 trans-1,3-Dichloropropene	75	6.273	6.273	0.0	89	72655	9.62	
75 Ethyl methacrylate	69	6.303	6.303	0.0	85	68661	8.60	
79 1,1,2-Trichloroethane	83	6.419	6.419	0.0	87	43537	10.0	
81 Tetrachloroethene	166	6.455	6.455	0.0	78	58878	10.3	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	92	91322	9.93	
80 2-Hexanone	43	6.589	6.589	0.0	95	283618	51.2	
83 Chlorodibromomethane	129	6.717	6.717	0.0	83	46777	9.56	
84 Ethylene Dibromide	107	6.796	6.802	-0.006	96	51227	9.87	
87 Chlorobenzene	112	7.149	7.149	0.0	86	161895	10.2	
88 Ethylbenzene	91	7.216	7.216	0.0	99	262001	10.3	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	40	51333	10.2	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	208163	20.9	
91 o-Xylene	106	7.624	7.623	0.001	97	94654	10.1	
92 Styrene	104	7.648	7.648	0.0	95	159705	10.1	
95 Bromoform	173	7.836	7.836	0.0	93	29015	8.06	
94 Isopropylbenzene	105	7.909	7.909	0.0	96	245677	9.99	
101 Bromobenzene	156	8.183	8.183	0.0	90	68663	9.99	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	80	74282	9.67	
99 N-Propylbenzene	91	8.238	8.238	0.0	98	312341	10.2	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	72	25353	10.1	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	87	95979	43.7	
103 2-Chlorotoluene	126	8.323	8.323	0.0	96	62422	10.0	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	92	216503	10.2	
105 4-Chlorotoluene	126	8.414	8.414	0.0	97	67729	10.1	
106 tert-Butylbenzene	134	8.639	8.646	-0.007	88	47166	10.2	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	69	220255	10.3	
109 sec-Butylbenzene	105	8.816	8.816	0.0	93	268947	10.0	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	73	134913	10.1	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	96	230225	10.3	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	91	140842	9.91	
115 n-Butylbenzene	91	9.278	9.278	0.0	94	203364	9.07	
116 1,2-Dichlorobenzene	146	9.321	9.327	-0.006	91	130703	9.94	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	61	12802	7.76	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	90	79146	9.66	
120 Hexachlorobutadiene	225	10.750	10.750	0.0	91	36603	10.0	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	97	226574	8.78	
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	93	79489	10.2	
S 125 1,2-Dichloroethene, Total	1				0		20.2	
S 126 1,3-Dichloropropene, Total	1				0		19.3	
S 123 Total BTEX	1				0		61.4	
S 124 Xylenes, Total	1				0		31.0	

QC Flag Legend

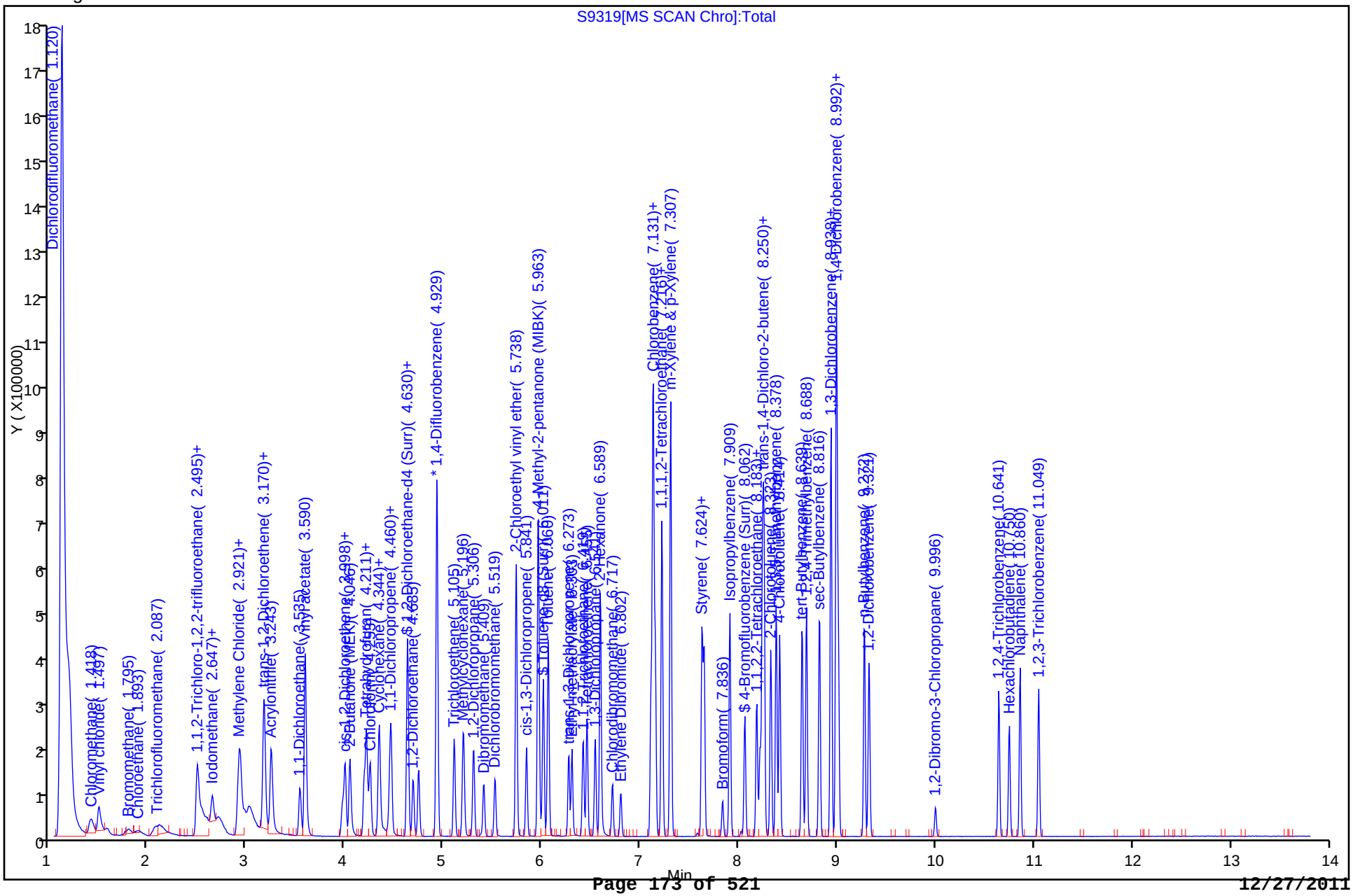
Review Flags
M - Manually Integrated

Report Date: 01-Dec-2011 15:11:30 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9319.D

Injection Date:	01-Dec-2011 12:22:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	5
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



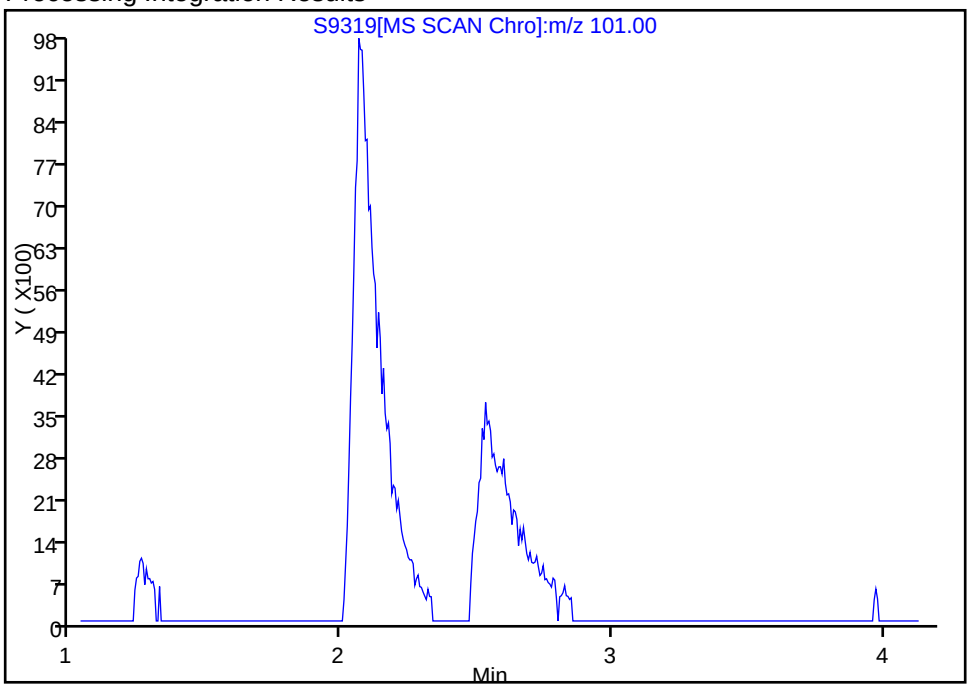
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9319.D		
Injection Date:	01-Dec-2011 12:22:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	5
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

21 1,1,2-Trichloro-1,2,2-trifluoroethane, Signal: 1, m/z: 101.0 Type: quant, RT: 2.53

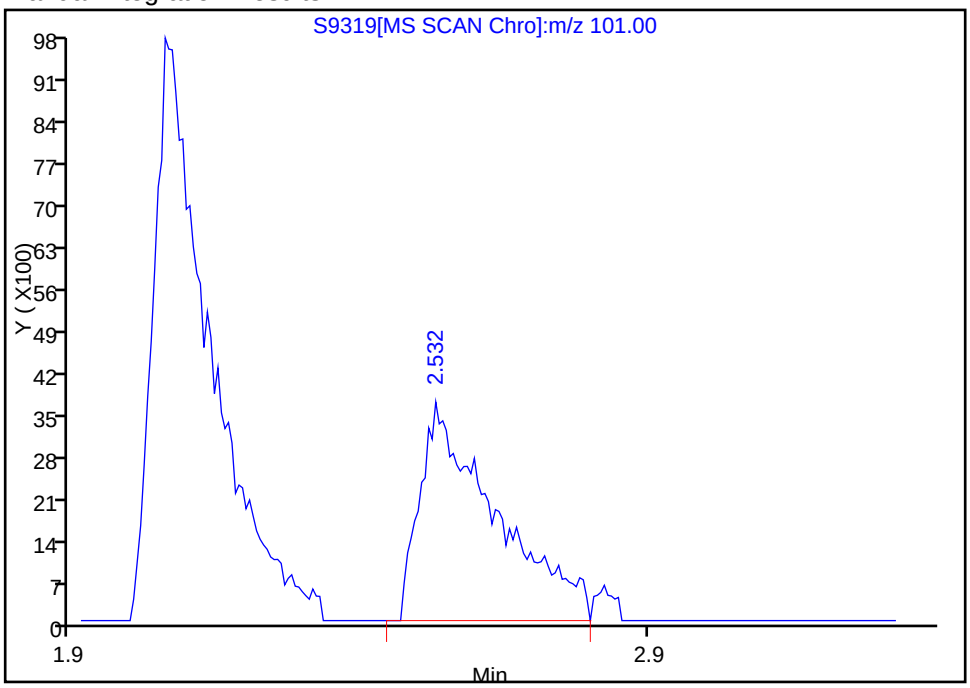
Not Detected
Expected RT: 2.53

Processing Integration Results



Manual Integration Results

RT: 2.53
Response: 33037
Amount: 10.044809



Reviewer: coderd, 01-Dec-2011 15:11:30
Audit Action: Manually Integrated
Audit Reason: Assign Peak

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9320.D
Lims ID: STD-4 Client ID:
Inject. Date: 01-Dec-2011 12:44:30 Dil. Factor: 1.0000
Sample Type: ICIS Calib Level: 4
Sample ID: STD-4
Misc. Info.: 480-0007883-006 =480-0007883-006
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 6
Lims Batch ID: 42429 Lims Sample ID: 6
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S-8260.m
Last Update: 01-Dec-2011 15:09:22 Calib Date: 01-Dec-2011 14:36:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9325.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 01-Dec-2011 15:06:33

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.928	4.928	0.0	95	485964	25.0	
* 2 Chlorobenzene-d5	82	7.131	7.131	0.0	85	240087	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	251431	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	53	73590	23.9	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	57	461361	25.6	
$ 6 4-Bromofluorobenzene (Surr)	174	8.061	8.061	0.0	85	145224	24.0	
10 Dichlorodifluoromethane	85	1.254	1.254	0.0	83	131301	25.6	
12 Chloromethane	50	1.418	1.418	0.0	89	204331	26.4	
13 Vinyl chloride	62	1.503	1.503	0.0	66	150119	25.9	
14 Bromomethane	94	1.795	1.795	0.0	82	60989	26.4	
15 Chloroethane	64	1.887	1.887	0.0	86	70763	25.0	
17 Trichlorofluoromethane	101	2.069	2.069	0.0	78	175404	25.9	
20 Acrolein	56	2.495	2.495	0.0	96	415363	532.7	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.532	2.532	0.0	41	93334	26.9	
22 1,1-Dichloroethene	96	2.544	2.544	0.0	81	135447	27.2	
23 Acetone	43	2.647	2.647	0.0	99	306432	125.5	
25 Iodomethane	142	2.714	2.714	0.0	44	87593	24.8	
26 Carbon disulfide	76	2.714	2.714	0.0	95	265947	26.8	
27 Methyl acetate	43	2.903	2.903	0.0	98	316536	27.4	
29 Acetonitrile	40	2.927	2.927	0.0	99	468142	1043.3	
30 Methylene Chloride	84	3.030	3.030	0.0	85	137824	25.0	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	92	422586	26.4	
34 trans-1,2-Dichloroethene	96	3.176	3.176	0.0	58	122586	25.5	
33 Acrylonitrile	53	3.243	3.243	0.0	97	390392	127.8	
39 1,1-Dichloroethane	63	3.541	3.541	0.0	85	243778	24.7	
37 Vinyl acetate	43	3.590	3.590	0.0	97	1400987	133.9	
44 2,2-Dichloropropane	77	3.973	3.973	0.0	92	98925	25.5	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	69	145460	25.0	
43 2-Butanone (MEK)	43	4.046	4.046	0.0	98	515677	129.0	
48 Chlorobromomethane	128	4.192	4.192	0.0	94	72478	24.7	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.211	4.211	0.0	91	350267	132.7	
50 Chloroform	83	4.253	4.253	0.0	69	235598	24.5	
52 Cyclohexane	56	4.344	4.344	0.0	89	212254	25.7	
51 1,1,1-Trichloroethane	97	4.344	4.344	0.0	92	160586	25.5	
55 Carbon tetrachloride	117	4.448	4.448	0.0	80	150209	25.8	
54 1,1-Dichloropropene	75	4.466	4.466	0.0	94	186643	25.7	
57 Benzene	78	4.630	4.630	0.0	97	560824	25.1	
58 1,2-Dichloroethane	62	4.691	4.691	0.0	73	202975	24.6	
62 Trichloroethene	95	5.105	5.105	0.0	94	138418	25.3	
64 Methylcyclohexane	83	5.196	5.196	0.0	92	205244	26.9	
65 1,2-Dichloropropane	63	5.306	5.306	0.0	92	144030	25.3	
67 Dibromomethane	93	5.403	5.403	0.0	86	86636	25.2	
68 Dichlorobromomethane	83	5.519	5.519	0.0	92	170456	25.6	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	91	507583	139.0	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	90	224157	25.7	
73 4-Methyl-2-pentanone (MIBK)	43	5.957	5.957	0.0	98	1068255	136.3	
74 Toluene	92	6.060	6.060	0.0	97	366081	25.2	
77 trans-1,3-Dichloropropene	75	6.273	6.273	0.0	90	211882	27.0	
75 Ethyl methacrylate	69	6.303	6.303	0.0	73	207930	26.8	
79 1,1,2-Trichloroethane	83	6.419	6.419	0.0	87	113428	25.1	
81 Tetrachloroethene	166	6.455	6.455	0.0	79	147270	24.9	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	93	241929	25.3	
80 2-Hexanone	43	6.589	6.589	0.0	98	802284	139.3	
83 Chlorodibromomethane	129	6.717	6.717	0.0	88	133808	26.3	
84 Ethylene Dibromide	107	6.802	6.802	0.0	98	139017	25.7	
87 Chlorobenzene	112	7.149	7.149	0.0	85	409498	24.7	
88 Ethylbenzene	91	7.216	7.216	0.0	99	686255	25.8	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	42	135150	25.7	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	543983	52.5	
91 o-Xylene	106	7.623	7.623	0.0	97	260797	26.7	
92 Styrene	104	7.648	7.648	0.0	95	446491	27.1	
95 Bromoform	173	7.836	7.836	0.0	96	85891	22.9	
94 Isopropylbenzene	105	7.909	7.909	0.0	96	675634	26.8	
101 Bromobenzene	156	8.183	8.183	0.0	93	179099	25.5	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	80	202834	25.8	
99 N-Propylbenzene	91	8.238	8.238	0.0	78	848267	27.0	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	71	65705	25.5	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	87	288110	128.1	
103 2-Chlorotoluene	126	8.323	8.323	0.0	96	165944	26.0	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	85	581460	26.8	
105 4-Chlorotoluene	126	8.414	8.414	0.0	98	177034	25.7	
106 tert-Butylbenzene	134	8.646	8.646	0.0	90	129882	27.3	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	70	591789	26.9	
109 sec-Butylbenzene	105	8.816	8.816	0.0	94	733490	26.8	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	72	350121	25.7	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	94	626639	27.3	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	94	358758	24.7	
115 n-Butylbenzene	91	9.278	9.278	0.0	94	568785	24.8	
116 1,2-Dichlorobenzene	146	9.327	9.327	0.0	93	341231	25.3	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	72	39064	23.1	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	93	226806	27.0	
120 Hexachlorobutadiene	225	10.750	10.750	0.0	95	96858	25.6	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	97	679867	25.4	
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	93	221577	27.3	
S 125 1,2-Dichloroethene, Total	1				0		50.4	
S 126 1,3-Dichloropropene, Total	1				0		52.6	
S 123 Total BTEX	1				0		155.3	
S 124 Xylenes, Total	1				0		79.2	

Report Date: 01-Dec-2011 15:09:22 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9320.D

Injection Date: 01-Dec-2011 12:44:30 Limit Group: MV - 8260B ICAL

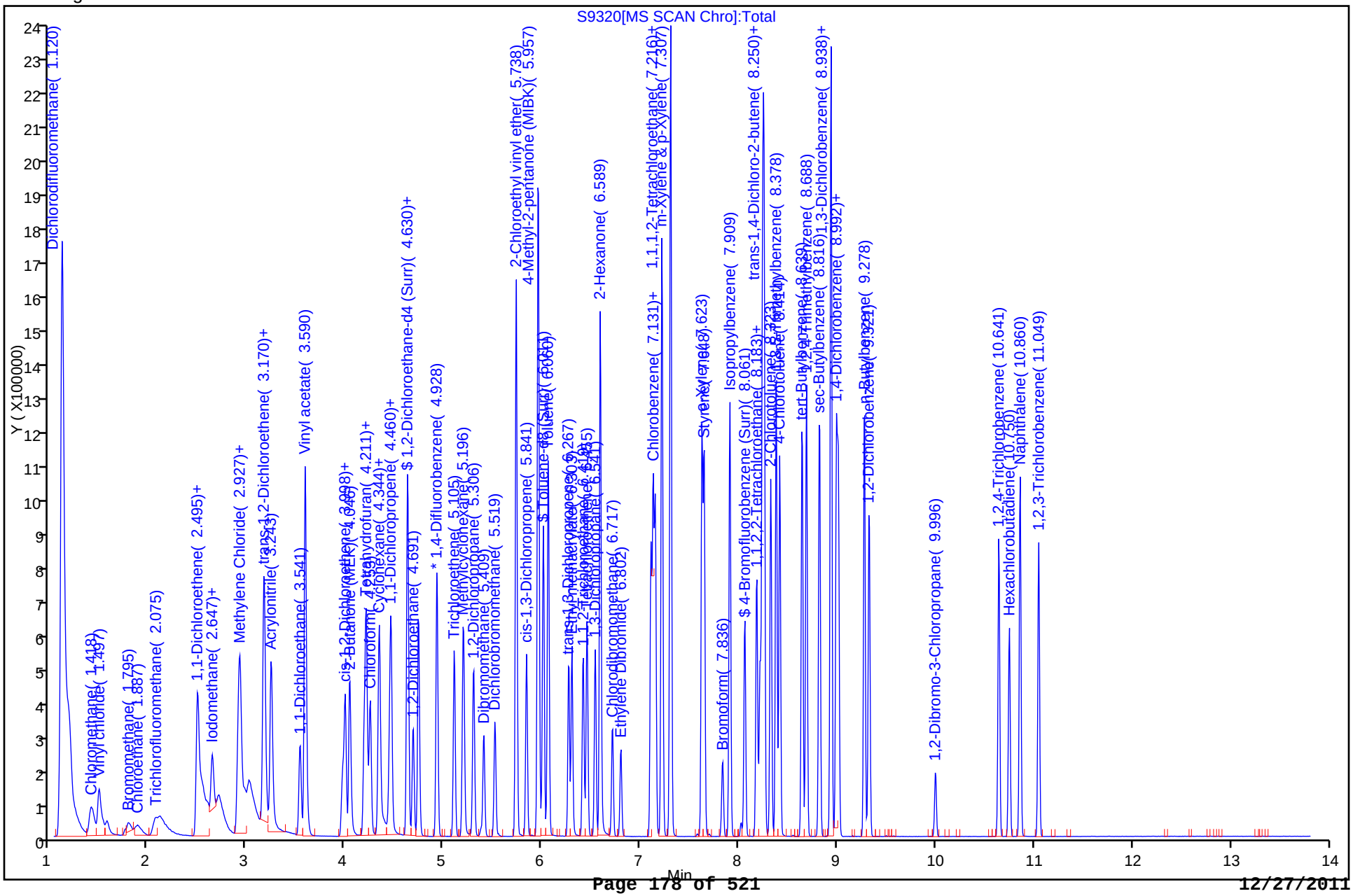
Client ID: Instrument ID: HP5973S

Lims Batch ID: 42429 Lims Sample ID: 6

Operator ID: DHC

Column Type: ZB-624 Column Dia: 0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9321.D
Lims ID: STD-5 Client ID:
Inject. Date: 01-Dec-2011 13:07:30 Dil. Factor: 1.0000
Sample Type: IC Calib Level: 5
Sample ID: STD-5
Misc. Info.: 480-0007883-007 =480-0007883-007
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 7
Lims Batch ID: 42429 Lims Sample ID: 7
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S-8260.m
Last Update: 01-Dec-2011 15:11:37 Calib Date: 01-Dec-2011 14:36:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9325.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 01-Dec-2011 15:11:37

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	498404	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.131	-0.006	86	247544	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	256575	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.631	4.630	0.001	53	151770	48.0	
$ 5 Toluene-d8 (Surr)	98	6.012	6.011	0.001	78	915909	49.3	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.061	0.001	84	309920	49.6	
10 Dichlorodifluoromethane	85	1.260	1.254	0.006	87	283918	54.0	
12 Chloromethane	50	1.418	1.418	0.0	89	426659	53.7	
13 Vinyl chloride	62	1.504	1.503	0.001	67	319006	53.6	
14 Bromomethane	94	1.802	1.795	0.007	89	131301	55.5	
15 Chloroethane	64	1.887	1.887	0.0	94	154286	53.1	
17 Trichlorofluoromethane	101	2.069	2.069	0.0	83	370575	53.4	
20 Acrolein	56	2.495	2.495	0.0	99	724143	905.5	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.526	2.532	-0.006	44	164223	46.9	
22 1,1-Dichloroethene	96	2.556	2.544	0.012	81	272518	53.3	
23 Acetone	43	2.647	2.647	0.0	99	589125	235.2	
25 Iodomethane	142	2.702	2.702	0.0	47	175661	49.4	
26 Carbon disulfide	76	2.714	2.714	0.0	87	545683	53.7	
27 Methyl acetate	43	2.903	2.903	0.0	98	584372	49.3	
29 Acetonitrile	40	2.927	2.927	0.0	99	920849	2001.0	
30 Methylene Chloride	84	3.031	3.049	-0.018	85	280535	46.7	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	91	855450	52.1	
34 trans-1,2-Dichloroethene	96	3.177	3.176	0.001	57	257436	52.1	
33 Acrylonitrile	53	3.243	3.243	0.0	98	777215	248.0	
39 1,1-Dichloroethane	63	3.536	3.541	-0.005	85	505546	50.0	
37 Vinyl acetate	43	3.590	3.590	0.0	97	2866557	267.2	
44 2,2-Dichloropropane	77	3.974	3.973	0.001	94	205262	51.5	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	70	306130	51.3	
43 2-Butanone (MEK)	43	4.040	4.046	-0.006	98	1032569	251.9	
48 Chlorobromomethane	128	4.193	4.192	0.001	93	148927	49.4	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.211	4.211	0.0	91	688705	254.3	
50 Chloroform	83	4.253	4.253	0.0	69	483726	49.1	
52 Cyclohexane	56	4.345	4.344	0.001	89	432018	51.0	
51 1,1,1-Trichloroethane	97	4.345	4.344	0.001	92	332641	51.5	
55 Carbon tetrachloride	117	4.448	4.448	0.0	80	319202	53.4	
54 1,1-Dichloropropene	75	4.466	4.466	0.0	93	391147	52.4	
57 Benzene	78	4.631	4.630	0.001	96	1154590	50.3	
58 1,2-Dichloroethane	62	4.685	4.691	-0.006	72	418786	49.6	
62 Trichloroethene	95	5.105	5.105	0.0	93	284551	50.7	
64 Methylcyclohexane	83	5.196	5.196	0.0	93	407252	52.1	
65 1,2-Dichloropropane	63	5.300	5.306	-0.006	92	300812	51.5	
67 Dibromomethane	93	5.403	5.403	0.0	87	179478	50.8	
68 Dichlorobromomethane	83	5.519	5.519	0.0	93	365756	53.6	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	91	1020486	272.4	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	89	481123	55.4	
73 4-Methyl-2-pentanone (MIBK)	43	5.957	5.957	0.0	97	2100822	260.0	
74 Toluene	92	6.060	6.060	0.0	95	759884	50.7	
77 trans-1,3-Dichloropropene	75	6.273	6.273	0.0	90	457385	56.4	
75 Ethyl methacrylate	69	6.304	6.303	0.001	84	433450	50.6	
79 1,1,2-Trichloroethane	83	6.413	6.419	-0.006	88	234736	50.3	
81 Tetrachloroethene	166	6.456	6.455	0.001	79	305704	49.7	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	92	505985	51.3	
80 2-Hexanone	43	6.589	6.589	0.0	95	1589987	267.7	
83 Chlorodibromomethane	129	6.717	6.717	0.0	87	291944	55.6	
84 Ethylene Dibromide	107	6.802	6.802	0.0	97	291501	52.3	
87 Chlorobenzene	112	7.149	7.149	0.0	85	847617	49.6	
88 Ethylbenzene	91	7.216	7.216	0.0	98	1426932	52.1	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	41	284036	52.4	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	1111317	104.0	
91 o-Xylene	106	7.624	7.623	0.001	98	545743	54.2	
92 Styrene	104	7.648	7.648	0.0	96	941975	55.5	
95 Bromoform	173	7.837	7.836	0.001	97	196221	50.8	
94 Isopropylbenzene	105	7.910	7.909	0.001	96	1426271	55.5	
101 Bromobenzene	156	8.183	8.183	0.0	92	372610	51.9	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	80	422222	52.6	
99 N-Propylbenzene	91	8.238	8.238	0.0	78	1756216	54.8	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	76	132290	50.2	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	86	577882	251.8	
103 2-Chlorotoluene	126	8.323	8.323	0.0	96	343318	52.7	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	85	1206332	54.4	
105 4-Chlorotoluene	126	8.415	8.414	0.001	98	365521	52.1	
106 tert-Butylbenzene	134	8.646	8.646	0.0	90	271847	56.0	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	69	1232663	54.9	
109 sec-Butylbenzene	105	8.822	8.816	0.006	94	1556014	55.6	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	71	702351	50.5	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	95	1313357	56.1	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	94	731350	49.3	
115 n-Butylbenzene	91	9.278	9.278	0.0	95	1206896	51.5	
116 1,2-Dichlorobenzene	146	9.327	9.327	0.0	93	697910	50.8	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	81	86797	50.4	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	90	479756	56.1	
120 Hexachlorobutadiene	225	10.751	10.750	0.001	95	205728	53.0	

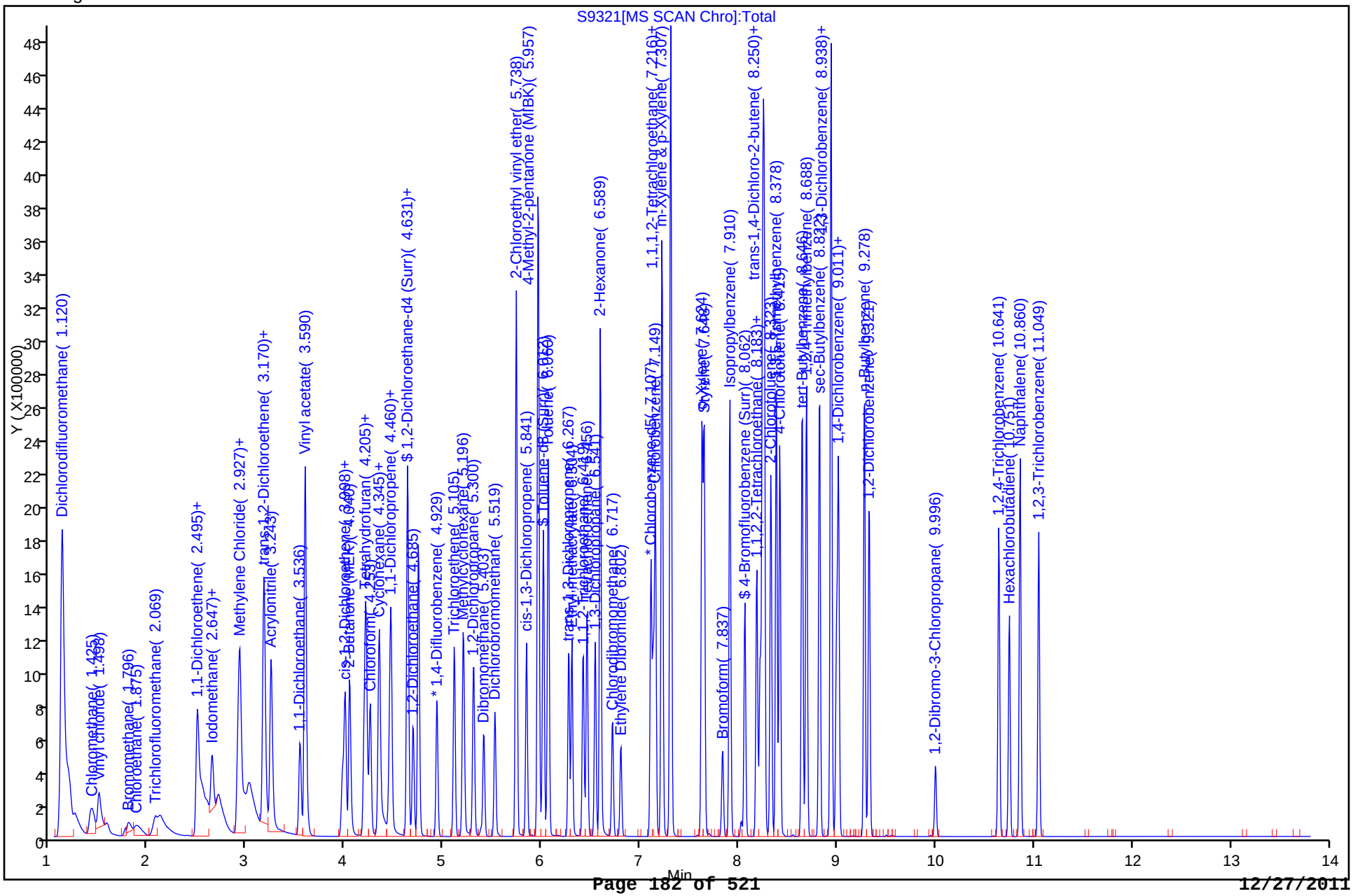
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	97	1456129	53.0	
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	93	455144	54.6	
S 125 1,2-Dichloroethene, Total	1				0		103.4	
S 126 1,3-Dichloropropene, Total	1				0		111.8	
S 123 Total BTEX	1				0		311.4	
S 124 Xylenes, Total	1				0		158.2	

Report Date: 01-Dec-2011 15:11:37 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9321.D

Injection Date:	01-Dec-2011 13:07:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	7
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9322.D
Lims ID: STD-6 Client ID:
Inject. Date: 01-Dec-2011 13:29:30 Dil. Factor: 1.0000
Sample Type: IC Calib Level: 6
Sample ID: STD-6
Misc. Info.: 480-0007883-008 =480-0007883-008
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 8
Lims Batch ID: 42429 Lims Sample ID: 8
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S-8260.m
Last Update: 01-Dec-2011 15:12:36 Calib Date: 01-Dec-2011 14:36:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9325.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 01-Dec-2011 15:12:36

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.0	95	514903	25.0	
* 2 Chlorobenzene-d5	82	7.131	7.131	0.0	85	254398	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	84	257664	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	53	305006	93.4	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	48	1825030	95.5	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.061	0.001	87	620514	96.7	
10 Dichlorodifluoromethane	85	1.260	1.254	0.006	88	574598	105.8	
12 Chloromethane	50	1.424	1.418	0.006	89	872516	106.3	
13 Vinyl chloride	62	1.503	1.503	0.0	67	660364	107.4	
14 Bromomethane	94	1.795	1.795	0.0	92	286854	117.4	
15 Chloroethane	64	1.887	1.887	0.0	95	323109	107.6	
17 Trichlorofluoromethane	101	2.069	2.069	0.0	84	745694	104.1	
20 Acrolein	56	2.495	2.495	0.0	97	1442277	1745.7	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.538	2.532	0.006	45	367240	101.5	
22 1,1-Dichloroethene	96	2.550	2.544	0.006	87	570688	108.0	
23 Acetone	43	2.647	2.647	0.0	99	1181876	456.8	
25 Iodomethane	142	2.702	2.702	0.0	44	368829	100.3	
26 Carbon disulfide	76	2.714	2.714	0.0	98	1177927	112.2	
27 Methyl acetate	43	2.903	2.903	0.0	98	1133510	92.5	
29 Acetonitrile	40	2.927	2.927	0.0	99	1678383	3530.2	
30 Methylene Chloride	84	3.024	3.049	-0.025	86	583775	94.1	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	90	1780753	105.0	
34 trans-1,2-Dichloroethene	96	3.176	3.176	0.0	57	517724	101.4	
33 Acrylonitrile	53	3.243	3.243	0.0	98	1577549	487.2	
39 1,1-Dichloroethane	63	3.535	3.541	-0.006	85	1040642	99.7	
37 Vinyl acetate	43	3.590	3.590	0.0	97	5904381	532.8	
44 2,2-Dichloropropane	77	3.973	3.973	0.0	92	419916	102.0	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	70	620397	100.6	
43 2-Butanone (MEK)	43	4.040	4.046	-0.006	98	2118759	500.4	
48 Chlorobromomethane	128	4.192	4.192	0.0	93	303935	97.6	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.205	4.211	-0.006	90	1396032	499.0	
50 Chloroform	83	4.253	4.253	0.0	69	969089	95.1	
52 Cyclohexane	56	4.344	4.344	0.0	87	880219	100.5	
51 1,1,1-Trichloroethane	97	4.344	4.344	0.0	92	672888	100.9	
55 Carbon tetrachloride	117	4.448	4.448	0.0	80	653583	105.8	
54 1,1-Dichloropropene	75	4.466	4.466	0.0	94	799765	103.8	
57 Benzene	78	4.630	4.630	0.0	97	2326314	98.2	
58 1,2-Dichloroethane	62	4.691	4.691	0.0	73	838370	96.0	
62 Trichloroethene	95	5.105	5.105	0.0	94	586483	101.1	
64 Methylcyclohexane	83	5.196	5.196	0.0	92	828949	102.6	
65 1,2-Dichloropropane	63	5.306	5.306	0.0	93	616345	102.1	
67 Dibromomethane	93	5.403	5.403	0.0	88	367241	100.7	
68 Dichlorobromomethane	83	5.519	5.519	0.0	93	756410	107.3	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	91	2055503	531.2	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	91	1000189	111.4	
73 4-Methyl-2-pentanone (MIBK)	43	5.963	5.957	0.006	97	4097888	493.5	
74 Toluene	92	6.066	6.060	0.006	94	1531098	99.5	
77 trans-1,3-Dichloropropene	75	6.273	6.273	0.0	90	959517	115.2	
75 Ethyl methacrylate	69	6.303	6.303	0.0	72	899682	102.3	
79 1,1,2-Trichloroethane	83	6.419	6.419	0.0	87	479040	99.9	
81 Tetrachloroethene	166	6.455	6.455	0.0	86	612514	96.9	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	92	1019486	100.6	
80 2-Hexanone	43	6.589	6.589	0.0	81	3116281	510.5	
83 Chlorodibromomethane	129	6.717	6.717	0.0	88	606835	112.5	
84 Ethylene Dibromide	107	6.802	6.802	0.0	99	595677	104.1	
87 Chlorobenzene	112	7.149	7.149	0.0	85	1703311	96.9	
88 Ethylbenzene	91	7.216	7.216	0.0	99	2853642	101.3	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	40	563884	101.1	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	99	2186879	199.1	
91 o-Xylene	106	7.624	7.623	0.001	97	1097330	106.1	
92 Styrene	104	7.648	7.648	0.0	96	1888425	108.3	
95 Bromoform	173	7.836	7.836	0.0	97	416599	104.9	
94 Isopropylbenzene	105	7.909	7.909	0.0	96	2885189	111.8	
101 Bromobenzene	156	8.183	8.183	0.0	93	733987	101.8	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	79	832706	103.4	
99 N-Propylbenzene	91	8.238	8.238	0.0	77	3445570	107.0	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	68	252640	95.5	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	86	1171776	508.4	
103 2-Chlorotoluene	126	8.329	8.323	0.006	96	678444	103.7	
102 1,3,5-Trimethylbenzene	105	8.384	8.378	0.006	84	2393677	107.6	
105 4-Chlorotoluene	126	8.420	8.414	0.006	97	729115	103.5	
106 tert-Butylbenzene	134	8.646	8.646	0.0	92	541148	111.1	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	69	2436939	108.2	
109 sec-Butylbenzene	105	8.822	8.816	0.006	94	3084361	109.8	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	71	1344435	96.3	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	95	2546341	108.3	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	94	1432989	96.2	
115 n-Butylbenzene	91	9.278	9.278	0.0	95	2371077	100.8	
116 1,2-Dichlorobenzene	146	9.327	9.327	0.0	92	1369068	99.2	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	83	182137	105.3	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	90	909679	105.8	
120 Hexachlorobutadiene	225	10.750	10.750	0.0	96	362427	90.3	

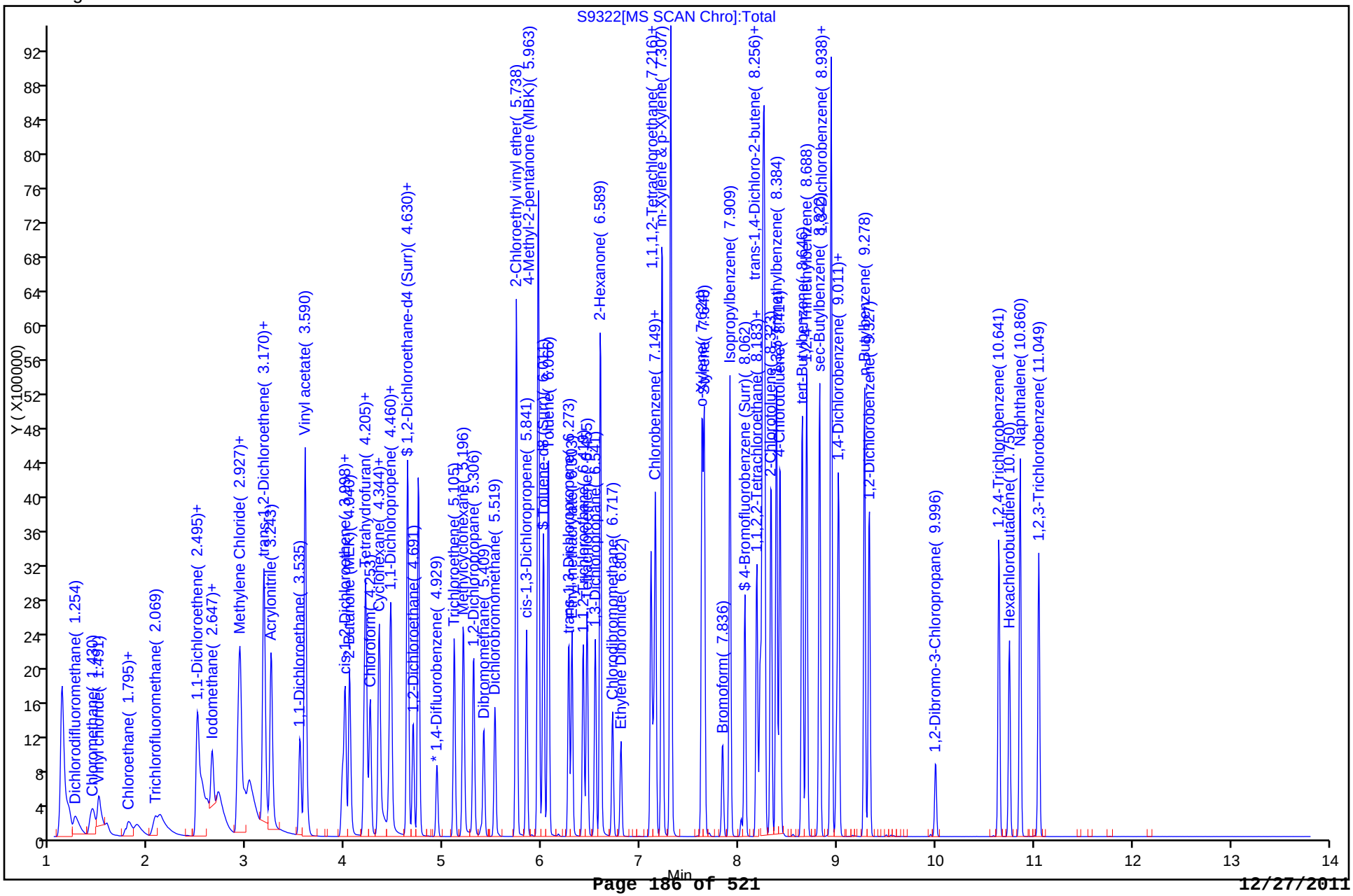
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	97	2830484	99.7	
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	93	843712	98.0	
S 125 1,2-Dichloroethene, Total	1				0		202.0	
S 126 1,3-Dichloropropene, Total	1				0		226.7	
S 123 Total BTEX	1				0		604.2	
S 124 Xylenes, Total	1				0		305.3	

Report Date: 01-Dec-2011 15:12:36 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9322.D

Injection Date:	01-Dec-2011 13:29:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	8
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-43413/2 Calibration Date: 12/08/2011 09:35

Instrument ID: HP5973S Calib Start Date: 12/01/2011 12:22

GC Column: ZB-624 (60) ID: 0.25(mm) Calib End Date: 12/01/2011 13:29

Lab File ID: S9488.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.2636	0.2570		24.4	25.0	-2.5	50.0
Chloromethane	Ave	0.3986	0.3870	0.1000	24.3	25.0	-2.9	50.0
Vinyl chloride	Ave	0.2986	0.3355		28.1	25.0	12.4	20.0
Bromomethane	Ave	0.1186	0.1148		24.2	25.0	-3.2	50.0
Chloroethane	Ave	0.1458	0.1915		32.8	25.0	31.3	50.0
Trichlorofluoromethane	Ave	0.3479	0.4631		33.3	25.0	33.1	50.0
Acrolein	Ave	0.0401	0.0419		522	500	4.4	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Lin1F		0.1650		23.5	25.0	-6.0	50.0
1,1-Dichloroethene	Ave	0.2564	0.2893	0.1000	28.2	25.0	12.8	20.0
Acetone	Ave	0.1256	0.1337		133	125	6.4	50.0
Iodomethane	Lin1F		0.2041		28.6	25.0	14.4	50.0
Carbon disulfide	Ave	0.5098	0.3547		17.4	25.0	-30.4	50.0
Methyl acetate	Ave	0.5947	0.4945		20.8	25.0	-16.8	50.0
Acetonitrile	Ave	0.0231	0.0259		1120	1000	12.2	50.0
Methylene Chloride	Ave	0.3011	0.3162		26.2	25.0	5.0	50.0
Methyl tert-butyl ether	Ave	0.8237	0.6977		21.2	25.0	-15.3	50.0
trans-1,2-Dichloroethene	Ave	0.2478	0.3084		31.1	25.0	24.5	50.0
Acrylonitrile	Ave	0.1572	0.1411		112	125	-10.2	50.0
1,1-Dichloroethane	Ave	0.5068	0.5529		27.3	25.0	9.1	50.0
Vinyl acetate	Ave	0.5381	0.4980		116	125	-7.5	50.0
2,2-Dichloropropane	Ave	0.1998	0.2599		32.5	25.0	30.1	50.0
cis-1,2-Dichloroethene	Ave	0.2994	0.3295		27.5	25.0	10.0	50.0
2-Butanone (MEK)	Ave	0.2056	0.1896		115	125	-7.8	50.0
Bromochloromethane	Ave	0.1511	0.1680		27.8	25.0	11.1	50.0
Tetrahydrofuran	Ave	0.1358	0.1218		112	125	-10.3	50.0
Chloroform	Ave	0.4946	0.5545		28.0	25.0	12.1	20.0
1,1,1-Trichloroethane	Ave	0.3238	0.4085		31.5	25.0	26.1	50.0
Cyclohexane	Lin1F		0.3328		19.6	25.0	-21.6	50.0
Carbon tetrachloride	Ave	0.3000	0.4149		34.6	25.0	38.3	50.0
1,1-Dichloropropene	Ave	0.3741	0.4220		28.2	25.0	12.8	50.0
Benzene	Ave	1.150	1.275		27.7	25.0	10.8	50.0
1,2-Dichloroethane	Ave	0.4238	0.4832		28.5	25.0	14.0	50.0
Trichloroethene	Ave	0.2818	0.3130		27.8	25.0	11.1	50.0
Methylcyclohexane	Ave	0.3924	0.3376		21.5	25.0	-14.0	50.0
1,2-Dichloropropane	Ave	0.2930	0.3133		26.7	25.0	6.9	20.0
Dibromomethane	Ave	0.1771	0.2002		28.3	25.0	13.0	50.0
Bromodichloromethane	Ave	0.3423	0.4137		30.2	25.0	20.9	50.0
2-Chloroethyl vinyl ether	Ave	0.1879	0.1379		91.7	125	-26.6	50.0
cis-1,3-Dichloropropene	Ave	0.4358	0.4992		28.6	25.0	14.6	50.0
4-Methyl-2-pentanone (MIBK)	Ave	0.8161	0.7093		109	125	-13.1	50.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-43413/2 Calibration Date: 12/08/2011 09:35

Instrument ID: HP5973S Calib Start Date: 12/01/2011 12:22

GC Column: ZB-624 (60) ID: 0.25(mm) Calib End Date: 12/01/2011 13:29

Lab File ID: S9488.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Toluene	Ave	1.513	1.626		26.9	25.0	7.5	20.0
trans-1,3-Dichloropropene	Ave	0.8184	0.9148		27.9	25.0	11.8	50.0
Ethyl methacrylate	Lin1F		0.6792		19.6	25.0	-21.6	50.0
1,1,2-Trichloroethane	Ave	0.4712	0.4954		26.3	25.0	5.1	50.0
Tetrachloroethene	Ave	0.6211	0.6805		27.4	25.0	9.6	50.0
1,3-Dichloropropane	Ave	0.996	1.046		26.3	25.0	5.1	50.0
2-Hexanone	Ave	0.5999	0.5295		110	125	-11.7	50.0
Dibromochloromethane	Ave	0.5300	0.6289		29.7	25.0	18.7	50.0
1,2-Dibromoethane	Ave	0.5624	0.5919		26.3	25.0	5.2	50.0
Chlorobenzene	Ave	1.727	1.855	0.3000	26.8	25.0	7.4	50.0
Ethylbenzene	Ave	2.769	3.059		27.6	25.0	10.5	20.0
1,1,1,2-Tetrachloroethane	Ave	0.5479	0.6272		28.6	25.0	14.5	50.0
m-Xylene & p-Xylene	Ave	1.079	1.213		56.2	50.0	12.4	50.0
o-Xylene	Ave	1.016	1.140		28.0	25.0	12.2	50.0
Styrene	Ave	1.714	1.990		29.0	25.0	16.1	50.0
Bromoform	Lin1F		0.4129	0.1000	26.5	25.0	6.0	50.0
Isopropylbenzene	Ave	2.503	2.836		28.3	25.0	13.3	50.0
Bromobenzene	Ave	0.6997	0.7417		26.5	25.0	6.0	50.0
1,1,2,2-Tetrachloroethane	Ave	0.7817	0.8324	0.3000	26.6	25.0	6.5	50.0
N-Propylbenzene	Ave	3.125	3.546		28.4	25.0	13.5	50.0
1,2,3-Trichloropropane	Ave	0.2566	0.2795		27.2	25.0	8.9	50.0
trans-1,4-Dichloro-2-butene	Lin1F		0.1911		107	125	-14.6	50.0
2-Chlorotoluene	Ave	0.6346	0.6901		27.2	25.0	8.8	50.0
1,3,5-Trimethylbenzene	Ave	2.159	2.475		28.7	25.0	14.6	50.0
4-Chlorotoluene	Ave	0.6838	0.7490		27.4	25.0	9.5	50.0
tert-Butylbenzene	Ave	0.4727	0.5465		28.9	25.0	15.6	50.0
1,2,4-Trimethylbenzene	Ave	2.186	2.518		28.8	25.0	15.2	50.0
sec-Butylbenzene	Ave	2.726	3.139		28.8	25.0	15.1	50.0
1,3-Dichlorobenzene	Ave	1.355	1.461		27.0	25.0	7.9	50.0
4-Isopropyltoluene	Ave	2.281	2.701		29.6	25.0	18.4	50.0
1,4-Dichlorobenzene	Ave	1.446	1.512		26.1	25.0	4.6	50.0
n-Butylbenzene	Lin1F		2.425		26.6	25.0	6.4	50.0
1,2-Dichlorobenzene	Ave	1.339	1.439		26.9	25.0	7.5	50.0
1,2-Dibromo-3-Chloropropane	Lin1F		0.1560		23.2	25.0	-7.2	50.0
1,2,4-Trichlorobenzene	Ave	0.8340	0.8687		26.0	25.0	4.2	50.0
Hexachlorobutadiene	Ave	0.1948	0.2450		31.4	25.0	25.8	50.0
Naphthalene	Lin1F		1.409		25.5	25.0	2.0	50.0
1,2,3-Trichlorobenzene	Ave	0.4178	0.4785		28.6	25.0	14.5	50.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.1586	0.1582		24.9	25.0	-0.2	50.0
Toluene-d8 (Surr)	Ave	1.877	1.877		25.0	25.0	-0.0	50.0
4-Bromofluorobenzene (Surr)	Ave	0.6308	0.5989		23.7	25.0	-5.1	50.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9488.D
Lims ID: CCVIS Client ID:
Inject. Date: 08-Dec-2011 09:35:30 Dil. Factor: 1.0000
Sample Type: CCVIS
Sample ID: CCVIS
Misc. Info.: 480-0008065-002 =480-0008065-002
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 2
Lims Batch ID: 43413 Lims Sample ID: 2
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m
Last Update: 08-Dec-2011 10:49:14 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: coderd Date: 08-Dec-2011 10:49:14

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.928	4.928	0.0	95	414121	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	216625	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	232227	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	52	65529	24.9	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	58	406512	25.0	
$ 6 4-Bromofluorobenzene (Surr)	174	8.061	8.061	0.0	89	129743	23.7	
10 Dichlorodifluoromethane	85	1.266	1.266	0.0	83	106443	24.4	
12 Chloromethane	50	1.406	1.406	0.0	89	160276	24.3	
13 Vinyl chloride	62	1.509	1.509	0.0	70	138947	28.1	
14 Bromomethane	94	1.771	1.771	0.0	89	47559	24.2	
15 Chloroethane	64	1.862	1.862	0.0	93	79287	32.8	
17 Trichlorofluoromethane	101	2.075	2.075	0.0	76	191769	33.3	
20 Acrolein	56	2.489	2.489	0.0	98	346803	521.9	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.544	2.544	0.0	44	68329	23.5	
22 1,1-Dichloroethene	96	2.550	2.550	0.0	87	119819	28.2	
23 Acetone	43	2.641	2.641	0.0	99	276878	133.1	
25 Iodomethane	142	2.708	2.708	0.0	90	84512	28.6	
26 Carbon disulfide	76	2.714	2.714	0.0	84	146869	17.4	
27 Methyl acetate	43	2.896	2.896	0.0	98	204784	20.8	
29 Acetonitrile	40	2.927	2.927	0.0	99	428892	1121.6	
30 Methylene Chloride	84	3.024	3.024	0.0	86	130933	26.2	
32 Methyl tert-butyl ether	73	3.164	3.164	0.0	92	288933	21.2	
34 trans-1,2-Dichloroethene	96	3.170	3.170	0.0	78	127718	31.1	
33 Acrylonitrile	53	3.237	3.237	0.0	97	292252	112.2	
39 1,1-Dichloroethane	63	3.529	3.529	0.0	86	228961	27.3	
37 Vinyl acetate	43	3.584	3.584	0.0	97	1031117	115.7	
44 2,2-Dichloropropane	77	3.967	3.967	0.0	93	107621	32.5	
45 cis-1,2-Dichloroethene	96	3.992	3.992	0.0	71	136445	27.5	
43 2-Butanone (MEK)	43	4.040	4.040	0.0	98	392594	115.3	
48 Chlorobromomethane	128	4.186	4.186	0.0	92	69553	27.8	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.204	4.204	0.0	90	252160	112.1	
50 Chloroform	83	4.247	4.247	0.0	70	229612	28.0	
52 Cyclohexane	56	4.338	4.338	0.0	71	137812	19.6	
51 1,1,1-Trichloroethane	97	4.338	4.338	0.0	90	169180	31.5	
55 Carbon tetrachloride	117	4.448	4.448	0.0	80	171813	34.6	
54 1,1-Dichloropropene	75	4.460	4.460	0.0	92	174756	28.2	
57 Benzene	78	4.630	4.630	0.0	97	528050	27.7	
58 1,2-Dichloroethane	62	4.685	4.685	0.0	76	200089	28.5	
62 Trichloroethene	95	5.105	5.105	0.0	92	129615	27.8	
64 Methylcyclohexane	83	5.196	5.196	0.0	92	139811	21.5	
65 1,2-Dichloropropane	63	5.299	5.299	0.0	89	129753	26.7	
67 Dibromomethane	93	5.403	5.403	0.0	88	82896	28.3	
68 Dichlorobromomethane	83	5.518	5.518	0.0	93	171321	30.2	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	92	285565	91.7	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	90	206730	28.6	
73 4-Methyl-2-pentanone (MIBK)	43	5.957	5.957	0.0	98	768299	108.7	
74 Toluene	92	6.060	6.060	0.0	94	352198	26.9	
77 trans-1,3-Dichloropropene	75	6.267	6.267	0.0	92	198157	27.9	
75 Ethyl methacrylate	69	6.303	6.303	0.0	71	147133	19.6	
79 1,1,2-Trichloroethane	83	6.413	6.413	0.0	89	107322	26.3	
81 Tetrachloroethene	166	6.455	6.455	0.0	88	147412	27.4	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	93	226672	26.3	
80 2-Hexanone	43	6.589	6.589	0.0	81	573519	110.3	
83 Chlorodibromomethane	129	6.717	6.717	0.0	88	136232	29.7	
84 Ethylene Dibromide	107	6.796	6.796	0.0	97	128222	26.3	
87 Chlorobenzene	112	7.149	7.149	0.0	86	401747	26.8	
88 Ethylbenzene	91	7.216	7.216	0.0	99	662599	27.6	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	43	135865	28.6	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	525550	56.2	
91 o-Xylene	106	7.623	7.623	0.0	97	246955	28.0	
92 Styrene	104	7.648	7.648	0.0	95	431002	29.0	
95 Bromoform	173	7.836	7.836	0.0	97	89449	26.5	
94 Isopropylbenzene	105	7.909	7.909	0.0	96	658548	28.3	
101 Bromobenzene	156	8.183	8.183	0.0	92	172250	26.5	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	82	193294	26.6	
99 N-Propylbenzene	91	8.238	8.238	0.0	78	823387	28.4	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	70	64906	27.2	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	86	221868	106.8	
103 2-Chlorotoluene	126	8.323	8.323	0.0	96	160267	27.2	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	92	574787	28.7	
105 4-Chlorotoluene	126	8.414	8.414	0.0	98	173937	27.4	
106 tert-Butylbenzene	134	8.645	8.645	0.0	91	126915	28.9	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	69	584821	28.8	
109 sec-Butylbenzene	105	8.816	8.816	0.0	95	728874	28.8	
111 1,3-Dichlorobenzene	146	8.937	8.937	0.0	70	339364	27.0	
110 4-Isopropyltoluene	119	8.937	8.937	0.0	97	627250	29.6	
113 1,4-Dichlorobenzene	146	9.010	9.010	0.0	94	351093	26.1	
115 n-Butylbenzene	91	9.272	9.272	0.0	95	563221	26.6	
116 1,2-Dichlorobenzene	146	9.321	9.321	0.0	92	334260	26.9	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	71	36231	23.2	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	90	201737	26.0	
120 Hexachlorobutadiene	225	10.750	10.750	0.0	95	101455	31.4	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	97	583456	25.5	
122 1,2,3-Trichlorobenzene	180	11.048	11.048	0.0	93	198159	28.6	
S 125 1,2-Dichloroethene, Total	1				0		58.6	
S 126 1,3-Dichloropropene, Total	1				0		56.6	
S 123 Total BTEX	1				0		166.4	
S 124 Xylenes, Total	1				0		84.3	

Report Date: 08-Dec-2011 10:49:14 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9488.D

Injection Date: 08-Dec-2011 09:35:30 Limit Group: MV - 8260B ICAL

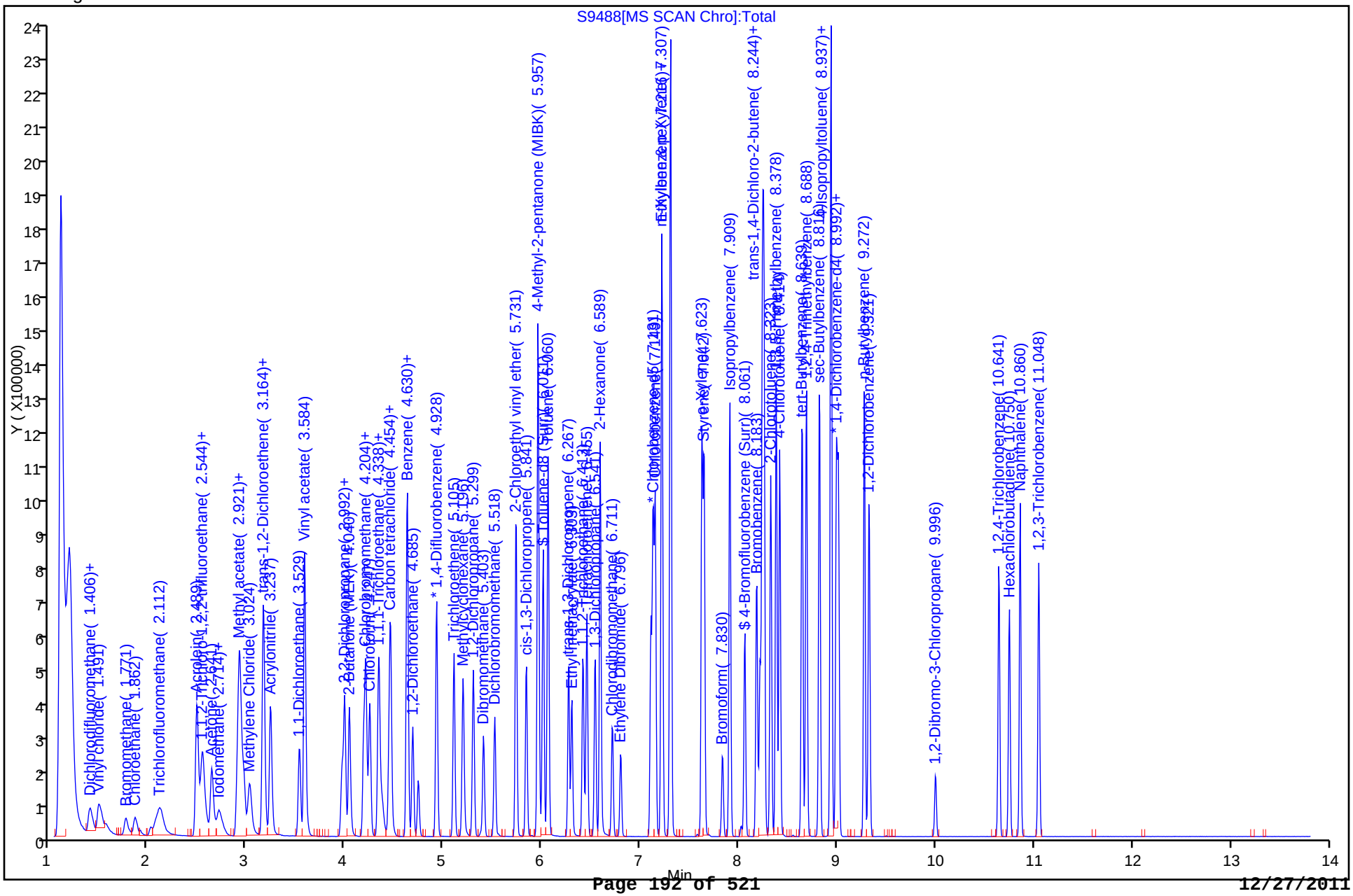
Client ID: Instrument ID: HP5973S

Lims Batch ID: 43413 Lims Sample ID: 2

Operator ID: DHC

Column Type: ZB-624 Column Dia: 0.25 mm

Y Scaling:



FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-43660/2 Calibration Date: 12/09/2011 09:39

Instrument ID: HP5973S Calib Start Date: 12/01/2011 12:22

GC Column: ZB-624 (60) ID: 0.25(mm) Calib End Date: 12/01/2011 13:29

Lab File ID: S9514.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.2636	0.2075		19.7	25.0	-21.3	50.0
Chloromethane	Ave	0.3986	0.3397	0.1000	21.3	25.0	-14.8	50.0
Vinyl chloride	Ave	0.2986	0.3248		27.2	25.0	8.8	20.0
Bromomethane	Ave	0.1186	0.1599		33.7	25.0	34.8	50.0
Chloroethane	Ave	0.1458	0.1908		32.7	25.0	30.9	50.0
Trichlorofluoromethane	Ave	0.3479	0.4159		29.9	25.0	19.6	50.0
Acrolein	Ave	0.0401	0.0302		376	500	-24.8	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Lin1F		0.2298		32.7	25.0	30.8	50.0
1,1-Dichloroethene	Ave	0.2564	0.2931	0.1000	28.6	25.0	14.3	20.0
Acetone	Ave	0.1256	0.0889		88.4	125	-29.3	50.0
Iodomethane	Lin1F		0.2259		31.6	25.0	26.4	50.0
Carbon disulfide	Ave	0.5098	0.7486		36.7	25.0	46.8	50.0
Methyl acetate	Ave	0.5947	0.4685		19.7	25.0	-21.2	50.0
Acetonitrile	Ave	0.0231	0.0179		774	1000	-22.6	50.0
Methylene Chloride	Ave	0.3011	0.3258		27.0	25.0	8.2	50.0
Methyl tert-butyl ether	Ave	0.8237	0.8318		25.2	25.0	1.0	50.0
trans-1,2-Dichloroethene	Ave	0.2478	0.2898		29.2	25.0	16.9	50.0
Acrylonitrile	Ave	0.1572	0.1308		104	125	-16.8	50.0
1,1-Dichloroethane	Ave	0.5068	0.5507		27.2	25.0	8.7	50.0
Vinyl acetate	Ave	0.5381	0.6058		141	125	12.6	50.0
2,2-Dichloropropane	Ave	0.1998	0.2327		29.1	25.0	16.4	50.0
cis-1,2-Dichloroethene	Ave	0.2994	0.3317		27.7	25.0	10.8	50.0
2-Butanone (MEK)	Ave	0.2056	0.1697		103	125	-17.4	50.0
Bromochloromethane	Ave	0.1511	0.1652		27.3	25.0	9.3	50.0
Tetrahydrofuran	Ave	0.1358	0.1160		107	125	-14.6	50.0
Chloroform	Ave	0.4946	0.5294		26.8	25.0	7.0	20.0
Cyclohexane	Lin1F		0.4600		27.1	25.0	8.4	50.0
1,1,1-Trichloroethane	Ave	0.3238	0.3674		28.4	25.0	13.4	50.0
Carbon tetrachloride	Ave	0.3000	0.3509		29.2	25.0	17.0	50.0
1,1-Dichloropropene	Ave	0.3741	0.4178		27.9	25.0	11.7	50.0
Benzene	Ave	1.150	1.248		27.1	25.0	8.5	50.0
1,2-Dichloroethane	Ave	0.4238	0.4456		26.3	25.0	5.1	50.0
Trichloroethene	Ave	0.2818	0.3029		26.9	25.0	7.5	50.0
Methylcyclohexane	Ave	0.3924	0.4405		28.1	25.0	12.3	50.0
1,2-Dichloropropane	Ave	0.2930	0.3189		27.2	25.0	8.9	20.0
Dibromomethane	Ave	0.1771	0.1940		27.4	25.0	9.5	50.0
Bromodichloromethane	Ave	0.3423	0.3955		28.9	25.0	15.6	50.0
2-Chloroethyl vinyl ether	Ave	0.1879	0.2029		135	125	8.0	50.0
cis-1,3-Dichloropropene	Ave	0.4358	0.4987		28.6	25.0	14.4	50.0
4-Methyl-2-pentanone (MIBK)	Ave	0.8161	0.7987		122	125	-2.1	50.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-43660/2 Calibration Date: 12/09/2011 09:39

Instrument ID: HP5973S Calib Start Date: 12/01/2011 12:22

GC Column: ZB-624 (60) ID: 0.25(mm) Calib End Date: 12/01/2011 13:29

Lab File ID: S9514.D Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Toluene	Ave	1.513	1.622		26.8	25.0	7.2	20.0
trans-1,3-Dichloropropene	Ave	0.8184	0.9478		29.0	25.0	15.8	50.0
Ethyl methacrylate	Lin1F		0.8680		25.1	25.0	0.4	50.0
1,1,2-Trichloroethane	Ave	0.4712	0.5074		26.9	25.0	7.7	50.0
Tetrachloroethene	Ave	0.6211	0.6479		26.1	25.0	4.3	50.0
1,3-Dichloropropane	Ave	0.996	1.067		26.8	25.0	7.2	50.0
2-Hexanone	Ave	0.5999	0.5893		123	125	-1.8	50.0
Dibromochloromethane	Ave	0.5300	0.6270		29.6	25.0	18.3	50.0
1,2-Dibromoethane	Ave	0.5624	0.6188		27.5	25.0	10.0	50.0
Chlorobenzene	Ave	1.727	1.817	0.3000	26.3	25.0	5.2	50.0
Ethylbenzene	Ave	2.769	3.051		27.6	25.0	10.2	20.0
1,1,1,2-Tetrachloroethane	Ave	0.5479	0.6259		28.6	25.0	14.2	50.0
m-Xylene & p-Xylene	Ave	1.079	1.191		55.2	50.0	10.4	50.0
o-Xylene	Ave	1.016	1.137		28.0	25.0	11.9	50.0
Styrene	Ave	1.714	1.965		28.7	25.0	14.6	50.0
Bromoform	Lin1F		0.4082	0.1000	26.2	25.0	4.8	50.0
Isopropylbenzene	Ave	2.503	2.862		28.6	25.0	14.3	50.0
Bromobenzene	Ave	0.6997	0.7560		27.0	25.0	8.0	50.0
1,1,2,2-Tetrachloroethane	Ave	0.7817	0.8676	0.3000	27.7	25.0	11.0	50.0
N-Propylbenzene	Ave	3.125	3.558		28.5	25.0	13.9	50.0
1,2,3-Trichloropropane	Ave	0.2566	0.2784		27.1	25.0	8.5	50.0
trans-1,4-Dichloro-2-butene	Lin1F		0.2055		115	125	-8.1	50.0
2-Chlorotoluene	Ave	0.6346	0.7022		27.7	25.0	10.7	50.0
1,3,5-Trimethylbenzene	Ave	2.159	2.432		28.2	25.0	12.6	50.0
4-Chlorotoluene	Ave	0.6838	0.7495		27.4	25.0	9.6	50.0
tert-Butylbenzene	Ave	0.4727	0.5452		28.8	25.0	15.3	50.0
1,2,4-Trimethylbenzene	Ave	2.186	2.505		28.7	25.0	14.6	50.0
sec-Butylbenzene	Ave	2.726	3.089		28.3	25.0	13.3	50.0
1,3-Dichlorobenzene	Ave	1.355	1.457		26.9	25.0	7.5	50.0
4-Isopropyltoluene	Ave	2.281	2.657		29.1	25.0	16.5	50.0
1,4-Dichlorobenzene	Ave	1.446	1.503		26.0	25.0	4.0	50.0
n-Butylbenzene	Lin1F		2.402		26.3	25.0	5.2	50.0
1,2-Dichlorobenzene	Ave	1.339	1.425		26.6	25.0	6.5	50.0
1,2-Dibromo-3-Chloropropane	Lin1F		0.1643		24.5	25.0	-2.0	50.0
1,2,4-Trichlorobenzene	Ave	0.8340	0.9447		28.3	25.0	13.3	50.0
Hexachlorobutadiene	Ave	0.1948	0.2196		28.2	25.0	12.7	50.0
Naphthalene	Lin1F		1.486		27.0	25.0	8.0	50.0
1,2,3-Trichlorobenzene	Ave	0.4178	0.4727		28.3	25.0	13.1	50.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.1586	0.1546		24.4	25.0	-2.5	50.0
Toluene-d8 (Surr)	Ave	1.877	1.956		26.1	25.0	4.2	50.0
4-Bromofluorobenzene (Surr)	Ave	0.6308	0.6010		23.8	25.0	-4.7	50.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9514.D
Lims ID: CCVIS Client ID:
Inject. Date: 09-Dec-2011 09:39:30 Dil. Factor: 1.0000
Sample Type: CCVIS
Sample ID: CCVIS
Misc. Info.: 480-0008099-002 =480-0008099-002
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 2
Lims Batch ID: 43660 Lims Sample ID: 2
Sublist: chrom-S-8260*sub1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m
Last Update: 09-Dec-2011 10:18:19 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 10:18:19

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.928	4.928	0.0	95	474007	25.0	
* 2 Chlorobenzene-d5	82	7.131	7.131	0.0	84	236524	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	245660	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	52	73285	24.4	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	75	462756	26.1	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	88	142147	23.8	
10 Dichlorodifluoromethane	85	1.260	1.260	0.0	83	98333	19.7	
12 Chloromethane	50	1.418	1.418	0.0	88	161023	21.3	
13 Vinyl chloride	62	1.510	1.510	0.0	66	153977	27.2	
14 Bromomethane	94	1.789	1.789	0.0	87	75780	33.7	
15 Chloroethane	64	1.893	1.893	0.0	92	90441	32.7	
17 Trichlorofluoromethane	101	2.075	2.075	0.0	77	197138	29.9	
20 Acrolein	56	2.495	2.495	0.0	96	285793	375.8	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.538	2.538	0.0	35	108925	32.7	
22 1,1-Dichloroethene	96	2.544	2.544	0.0	81	138938	28.6	
23 Acetone	43	2.641	2.641	0.0	99	210590	88.4	
25 Iodomethane	142	2.720	2.720	0.0	44	107095	31.6	
26 Carbon disulfide	76	2.726	2.726	0.0	97	354847	36.7	
27 Methyl acetate	43	2.903	2.903	0.0	97	222070	19.7	
29 Acetonitrile	40	2.921	2.921	0.0	99	338936	774.4	
30 Methylene Chloride	84	3.024	3.024	0.0	84	154417	27.0	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	91	394283	25.2	
34 trans-1,2-Dichloroethene	96	3.176	3.176	0.0	69	137342	29.2	
33 Acrylonitrile	53	3.243	3.243	0.0	99	309877	104.0	
39 1,1-Dichloroethane	63	3.535	3.535	0.0	84	261050	27.2	
37 Vinyl acetate	43	3.590	3.590	0.0	97	1435767	140.7	
44 2,2-Dichloropropane	77	3.967	3.967	0.0	92	110276	29.1	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	70	157237	27.7	
43 2-Butanone (MEK)	43	4.040	4.040	0.0	94	402264	103.2	
48 Chlorobromomethane	128	4.192	4.192	0.0	94	78314	27.3	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
49 Tetrahydrofuran	42	4.211	4.211	0.0	91	275014	106.8	
50 Chloroform	83	4.253	4.253	0.0	69	250934	26.8	
51 1,1,1-Trichloroethane	97	4.344	4.344	0.0	92	174136	28.4	
52 Cyclohexane	56	4.338	4.338	0.0	88	218057	27.1	
55 Carbon tetrachloride	117	4.448	4.448	0.0	81	166332	29.2	
54 1,1-Dichloropropene	75	4.460	4.460	0.0	93	198034	27.9	
57 Benzene	78	4.630	4.630	0.0	97	591437	27.1	
58 1,2-Dichloroethane	62	4.685	4.685	0.0	74	211211	26.3	
62 Trichloroethene	95	5.105	5.105	0.0	93	143580	26.9	
64 Methylcyclohexane	83	5.196	5.196	0.0	92	208804	28.1	
65 1,2-Dichloropropane	63	5.300	5.300	0.0	92	151178	27.2	
67 Dibromomethane	93	5.403	5.403	0.0	91	91964	27.4	
68 Dichlorobromomethane	83	5.519	5.519	0.0	93	187488	28.9	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	91	480788	135.0	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	87	236376	28.6	
73 4-Methyl-2-pentanone (MIBK)	43	5.957	5.957	0.0	97	944590	122.3	
74 Toluene	92	6.060	6.060	0.0	93	383714	26.8	
77 trans-1,3-Dichloropropene	75	6.267	6.267	0.0	92	224183	29.0	
75 Ethyl methacrylate	69	6.303	6.303	0.0	83	205298	25.1	
79 1,1,2-Trichloroethane	83	6.419	6.419	0.0	87	120007	26.9	
81 Tetrachloroethene	166	6.455	6.455	0.0	84	153247	26.1	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	93	252433	26.8	
80 2-Hexanone	43	6.589	6.589	0.0	74	696865	122.8	
83 Chlorodibromomethane	129	6.717	6.717	0.0	87	148310	29.6	
84 Ethylene Dibromide	107	6.802	6.802	0.0	98	146350	27.5	
87 Chlorobenzene	112	7.149	7.149	0.0	86	429806	26.3	
88 Ethylbenzene	91	7.216	7.216	0.0	98	721740	27.6	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	42	148028	28.6	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	563484	55.2	
91 o-Xylene	106	7.624	7.624	0.0	97	268904	28.0	
92 Styrene	104	7.648	7.648	0.0	95	464656	28.7	
95 Bromoform	173	7.836	7.836	0.0	96	96558	26.2	
94 Isopropylbenzene	105	7.909	7.909	0.0	96	703039	28.6	
101 Bromobenzene	156	8.183	8.183	0.0	93	185713	27.0	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	79	213125	27.7	
99 N-Propylbenzene	91	8.238	8.238	0.0	78	874105	28.5	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	70	68387	27.1	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	86	252441	114.9	
103 2-Chlorotoluene	126	8.323	8.323	0.0	96	172509	27.7	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	85	597466	28.2	
105 4-Chlorotoluene	126	8.414	8.414	0.0	98	184114	27.4	
106 tert-Butylbenzene	134	8.646	8.646	0.0	87	133938	28.8	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	69	615490	28.7	
109 sec-Butylbenzene	105	8.816	8.816	0.0	94	758895	28.3	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	71	357898	26.9	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	97	652717	29.1	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	94	369339	26.0	
115 n-Butylbenzene	91	9.278	9.278	0.0	94	590063	26.3	
116 1,2-Dichlorobenzene	146	9.321	9.321	0.0	95	350121	26.6	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	74	40362	24.5	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	93	232079	28.3	
120 Hexachlorobutadiene	225	10.750	10.750	0.0	96	104094	28.2	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
121 Naphthalene	128	10.860	10.860	0.0	97	704543	27.0	
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	94	224046	28.3	
S 123 Total BTEX	1				0		164.6	
S 124 Xylenes, Total	1				0		83.2	
S 125 1,2-Dichloroethene, Total	1				0		56.9	
S 126 1,3-Dichloropropene, Total	1				0		57.6	

Report Date: 09-Dec-2011 10:18:19 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9514.D

Injection Date: 09-Dec-2011 09:39:30 Limit Group: MV - 8260B ICAL

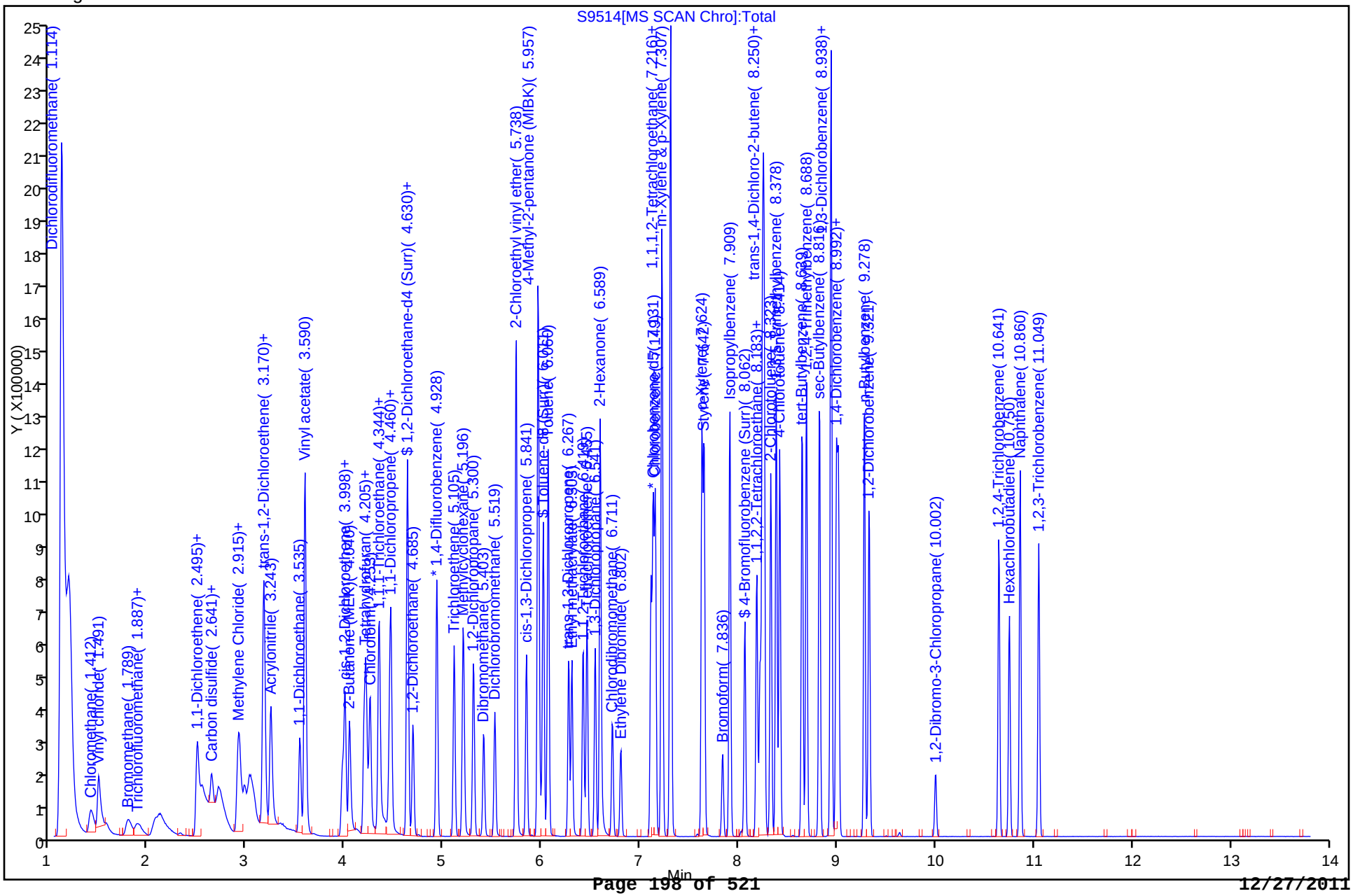
Client ID: Instrument ID: HP5973S

Lims Batch ID: 43660 Lims Sample ID: 2

Operator ID: DHC

Column Type: ZB-624 Column Dia: 0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

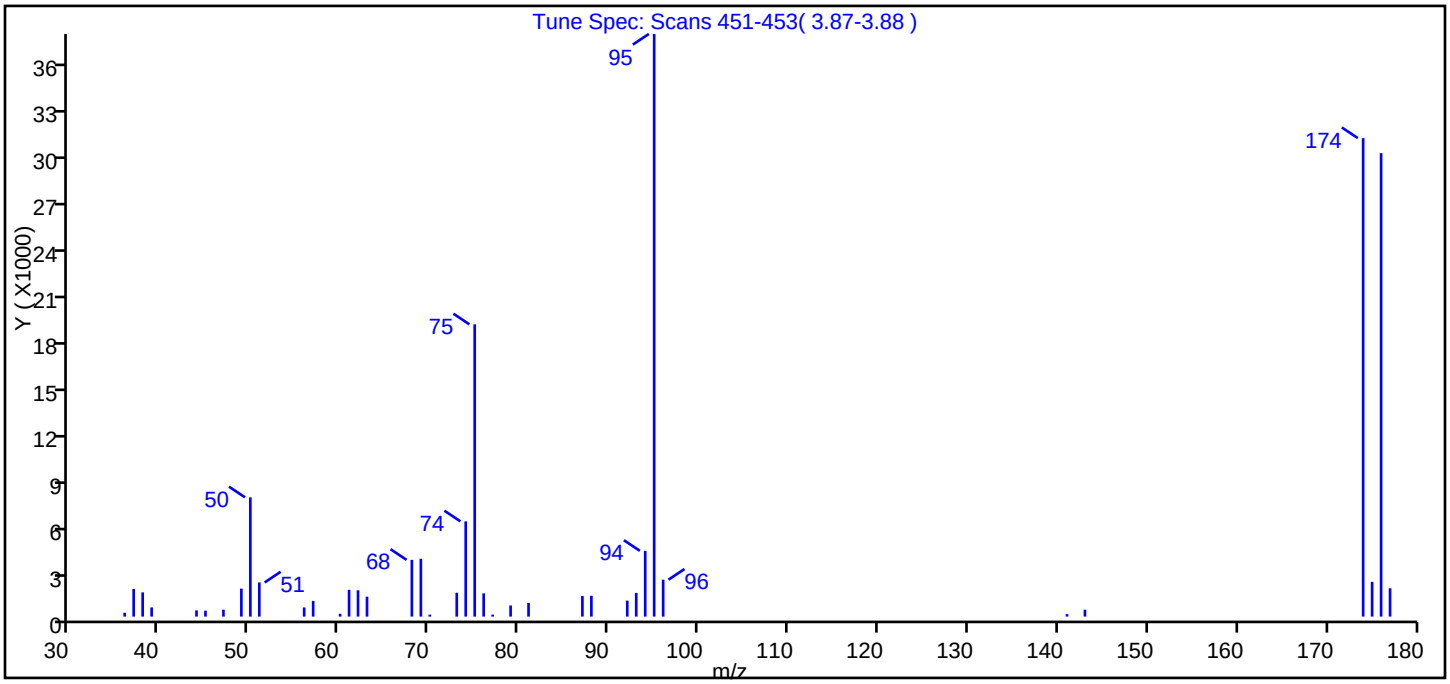
Data File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9315.D		
Lims ID:	BFB	Client ID:	
Inject. Date:	01-Dec-2011 10:44:30	Dil. Factor:	1.0000
Sample Type:	BFB		
Sample ID:	BFB		
Misc. Info.:	480-0007883-001 =480-0007883-001		
Operator:	DHC	Instrument ID:	HP5973S
Vol. Injected:	1.0000	ALS Bottle#:	1
Lims Batch ID:	42429	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S-8260.m		
Last Update:	01-Dec-2011 11:07:23	Calib Date:	18-Nov-2011 15:20:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973S\20111118-7636.b\S9197.D		
Limit Group:	MV - 8260B ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: coderd		Date:	01-Dec-2011 11:07:23

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
$ 61 BFB	95	3.879	3.879	0.0	0	73323	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9315.D		
Injection Date:	01-Dec-2011 10:44:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	42429	Lims Sample ID:	1
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm
Tune Method:	BFB Method 8260		

$ 61 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.47
75	30.00 - 60.00% of mass 95	50.16
96	5.00 - 9.00% of mass 95	6.34
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	82.12
175	5.00 - 9.00% of mass 174	5.96 (7.26)
176	95.00 - 101.00% of mass 174	79.54 (96.87)
177	5.00 - 9.00% of mass 176	4.86 (6.11)

Data File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9315.D\S-8260.rslt\spectra.d
Injection Date: 01-Dec-2011 10:44:30
Spectrum: Tune Spec: Scans 451-453(3.87-3.88)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 39

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	247	56.00	592	74.00	6149	94.00	4246
37.00	1783	57.00	1014	75.00	18872	95.00	37624
38.00	1563	60.00	181	76.00	1500	96.00	2384
39.00	593	61.00	1729	77.00	130	141.00	161
44.00	403	62.00	1699	79.00	719	143.00	445
45.00	383	63.00	1289	81.00	881	174.00	30896
47.00	447	68.00	3663	87.00	1329	175.00	2244
49.00	1807	69.00	3735	88.00	1343	176.00	29928
50.00	7700	70.00	127	92.00	1031	177.00	1830
51.00	2205	73.00	1540	93.00	1530		

TestAmerica Laboratories
Target Compound Quantitation Report

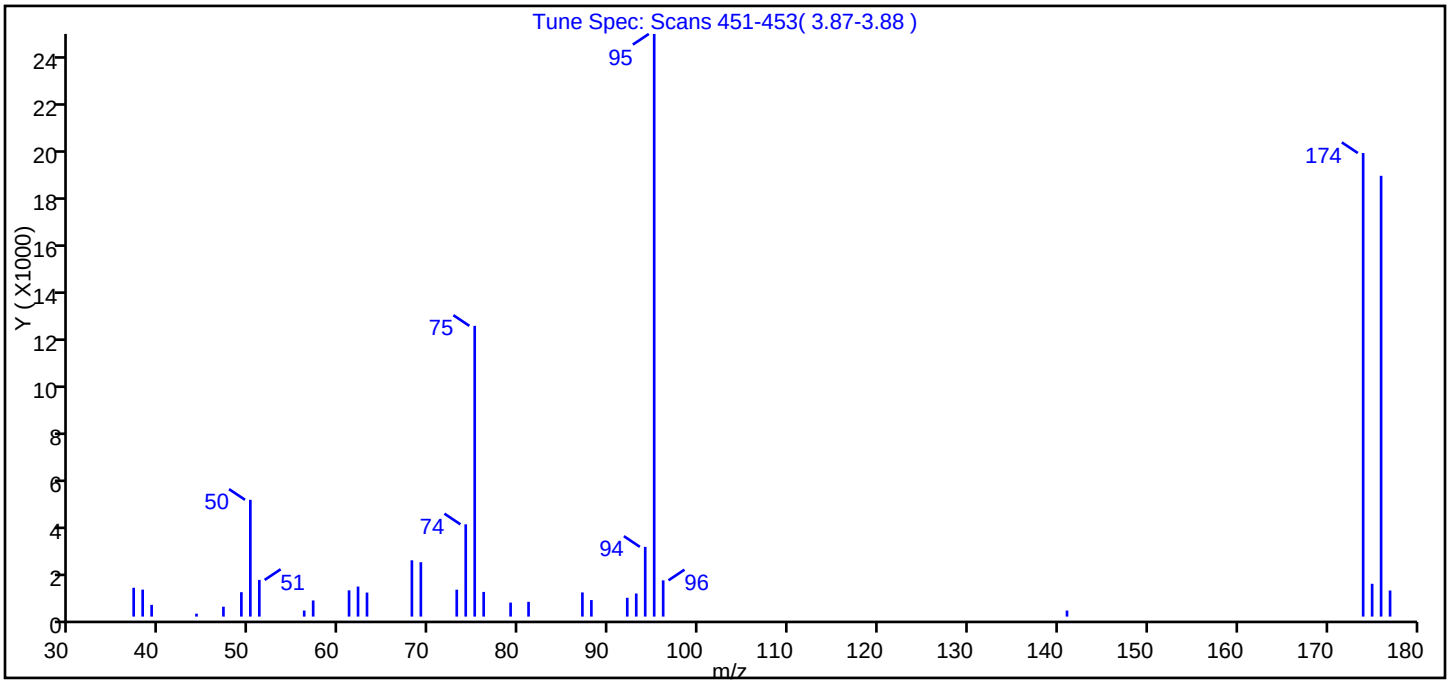
Data File:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9487.D		
Lims ID:	BFB	Client ID:	
Inject. Date:	08-Dec-2011 09:13:30	Dil. Factor:	1.0000
Sample Type:	BFB		
Sample ID:	BFB		
Misc. Info.:	480-0008065-001 =480-0008065-001		
Operator:	DHC	Instrument ID:	HP5973S
Vol. Injected:	1.0000	ALS Bottle#:	1
Lims Batch ID:	43413	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m		
Last Update:	08-Dec-2011 09:22:38	Calib Date:	01-Dec-2011 16:05:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D		
Limit Group:	MV - 8260B ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: coderd		Date:	08-Dec-2011 09:22:38

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
$ 61 BFB	95	3.879	3.879	0.0	0	45230	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9487.D		
Injection Date:	08-Dec-2011 09:13:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	43413	Lims Sample ID:	1
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm
Tune Method:	BFB Method 8260		

$ 61 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.05
75	30.00 - 60.00% of mass 95	49.90
96	5.00 - 9.00% of mass 95	6.22
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	79.56
175	5.00 - 9.00% of mass 174	5.63 (7.08)
176	95.00 - 101.00% of mass 174	75.65 (95.08)
177	5.00 - 9.00% of mass 176	4.48 (5.92)

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9487.D\S-8260.rslt\spectra.d
Injection Date: 08-Dec-2011 09:13:30
Spectrum: Tune Spec: Scans 451-453(3.87-3.88)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 33

m/z	Y	m/z	Y	m/z	Y	m/z	Y
37.00	1205	57.00	674	76.00	1031	96.00	1515
38.00	1127	61.00	1097	79.00	585	141.00	252
39.00	490	62.00	1255	81.00	617	174.00	19368
44.00	122	63.00	1004	87.00	1009	175.00	1371
47.00	414	68.00	2352	88.00	691	176.00	18416
49.00	1020	69.00	2272	92.00	786	177.00	1091
50.00	4880	73.00	1125	93.00	964		
51.00	1532	74.00	3855	94.00	2914		
56.00	254	75.00	12147	95.00	24344		

TestAmerica Laboratories
Target Compound Quantitation Report

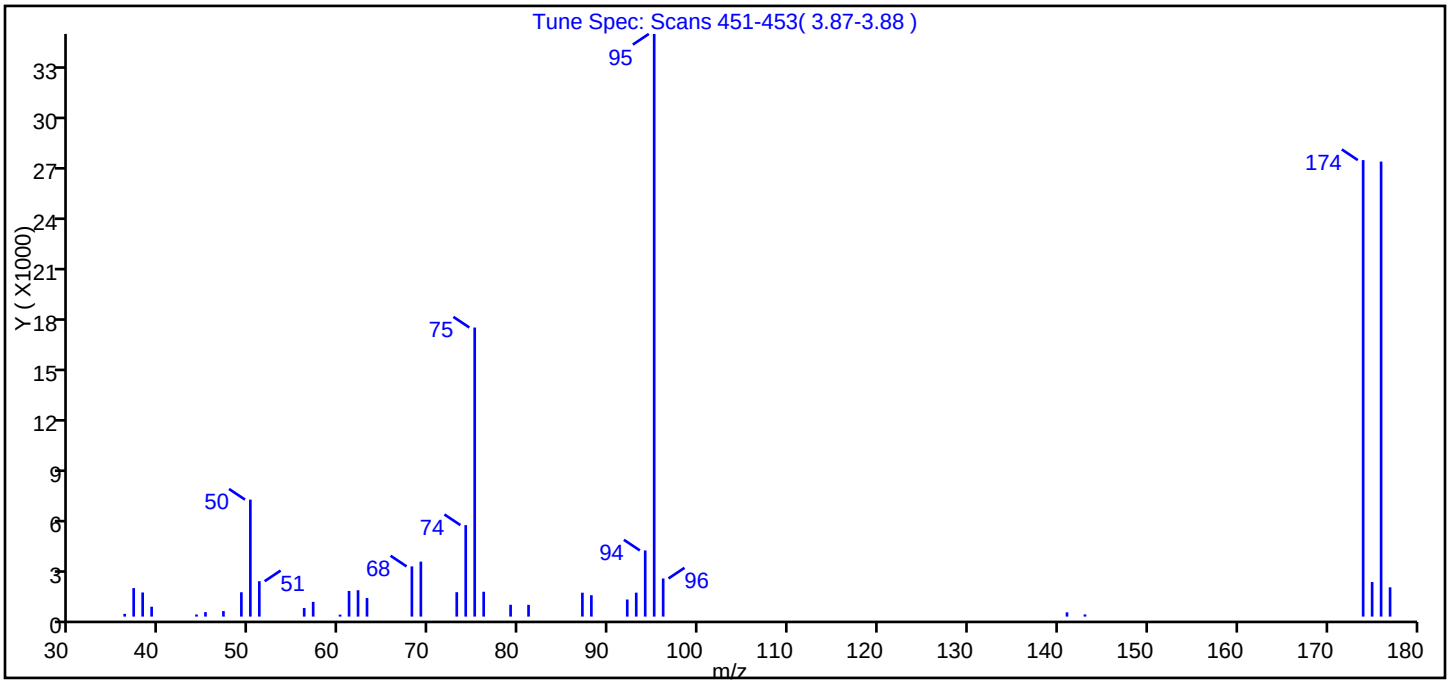
Data File:	\\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9513.D		
Lims ID:	BFB	Client ID:	
Inject. Date:	09-Dec-2011 09:05:30	Dil. Factor:	1.0000
Sample Type:	BFB		
Sample ID:	BFB		
Misc. Info.:	480-0008099-001 =480-0008099-001		
Operator:	DHC	Instrument ID:	HP5973S
Vol. Injected:	1.0000	ALS Bottle#:	1
Lims Batch ID:	43660	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m		
Last Update:	09-Dec-2011 09:14:10	Calib Date:	01-Dec-2011 16:05:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D		
Limit Group:	MV - 8260B ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: coderd		Date:	09-Dec-2011 09:14:10

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
$ 61 BFB	95	3.879	3.879	0.0	0	65593	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9513.D		
Injection Date:	09-Dec-2011 09:05:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	1
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm
Tune Method:	BFB Method 8260		

$ 61 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.08
75	30.00 - 60.00% of mass 95	49.61
96	5.00 - 9.00% of mass 95	6.54
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	78.35
175	5.00 - 9.00% of mass 174	5.93 (7.57)
176	95.00 - 101.00% of mass 174	78.09 (99.68)
177	5.00 - 9.00% of mass 176	5.02 (6.43)

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9513.D\S-8260.rslt\spectra.d
Injection Date: 09-Dec-2011 09:05:30
Spectrum: Tune Spec: Scans 451-453(3.87-3.88)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 37

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	165	56.00	514	75.00	17320	96.00	2284
37.00	1708	57.00	884	76.00	1489	141.00	255
38.00	1445	60.00	118	79.00	710	143.00	130
39.00	591	61.00	1537	81.00	703	174.00	27352
44.00	126	62.00	1579	87.00	1432	175.00	2070
45.00	269	63.00	1114	88.00	1281	176.00	27264
47.00	331	68.00	3007	92.00	1024	177.00	1754
49.00	1458	69.00	3294	93.00	1435		
50.00	7009	73.00	1463	94.00	3963		
51.00	2120	74.00	5482	95.00	34912		

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 480-43413/5

Matrix: Water Lab File ID: S9491.D

Analysis Method: 8260B Date Collected:

Sample wt/vol: 5(mL) Date Analyzed: 12/08/2011 10:55

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	100		66-137
2037-26-5	Toluene-d8 (Surr)	102		71-126
460-00-4	4-Bromofluorobenzene (Surr)	90		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9491.D
Lims ID: MB Client ID:
Inject. Date: 08-Dec-2011 10:55:30 Dil. Factor: 1.0000
Sample Type: MB
Sample ID: MB
Misc. Info.: 480-0008065-005 =480-0008065-005
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 5
Lims Batch ID: 43413 Lims Sample ID: 5
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m
Last Update: 08-Dec-2011 11:12:08 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: coderd Date: 08-Dec-2011 11:12:08

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.928	4.928	0.0	95	393850	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	85	190210	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	192176	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	95	62570	25.0	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	93	364147	25.5	
$ 6 4-Bromofluorobenzene (Surr)	174	8.061	8.062	-0.001	87	108576	22.6	
10 Dichlorodifluoromethane	85		1.266					
11 Chlorodifluoromethane	51		1.297					
12 Chloromethane	50		1.406					
13 Vinyl chloride	62		1.509					
14 Bromomethane	94		1.771					
15 Chloroethane	64		1.862					
17 Trichlorofluoromethane	101		2.075					
16 Dichlorofluoromethane	67		2.094					
18 Ethyl ether	59		2.325					
19 Propene oxide	58		2.404					
20 Acrolein	56		2.489					
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101		2.544					
22 1,1-Dichloroethene	96		2.550					
23 Acetone	43		2.641					
25 Iodomethane	142		2.708					
26 Carbon disulfide	76		2.714					
24 Isopropyl alcohol	45		2.817					
28 3-Chloro-1-propene	41		2.848					
27 Methyl acetate	43		2.896					
29 Acetonitrile	40		2.927					
30 Methylene Chloride	84		3.024					
31 2-Methyl-2-propanol	59		3.146					
32 Methyl tert-butyl ether	73		3.164					
34 trans-1,2-Dichloroethene	96		3.170					
33 Acrylonitrile	53		3.237					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
35 Hexane	57		3.341					
39 1,1-Dichloroethane	63		3.529					
36 Isopropyl ether	45		3.548					
37 Vinyl acetate	43		3.584					
40 2-Chloro-1,3-butadiene	53		3.584					
38 1,1-Dimethoxyethane	75		3.621					
41 Tert-butyl ethyl ether	59		3.833					
44 2,2-Dichloropropane	77		3.967					
45 cis-1,2-Dichloroethene	96		3.992					
43 2-Butanone (MEK)	43		4.040					
42 Ethyl acetate	43		4.065					
46 Propionitrile	54		4.138					
48 Chlorobromomethane	128		4.186					
49 Tetrahydrofuran	42		4.204					
47 Methacrylonitrile	41		4.217					
50 Chloroform	83		4.247					
52 Cyclohexane	56		4.338					
51 1,1,1-Trichloroethane	97		4.338					
55 Carbon tetrachloride	117		4.448					
54 1,1-Dichloropropene	75		4.460					
57 Benzene	78		4.630					
53 Isobutyl alcohol	43		4.649					
58 1,2-Dichloroethane	62		4.685					
56 Tert-amyl methyl ether	73		4.691					
59 n-Heptane	43		4.764					
62 Trichloroethene	95		5.105					
60 n-Butanol	56		5.135					
64 Methylcyclohexane	83		5.196					
65 1,2-Dichloropropane	63		5.299					
63 Methyl methacrylate	41		5.373					
67 Dibromomethane	93		5.403					
66 1,4-Dioxane	88		5.415					
68 Dichlorobromomethane	83		5.518					
70 2-Nitropropane	43		5.725					
69 2-Chloroethyl vinyl ether	63		5.738					
71 Epichlorohydrin	57		5.817					
72 cis-1,3-Dichloropropene	75		5.841					
73 4-Methyl-2-pentanone (MIBK)	43		5.957					
74 Toluene	92		6.060					
76 2-Methylthiophene	97		6.163					
77 trans-1,3-Dichloropropene	75		6.267					
78 3-Methylthiophene	97		6.291					
75 Ethyl methacrylate	69		6.303					
79 1,1,2-Trichloroethane	83		6.413					
81 Tetrachloroethene	166		6.455					
82 1,3-Dichloropropane	76		6.541					
80 2-Hexanone	43		6.589					
83 Chlorodibromomethane	129		6.717					
84 Ethylene Dibromide	107		6.796					
85 3-Chlorobenzotrifluoride	180		7.119					
87 Chlorobenzene	112		7.149					
86 4-Chlorobenzotrifluoride	180		7.161					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
88 Ethylbenzene	91		7.216					
89 1,1,1,2-Tetrachloroethane	131		7.222					
90 m-Xylene & p-Xylene	106		7.307					
91 o-Xylene	106		7.623					
92 Styrene	104		7.648					
95 Bromoform	173		7.836					
93 2-Chlorobenzotrifluoride	180		7.849					
94 Isopropylbenzene	105		7.909					
96 Cyclohexanone	55		8.055					
101 Bromobenzene	156		8.183					
97 1,1,2,2-Tetrachloroethane	83		8.214					
99 N-Propylbenzene	91		8.238					
100 1,2,3-Trichloropropane	110		8.250					
98 trans-1,4-Dichloro-2-butene	53		8.256					
103 2-Chlorotoluene	126		8.323					
102 1,3,5-Trimethylbenzene	105		8.378					
104 3-Chlorotoluene	126		8.378					
105 4-Chlorotoluene	126		8.414					
106 tert-Butylbenzene	134		8.645					
107 1,2,4-Trimethylbenzene	105		8.688					
108 Pentachloroethane	167		8.694					
109 sec-Butylbenzene	105		8.816					
111 1,3-Dichlorobenzene	146		8.937					
110 4-Isopropyltoluene	119		8.937					
114 Dicyclopentadiene	66		8.992					
113 1,4-Dichlorobenzene	146		9.010					
112 1,2,3-Trimethylbenzene	105		9.035					
115 n-Butylbenzene	91		9.272					
116 1,2-Dichlorobenzene	146		9.321					
117 1,2-Dibromo-3-Chloropropane	75		9.996					
118 1,3,5-Trichlorobenzene	180		10.118					
119 1,2,4-Trichlorobenzene	180		10.641					
120 Hexachlorobutadiene	225		10.750					
121 Naphthalene	128		10.860					
122 1,2,3-Trichlorobenzene	180		11.048					
S 125 1,2-Dichloroethene, Total	1		30.000					7
S 126 1,3-Dichloropropene, Total	1		30.000					7
S 123 Total BTEX	1		30.000					7
S 124 Xylenes, Total	1		30.000					7
T 8 t-Amyl alcohol	59		0.000					1
T 7 Ethylene oxide	1		0.000					1
T 9 bis(2-chloromethyl)ether TIC	1		0.000					1
T 127 Ethanol TIC	45		0.000					1
T 128 Hexachloroethane TIC	1		0.000					1

QC Flag Legend

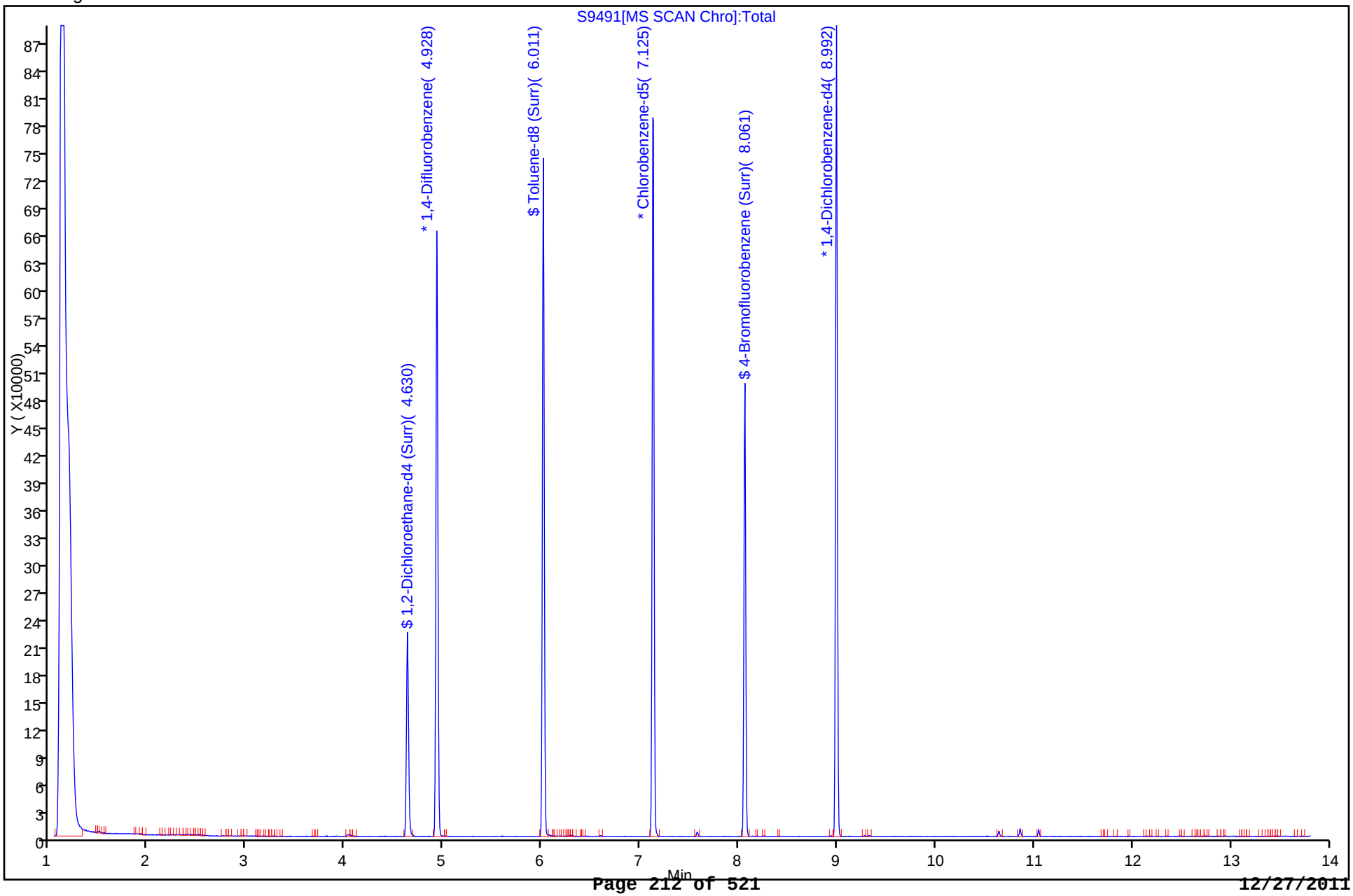
Processing Flags
1 - Missing Peaks
7 - Failed Limit of Detection

Report Date: 08-Dec-2011 11:12:08 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9491.D

Injection Date:	08-Dec-2011 10:55:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	43413	Lims Sample ID:	5
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 480-43660/5

Matrix: Water | Lab File ID: S9517.D

Analysis Method: 8260B | Date Collected:

Sample wt/vol: 5(mL) | Date Analyzed: 12/09/2011 10:57

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 43660 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	ND		1.0	0.41
108-88-3	Toluene	ND		1.0	0.51
100-41-4	Ethylbenzene	ND		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	ND		2.0	0.66
95-47-6	o-Xylene	ND		1.0	0.76
1330-20-7	Xylenes, Total	ND		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	97		66-137
2037-26-5	Toluene-d8 (Surr)	102		71-126
460-00-4	4-Bromofluorobenzene (Surr)	90		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9517.D
Lims ID: MB Client ID:
Inject. Date: 09-Dec-2011 10:57:30 Dil. Factor: 1.0000
Sample Type: MB
Sample ID: MB
Misc. Info.: 480-0008099-005 =480-0008099-005
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 5
Lims Batch ID: 43660 Lims Sample ID: 5
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m
Last Update: 09-Dec-2011 11:23:34 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 11:23:34

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.928	4.929	-0.001	95	460748	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	85	220939	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	220420	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.631	-0.001	97	70614	24.2	
$ 5 Toluene-d8 (Surr)	98	6.011	6.012	-0.001	93	424829	25.6	
$ 6 4-Bromofluorobenzene (Surr)	174	8.061	8.062	-0.001	89	125532	22.5	
10 Dichlorodifluoromethane	85		1.260					
11 Chlorodifluoromethane	51		1.297					
12 Chloromethane	50		1.418					
13 Vinyl chloride	62		1.510					
14 Bromomethane	94		1.789					
15 Chloroethane	64		1.893					
17 Trichlorofluoromethane	101		2.075					
16 Dichlorofluoromethane	67		2.094					
18 Ethyl ether	59		2.319					
19 Propene oxide	58		2.404					
20 Acrolein	56		2.495					
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101		2.538					
22 1,1-Dichloroethene	96		2.544					
23 Acetone	43		2.641					
25 Iodomethane	142		2.720					
26 Carbon disulfide	76		2.726					
24 Isopropyl alcohol	45		2.805					
28 3-Chloro-1-propene	41		2.854					
27 Methyl acetate	43		2.903					
29 Acetonitrile	40		2.921					
30 Methylene Chloride	84		3.024					
31 2-Methyl-2-propanol	59		3.134					
32 Methyl tert-butyl ether	73		3.170					
34 trans-1,2-Dichloroethene	96		3.176					
33 Acrylonitrile	53		3.243					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
35 Hexane	57		3.341					
39 1,1-Dichloroethane	63		3.535					
36 Isopropyl ether	45		3.548					
40 2-Chloro-1,3-butadiene	53		3.584					
37 Vinyl acetate	43		3.590					
38 1,1-Dimethoxyethane	75		3.621					
41 Tert-butyl ethyl ether	59		3.834					
44 2,2-Dichloropropane	77		3.967					
45 cis-1,2-Dichloroethene	96		3.998					
43 2-Butanone (MEK)	43		4.040					
42 Ethyl acetate	43		4.065					
46 Propionitrile	54		4.132					
48 Chlorobromomethane	128		4.192					
49 Tetrahydrofuran	42		4.211					
47 Methacrylonitrile	41		4.217					
50 Chloroform	83		4.253					
52 Cyclohexane	56		4.338					
51 1,1,1-Trichloroethane	97		4.344					
55 Carbon tetrachloride	117		4.448					
54 1,1-Dichloropropene	75		4.460					
57 Benzene	78		4.630					
53 Isobutyl alcohol	43		4.643					
58 1,2-Dichloroethane	62		4.685					
56 Tert-amyl methyl ether	73		4.691					
59 n-Heptane	43		4.764					
62 Trichloroethene	95		5.105					
60 n-Butanol	56		5.129					
64 Methylcyclohexane	83		5.196					
65 1,2-Dichloropropane	63		5.300					
63 Methyl methacrylate	41		5.373					
67 Dibromomethane	93		5.403					
66 1,4-Dioxane	88		5.415					
68 Dichlorobromomethane	83		5.519					
70 2-Nitropropane	43		5.726					
69 2-Chloroethyl vinyl ether	63		5.738					
71 Epichlorohydrin	57		5.811					
72 cis-1,3-Dichloropropene	75		5.841					
73 4-Methyl-2-pentanone (MIBK)	43		5.957					
74 Toluene	92		6.060					
76 2-Methylthiophene	97		6.164					
77 trans-1,3-Dichloropropene	75		6.267					
78 3-Methylthiophene	97		6.291					
75 Ethyl methacrylate	69		6.303					
79 1,1,2-Trichloroethane	83		6.419					
81 Tetrachloroethene	166		6.455					
82 1,3-Dichloropropane	76		6.541					
80 2-Hexanone	43		6.589					
83 Chlorodibromomethane	129		6.717					
84 Ethylene Dibromide	107		6.802					
85 3-Chlorobenzotrifluoride	180		7.119					
87 Chlorobenzene	112		7.149					
86 4-Chlorobenzotrifluoride	180		7.161					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
88 Ethylbenzene	91		7.216					
89 1,1,1,2-Tetrachloroethane	131		7.222					
90 m-Xylene & p-Xylene	106		7.307					
91 o-Xylene	106		7.624					
92 Styrene	104		7.648					
95 Bromoform	173		7.836					
93 2-Chlorobenzotrifluoride	180		7.849					
94 Isopropylbenzene	105		7.909					
96 Cyclohexanone	55		8.056					
101 Bromobenzene	156		8.183					
97 1,1,2,2-Tetrachloroethane	83		8.214					
99 N-Propylbenzene	91		8.238					
100 1,2,3-Trichloropropane	110		8.250					
98 trans-1,4-Dichloro-2-butene	53		8.256					
103 2-Chlorotoluene	126		8.323					
102 1,3,5-Trimethylbenzene	105		8.378					
104 3-Chlorotoluene	126		8.378					
105 4-Chlorotoluene	126		8.414					
106 tert-Butylbenzene	134		8.646					
107 1,2,4-Trimethylbenzene	105		8.688					
108 Pentachloroethane	167		8.694					
109 sec-Butylbenzene	105		8.816					
111 1,3-Dichlorobenzene	146		8.938					
110 4-Isopropyltoluene	119		8.938					
114 Dicyclopentadiene	66		8.992					
113 1,4-Dichlorobenzene	146		9.011					
112 1,2,3-Trimethylbenzene	105		9.035					
115 n-Butylbenzene	91		9.278					
116 1,2-Dichlorobenzene	146		9.321					
117 1,2-Dibromo-3-Chloropropane	75		9.996					
118 1,3,5-Trichlorobenzene	180		10.118					
119 1,2,4-Trichlorobenzene	180		10.641					
120 Hexachlorobutadiene	225		10.750					
121 Naphthalene	128		10.860					
122 1,2,3-Trichlorobenzene	180		11.049					
S 123 Total BTEX	1		30.000					7
S 124 Xylenes, Total	1		30.000					7
S 125 1,2-Dichloroethene, Total	1		30.000					7
S 126 1,3-Dichloropropene, Total	1		30.000					7
T 127 Ethanol TIC	45		0.000					1
T 128 Hexachloroethane TIC	1		0.000					1
T 9 bis(2-chloromethyl)ether TIC	1		0.000					1
T 8 t-Amyl alcohol	59		0.000					1
T 7 Ethylene oxide	1		0.000					1

QC Flag Legend

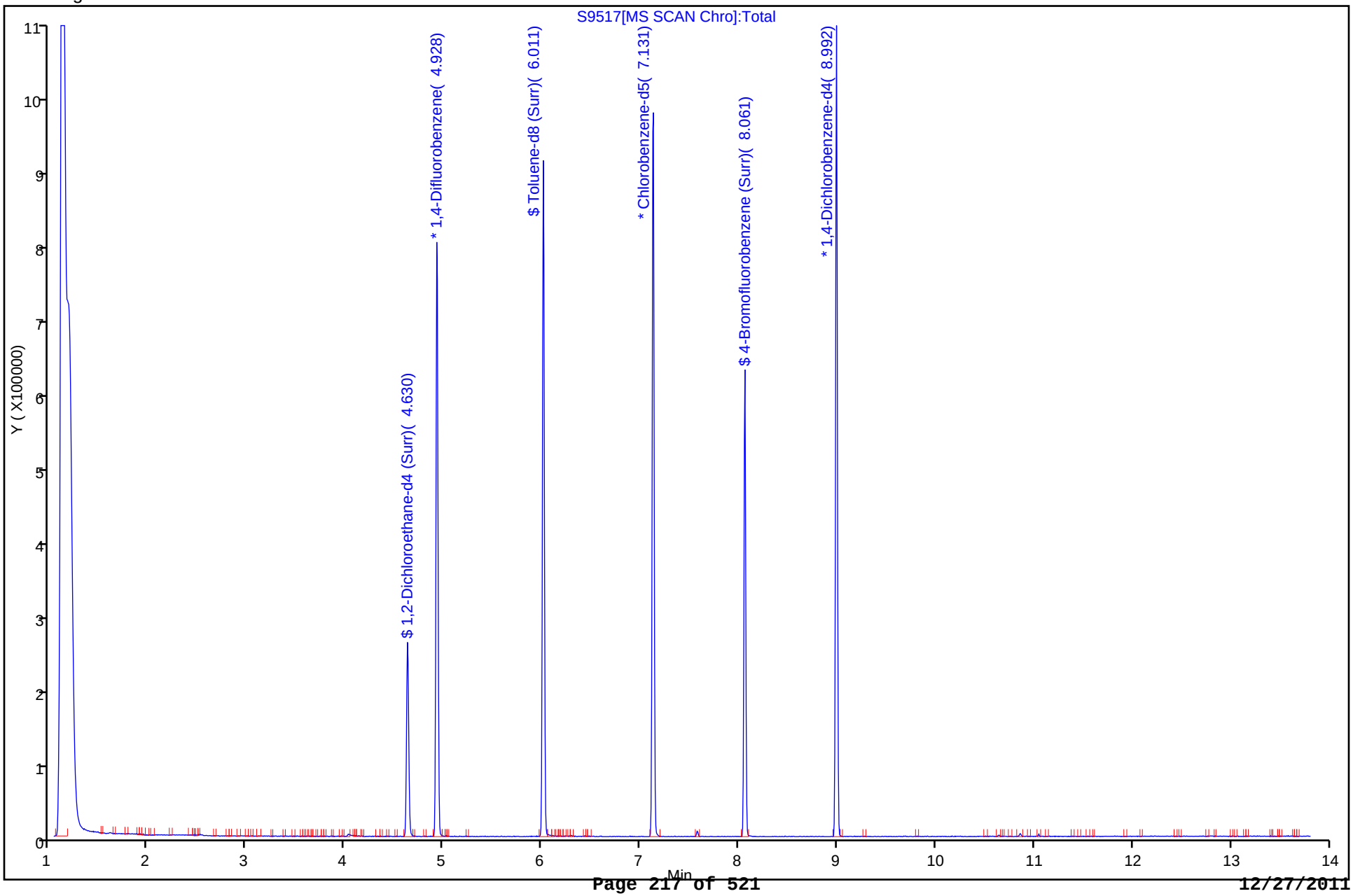
Processing Flags
1 - Missing Peaks
7 - Failed Limit of Detection

Report Date: 09-Dec-2011 11:23:34 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9517.D

Injection Date:	09-Dec-2011 10:57:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	5
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 480-43413/4

Matrix: Water Lab File ID: S9490.D

Analysis Method: 8260B Date Collected:

Sample wt/vol: 5(mL) Date Analyzed: 12/08/2011 10:33

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	26.1		1.0	0.41
108-88-3	Toluene	26.0		1.0	0.51
100-41-4	Ethylbenzene	26.5		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	54.3		2.0	0.66
95-47-6	o-Xylene	27.5		1.0	0.76
1330-20-7	Xylenes, Total	81.8		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		66-137
2037-26-5	Toluene-d8 (Surr)	101		71-126
460-00-4	4-Bromofluorobenzene (Surr)	96		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9490.D
Lims ID: LCS Client ID:
Inject. Date: 08-Dec-2011 10:33:30 Dil. Factor: 1.0000
Sample Type: LCS
Sample ID: LCS
Misc. Info.: 480-0008065-004 =480-0008065-004
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 4
Lims Batch ID: 43413 Lims Sample ID: 4
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m
Last Update: 08-Dec-2011 10:50:36 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: coderd Date: 08-Dec-2011 10:50:36

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	421949	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	213935	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	47	229151	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	53	66358	24.8	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	58	406906	25.3	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	88	129021	23.9	
10 Dichlorodifluoromethane	85	1.272	1.266	0.006	78	92254	20.7	
12 Chloromethane	50	1.418	1.406	0.012	88	150901	22.4	
13 Vinyl chloride	62	1.510	1.509	0.001	66	130501	25.9	
14 Bromomethane	94	1.795	1.771	0.024	81	57609	28.8	
15 Chloroethane	64	1.887	1.862	0.025	91	68973	28.0	
17 Trichlorofluoromethane	101	2.088	2.075	0.013	84	170012	29.0	
20 Acrolein	56	2.495	2.489	0.006	96	313441	463.0	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.544	2.544	0.0	24	60269	20.3	
22 1,1-Dichloroethene	96	2.556	2.550	0.006	81	117714	27.2	
23 Acetone	43	2.647	2.641	0.006	99	247647	116.8	
25 Iodomethane	142	2.720	2.708	0.012	51	60731	20.2	
26 Carbon disulfide	76	2.720	2.714	0.006	84	143117	16.6	
27 Methyl acetate	43	2.903	2.896	0.007	97	212650	21.2	
29 Acetonitrile	40	2.927	2.927	0.0	100	367285	942.7	
30 Methylene Chloride	84	3.030	3.024	0.006	86	126991	25.0	
32 Methyl tert-butyl ether	73	3.170	3.164	0.006	92	313143	22.5	
34 trans-1,2-Dichloroethene	96	3.176	3.170	0.006	69	115579	27.6	
33 Acrylonitrile	53	3.243	3.237	0.006	99	290604	109.5	
39 1,1-Dichloroethane	63	3.535	3.529	0.006	85	223293	26.1	
37 Vinyl acetate	43	3.590	3.584	0.006	97	1014418	111.7	
44 2,2-Dichloropropane	77	3.967	3.967	0.0	92	96456	28.6	
45 cis-1,2-Dichloroethene	96	3.998	3.992	0.006	70	131822	26.1	
43 2-Butanone (MEK)	43	4.040	4.040	0.0	94	369594	106.5	
48 Chlorobromomethane	128	4.192	4.186	0.006	94	67368	26.4	
49 Tetrahydrofuran	42	4.211	4.204	0.007	90	250103	109.1	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
50 Chloroform	83	4.253	4.247	0.006	69	216502	25.9	
52 Cyclohexane	56	4.345	4.338	0.006	70	130609	18.2	
51 1,1,1-Trichloroethane	97	4.345	4.338	0.006	92	155145	28.4	
55 Carbon tetrachloride	117	4.448	4.448	0.0	80	145546	28.7	
54 1,1-Dichloropropene	75	4.460	4.460	0.0	93	167246	26.5	
57 Benzene	78	4.630	4.630	0.0	97	506233	26.1	
58 1,2-Dichloroethane	62	4.685	4.685	0.0	74	190718	26.7	
62 Trichloroethene	95	5.105	5.105	0.0	92	125782	26.4	
64 Methylcyclohexane	83	5.196	5.196	0.0	91	138245	20.9	
65 1,2-Dichloropropane	63	5.300	5.299	0.001	91	127575	25.8	
67 Dibromomethane	93	5.403	5.403	0.0	88	77778	26.0	
68 Dichlorobromomethane	83	5.519	5.518	0.001	93	157635	27.3	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	92	355134	112.0	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	88	199952	27.2	
73 4-Methyl-2-pentanone (MIBK)	43	5.957	5.957	0.001	98	770583	110.3	
74 Toluene	92	6.060	6.060	0.0	94	335952	26.0	
77 trans-1,3-Dichloropropene	75	6.267	6.267	0.0	92	190016	27.1	
75 Ethyl methacrylate	69	6.303	6.303	0.0	72	151448	20.5	
79 1,1,2-Trichloroethane	83	6.413	6.413	0.0	89	103057	25.6	
81 Tetrachloroethene	166	6.456	6.455	0.001	79	137399	25.9	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	93	217456	25.5	
80 2-Hexanone	43	6.589	6.589	0.0	98	568085	110.7	
83 Chlorodibromomethane	129	6.711	6.717	-0.006	88	126044	27.8	
84 Ethylene Dibromide	107	6.796	6.796	0.0	98	122777	25.5	
87 Chlorobenzene	112	7.149	7.149	0.0	86	381334	25.8	
88 Ethylbenzene	91	7.216	7.216	0.0	99	628103	26.5	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	43	127470	27.2	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	501170	54.3	
91 o-Xylene	106	7.624	7.623	0.001	97	238711	27.5	
92 Styrene	104	7.648	7.648	0.0	95	402924	27.5	
95 Bromoform	173	7.836	7.836	0.0	96	80425	24.1	
94 Isopropylbenzene	105	7.909	7.909	0.0	96	618759	27.0	
101 Bromobenzene	156	8.183	8.183	0.0	91	163610	25.5	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	80	182463	25.5	
99 N-Propylbenzene	91	8.238	8.238	0.0	78	766968	26.8	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	71	60640	25.8	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	85	194182	94.7	
103 2-Chlorotoluene	126	8.323	8.323	0.0	96	152516	26.2	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	92	533737	27.0	
105 4-Chlorotoluene	126	8.414	8.414	0.0	98	162238	25.9	
106 tert-Butylbenzene	134	8.640	8.645	-0.005	91	118581	27.4	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	70	557786	27.8	
109 sec-Butylbenzene	105	8.816	8.816	0.0	94	679265	27.2	
111 1,3-Dichlorobenzene	146	8.938	8.937	0.001	71	320022	25.8	
110 4-Isopropyltoluene	119	8.938	8.937	0.001	95	583294	27.9	
113 1,4-Dichlorobenzene	146	9.011	9.010	0.001	93	326319	24.6	
115 n-Butylbenzene	91	9.272	9.272	0.0	95	526785	25.2	
116 1,2-Dichlorobenzene	146	9.321	9.321	0.0	95	319859	26.1	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	72	33606	21.8	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	92	192083	25.1	
120 Hexachlorobutadiene	225	10.751	10.750	0.0	95	92479	28.1	
121 Naphthalene	128	10.860	10.860	0.0	97	553575	23.8	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
122 1,2,3-Trichlorobenzene	180	11.049	11.048	0.001	94	188057	26.7	
S 125 1,2-Dichloroethene, Total	1				0		53.7	
S 126 1,3-Dichloropropene, Total	1				0		54.3	
S 124 Xylenes, Total	1				0		81.7	

Report Date: 08-Dec-2011 10:50:36 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9490.D

Injection Date: 08-Dec-2011 10:33:30 Limit Group: MV - 8260B ICAL

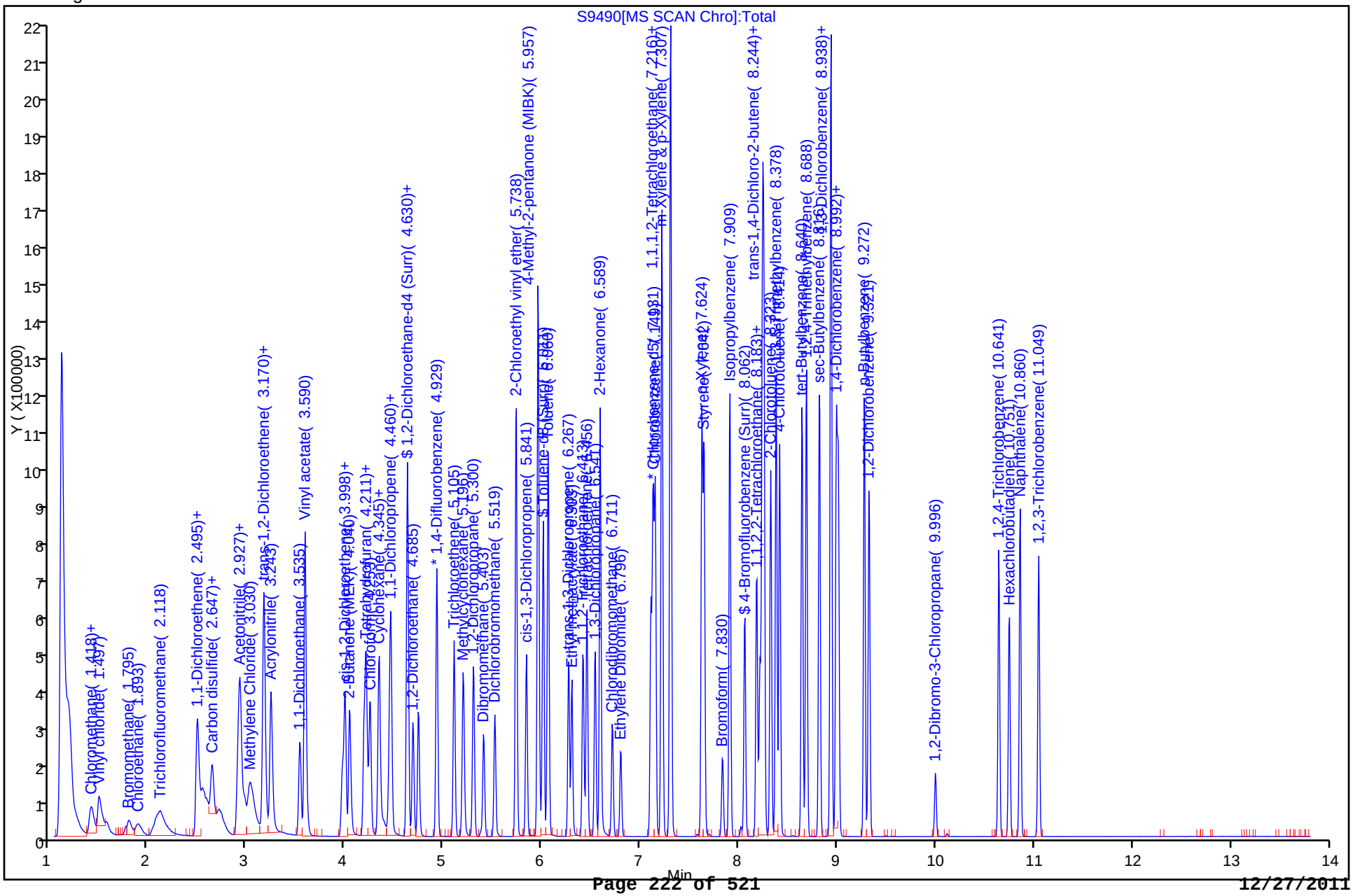
Client ID: Instrument ID: HP5973S

Lims Batch ID: 43413 Lims Sample ID: 4

Operator ID: DHC

Column Type: ZB-624 Column Dia: 0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 480-43660/4

Matrix: Water Lab File ID: S9516.D

Analysis Method: 8260B Date Collected:

Sample wt/vol: 5(mL) Date Analyzed: 12/09/2011 10:35

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43660 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	26.7		1.0	0.41
108-88-3	Toluene	26.1		1.0	0.51
100-41-4	Ethylbenzene	27.0		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	55.0		2.0	0.66
95-47-6	o-Xylene	27.7		1.0	0.76
1330-20-7	Xylenes, Total	82.7		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	95		66-137
2037-26-5	Toluene-d8 (Surr)	104		71-126
460-00-4	4-Bromofluorobenzene (Surr)	94		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9516.D
Lims ID: LCS Client ID:
Inject. Date: 09-Dec-2011 10:35:30 Dil. Factor: 1.0000
Sample Type: LCS
Sample ID: LCS
Misc. Info.: 480-0008099-004 =480-0008099-004
Operator: DHC Instrument ID: HP5973S
Vol. Injected: 1.0000 ALS Bottle#: 4
Lims Batch ID: 43660 Lims Sample ID: 4
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S-8260.m
Last Update: 09-Dec-2011 11:09:08 Calib Date: 01-Dec-2011 16:05:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D
Limit Group: MV - 8260B ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: coderd Date: 09-Dec-2011 11:09:08

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.928	4.929	-0.001	95	474176	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	236475	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	47	247275	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.631	-0.001	52	71237	23.7	
$ 5 Toluene-d8 (Surr)	98	6.011	6.012	-0.001	57	459358	25.9	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	88	139772	23.4	
10 Dichlorodifluoromethane	85	1.266	1.260	0.006	79	90785	18.2	
12 Chloromethane	50	1.418	1.418	0.0	89	159452	21.1	
13 Vinyl chloride	62	1.510	1.510	0.0	66	145485	25.7	
14 Bromomethane	94	1.795	1.789	0.006	86	66768	29.7	
15 Chloroethane	64	1.887	1.893	-0.006	93	79116	28.6	
17 Trichlorofluoromethane	101	2.075	2.075	0.0	83	179752	27.2	
20 Acrolein	56	2.501	2.495	0.006	98	311061	408.8	
21 1,1,2-Trichloro-1,2,2-trifluoroethane	101	2.538	2.538	0.0	43	100859	30.3	
22 1,1-Dichloroethene	96	2.544	2.544	0.0	85	132682	27.3	
23 Acetone	43	2.647	2.641	0.006	99	255995	107.4	
25 Iodomethane	142	2.720	2.720	0.0	45	108727	32.1	
26 Carbon disulfide	76	2.726	2.726	0.0	97	347855	36.0	
27 Methyl acetate	43	2.903	2.903	0.0	98	247698	22.0	
29 Acetonitrile	40	2.927	2.921	0.006	99	338628	773.4	
30 Methylene Chloride	84	3.030	3.024	0.006	85	144247	25.3	
32 Methyl tert-butyl ether	73	3.170	3.170	0.0	91	396670	25.4	
34 trans-1,2-Dichloroethene	96	3.176	3.176	0.0	65	132731	28.2	
33 Acrylonitrile	53	3.249	3.243	0.006	98	345116	115.7	
39 1,1-Dichloroethane	63	3.535	3.535	0.0	85	253799	26.4	
37 Vinyl acetate	43	3.590	3.590	0.0	97	1402059	137.4	
44 2,2-Dichloropropane	77	3.973	3.967	0.006	93	112062	29.6	
45 cis-1,2-Dichloroethene	96	3.998	3.998	0.0	69	152006	26.8	
43 2-Butanone (MEK)	43	4.046	4.040	0.006	99	439652	112.7	
48 Chlorobromomethane	128	4.192	4.192	0.0	94	74919	26.1	
49 Tetrahydrofuran	42	4.211	4.211	0.0	90	301560	117.1	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
50 Chloroform	83	4.253	4.253	0.0	69	240645	25.7	
52 Cyclohexane	56	4.344	4.338	0.006	88	230225	28.6	
51 1,1,1-Trichloroethane	97	4.344	4.344	0.0	92	174403	28.4	
55 Carbon tetrachloride	117	4.448	4.448	0.0	81	160267	28.2	
54 1,1-Dichloropropene	75	4.466	4.460	0.006	94	195774	27.6	
57 Benzene	78	4.630	4.630	0.0	97	581833	26.7	
58 1,2-Dichloroethane	62	4.685	4.685	0.0	73	202148	25.1	
62 Trichloroethene	95	5.105	5.105	0.0	94	140879	26.4	
64 Methylcyclohexane	83	5.196	5.196	0.0	92	214927	28.9	
65 1,2-Dichloropropane	63	5.300	5.300	0.0	92	147752	26.6	
67 Dibromomethane	93	5.403	5.403	0.0	91	86167	25.6	
68 Dichlorobromomethane	83	5.519	5.519	0.0	92	180500	27.8	
69 2-Chloroethyl vinyl ether	63	5.738	5.738	0.0	91	480076	134.7	
72 cis-1,3-Dichloropropene	75	5.841	5.841	0.0	89	227932	27.6	
73 4-Methyl-2-pentanone (MIBK)	43	5.957	5.957	0.0	97	923247	119.6	
74 Toluene	92	6.060	6.060	0.0	96	373714	26.1	
77 trans-1,3-Dichloropropene	75	6.267	6.267	0.0	91	218281	28.2	
75 Ethyl methacrylate	69	6.303	6.303	0.0	71	204536	25.0	
79 1,1,2-Trichloroethane	83	6.413	6.419	-0.006	88	115955	26.0	
81 Tetrachloroethene	166	6.455	6.455	0.0	79	152585	26.0	
82 1,3-Dichloropropane	76	6.541	6.541	0.0	92	244993	26.0	
80 2-Hexanone	43	6.589	6.589	0.0	81	681590	120.1	
83 Chlorodibromomethane	129	6.717	6.717	0.0	88	140098	27.9	
84 Ethylene Dibromide	107	6.802	6.802	0.0	98	138974	26.1	
87 Chlorobenzene	112	7.149	7.149	0.0	86	421540	25.8	
88 Ethylbenzene	91	7.216	7.216	0.0	98	705941	27.0	
89 1,1,1,2-Tetrachloroethane	131	7.222	7.222	0.0	42	141251	27.3	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	561544	55.0	
91 o-Xylene	106	7.624	7.624	0.0	97	266505	27.7	
92 Styrene	104	7.648	7.648	0.0	95	456003	28.1	
95 Bromoform	173	7.836	7.836	0.0	97	90222	24.4	
94 Isopropylbenzene	105	7.909	7.909	0.0	95	702212	28.4	
101 Bromobenzene	156	8.183	8.183	0.0	92	181593	26.2	
97 1,1,2,2-Tetrachloroethane	83	8.214	8.214	0.0	80	202605	26.2	
99 N-Propylbenzene	91	8.238	8.238	0.0	78	867919	28.1	
100 1,2,3-Trichloropropane	110	8.250	8.250	0.0	69	65962	26.0	
98 trans-1,4-Dichloro-2-butene	53	8.256	8.256	0.0	86	244878	110.7	
103 2-Chlorotoluene	126	8.323	8.323	0.0	96	169949	27.1	
102 1,3,5-Trimethylbenzene	105	8.378	8.378	0.0	92	594635	27.8	
105 4-Chlorotoluene	126	8.414	8.414	0.0	98	182581	27.0	
106 tert-Butylbenzene	134	8.646	8.646	0.0	86	134427	28.8	
107 1,2,4-Trimethylbenzene	105	8.688	8.688	0.0	69	603044	27.9	
109 sec-Butylbenzene	105	8.822	8.816	0.006	94	761039	28.2	
111 1,3-Dichlorobenzene	146	8.938	8.938	0.0	70	353329	26.4	
110 4-Isopropyltoluene	119	8.938	8.938	0.0	95	656232	29.1	
113 1,4-Dichlorobenzene	146	9.011	9.011	0.0	94	362949	25.4	
115 n-Butylbenzene	91	9.272	9.278	-0.006	95	587440	26.0	
116 1,2-Dichlorobenzene	146	9.321	9.321	0.0	95	341038	25.8	
117 1,2-Dibromo-3-Chloropropane	75	9.996	9.996	0.0	72	38065	22.9	
119 1,2,4-Trichlorobenzene	180	10.641	10.641	0.0	91	226197	27.4	
120 Hexachlorobutadiene	225	10.750	10.750	0.0	95	102138	27.6	
121 Naphthalene	128	10.860	10.860	0.0	97	669560	25.6	

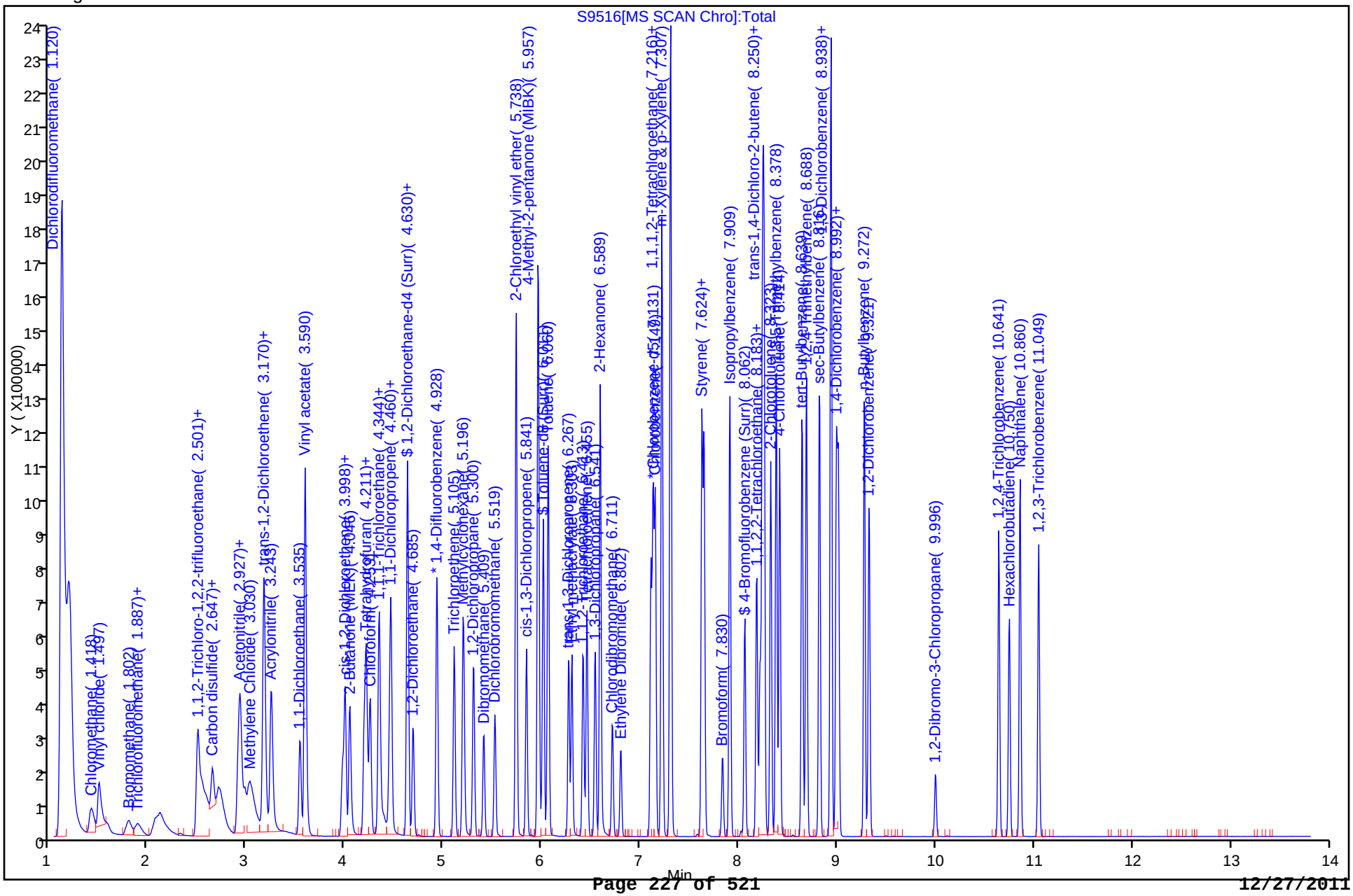
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
122 1,2,3-Trichlorobenzene	180	11.049	11.049	0.0	94	216675	27.3	
S 124 Xylenes, Total	1				0		82.7	
S 125 1,2-Dichloroethene, Total	1				0		55.0	
S 126 1,3-Dichloropropene, Total	1				0		55.8	

Report Date: 09-Dec-2011 11:09:08 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111209-8099.b\S9516.D

Injection Date:	09-Dec-2011 10:35:30	Limit Group:	MV - 8260B ICAL
Client ID:		Instrument ID:	HP5973S
Lims Batch ID:	43660	Lims Sample ID:	4
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-17 MS Lab Sample ID: 480-13366-1 MS

Matrix: Water Lab File ID: S9503.D

Analysis Method: 8260B Date Collected: 11/30/2011 11:55

Sample wt/vol: 5(mL) Date Analyzed: 12/08/2011 15:33

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	32.4		1.0	0.41
108-88-3	Toluene	29.5		1.0	0.51
100-41-4	Ethylbenzene	30.9		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	61.0		2.0	0.66
95-47-6	o-Xylene	30.2		1.0	0.76
1330-20-7	Xylenes, Total	91.2		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	105		66-137
2037-26-5	Toluene-d8 (Surr)	99		71-126
460-00-4	4-Bromofluorobenzene (Surr)	94		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9503.D		
Lims ID:	480-13366-E-1 MS	Client ID:	MW-17
Inject. Date:	08-Dec-2011 15:33:30	Dil. Factor:	1.0000
Sample Type:	MS		
Sample ID:	480-13366-E-1 MS		
Misc. Info.:	480-0008065-055 =480-0008065-055		
Operator:	DHC	Instrument ID:	HP5973S
Vol. Injected:	1.0000	ALS Bottle#:	17
Lims Batch ID:	43413	Lims Sample ID:	55
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m		
Last Update:	08-Dec-2011 11:12:08	Calib Date:	01-Dec-2011 16:05:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D		
Limit Group:	MV - 8260B ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: coderd		Date:	09-Dec-2011 08:49:49

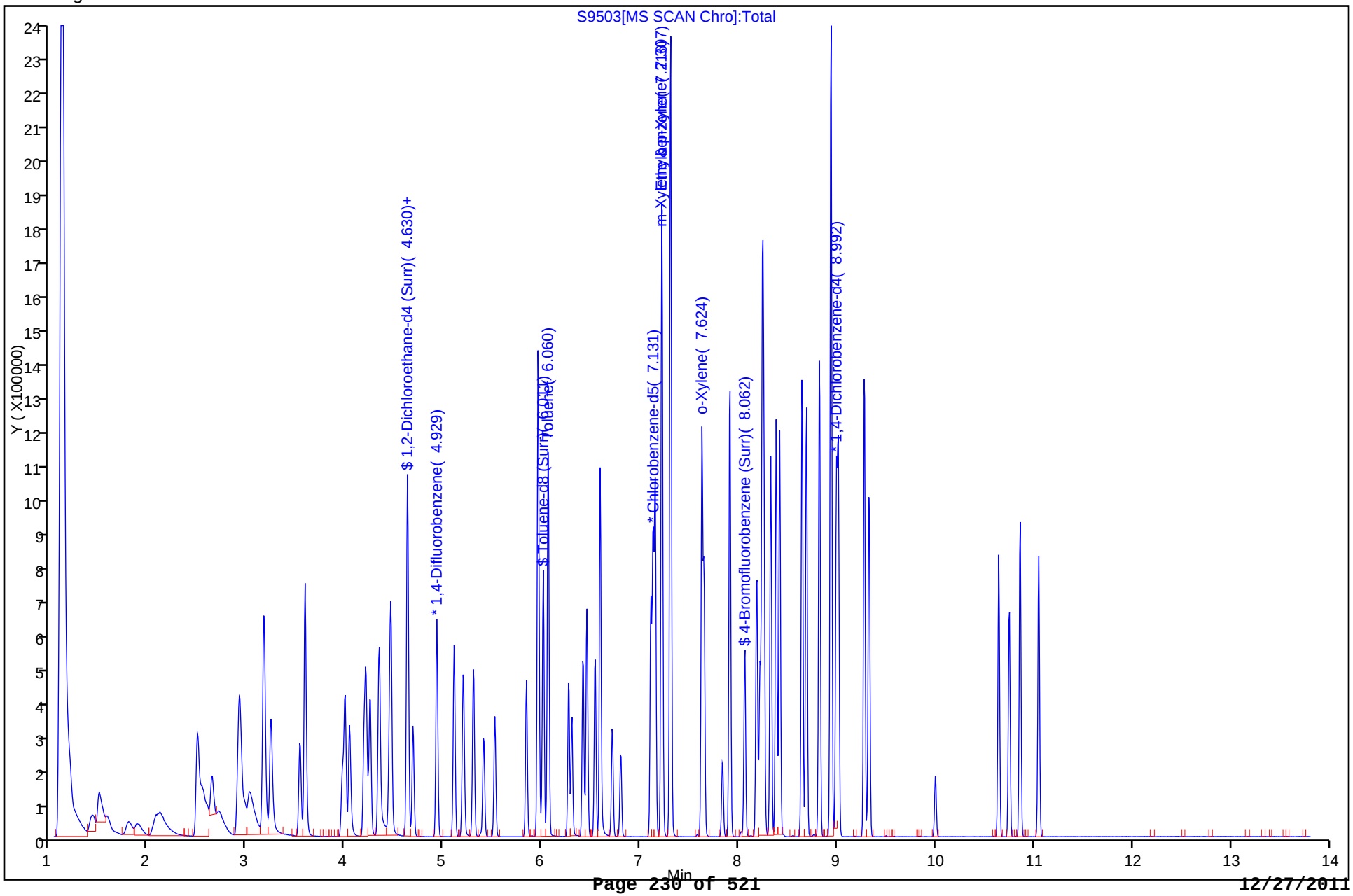
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	368055	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	85	198769	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	43	215341	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	50	61198	26.2	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	58	369832	24.8	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	89	117977	23.5	
57 Benzene	78	4.630	4.630	0.0	97	548322	32.4	
74 Toluene	92	6.060	6.060	0.0	94	354922	29.5	
88 Ethylbenzene	91	7.216	7.216	0.0	99	679514	30.9	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	523104	61.0	
91 o-Xylene	106	7.624	7.623	0.001	97	243864	30.2	
S 123 Total BTEX	1				0		183.9	
S 124 Xylenes, Total	1				0		91.2	

Report Date: 09-Dec-2011 08:49:49 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9503.D

Injection Date:	08-Dec-2011 15:33:30	Limit Group:	MV - 8260B ICAL
Client ID:	MW-17	Instrument ID:	HP5973S
Lims Batch ID:	43413	Lims Sample ID:	55
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-17 MSD Lab Sample ID: 480-13366-1 MSD

Matrix: Water Lab File ID: S9504.D

Analysis Method: 8260B Date Collected: 11/30/2011 11:55

Sample wt/vol: 5(mL) Date Analyzed: 12/08/2011 15:55

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: ZB-624 (60) ID: 0.25(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 43413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-43-2	Benzene	31.1		1.0	0.41
108-88-3	Toluene	29.1		1.0	0.51
100-41-4	Ethylbenzene	30.1		1.0	0.74
179601-23-1	m-Xylene & p-Xylene	59.1		2.0	0.66
95-47-6	o-Xylene	29.7		1.0	0.76
1330-20-7	Xylenes, Total	88.8		2.0	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		66-137
2037-26-5	Toluene-d8 (Surr)	99		71-126
460-00-4	4-Bromofluorobenzene (Surr)	93		73-120

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9504.D		
Lims ID:	480-13366-E-1 MSD	Client ID:	MW-17
Inject. Date:	08-Dec-2011 15:55:30	Dil. Factor:	1.0000
Sample Type:	MSD		
Sample ID:	480-13366-E-1 MSD		
Misc. Info.:	480-0008065-056 =480-0008065-056		
Operator:	DHC	Instrument ID:	HP5973S
Vol. Injected:	1.0000	ALS Bottle#:	18
Lims Batch ID:	43413	Lims Sample ID:	56
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973S\20111208-8065.b\S-8260.m		
Last Update:	08-Dec-2011 11:12:08	Calib Date:	01-Dec-2011 16:05:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973S\20111201-7883.b\S9329.D		
Limit Group:	MV - 8260B ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: coderd		Date:	09-Dec-2011 08:49:52

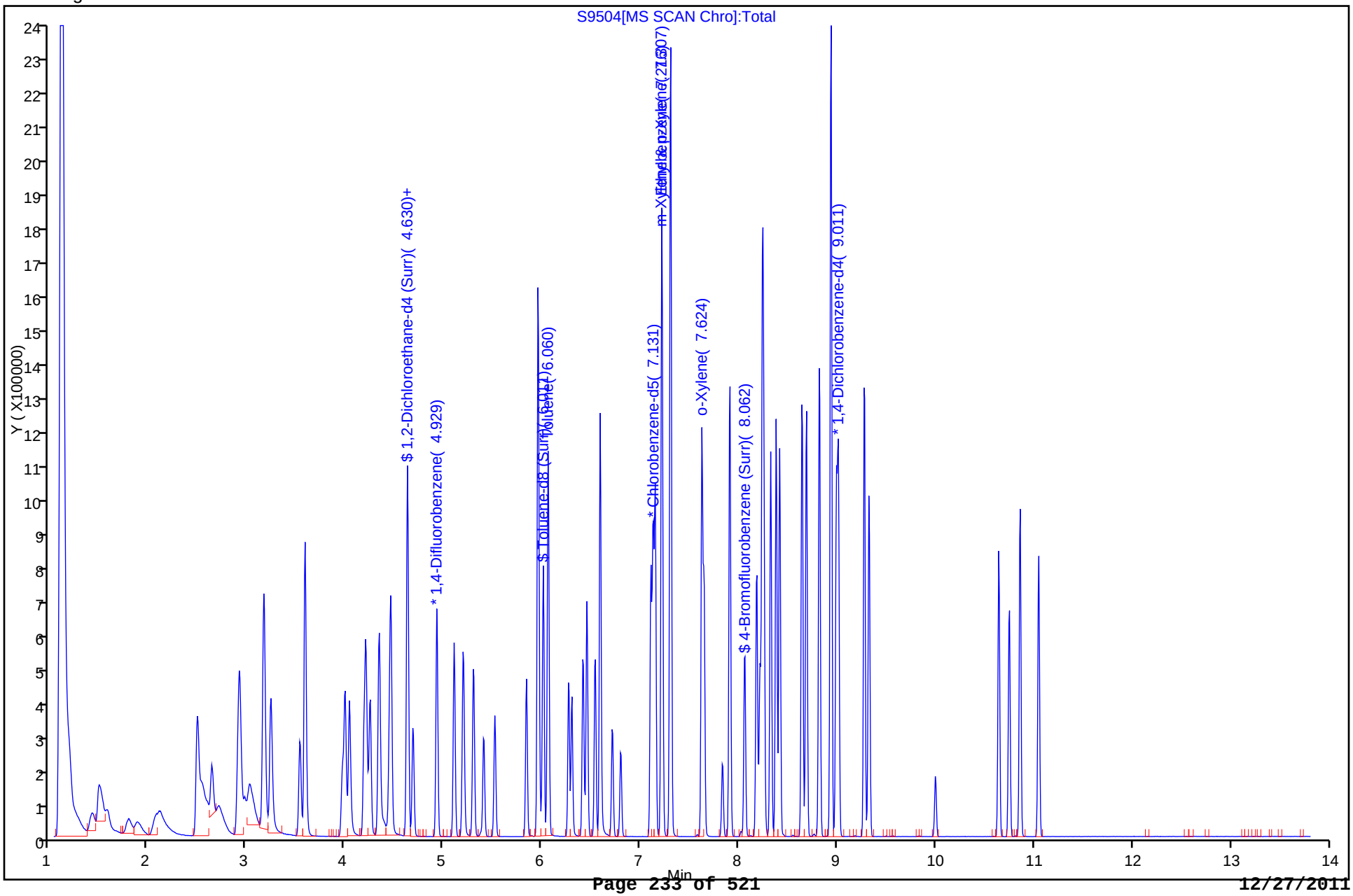
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ug/L	Flags
* 1 1,4-Difluorobenzene	114	4.929	4.928	0.001	95	396885	25.0	
* 2 Chlorobenzene-d5	82	7.125	7.125	0.0	86	209105	25.0	
* 3 1,4-Dichlorobenzene-d4	152	8.992	8.992	0.0	94	221207	25.0	
$ 4 1,2-Dichloroethane-d4 (Surr)	67	4.630	4.630	0.0	50	62396	24.8	
$ 5 Toluene-d8 (Surr)	98	6.011	6.011	0.0	57	389864	24.8	
$ 6 4-Bromofluorobenzene (Surr)	174	8.062	8.062	0.0	89	123077	23.3	
57 Benzene	78	4.630	4.630	0.0	97	568907	31.1	
74 Toluene	92	6.060	6.060	0.0	97	368094	29.1	
88 Ethylbenzene	91	7.216	7.216	0.0	99	697539	30.1	
90 m-Xylene & p-Xylene	106	7.307	7.307	0.0	98	533676	59.1	
91 o-Xylene	106	7.624	7.623	0.001	97	252150	29.7	
S 123 Total BTEX	1				0		179.2	
S 124 Xylenes, Total	1				0		88.8	

Report Date: 09-Dec-2011 08:49:52 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973S\20111208-8065.b\S9504.D

Injection Date:	08-Dec-2011 15:55:30	Limit Group:	MV - 8260B ICAL
Client ID:	MW-17	Instrument ID:	HP5973S
Lims Batch ID:	43413	Lims Sample ID:	56
Operator ID:	DHC		
Column Type:	ZB-624	Column Dia:	0.25 mm

Y Scaling:



GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973S Start Date: 12/01/2011 10:44

Analysis Batch Number: 42429 End Date: 12/01/2011 17:11

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 480-42429/1		12/01/2011 10:44	1	S9315.D	ZB-624 (60) 0.25(mm)
STD 480-42429/3 IC		12/01/2011 11:38	1	S9317.D	ZB-624 (60) 0.25(mm)
STD 480-42429/4 IC		12/01/2011 12:00	1	S9318.D	ZB-624 (60) 0.25(mm)
STD 480-42429/5 IC		12/01/2011 12:22	1	S9319.D	ZB-624 (60) 0.25(mm)
STD 480-42429/6 ICIS		12/01/2011 12:44	1	S9320.D	ZB-624 (60) 0.25(mm)
STD 480-42429/7 IC		12/01/2011 13:07	1	S9321.D	ZB-624 (60) 0.25(mm)
STD 480-42429/8 IC		12/01/2011 13:29	1	S9322.D	ZB-624 (60) 0.25(mm)
STD 480-42429/10 IC		12/01/2011 14:13	1		ZB-624 (60) 0.25(mm)
STD 480-42429/11 IC		12/01/2011 14:36	1		ZB-624 (60) 0.25(mm)
STD 480-42429/12 IC		12/01/2011 14:58	1		ZB-624 (60) 0.25(mm)
STD 480-42429/13 IC		12/01/2011 15:20	1		ZB-624 (60) 0.25(mm)
STD 480-42429/14 IC		12/01/2011 15:42	1		ZB-624 (60) 0.25(mm)
STD 480-42429/15 IC		12/01/2011 16:05	1		ZB-624 (60) 0.25(mm)
ICV 480-42429/17		12/01/2011 16:49	1		ZB-624 (60) 0.25(mm)
MDLV 480-42429/18		12/01/2011 17:11	1		ZB-624 (60) 0.25(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973S Start Date: 12/08/2011 09:13

Analysis Batch Number: 43413 End Date: 12/08/2011 18:52

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 480-43413/1		12/08/2011 09:13	1	S9487.D	ZB-624 (60) 0.25(mm)
CCVIS 480-43413/2		12/08/2011 09:35	1	S9488.D	ZB-624 (60) 0.25(mm)
CCV 480-43413/3		12/08/2011 10:11	1		ZB-624 (60) 0.25(mm)
LCS 480-43413/4		12/08/2011 10:33	1	S9490.D	ZB-624 (60) 0.25(mm)
MB 480-43413/5		12/08/2011 10:55	1	S9491.D	ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 11:28	5		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 11:50	5		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 12:35	25		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 12:57	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 13:19	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 13:41	10		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 14:04	4		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 14:26	25		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 14:48	20		ZB-624 (60) 0.25(mm)
480-13366-1	MW-17	12/08/2011 15:10	1	S9502.D	ZB-624 (60) 0.25(mm)
480-13366-1 MS	MW-17 MS	12/08/2011 15:33	1	S9503.D	ZB-624 (60) 0.25(mm)
480-13366-1 MSD	MW-17 MSD	12/08/2011 15:55	1	S9504.D	ZB-624 (60) 0.25(mm)
480-13366-2	TRIP BLANK	12/08/2011 16:17	1	S9505.D	ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 16:39	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 17:02	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 17:24	20		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 17:46	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 18:08	4		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 18:30	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/08/2011 18:52	1		ZB-624 (60) 0.25(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973S Start Date: 12/09/2011 09:05

Analysis Batch Number: 43660 End Date: 12/09/2011 19:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 480-43660/1		12/09/2011 09:05	1	S9513.D	ZB-624 (60) 0.25(mm)
CCVIS 480-43660/2		12/09/2011 09:39	1	S9514.D	ZB-624 (60) 0.25(mm)
CCV 480-43660/3		12/09/2011 10:13	1		ZB-624 (60) 0.25(mm)
LCS 480-43660/4		12/09/2011 10:35	1	S9516.D	ZB-624 (60) 0.25(mm)
MB 480-43660/5		12/09/2011 10:57	1	S9517.D	ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 11:38	20		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 12:00	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 12:23	50		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 12:44	20		ZB-624 (60) 0.25(mm)
480-13430-1	MW-14	12/09/2011 13:06	1	S9522.D	ZB-624 (60) 0.25(mm)
480-13430-2	MW-15	12/09/2011 13:28	1	S9523.D	ZB-624 (60) 0.25(mm)
480-13430-3	MW-16	12/09/2011 13:50	1	S9524.D	ZB-624 (60) 0.25(mm)
480-13430-4	BD-120111	12/09/2011 14:12	1	S9525.D	ZB-624 (60) 0.25(mm)
480-13430-5	TRIP BLANK	12/09/2011 14:34	1	S9526.D	ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 14:56	250		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 15:17	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 15:39	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 16:01	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 16:23	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 16:45	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 17:07	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 17:29	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 17:51	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 18:12	1		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 18:34	40		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 18:56	20		ZB-624 (60) 0.25(mm)
ZZZZZ		12/09/2011 19:18	20		ZB-624 (60) 0.25(mm)

Method 8270C

Semivolatile Organic Compounds (GC/MS) by Method 8270C

FORM II
GC/MS SEMI VOA SURROGATE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): RXI-5Sil MS ID: 0.25 (mm)

Client Sample ID	Lab Sample ID	NBZ #	FBP #	TPH #
MW-17	480-13366-1	80	87	49
MW-14	480-13430-1	49	65	132
MW-15	480-13430-2	64	76	116
MW-16	480-13430-3	46	63	91
BD-120111	480-13430-4	51	72	115
	MB 480-42575/1-A	74	77	130
	MB 480-42840/1-A	77	76	105
	LCS 480-42575/2-A	95	94	133
	LCS 480-42840/2-A	66	80	117
	LCSD 480-42840/3-A	61	75	118
MW-17 MS	480-13366-1 MS	95	97	110
MW-17 MSD	480-13366-1 MSD	93	100	114

	QC LIMITS
NBZ = Nitrobenzene-d5	46-120
FBP = 2-Fluorobiphenyl	48-120
TPH = p-Terphenyl-d14	24-136

Column to be used to flag recovery values

FORM II 8270C

FORM III
GC/MS SEMI VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: U6924.D

Lab ID: LCS 480-42575/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Acenaphthene	100	103	103	60-120	
Acenaphthylene	100	108	108	63-120	
Anthracene	100	120	120	69-131	
Benz(a)anthracene	100	117	117	73-138	
Benzo(a)pyrene	100	108	108	74-126	
Benzo(b)fluoranthene	100	98.7	99	75-133	
Benzo(g,h,i)perylene	100	106	106	66-152	
Benzo(k)fluoranthene	100	106	106	75-133	
Chrysene	100	119	119	69-140	
Dibenz(a,h)anthracene	100	111	111	67-144	
Fluoranthene	100	109	109	67-133	
Fluorene	100	110	110	66-129	
Indeno(1,2,3-c,d)pyrene	100	108	108	69-146	
Naphthalene	100	80.8	81	48-120	
Phenanthrene	100	107	107	67-130	
Pyrene	100	125	125	58-136	

Column to be used to flag recovery and RPD values

FORM III 8270C

FORM III
GC/MS SEMI VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: X1734.D

Lab ID: LCS 480-42840/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Acenaphthene	100	90.3	90	60-120	
Acenaphthylene	100	84.8	85	63-120	
Anthracene	100	102	102	69-131	
Benz(a)anthracene	100	108	108	73-138	
Benzo(a)pyrene	100	101	101	74-126	
Benzo(b)fluoranthene	100	98.5	99	75-133	
Benzo(g,h,i)perylene	100	112	112	66-152	
Benzo(k)fluoranthene	100	98.4	98	75-133	
Chrysene	100	100	100	69-140	
Dibenz(a,h)anthracene	100	99.0	99	67-144	
Fluoranthene	100	106	106	67-133	
Fluorene	100	98.9	99	66-129	
Indeno(1,2,3-c,d)pyrene	100	106	106	69-146	
Naphthalene	100	53.9	54	48-120	
Phenanthrene	100	102	102	67-130	
Pyrene	100	98.4	98	58-136	

Column to be used to flag recovery and RPD values

FORM III 8270C

FORM III
GC/MS SEMI VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: X1735.D

Lab ID: LCSD 480-42840/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Acenaphthene	100	87.7	88	3	24	60-120	
Acenaphthylene	100	83.5	84	2	18	63-120	
Anthracene	100	105	105	3	15	69-131	
Benz(a)anthracene	100	110	110	2	15	73-138	
Benzo(a)pyrene	100	104	104	3	15	74-126	
Benzo(b)fluoranthene	100	100	100	2	15	75-133	
Benzo(g,h,i)perylene	100	116	116	3	15	66-152	
Benzo(k)fluoranthene	100	103	103	5	22	75-133	
Chrysene	100	102	102	2	15	69-140	
Dibenz(a,h)anthracene	100	102	102	3	15	67-144	
Fluoranthene	100	106	106	1	15	67-133	
Fluorene	100	100	100	1	15	66-129	
Indeno(1,2,3-c,d)pyrene	100	110	110	4	15	69-146	
Naphthalene	100	48.3	48	11	29	48-120	
Phenanthrene	100	104	104	2	15	67-130	
Pyrene	100	101	101	3	19	58-136	

Column to be used to flag recovery and RPD values

FORM III 8270C

FORM III
GC/MS SEMI VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: U6925.D

Lab ID: 480-13366-1 MS Client ID: MW-17 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Acenaphthene	105	ND	112	106	60-120	
Acenaphthylene	105	ND	115	110	63-120	
Anthracene	105	ND	134	127	69-131	
Benz(a)anthracene	105	ND	128	121	73-138	
Benzo(a)pyrene	105	ND	115	109	74-126	
Benzo(b)fluoranthene	105	ND	104	99	75-133	
Benzo(g,h,i)perylene	105	ND	114	109	66-152	
Benzo(k)fluoranthene	105	ND	114	108	75-133	
Chrysene	105	ND	131	125	69-140	
Dibenz(a,h)anthracene	105	ND	119	113	67-144	
Fluoranthene	105	ND	122	116	67-133	
Fluorene	105	ND	117	111	66-129	
Indeno(1,2,3-c,d)pyrene	105	ND	117	111	69-146	
Naphthalene	105	ND	90.5	86	48-120	
Phenanthrene	105	ND	117	111	67-130	
Pyrene	105	ND	140	133	58-136	

Column to be used to flag recovery and RPD values

FORM III 8270C

FORM III
GC/MS SEMI VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Matrix: Water Level: Low Lab File ID: U6926.D

Lab ID: 480-13366-1 MSD Client ID: MW-17 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Acenaphthene	103	110	107	2	24	60-120	
Acenaphthylene	103	114	110	2	18	63-120	
Anthracene	103	123	119	8	15	69-131	
Benz(a)anthracene	103	122	119	4	15	73-138	
Benzo(a)pyrene	103	109	106	5	15	74-126	
Benzo(b)fluoranthene	103	102	99	2	15	75-133	
Benzo(g,h,i)perylene	103	110	107	4	15	66-152	
Benzo(k)fluoranthene	103	107	104	6	22	75-133	
Chrysene	103	125	121	5	15	69-140	
Dibenz(a,h)anthracene	103	113	110	5	15	67-144	
Fluoranthene	103	114	111	7	15	67-133	
Fluorene	103	115	112	1	15	66-129	
Indeno(1,2,3-c,d)pyrene	103	111	107	5	15	69-146	
Naphthalene	103	89.0	86	2	29	48-120	
Phenanthrene	103	109	106	7	15	67-130	
Pyrene	103	137	133	3	19	58-136	

Column to be used to flag recovery and RPD values

FORM III 8270C

FORM IV
GC/MS SEMI VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: U6923.D Lab Sample ID: MB 480-42575/1-A

Matrix: Water Date Extracted: 12/02/2011 06:38

Instrument ID: HP5973U Date Analyzed: 12/06/2011 17:19

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 480-42575/2-A	U6924.D	12/06/2011 17:42
MW-17 MS	480-13366-1 MS	U6925.D	12/06/2011 18:06
MW-17 MSD	480-13366-1 MSD	U6926.D	12/06/2011 18:29
MW-17	480-13366-1	U6937.D	12/06/2011 22:45

FORM IV
GC/MS SEMI VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: X1733.D Lab Sample ID: MB 480-42840/1-A

Matrix: Water Date Extracted: 12/05/2011 09:05

Instrument ID: HP5973X Date Analyzed: 12/12/2011 21:21

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
MW-14	480-13430-1	X1564.D	12/07/2011 21:28
MW-15	480-13430-2	X1565.D	12/07/2011 21:51
MW-16	480-13430-3	X1566.D	12/07/2011 22:14
BD-120111	480-13430-4	X1567.D	12/07/2011 22:37
	LCS 480-42840/2-A	X1734.D	12/12/2011 21:44
	LCSD 480-42840/3-A	X1735.D	12/12/2011 22:06

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: U6912.D DFTPP Injection Date: 12/06/2011

Instrument ID: HP5973U DFTPP Injection Time: 13:11

Analysis Batch No.: 42934

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	54.1	
68	Less than 2.0 % of mass 69	0.1	(0.3)1
69	Mass 69 relative abundance	43.7	
70	Less than 2.0 % of mass 69	0.2	(0.4)1
127	40.0 - 60.0 % of mass 198	45.5	
197	Less than 1.0 % of mass 198	0.0	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	7.1	
275	10.0 - 30.0 % of mass 198	23.4	
365	Greater than 1.0 % of mass 198	3.6	
441	Present but less than mass 443	8.9	
442	Greater than 40.0 % of mass 198	56.9	
443	17.0 - 23.0 % of mass 442	11.1	(19.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 480-42934/2	U6913.D	12/06/2011	13:27
	IC 480-42934/3	U6914.D	12/06/2011	13:50
	ICIS 480-42934/4	U6915.D	12/06/2011	14:13
	IC 480-42934/5	U6916.D	12/06/2011	14:36
	IC 480-42934/6	U6917.D	12/06/2011	15:00
	IC 480-42934/7	U6918.D	12/06/2011	15:23
	ICV 480-42934/8	U6919.D	12/06/2011	15:46
	CCVIS 480-42934/10	U6921.D	12/06/2011	16:33
	MB 480-42575/1-A	U6923.D	12/06/2011	17:19
	LCS 480-42575/2-A	U6924.D	12/06/2011	17:42
MW-17 MS	480-13366-1 MS	U6925.D	12/06/2011	18:06
MW-17 MSD	480-13366-1 MSD	U6926.D	12/06/2011	18:29
MW-17	480-13366-1	U6937.D	12/06/2011	22:45

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: X0978.D DFTPP Injection Date: 11/16/2011

Instrument ID: HP5973X DFTPP Injection Time: 12:09

Analysis Batch No.: 40664

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	40.1	
68	Less than 2.0 % of mass 69	0.4	(1.0)1
69	Mass 69 relative abundance	38.9	
70	Less than 2.0 % of mass 69	0.0	(0.0)1
127	40.0 - 60.0 % of mass 198	47.6	
197	Less than 1.0 % of mass 198	0.0	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	6.9	
275	10.0 - 30.0 % of mass 198	23.4	
365	Greater than 1.0 % of mass 198	2.7	
441	Present but less than mass 443	10.1	
442	Greater than 40.0 % of mass 198	67.1	
443	17.0 - 23.0 % of mass 442	13.4	(20.0)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 480-40664/2	X0979.D	11/16/2011	12:25
	IC 480-40664/3	X0980.D	11/16/2011	12:47
	ICIS 480-40664/4	X0981.D	11/16/2011	13:10
	IC 480-40664/5	X0982.D	11/16/2011	13:33
	IC 480-40664/6	X0983.D	11/16/2011	13:56
	IC 480-40664/7	X0984.D	11/16/2011	14:19

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: X1546.D DFTPP Injection Date: 12/07/2011

Instrument ID: HP5973X DFTPP Injection Time: 14:43

Analysis Batch No.: 43264

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	32.3	
68	Less than 2.0 % of mass 69	0.7	(1.9)1
69	Mass 69 relative abundance	34.2	
70	Less than 2.0 % of mass 69	0.0	(0.0)1
127	40.0 - 60.0 % of mass 198	45.0	
197	Less than 1.0 % of mass 198	0.3	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	6.2	
275	10.0 - 30.0 % of mass 198	29.9	
365	Greater than 1.0 % of mass 198	5.5	
441	Present but less than mass 443	14.6	
442	Greater than 40.0 % of mass 198	99.5	
443	17.0 - 23.0 % of mass 442	19.8	(19.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 480-43264/2	X1547.D	12/07/2011	14:58
MW-14	480-13430-1	X1564.D	12/07/2011	21:28
MW-15	480-13430-2	X1565.D	12/07/2011	21:51
MW-16	480-13430-3	X1566.D	12/07/2011	22:14
BD-120111	480-13430-4	X1567.D	12/07/2011	22:37

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: X1679.D DFTPP Injection Date: 12/10/2011

Instrument ID: HP5973X DFTPP Injection Time: 13:58

Analysis Batch No.: 43924

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	43.6	
68	Less than 2.0 % of mass 69	0.4	(1.0)1
69	Mass 69 relative abundance	42.1	
70	Less than 2.0 % of mass 69	0.2	(0.5)1
127	40.0 - 60.0 % of mass 198	51.0	
197	Less than 1.0 % of mass 198	0.2	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	6.9	
275	10.0 - 30.0 % of mass 198	22.6	
365	Greater than 1.0 % of mass 198	2.6	
441	Present but less than mass 443	8.8	
442	Greater than 40.0 % of mass 198	61.1	
443	17.0 - 23.0 % of mass 442	12.1	(19.8)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 480-43924/2	X1680.D	12/10/2011	14:13
	IC 480-43924/3	X1681.D	12/10/2011	14:36
	ICIS 480-43924/4	X1682.D	12/10/2011	14:59
	IC 480-43924/5	X1683.D	12/10/2011	15:22
	IC 480-43924/7	X1685.D	12/10/2011	16:08
	IC 480-43924/6	X1686.D	12/10/2011	16:31

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: X1709.D DFTPP Injection Date: 12/12/2011

Instrument ID: HP5973X DFTPP Injection Time: 12:40

Analysis Batch No.: 44019

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	31.4	
68	Less than 2.0 % of mass 69	0.1	(0.2)1
69	Mass 69 relative abundance	33.4	
70	Less than 2.0 % of mass 69	0.2	(0.6)1
127	40.0 - 60.0 % of mass 198	44.9	
197	Less than 1.0 % of mass 198	0.0	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	6.9	
275	10.0 - 30.0 % of mass 198	26.9	
365	Greater than 1.0 % of mass 198	3.0	
441	Present but less than mass 443	12.0	
442	Greater than 40.0 % of mass 198	82.7	
443	17.0 - 23.0 % of mass 442	16.2	(19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 480-44019/9	X1717.D	12/12/2011	15:35
	IC 480-44019/10	X1718.D	12/12/2011	15:57
	IC 480-44019/11	X1719.D	12/12/2011	16:20
	IC 480-44019/12	X1720.D	12/12/2011	16:43
	IC 480-44019/13	X1721.D	12/12/2011	17:06
	IC 480-44019/14	X1722.D	12/12/2011	17:29

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab File ID: X1727.D DFTPP Injection Date: 12/12/2011

Instrument ID: HP5973X DFTPP Injection Time: 19:12

Analysis Batch No.: 44096

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 60.0 % of mass 198	30.8	
68	Less than 2.0 % of mass 69	0.0	(0.0)1
69	Mass 69 relative abundance	32.0	
70	Less than 2.0 % of mass 69	0.2	(0.6)1
127	40.0 - 60.0 % of mass 198	43.5	
197	Less than 1.0 % of mass 198	0.0	
198	Base Peak, 100 % relative abundance	100.0	
199	5.0- 9.0 % of mass 198	6.9	
275	10.0 - 30.0 % of mass 198	26.6	
365	Greater than 1.0 % of mass 198	2.9	
441	Present but less than mass 443	12.0	
442	Greater than 40.0 % of mass 198	81.4	
443	17.0 - 23.0 % of mass 442	16.2	(19.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 480-44096/2	X1728.D	12/12/2011	19:27
	MB 480-42840/1-A	X1733.D	12/12/2011	21:21
	LCS 480-42840/2-A	X1734.D	12/12/2011	21:44
	LCSD 480-42840/3-A	X1735.D	12/12/2011	22:06

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: ICIS 480-42934/4 Date Analyzed: 12/06/2011 14:13

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): U6915.D Heated Purge: (Y/N) N

Calibration ID: 5137

		DCB		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		153495	6.01	604437	7.67	440232	9.94
UPPER LIMIT		306990	6.51	1208874	8.17	880464	10.44
LOWER LIMIT		76748	5.51	302219	7.17	220116	9.44
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 480-42934/8		142420	6.01	536679	7.67	386961	9.94
CCVIS 480-42934/10		150437	6.01	568704	7.67	432519	9.94

DCB = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: ICIS 480-42934/4 Date Analyzed: 12/06/2011 14:13

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): U6915.D Heated Purge: (Y/N) N

Calibration ID: 5137

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		813336	11.65	806728	14.15	707748	15.54
UPPER LIMIT		1626672	12.15	1613456	14.65	1415496	16.04
LOWER LIMIT		406668	11.15	403364	13.65	353874	15.04
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 480-42934/8		725453	11.65	700116	14.15	567771	15.54
CCVIS 480-42934/10		812786	11.65	836415	14.15	720971	15.54

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-42934/10 Date Analyzed: 12/06/2011 16:33

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): U6921.D Heated Purge: (Y/N) N

Calibration ID: 5137

		DCB		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		150437	6.01	568704	7.67	432519	9.94
UPPER LIMIT		300874	6.51	1137408	8.17	865038	10.44
LOWER LIMIT		75219	5.51	284352	7.17	216260	9.44
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 480-42575/1-A		136062	6.01	536716	7.67	374958	9.94
LCS 480-42575/2-A		132114	6.01	509552	7.67	394152	9.94
480-13366-1 MS	MW-17 MS	136674	6.01	522347	7.67	394503	9.94
480-13366-1 MSD	MW-17 MSD	138617	6.01	545861	7.67	405810	9.94
480-13366-1	MW-17	128828	6.01	501341	7.67	345700	9.94

DCB = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-42934/10 Date Analyzed: 12/06/2011 16:33

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): U6921.D Heated Purge: (Y/N) N

Calibration ID: 5137

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		812786	11.65	836415	14.15	720971	15.54
UPPER LIMIT		1625572	12.15	1672830	14.65	1441942	16.04
LOWER LIMIT		406393	11.15	418208	13.65	360486	15.04
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 480-42575/1-A		712817	11.65	649133	14.15	616639	15.54
LCS 480-42575/2-A		688051	11.65	729027	14.16	570675	15.55
480-13366-1 MS	MW-17 MS	668420	11.65	686021	14.16	535774	15.55
480-13366-1 MSD	MW-17 MSD	708820	11.65	697607	14.16	554502	15.55
480-13366-1	MW-17	675120	11.65	587513	14.15	545131	15.54

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: ICIS 480-40664/4 Date Analyzed: 11/16/2011 13:10

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X0981.D Heated Purge: (Y/N) N

Calibration ID: 4708

		DCB		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		133214	6.19	473448	7.70	259643	9.75
UPPER LIMIT		266428	6.69	946896	8.20	519286	10.25
LOWER LIMIT		66607	5.69	236724	7.20	129822	9.25
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVIS 480-43264/2		101407	6.17	390481	7.67	246242	9.73

DCB = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: ICIS 480-40664/4 Date Analyzed: 11/16/2011 13:10

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X0981.D Heated Purge: (Y/N) N

Calibration ID: 4708

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		487543	11.34	524782	13.75	661507	15.01
UPPER LIMIT		975086	11.84	1049564	14.25	1323014	15.51
LOWER LIMIT		243772	10.84	262391	13.25	330754	14.51
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVIS 480-43264/2		482120	11.32	528086	13.72	560230	14.97

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-43264/2 Date Analyzed: 12/07/2011 14:58

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X1547.D Heated Purge: (Y/N) N

Calibration ID: 5134

		DCB		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		101407	6.17	390481	7.67	246242	9.73
UPPER LIMIT		202814	6.67	780962	8.17	492484	10.23
LOWER LIMIT		50704	5.67	195241	7.17	123121	9.23
LAB SAMPLE ID	CLIENT SAMPLE ID						
480-13430-1	MW-14	81978	6.17	319416	7.69	197080	9.75
480-13430-2	MW-15	83092	6.17	320954	7.69	201292	9.75
480-13430-3	MW-16	102099	6.17	389356	7.69	239713	9.74
480-13430-4	BD-120111	91054	6.17	351584	7.69	215509	9.75

DCB = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-43264/2 Date Analyzed: 12/07/2011 14:58

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X1547.D Heated Purge: (Y/N) N

Calibration ID: 5134

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		482120	11.32	528086	13.72	560230	14.97
UPPER LIMIT		964240	11.82	1056172	14.22	1120460	15.47
LOWER LIMIT		241060	10.82	264043	13.22	280115	14.47
LAB SAMPLE ID	CLIENT SAMPLE ID						
480-13430-1	MW-14	380824	11.32	408781	13.72	454796	14.97
480-13430-2	MW-15	376113	11.32	402998	13.72	452986	14.97
480-13430-3	MW-16	456191	11.32	491006	13.72	551521	14.97
480-13430-4	BD-120111	414297	11.32	441061	13.72	494221	14.97

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: ICIS 480-43924/4 Date Analyzed: 12/10/2011 14:59

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X1682.D Heated Purge: (Y/N) N

Calibration ID: 5323

		DCB		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		339256	6.09	1355634	7.59	750510	9.65
UPPER LIMIT		678512	6.59	2711268	8.09	1501020	10.15
LOWER LIMIT		169628	5.59	677817	7.09	375255	9.15
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVIS 480-44096/2		364715	6.10	1335264	7.59	696947	9.65

DCB = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: ICIS 480-43924/4 Date Analyzed: 12/10/2011 14:59

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X1682.D Heated Purge: (Y/N) N

Calibration ID: 5323

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		1283000	11.24	1300861	13.65	1519081	14.89
UPPER LIMIT		2566000	11.74	2601722	14.15	3038162	15.39
LOWER LIMIT		641500	10.74	650431	13.15	759541	14.39
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVIS 480-44096/2		1196492	11.24	1196046	13.65	1576338	14.89

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-44096/2 Date Analyzed: 12/12/2011 19:27

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X1728.D Heated Purge: (Y/N) N

Calibration ID: 5350

		DCB		NPT		ANT	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		364715	6.10	1335264	7.59	696947	9.65
UPPER LIMIT		729430	6.60	2670528	8.09	1393894	10.15
LOWER LIMIT		182358	5.60	667632	7.09	348474	9.15
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 480-42840/1-A		375792	6.09	1359986	7.58	705080	9.65
LCS 480-42840/2-A		374917	6.09	1375679	7.59	716532	9.65
LCSD 480-42840/3-A		380257	6.10	1390802	7.59	729160	9.65

DCB = 1,4-Dichlorobenzene-d4
NPT = Naphthalene-d8
ANT = Acenaphthene-d10

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Sample No.: CCVIS 480-44096/2 Date Analyzed: 12/12/2011 19:27

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm)

Lab File ID (Standard): X1728.D Heated Purge: (Y/N) N

Calibration ID: 5350

		PHN		CRY		PRY	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1196492	11.24	1196046	13.65	1576338	14.89
UPPER LIMIT		2392984	11.74	2392092	14.15	3152676	15.39
LOWER LIMIT		598246	10.74	598023	13.15	788169	14.39
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 480-42840/1-A		1227068	11.24	1379454	13.64	1700452	14.89
LCS 480-42840/2-A		1281334	11.25	1186677	13.65	1711661	14.89
LCSD 480-42840/3-A		1311008	11.25	1198922	13.65	1729265	14.90

PHN = Phenanthrene-d10
CRY = Chrysene-d12
PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270C

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-17 | Lab Sample ID: 480-13366-1

Matrix: Water | Lab File ID: U6937.D

Analysis Method: 8270C | Date Collected: 11/30/2011 11:55

Extract. Method: 3510C | Date Extracted: 12/02/2011 06:38

Sample wt/vol: 1040(mL) | Date Analyzed: 12/06/2011 22:45

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 42934 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	ND		4.8	0.39
208-96-8	Acenaphthylene	ND		4.8	0.37
120-12-7	Anthracene	ND		4.8	0.27
56-55-3	Benz(a)anthracene	ND		4.8	0.35
50-32-8	Benzo(a)pyrene	ND		4.8	0.45
205-99-2	Benzo(b)fluoranthene	ND		4.8	0.33
191-24-2	Benzo(g,h,i)perylene	ND		4.8	0.34
207-08-9	Benzo(k)fluoranthene	ND		4.8	0.70
218-01-9	Chrysene	ND		4.8	0.32
53-70-3	Dibenz(a,h)anthracene	ND		4.8	0.40
206-44-0	Fluoranthene	ND		4.8	0.38
86-73-7	Fluorene	ND		4.8	0.35
193-39-5	Indeno(1,2,3-c,d)pyrene	ND		4.8	0.45
91-20-3	Naphthalene	ND		4.8	0.73
85-01-8	Phenanthrene	ND		4.8	0.42
129-00-0	Pyrene	ND		4.8	0.33
91-57-6	2-Methylnaphthalene	ND		4.8	0.58

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	80		46-120
321-60-8	2-Fluorobiphenyl	87		48-120
1718-51-0	p-Terphenyl-d14	49		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6937.D
Lims ID: 480-13366-B-1-A
Client ID: MW-17
Inject. Date: 06-Dec-2011 22:45:30
Dil. Factor: 1.0000
Sample Type: Client
Sample ID: 480-0007971-018
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 27
Lims Batch ID: 42934
Lims Sample ID: 26
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 07-Dec-2011 11:53:11
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 07-Dec-2011 11:53:11

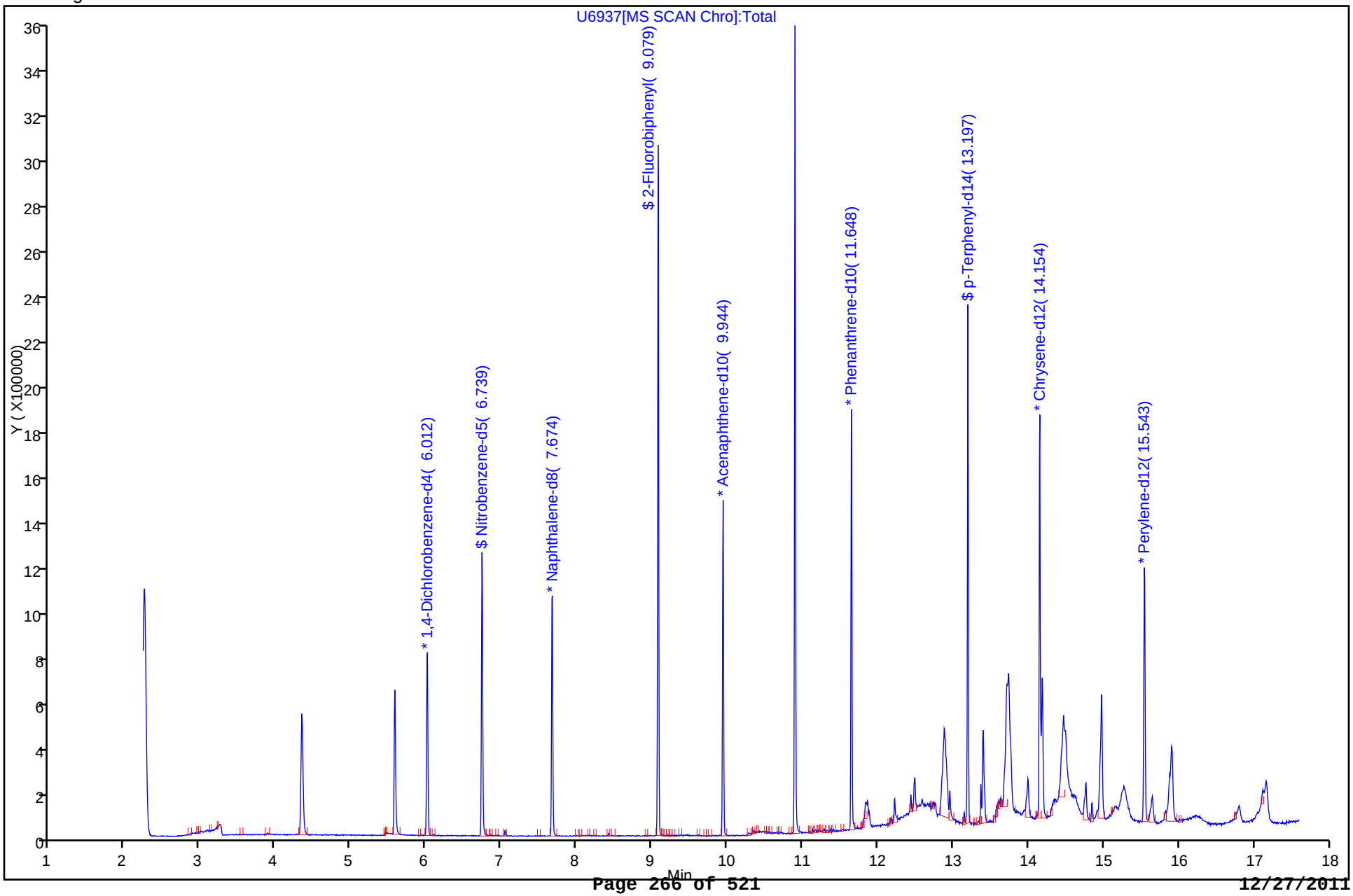
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.012	6.007	0.005	93	128828	40.0	
* 2 Naphthalene-d8	136	7.674	7.673	0.001	99	501341	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	345700	40.0	
* 4 Phenanthrene-d10	188	11.648	11.648	0.0	98	675120	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	96	587513	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	545131	40.0	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	90	445478	80.0	
$ 12 2-Fluorobiphenyl	172	9.079	9.079	0.0	99	980243	86.7	
$ 14 p-Terphenyl-d14	244	13.197	13.198	-0.001	96	620906	48.8	
121 Naphthalene	128		7.700					
133 2-Methylnaphthalene	142		8.603					
149 Acenaphthylene	152		9.762					
151 Acenaphthene	153		9.987					
161 Fluorene	166		10.612					
185 Phenanthrene	178		11.675					
188 Anthracene	178		11.728					
197 Fluoranthene	202		12.856					
199 Pyrene	202		13.069					
209 Benzo[a]anthracene	228		14.143					
211 Chrysene	228		14.175					
213 Benzo[b]fluoranthene	252		15.147					
214 Benzo[k]fluoranthene	252		15.174					
217 Benzo[a]pyrene	252		15.484					
219 Indeno[1,2,3-cd]pyrene	276		16.809					
220 Dibenz(a,h)anthracene	278		16.814					
221 Benzo[g,h,i]perylene	276		17.172					

Report Date: 07-Dec-2011 11:53:12 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6937.D

Injection Date:	06-Dec-2011 22:45:30	Limit Group:	MB - 8270C ICAL
Client ID:	MW-17	Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	26
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-14 | Lab Sample ID: 480-13430-1

Matrix: Water | Lab File ID: X1564.D

Analysis Method: 8270C | Date Collected: 12/01/2011 09:30

Extract. Method: 3510C | Date Extracted: 12/05/2011 09:05

Sample wt/vol: 750(mL) | Date Analyzed: 12/07/2011 21:28

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 43264 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	ND		6.7	0.55
208-96-8	Acenaphthylene	ND		6.7	0.51
120-12-7	Anthracene	ND		6.7	0.37
56-55-3	Benz(a)anthracene	ND		6.7	0.48
50-32-8	Benzo(a)pyrene	ND		6.7	0.63
205-99-2	Benzo(b)fluoranthene	ND		6.7	0.45
191-24-2	Benzo(g,h,i)perylene	ND		6.7	0.47
207-08-9	Benzo(k)fluoranthene	ND		6.7	0.97
218-01-9	Chrysene	ND		6.7	0.44
53-70-3	Dibenz(a,h)anthracene	ND		6.7	0.56
206-44-0	Fluoranthene	ND		6.7	0.53
86-73-7	Fluorene	ND		6.7	0.48
193-39-5	Indeno(1,2,3-c,d)pyrene	ND		6.7	0.63
91-20-3	Naphthalene	ND		6.7	1.0
85-01-8	Phenanthrene	ND		6.7	0.59
129-00-0	Pyrene	ND		6.7	0.45
91-57-6	2-Methylnaphthalene	ND		6.7	0.80

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	49		46-120
321-60-8	2-Fluorobiphenyl	65		48-120
1718-51-0	p-Terphenyl-d14	132		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1564.D		
Lims ID:	480-13430-A-1-A	Client ID:	MW-14
Inject. Date:	07-Dec-2011 21:28:30	Dil. Factor:	1.0000
Sample Type:	Client		
Sample ID:	480-0008038-019		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	19
Lims Batch ID:	43264	Lims Sample ID:	19
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X-8270.m		
Last Update:	08-Dec-2011 17:13:29	Calib Date:	05-Dec-2011 15:22:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111205-7963.b\X1458.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: lyh		Date:	08-Dec-2011 17:13:29

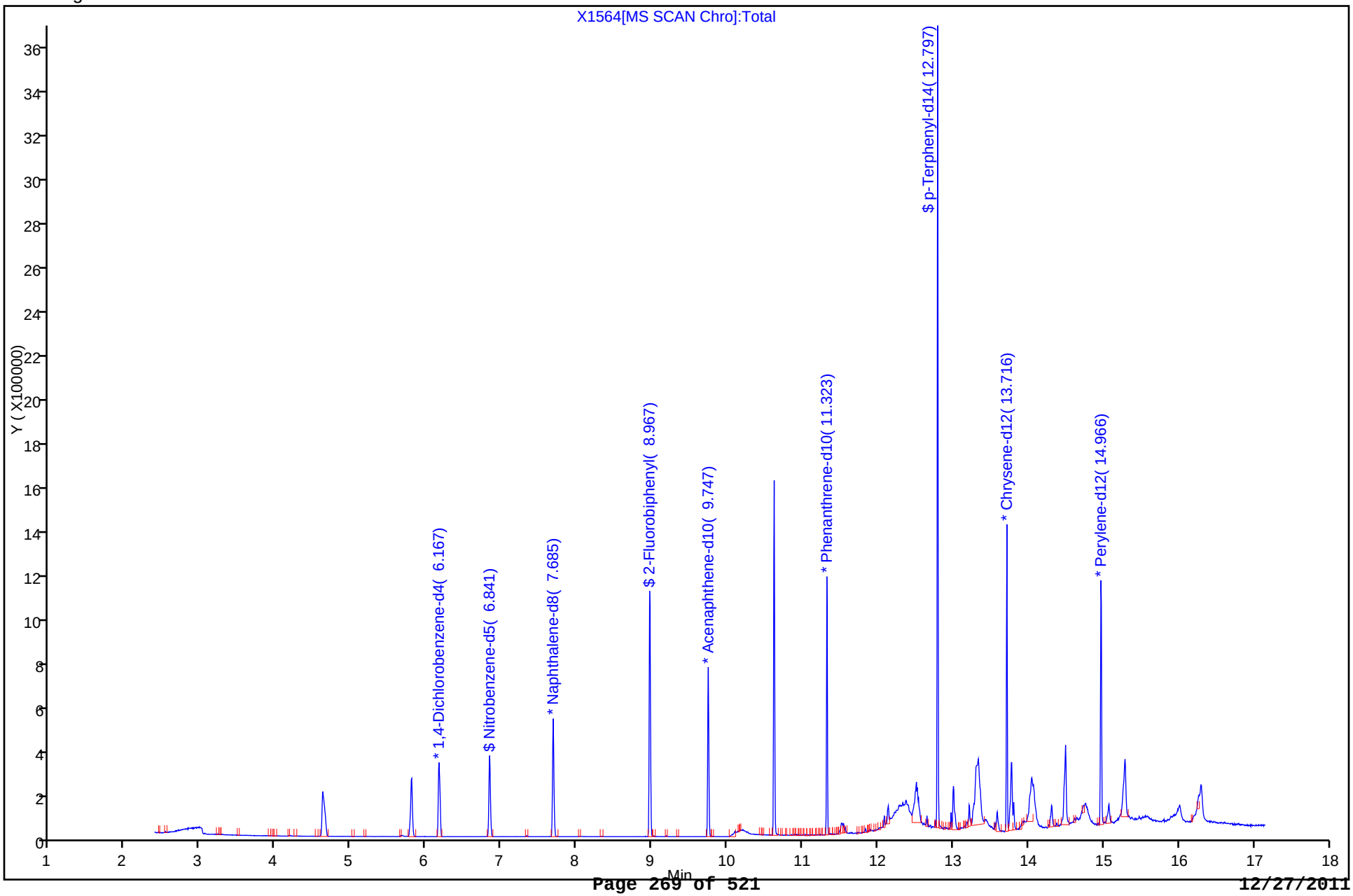
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.167	6.162	0.005	96	81978	40.0	
* 2 Naphthalene-d8	136	7.685	7.684	0.001	86	319416	40.0	
* 3 Acenaphthene-d10	164	9.747	9.747	0.0	50	197080	40.0	
* 4 Phenanthrene-d10	188	11.323	11.328	-0.005	99	380824	40.0	
* 5 Chrysene-d12	240	13.716	13.721	-0.005	99	408781	40.0	
* 6 Perylene-d12	264	14.966	14.971	-0.005	99	454796	40.0	
$ 9 Nitrobenzene-d5	82	6.841	6.824	0.017	97	163223	49.1	
$ 10 2-Fluorobiphenyl	172	8.967	8.951	0.016	100	437411	65.2	
$ 12 p-Terphenyl-d14	244	12.797	12.797	0.0	97	987400	132.3	
99 Naphthalene	128		7.695					
113 2-Methylnaphthalene	142		8.518					
131 Acenaphthylene	152		9.560					
133 Acenaphthene	153		9.768					
144 Fluorene	166		10.350					
171 Phenanthrene	178		11.344					
172 Anthracene	178		11.392					
182 Fluoranthene	202		12.460					
185 Pyrene	202		12.663					
197 Benzo[a]anthracene	228		13.705					
199 Chrysene	228		13.743					
203 Benzo[b]fluoranthene	252		14.624					
204 Benzo[k]fluoranthene	252		14.651					
206 Benzo[a]pyrene	252		14.923					
208 Indeno[1,2,3-cd]pyrene	276		16.045					
209 Dibenz(a,h)anthracene	278		16.050					
210 Benzo[g,h,i]perylene	276		16.355					

Report Date: 08-Dec-2011 17:13:29 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1564.D

Injection Date:	07-Dec-2011 21:28:30	Limit Group:	MB - 8270C ICAL
Client ID:	MW-14	Instrument ID:	HP5973X
Lims Batch ID:	43264	Lims Sample ID:	19
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-15 | Lab Sample ID: 480-13430-2

Matrix: Water | Lab File ID: X1565.D

Analysis Method: 8270C | Date Collected: 12/01/2011 09:40

Extract. Method: 3510C | Date Extracted: 12/05/2011 09:05

Sample wt/vol: 1055(mL) | Date Analyzed: 12/07/2011 21:51

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 43264 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	ND		4.7	0.39
208-96-8	Acenaphthylene	ND		4.7	0.36
120-12-7	Anthracene	ND		4.7	0.27
56-55-3	Benz(a)anthracene	ND		4.7	0.34
50-32-8	Benzo(a)pyrene	ND		4.7	0.45
205-99-2	Benzo(b)fluoranthene	ND		4.7	0.32
191-24-2	Benzo(g,h,i)perylene	ND		4.7	0.33
207-08-9	Benzo(k)fluoranthene	ND		4.7	0.69
218-01-9	Chrysene	ND		4.7	0.31
53-70-3	Dibenz(a,h)anthracene	ND		4.7	0.40
206-44-0	Fluoranthene	ND		4.7	0.38
86-73-7	Fluorene	ND		4.7	0.34
193-39-5	Indeno(1,2,3-c,d)pyrene	ND		4.7	0.45
91-20-3	Naphthalene	ND		4.7	0.72
85-01-8	Phenanthrene	ND		4.7	0.42
129-00-0	Pyrene	ND		4.7	0.32
91-57-6	2-Methylnaphthalene	ND		4.7	0.57

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	64		46-120
321-60-8	2-Fluorobiphenyl	76		48-120
1718-51-0	p-Terphenyl-d14	116		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1565.D		
Lims ID:	480-13430-B-2-A	Client ID:	MW-15
Inject. Date:	07-Dec-2011 21:51:30	Dil. Factor:	1.0000
Sample Type:	Client		
Sample ID:	480-0008038-020		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	20
Lims Batch ID:	43264	Lims Sample ID:	20
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X-8270.m		
Last Update:	08-Dec-2011 17:14:04	Calib Date:	05-Dec-2011 15:22:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111205-7963.b\X1458.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: lyh		Date:	08-Dec-2011 17:14:04

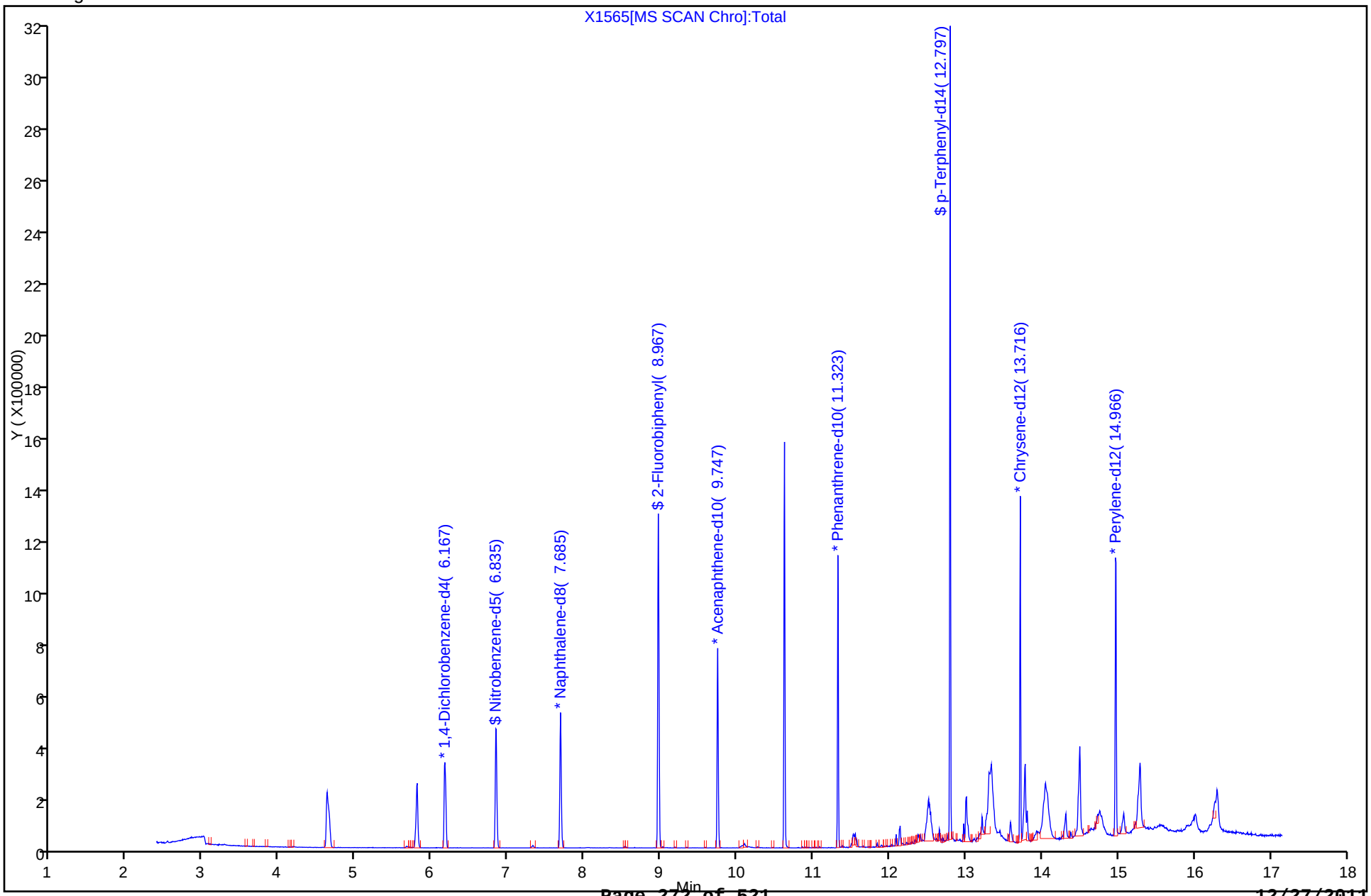
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.167	6.162	0.005	96	83092	40.0	
* 2 Naphthalene-d8	136	7.685	7.684	0.001	86	320954	40.0	
* 3 Acenaphthene-d10	164	9.747	9.747	0.0	51	201292	40.0	
* 4 Phenanthrene-d10	188	11.323	11.328	-0.005	99	376113	40.0	
* 5 Chrysene-d12	240	13.716	13.721	-0.005	99	402998	40.0	
* 6 Perylene-d12	264	14.971	14.971	0.0	98	452986	40.0	
$ 9 Nitrobenzene-d5	82	6.835	6.824	0.011	96	212591	63.6	
$ 10 2-Fluorobiphenyl	172	8.967	8.951	0.016	100	519217	75.8	
$ 12 p-Terphenyl-d14	244	12.797	12.797	0.0	97	854282	116.1	
99 Naphthalene	128		7.695					
113 2-Methylnaphthalene	142		8.518					
131 Acenaphthylene	152		9.560					
133 Acenaphthene	153		9.768					
144 Fluorene	166		10.350					
171 Phenanthrene	178		11.344					
172 Anthracene	178		11.392					
182 Fluoranthene	202		12.460					
185 Pyrene	202		12.663					
197 Benzo[a]anthracene	228		13.705					
199 Chrysene	228		13.743					
203 Benzo[b]fluoranthene	252		14.624					
204 Benzo[k]fluoranthene	252		14.651					
206 Benzo[a]pyrene	252		14.923					
208 Indeno[1,2,3-cd]pyrene	276		16.045					
209 Dibenz(a,h)anthracene	278		16.050					
210 Benzo[g,h,i]perylene	276		16.355					

Report Date: 08-Dec-2011 17:14:04 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1565.D

Injection Date:	07-Dec-2011 21:51:30	Limit Group:	MB - 8270C ICAL
Client ID:	MW-15	Instrument ID:	HP5973X
Lims Batch ID:	43264	Lims Sample ID:	20
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-16 | Lab Sample ID: 480-13430-3

Matrix: Water | Lab File ID: X1566.D

Analysis Method: 8270C | Date Collected: 12/01/2011 10:45

Extract. Method: 3510C | Date Extracted: 12/05/2011 09:05

Sample wt/vol: 1060(mL) | Date Analyzed: 12/07/2011 22:14

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 43264 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	ND		4.7	0.39
208-96-8	Acenaphthylene	ND		4.7	0.36
120-12-7	Anthracene	ND		4.7	0.26
56-55-3	Benz(a)anthracene	ND		4.7	0.34
50-32-8	Benzo(a)pyrene	ND		4.7	0.44
205-99-2	Benzo(b)fluoranthene	ND		4.7	0.32
191-24-2	Benzo(g,h,i)perylene	ND		4.7	0.33
207-08-9	Benzo(k)fluoranthene	ND		4.7	0.69
218-01-9	Chrysene	ND		4.7	0.31
53-70-3	Dibenz(a,h)anthracene	ND		4.7	0.40
206-44-0	Fluoranthene	ND		4.7	0.38
86-73-7	Fluorene	ND		4.7	0.34
193-39-5	Indeno(1,2,3-c,d)pyrene	ND		4.7	0.44
91-20-3	Naphthalene	ND		4.7	0.72
85-01-8	Phenanthrene	ND		4.7	0.42
129-00-0	Pyrene	ND		4.7	0.32
91-57-6	2-Methylnaphthalene	ND		4.7	0.57

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	46		46-120
321-60-8	2-Fluorobiphenyl	63		48-120
1718-51-0	p-Terphenyl-d14	91		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1566.D		
Lims ID:	480-13430-A-3-A	Client ID:	MW-16
Inject. Date:	07-Dec-2011 22:14:30	Dil. Factor:	1.0000
Sample Type:	Client		
Sample ID:	480-0008038-021		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	21
Lims Batch ID:	43264	Lims Sample ID:	21
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X-8270.m		
Last Update:	08-Dec-2011 17:14:44	Calib Date:	05-Dec-2011 15:22:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111205-7963.b\X1458.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: lyh		Date:	08-Dec-2011 17:14:44

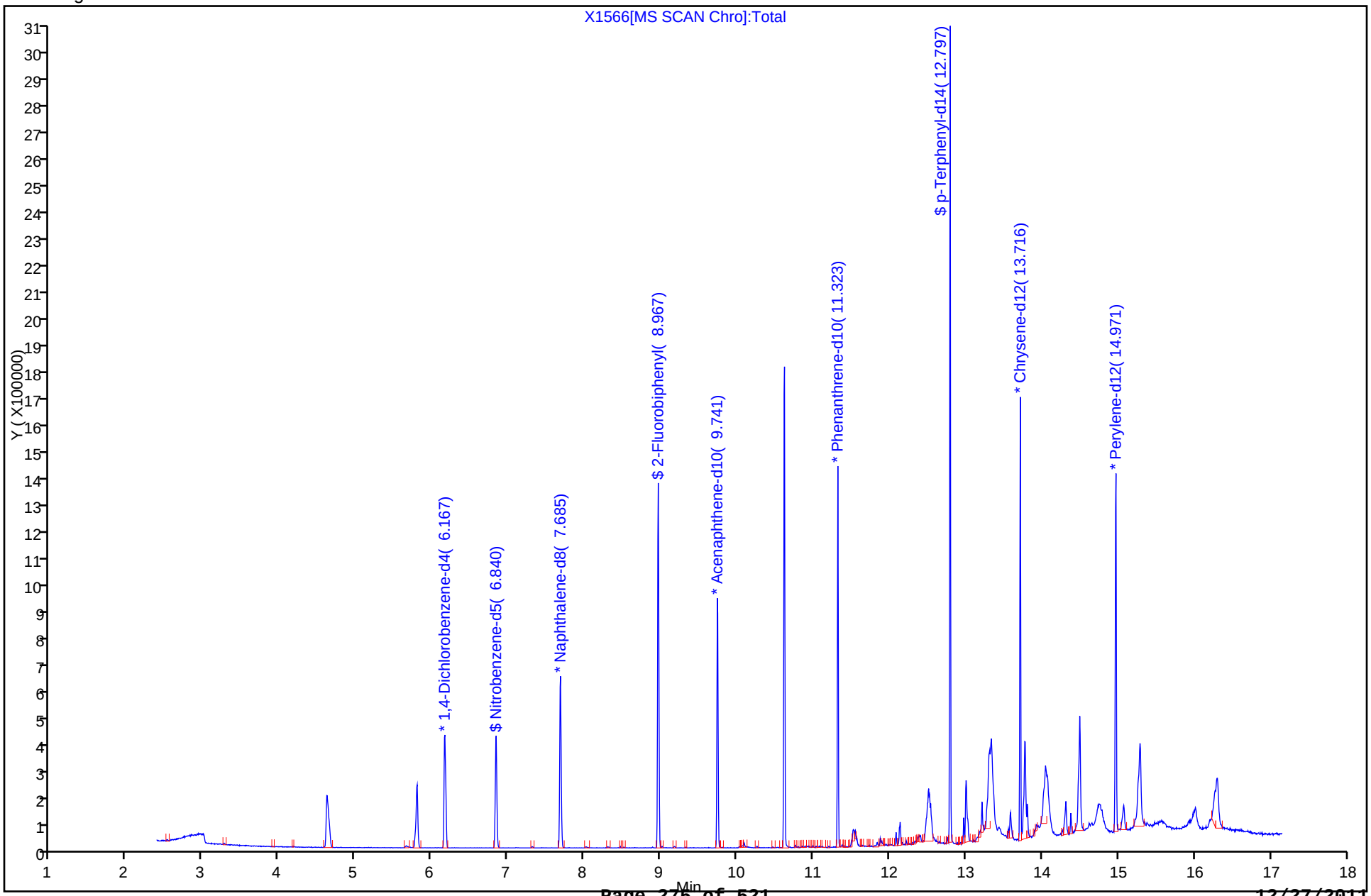
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.167	6.162	0.005	96	102099	40.0	
* 2 Naphthalene-d8	136	7.685	7.684	0.0	88	389356	40.0	
* 3 Acenaphthene-d10	164	9.741	9.747	-0.006	57	239713	40.0	
* 4 Phenanthrene-d10	188	11.323	11.328	-0.005	100	456191	40.0	
* 5 Chrysene-d12	240	13.716	13.721	-0.005	100	491006	40.0	
* 6 Perylene-d12	264	14.971	14.971	0.0	97	551521	40.0	
$ 9 Nitrobenzene-d5	82	6.840	6.824	0.016	97	186429	46.0	
$ 10 2-Fluorobiphenyl	172	8.967	8.951	0.016	100	515689	63.2	
$ 12 p-Terphenyl-d14	244	12.797	12.797	0.0	97	814766	90.9	
99 Naphthalene	128		7.695					
113 2-Methylnaphthalene	142		8.518					
131 Acenaphthylene	152		9.560					
133 Acenaphthene	153		9.768					
144 Fluorene	166		10.350					
171 Phenanthrene	178		11.344					
172 Anthracene	178		11.392					
182 Fluoranthene	202		12.460					
185 Pyrene	202		12.663					
197 Benzo[a]anthracene	228		13.705					
199 Chrysene	228		13.743					
203 Benzo[b]fluoranthene	252		14.624					
204 Benzo[k]fluoranthene	252		14.651					
206 Benzo[a]pyrene	252		14.923					
208 Indeno[1,2,3-cd]pyrene	276		16.045					
209 Dibenz(a,h)anthracene	278		16.050					
210 Benzo[g,h,i]perylene	276		16.355					

Report Date: 08-Dec-2011 17:14:44 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1566.D

Injection Date:	07-Dec-2011 22:14:30	Limit Group:	MB - 8270C ICAL
Client ID:	MW-16	Instrument ID:	HP5973X
Lims Batch ID:	43264	Lims Sample ID:	21
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: BD-120111 | Lab Sample ID: 480-13430-4

Matrix: Water | Lab File ID: X1567.D

Analysis Method: 8270C | Date Collected: 12/01/2011 00:00

Extract. Method: 3510C | Date Extracted: 12/05/2011 09:05

Sample wt/vol: 1050(mL) | Date Analyzed: 12/07/2011 22:37

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 43264 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	ND		4.8	0.39
208-96-8	Acenaphthylene	ND		4.8	0.36
120-12-7	Anthracene	ND		4.8	0.27
56-55-3	Benz(a)anthracene	ND		4.8	0.34
50-32-8	Benzo(a)pyrene	ND		4.8	0.45
205-99-2	Benzo(b)fluoranthene	ND		4.8	0.32
191-24-2	Benzo(g,h,i)perylene	ND		4.8	0.33
207-08-9	Benzo(k)fluoranthene	ND		4.8	0.70
218-01-9	Chrysene	ND		4.8	0.31
53-70-3	Dibenz(a,h)anthracene	ND		4.8	0.40
206-44-0	Fluoranthene	ND		4.8	0.38
86-73-7	Fluorene	ND		4.8	0.34
193-39-5	Indeno(1,2,3-c,d)pyrene	ND		4.8	0.45
91-20-3	Naphthalene	ND		4.8	0.72
85-01-8	Phenanthrene	ND		4.8	0.42
129-00-0	Pyrene	ND		4.8	0.32
91-57-6	2-Methylnaphthalene	ND		4.8	0.57

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	51		46-120
321-60-8	2-Fluorobiphenyl	72		48-120
1718-51-0	p-Terphenyl-d14	115		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1567.D		
Lims ID:	480-13430-A-4-A	Client ID:	BD-120111
Inject. Date:	07-Dec-2011 22:37:30	Dil. Factor:	1.0000
Sample Type:	Client		
Sample ID:	480-0008038-022		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	22
Lims Batch ID:	43264	Lims Sample ID:	22
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X-8270.m		
Last Update:	08-Dec-2011 17:15:21	Calib Date:	05-Dec-2011 15:22:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111205-7963.b\X1458.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: lyh		Date:	08-Dec-2011 17:15:21

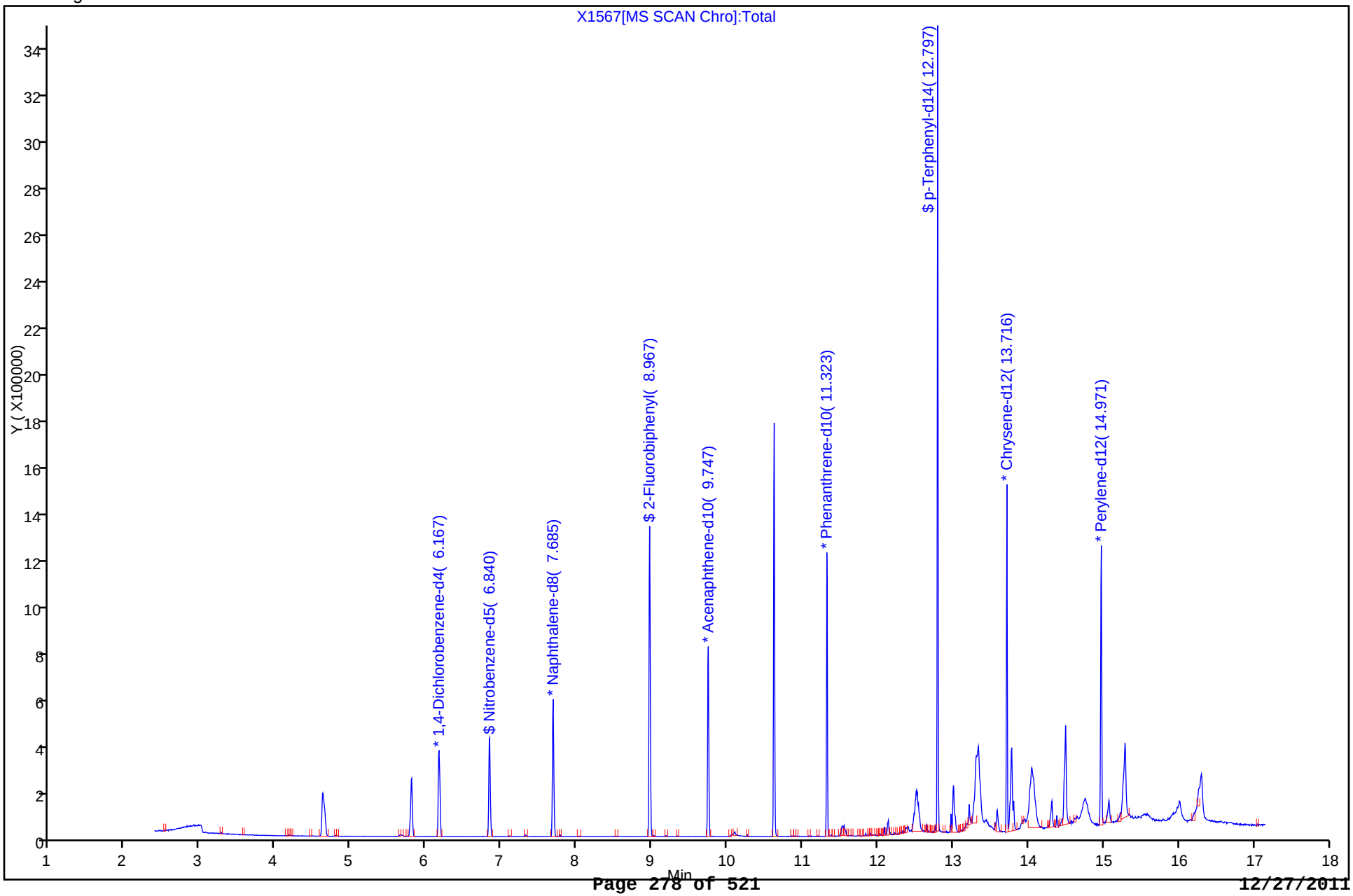
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.167	6.162	0.005	97	91054	40.0	
* 2 Naphthalene-d8	136	7.685	7.684	0.001	86	351584	40.0	
* 3 Acenaphthene-d10	164	9.747	9.747	0.0	50	215509	40.0	
* 4 Phenanthrene-d10	188	11.323	11.328	-0.005	99	414297	40.0	
* 5 Chrysene-d12	240	13.716	13.721	-0.005	99	441061	40.0	
* 6 Perylene-d12	264	14.971	14.971	0.0	98	494221	40.0	
$ 9 Nitrobenzene-d5	82	6.840	6.824	0.016	97	187493	51.2	
$ 10 2-Fluorobiphenyl	172	8.967	8.951	0.016	99	525000	71.6	
$ 12 p-Terphenyl-d14	244	12.797	12.797	0.0	96	929714	115.4	
99 Naphthalene	128		7.695					
113 2-Methylnaphthalene	142		8.518					
131 Acenaphthylene	152		9.560					
133 Acenaphthene	153		9.768					
144 Fluorene	166		10.350					
171 Phenanthrene	178		11.344					
172 Anthracene	178		11.392					
182 Fluoranthene	202		12.460					
185 Pyrene	202		12.663					
197 Benzo[a]anthracene	228		13.705					
199 Chrysene	228		13.743					
203 Benzo[b]fluoranthene	252		14.624					
204 Benzo[k]fluoranthene	252		14.651					
206 Benzo[a]pyrene	252		14.923					
208 Indeno[1,2,3-cd]pyrene	276		16.045					
209 Dibenz(a,h)anthracene	278		16.050					
210 Benzo[g,h,i]perylene	276		16.355					

Report Date: 08-Dec-2011 17:15:21 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1567.D

Injection Date:	07-Dec-2011 22:37:30	Limit Group:	MB - 8270C ICAL
Client ID:	BD-120111	Instrument ID:	HP5973X
Lims Batch ID:	43264	Lims Sample ID:	22
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-42934/2	U6913.D
Level 2	IC 480-42934/3	U6914.D
Level 3	ICIS 480-42934/4	U6915.D
Level 4	IC 480-42934/5	U6916.D
Level 5	IC 480-42934/6	U6917.D
Level 6	IC 480-42934/7	U6918.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
N-Nitrosodimethylamine	1.1694 1.0758	1.1652	1.0736	1.1717	1.1492	Ave		1.1341				4.1		15.0			
Pyridine	1.2590 1.1227	1.2408	1.1522	1.2616	1.1986	Ave		1.2058				4.8		15.0			
Aniline	1.8627 2.2870	1.9195	1.8830	2.2177	2.2849	Ave		2.0758				10.0		15.0			
Phenol	1.5929 2.0730	1.6708	1.6910	1.9186	2.0876	Ave		1.8390				12.0		15.0			
Bis(2-chloroethyl)ether	1.2929 1.2710	1.2311	1.1413	1.2686	1.3110	Ave		1.2527				4.9		15.0			
2-Chlorophenol	1.1340 1.3902	1.1503	1.1449	1.3026	1.3714	Ave		1.2489				9.6		15.0			
1,3-Dichlorobenzene	1.4384 1.6053	1.4089	1.3512	1.5272	1.5888	Ave		1.4866				6.9		15.0			
1,4-Dichlorobenzene	1.4398 1.7136	1.4741	1.3854	1.6022	1.6642	Ave		1.5465				8.6		15.0			
Benzyl alcohol	0.7459 1.2269	0.8337	0.9008	1.0696	1.1748	Lin1	-3.655	1.1730							0.9900		0.9900
1,2-Dichlorobenzene	1.3876 1.7913	1.3990	1.3364	1.5740	1.7044	Ave		1.5321				12.0		15.0			
2-Methylphenol	1.0789 1.4254	1.1734	1.1693	1.3465	1.3980	Ave		1.2653				11.0		15.0			
bis (2-chloroisopropyl) ether	2.8084 3.0293	2.8819	2.6999	3.0705	3.0753	Ave		2.9276				5.3		15.0			
N-Nitrosodi-n-propylamine	1.0816 1.2479	1.1971	1.1506	1.2656	1.2991	Ave		1.2070			0.0500	6.7		15.0			
4-Methylphenol	1.0607 1.4000	1.1537	1.1670	1.3197	1.3662	Ave		1.2445				11.0		15.0			
Hexachloroethane	0.5600 0.6460	0.5934	0.5636	0.6365	0.6492	Ave		0.6081				6.8		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Nitrobenzene	0.4095 0.4887	0.4535	0.4146	0.4845	0.4881	Ave		0.4565				8.1		15.0			
Isophorone	0.6837 0.7999	0.7406	0.7107	0.8195	0.8222	Ave		0.7627				7.8		15.0			
2-Nitrophenol	0.1459 0.2081	0.1769	0.1688	0.2014	0.2075	Ave		0.1848				14.0		15.0			
2,4-Dimethylphenol	0.3509 0.5448	0.3896	0.3787	0.4646	0.5126	Qua	-0.573	0.3751	0.0011						0.9990		0.9900
Tetraethyl lead	0.2050 0.2404	0.2154	0.2014	0.2348	0.2478	Ave		0.2241				8.7		15.0			
Bis(2-chloroethoxy)methane	0.3546 0.4194	0.3822	0.3530	0.4114	0.4243	Ave		0.3908				8.2		15.0			
2,4-Dichlorophenol	0.2661 0.3685	0.2827	0.2816	0.3384	0.3569	Ave		0.3157				14.0		15.0			
Benzoic acid	0.2615 0.3426	0.2699	0.2573	0.3147	0.3365	Ave		0.2971				13.0		15.0			
1,2,4-Trichlorobenzene	0.3615 0.4576	0.3587	0.3469	0.4066	0.4415	Ave		0.3955				12.0		15.0			
Naphthalene	0.9025 1.0578	0.9280	0.8674	1.0300	1.0614	Ave		0.9745				8.8		15.0			
4-Chloroaniline	0.3185 0.4083	0.3523	0.3405	0.4028	0.4003	Ave		0.3705				10.0		15.0			
Hexachlorobutadiene	0.2350 0.3113	0.2460	0.2432	0.2857	0.3007	Ave		0.2703				12.0		15.0			
4-Chloro-3-methylphenol	0.2732 0.3774	0.3063	0.2971	0.3568	0.3701	Ave		0.3301				13.0		15.0			
2-Methylnaphthalene	0.6680 0.8651	0.6645	0.6495	0.7802	0.8269	Ave		0.7424				13.0		15.0			
Hexachlorocyclopentadiene	0.1644 0.4479	0.2575	0.2902	0.3811	0.4056	Qua	-1.172	0.2978	0.0010		0.0500				0.9990		0.9900
2,4,6-Trichlorophenol	0.3148 0.4279	0.3535	0.3435	0.4054	0.4063	Ave		0.3752				12.0		15.0			
2,4,5-Trichlorophenol	0.3423 0.4273	0.3699	0.3412	0.4056	0.4022	Ave		0.3814				9.4		15.0			
2-Chloronaphthalene	0.9103 1.0648	0.9505	0.8825	1.0341	1.0253	Ave		0.9779				7.6		15.0			
2-Nitroaniline	0.2940 0.3615	0.3349	0.3290	0.3767	0.3657	Ave		0.3437				8.9		15.0			
Dimethyl phthalate	1.1491 1.2498	1.1864	1.1419	1.3068	1.2573	Ave		1.2152				5.5		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,6-Dinitrotoluene	0.2142 0.2702	0.2523	0.2394	0.2756	0.2686	Ave		0.2534				9.2		15.0			
Acenaphthylene	1.4303 1.6895	1.5034	1.4470	1.6794	1.6597	Ave		1.5682				7.7		15.0			
3-Nitroaniline	0.1980 0.2638	0.2523	0.2508	0.2786	0.2720	Ave		0.2526				11.0		15.0			
Acenaphthene	0.9801 1.1485	1.0155	0.9442	1.0917	1.1004	Ave		1.0468				7.5		15.0			
2,4-Dinitrophenol	0.0751 0.1678	0.1049	0.1292	0.1546	0.1604	Lin1	-1.147	0.1697			0.0500				0.9970		0.9900
Dibenzofuran	1.3807 1.7543	1.5084	1.4094	1.6806	1.7076	Ave		1.5735				10.0		15.0			
2,4-Dinitrotoluene	0.3004 0.3882	0.3482	0.3506	0.4073	0.3890	Ave		0.3589				11.0		15.0			
4-Nitrophenol	0.1397 0.2285	0.1322	0.1439	0.2117	0.2136	Qua	-1.022	0.1801	0.0003		0.0500				0.9950		0.9900
Diethyl phthalate	1.1443 1.2385	1.2289	1.1647	1.3021	1.2235	Ave		1.2170				4.6		15.0			
Fluorene	1.1594 1.6975	1.2647	1.2925	1.5813	1.6906	Lin1	-4.309	1.6610							0.9930		0.9900
4-Chlorophenyl phenyl ether	0.6444 0.9069	0.7005	0.7084	0.8695	0.9170	Ave		0.7911				15.0		15.0			
4-Nitroaniline	0.1808 0.2623	0.2262	0.2238	0.2552	0.2569	Ave		0.2342				13.0		15.0			
4,6-Dinitro-2-methylphenol	0.0879 0.1657	0.0967	0.1154	0.1385	0.1568	Qua	-0.580	0.1203	0.0003						0.9990		0.9900
N-Nitrosodiphenylamine	0.3808 0.5762	0.4275	0.4197	0.5080	0.5640	Qua	-1.129	0.4484	0.0009						0.9980		0.9900
1,2-Diphenylhydrazine	1.3316 1.2633	1.3724	1.2416	1.3796	1.2954	Ave		1.3140				4.3		15.0			
4-Bromophenyl phenyl ether	0.1772 0.2942	0.1945	0.1943	0.2441	0.2859	Qua	-0.628	0.2041	0.0006						0.9970		0.9900
Hexachlorobenzene	0.1900 0.3213	0.2048	0.2053	0.2579	0.2994	Qua	-0.364	0.1954	0.0008						0.9990		0.9900
Pentachlorophenol	0.0908 0.1766	0.0880	0.1020	0.1281	0.1556	Qua	-0.105	0.0804	0.0006						1.0000		0.9900
Phenanthrene	0.8674 1.2636	0.9331	0.9196	1.1214	1.2332	Lin1	-3.174	1.2135							0.9900		0.9900
Anthracene	0.8946 1.2338	0.9264	0.9282	1.1071	1.2112	Ave		1.0502				15.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Carbazole	0.7839 1.1092	0.8143	0.7734	0.9651	1.0594	Qua	-1.354	0.7982	0.0021						0.9980		0.9900
Di-n-butyl phthalate	0.9467 1.3188	0.9751	0.9706	1.2377	1.3391	Lin1	-3.305	1.2950							0.9900		0.9900
Fluoranthene	0.9399 1.5696	1.0194	1.0595	1.3832	1.5787	Qua	-5.886	1.2630	0.0023						0.9950		0.9900
Benzidine	0.5630 0.5137	0.5501	0.5176	0.5642	0.5254	Ave		0.5390				4.2		15.0			
Pyrene	1.1317 1.2308	1.0870	1.0539	1.3073	1.2815	Ave		1.1820				8.9		15.0			
Butyl benzyl phthalate	0.4620 0.5828	0.4784	0.4997	0.6101	0.5847	Ave		0.5363				12.0		15.0			
3,3'-Dimethylbenzidine	0.5364 0.8122	0.6072	0.6560	0.7964	0.8500	Lin1	-2.225	0.8199							0.9940		0.9900
Bis(2-ethylhexyl) phthalate	0.6634 0.7980	0.6821	0.7344	0.9005	0.8622	Ave		0.7734				12.0		15.0			
3,3'-Dichlorobenzidine	0.3941 0.5456	0.4165	0.4423	0.5847	0.5593	Lin1	-1.305	0.5550							0.9930		0.9900
Benz(a)anthracene	1.1325 1.2163	1.1171	1.0703	1.2976	1.2616	Ave		1.1826				7.6		15.0			
Chrysene	0.9540 1.1235	1.0075	0.9727	1.1722	1.1735	Ave		1.0672				9.4		15.0			
Di-n-octyl phthalate	0.9678 1.0058	0.9702	0.9470	1.1079	1.0422	Ave		1.0068				5.9		15.0			
Benzo(b)fluoranthene	1.0587 1.7461	1.0977	1.0768	1.4211	1.7365	Qua	-4.876	1.2002	0.0038						0.9940		0.9900
Benzo(k)fluoranthene	1.0684 1.6144	1.0866	1.1657	1.4442	1.5434	Qua	-3.663	1.2467	0.0025						0.9980		0.9900
Benzo(a)pyrene	0.8478 1.3669	0.9026	0.9190	1.1645	1.3029	Qua	-2.670	0.9590	0.0027						0.9980		0.9900
Indeno(1,2,3-c,d)pyrene	0.9768 1.7843	1.0974	1.1700	1.5350	1.6714	Qua	-4.316	1.2432	0.0036						0.9980		0.9900
Dibenz(a,h)anthracene	0.8740 1.5612	0.9093	0.9871	1.3476	1.5158	Qua	-5.523	1.1466	0.0030						0.9960		0.9900
Benzo(g,h,i)perylene	0.8590 1.2040	0.8374	0.7899	0.9768	1.0368	Qua	1.6344	0.6292	0.0035						0.9990		0.9900
2-Fluorophenol	1.0247 1.2272	1.0743	1.0646	1.1805	1.2439	Ave		1.1359				8.2		15.0			
Phenol-d5	1.3845 1.7692	1.4755	1.4448	1.6493	1.7547	Ave		1.5797				11.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Nitrobenzene-d5	0.3964 0.4774	0.4327	0.4093	0.4719	0.4771	Ave		0.4441				8.2		15.0			
2-Fluorobiphenyl	1.2019 1.4287	1.2491	1.2009	1.3825	1.3869	Ave		1.3083				7.8		15.0			
2,4,6-Tribromophenol	0.0654 0.1227	0.0801	0.0814	0.1002	0.1162	Qua	-0.208	0.0805	0.0003						0.9980		0.9900
p-Terphenyl-d14	0.7522 0.9057	0.7509	0.7459	0.9397	0.9214	Qua	-3.165	0.9296	0						0.9960		0.9900

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-42934/2	U6913.D
Level 2	IC 480-42934/3	U6914.D
Level 3	ICIS 480-42934/4	U6915.D
Level 4	IC 480-42934/5	U6916.D
Level 5	IC 480-42934/6	U6917.D
Level 6	IC 480-42934/7	U6918.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
N-Nitrosodimethylamine	DCB	Ave	25250 863951	83825	205983	367484	617131	5.00 160	20.0	50.0	80.0	120
Pyridine	DCB	Ave	27183 901619	89257	221063	395702	643664	5.00 160	20.0	50.0	80.0	120
Aniline	DCB	Ave	40219 1836594	138085	361288	695588	1227066	5.00 160	20.0	50.0	80.0	120
Phenol	DCB	Ave	34394 1664715	120191	324444	601758	1121088	5.00 160	20.0	50.0	80.0	120
Bis(2-chloroethyl)ether	DCB	Ave	27917 1020663	88562	218986	397882	704063	5.00 160	20.0	50.0	80.0	120
2-Chlorophenol	DCB	Ave	24484 1116417	82748	219665	408546	736473	5.00 160	20.0	50.0	80.0	120
1,3-Dichlorobenzene	DCB	Ave	31057 1289120	101354	259249	479006	853233	5.00 160	20.0	50.0	80.0	120
1,4-Dichlorobenzene	DCB	Ave	31087 1376111	106045	265812	502513	893711	5.00 160	20.0	50.0	80.0	120
Benzyl alcohol	DCB	Lin1	16105 985312	59976	172842	335483	630927	5.00 160	20.0	50.0	80.0	120
1,2-Dichlorobenzene	DCB	Ave	29960 1438540	100643	256411	493664	915299	5.00 160	20.0	50.0	80.0	120
2-Methylphenol	DCB	Ave	23295 1144692	84415	224354	422332	750769	5.00 160	20.0	50.0	80.0	120
bis (2-chloroisopropyl) ether	DCB	Ave	60639 2432730	207318	518030	963041	1651541	5.00 160	20.0	50.0	80.0	120
N-Nitrosodi-n-propylamine	DCB	Ave	23353 1002158	86118	220762	396937	697637	5.00 160	20.0	50.0	80.0	120
4-Methylphenol	DCB	Ave	22902 1124246	82991	223919	413925	733687	5.00 160	20.0	50.0	80.0	120
Hexachloroethane	DCB	Ave	12091 518794	42687	108130	199637	348659	5.00 160	20.0	50.0	80.0	120
Nitrobenzene	NPT	Ave	34145 1477441	126995	313239	576189	998921	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Isophorone	NPT	Ave	57003 2418262	207368	536932	974506	1682772	5.00 160	20.0	50.0	80.0	120
2-Nitrophenol	NPT	Ave	12167 629019	49522	127551	239473	424630	5.00 160	20.0	50.0	80.0	120
2,4-Dimethylphenol	NPT	Qua	29261 1647194	109087	286104	552509	1049117	5.00 160	20.0	50.0	80.0	120
Tetraethyl lead	NPT	Ave	17091 726882	60326	152145	279174	507149	5.00 160	20.0	50.0	80.0	120
Bis(2-chloroethoxy)methane	NPT	Ave	29566 1267881	107010	266687	489178	868439	5.00 160	20.0	50.0	80.0	120
2,4-Dichlorophenol	NPT	Ave	22183 1114181	79154	212777	402431	730423	5.00 160	20.0	50.0	80.0	120
Benzoic acid	NPT	Ave	436057 3107127	453494	583097	1122674	2066116	100 480	120	150	240	360
1,2,4-Trichlorobenzene	NPT	Ave	30137 1383434	100436	262133	483476	903542	5.00 160	20.0	50.0	80.0	120
Naphthalene	NPT	Ave	75252 3198115	259856	655346	1224906	2172290	5.00 160	20.0	50.0	80.0	120
4-Chloroaniline	NPT	Ave	26556 1234381	98658	257293	479043	819318	5.00 160	20.0	50.0	80.0	120
Hexachlorobutadiene	NPT	Ave	19591 941137	68889	183781	339800	615445	5.00 160	20.0	50.0	80.0	120
4-Chloro-3-methylphenol	NPT	Ave	22775 1141008	85777	224482	424257	757507	5.00 160	20.0	50.0	80.0	120
2-Methylnaphthalene	NPT	Ave	55698 2615493	186077	490717	927773	1692352	5.00 160	20.0	50.0	80.0	120
Hexachlorocyclopentadiene	ANT	Qua	9621 1081386	51666	159716	340319	662807	5.00 160	20.0	50.0	80.0	120
2,4,6-Trichlorophenol	ANT	Ave	18421 1033121	70927	189010	361949	663887	5.00 160	20.0	50.0	80.0	120
2,4,5-Trichlorophenol	ANT	Ave	20031 1031480	74205	187737	362206	657315	5.00 160	20.0	50.0	80.0	120
2-Chloronaphthalene	ANT	Ave	53270 2570550	190701	485607	923404	1675478	5.00 160	20.0	50.0	80.0	120
2-Nitroaniline	ANT	Ave	17206 872825	67190	181064	336347	597670	5.00 160	20.0	50.0	80.0	120
Dimethyl phthalate	ANT	Ave	67243 3017238	238024	628393	1166846	2054646	5.00 160	20.0	50.0	80.0	120
2,6-Dinitrotoluene	ANT	Ave	12534 652243	50620	131725	246059	438911	5.00 160	20.0	50.0	80.0	120
Acenaphthylene	ANT	Ave	83703 4078626	301637	796279	1499541	2712145	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
3-Nitroaniline	ANT	Ave	11585 636927	50613	137992	248724	444538	5.00 160	20.0	50.0	80.0	120
Acenaphthene	ANT	Ave	57357 2772596	203749	519593	974816	1798267	5.00 160	20.0	50.0	80.0	120
2,4-Dinitrophenol	ANT	Lin1	8793 405103	21046	71114	138056	262132	10.0 160	20.0	50.0	80.0	120
Dibenzofuran	ANT	Ave	80802 4235111	302636	775590	1500618	2790500	5.00 160	20.0	50.0	80.0	120
2,4-Dinitrotoluene	ANT	Ave	17579 937250	69852	192938	363728	635671	5.00 160	20.0	50.0	80.0	120
4-Nitrophenol	ANT	Qua	16353 551679	26525	79182	189053	349010	10.0 160	20.0	50.0	80.0	120
Diethyl phthalate	ANT	Ave	66963 2989814	246552	640906	1162696	1999325	5.00 160	20.0	50.0	80.0	120
Fluorene	ANT	Lin1	67850 4098035	253741	711257	1412007	2762604	5.00 160	20.0	50.0	80.0	120
4-Chlorophenyl phenyl ether	ANT	Ave	37709 2189424	140547	389818	776394	1498440	5.00 160	20.0	50.0	80.0	120
4-Nitroaniline	ANT	Ave	10581 633161	45387	123150	227890	419805	5.00 160	20.0	50.0	80.0	120
4,6-Dinitro-2-methylphenol	PHN	Qua	19363 635294	37126	117282	217938	411081	10.0 160	20.0	50.0	80.0	120
N-Nitrosodiphenylamine	PHN	Qua	41963 2208977	164148	426679	799381	1478444	5.00 160	20.0	50.0	80.0	120
1,2-Diphenylhydrazine	ANT	Ave	77925 3049883	275355	683238	1231886	2116775	5.00 160	20.0	50.0	80.0	120
4-Bromophenyl phenyl ether	PHN	Qua	19531 1127892	74672	197572	384098	749450	5.00 160	20.0	50.0	80.0	120
Hexachlorobenzene	PHN	Qua	20942 1231674	78641	208772	405768	784778	5.00 160	20.0	50.0	80.0	120
Pentachlorophenol	PHN	Qua	20021 676858	33791	103680	201591	407815	10.0 160	20.0	50.0	80.0	120
Phenanthrene	PHN	Lin1	95586 4844099	358292	934897	1764553	3232516	5.00 160	20.0	50.0	80.0	120
Anthracene	PHN	Ave	98591 4729619	355720	943652	1742071	3174849	5.00 160	20.0	50.0	80.0	120
Carbazole	PHN	Qua	86387 4252274	312674	786284	1518662	2777097	5.00 160	20.0	50.0	80.0	120
Di-n-butyl phthalate	PHN	Lin1	104325 5055699	374387	986798	1947529	3510169	5.00 160	20.0	50.0	80.0	120
Fluoranthene	PHN	Qua	103577 6017169	391420	1077198	2176611	4138418	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Benzidine	CRY	Ave	54486 2445998	203146	521946	931434	1672401	5.00 160	20.0	50.0	80.0	120
Pyrene	CRY	Ave	109535 5860243	401419	1062760	2158080	4079319	5.00 160	20.0	50.0	80.0	120
Butyl benzyl phthalate	CRY	Ave	44718 2774910	176672	503911	1007131	1861256	5.00 160	20.0	50.0	80.0	120
3,3'-Dimethylbenzidine	PHN	Lin1	59111 3113612	233148	666931	1253189	2228241	5.00 160	20.0	50.0	80.0	120
Bis(2-ethylhexyl) phthalate	CRY	Ave	64208 3799693	251874	740584	1486567	2744439	5.00 160	20.0	50.0	80.0	120
3,3'-Dichlorobenzidine	CRY	Lin1	38138 2598006	153799	446057	965172	1780395	5.00 160	20.0	50.0	80.0	120
Benz(a)anthracene	CRY	Ave	109613 5791085	412521	1079330	2142181	4015952	5.00 160	20.0	50.0	80.0	120
Chrysene	CRY	Ave	92333 5349286	372056	980847	1935095	3735537	5.00 160	20.0	50.0	80.0	120
Di-n-octyl phthalate	CRY	Ave	93670 4788766	358283	954998	1828973	3317443	5.00 160	20.0	50.0	80.0	120
Benzo(b)fluoranthene	PRY	Qua	95781 6282777	368051	952588	1948362	4200907	5.00 160	20.0	50.0	80.0	120
Benzo(k)fluoranthene	PRY	Qua	96656 5808702	364328	1031234	1980002	3733733	5.00 160	20.0	50.0	80.0	120
Benzo(a)pyrene	PRY	Qua	76704 4918306	302652	813036	1596440	3151985	5.00 160	20.0	50.0	80.0	120
Indeno(1,2,3-c,d)pyrene	PRY	Qua	88371 6420037	367966	1035067	2104521	4043529	5.00 160	20.0	50.0	80.0	120
Dibenz(a,h)anthracene	PRY	Qua	79069 5617339	304893	873295	1847517	3667072	5.00 160	20.0	50.0	80.0	120
Benzo(g,h,i)perylene	PRY	Qua	77714 4332056	280792	698823	1339203	2508167	5.00 160	20.0	50.0	80.0	120
2-Fluorophenol	DCB	Ave	22126 985490	77285	204273	370249	668038	5.00 160	20.0	50.0	80.0	120
Phenol-d5	DCB	Ave	29893 1420739	106142	277219	517305	942316	5.00 160	20.0	50.0	80.0	120
Nitrobenzene-d5	NPT	Ave	33053 1443327	121167	309248	561221	976390	5.00 160	20.0	50.0	80.0	120
2-Fluorobiphenyl	ANT	Ave	70335 3449143	250615	660840	1234440	2266331	5.00 160	20.0	50.0	80.0	120
2,4,6-Tribromophenol	PHN	Qua	7208 470470	30742	82745	157613	304555	5.00 160	20.0	50.0	80.0	120
p-Terphenyl-d14	CRY	Qua	72805 4312509	277302	752200	1551290	2933046	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 42934

SDG No.:

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/06/2011 13:27 Calibration End Date: 12/06/2011 15:23 Calibration ID: 5137

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD
Qua = Quadratic ISTD

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D
Lims ID: IC - 5 PT
Client ID:
Inject. Date: 06-Dec-2011 13:27:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 1
Sample ID: 480-0007971-002
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 3
Lims Batch ID: 42934
Lims Sample ID: 2
Sublist: chrom-U-8270*sub16
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:52
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:28:01

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	95	172734	40.0	
* 2 Naphthalene-d8	136	7.674	7.673	0.001	99	667021	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	468163	40.0	
* 4 Phenanthrene-d10	188	11.648	11.653	-0.005	99	881629	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	97	774277	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	723756	40.0	
$ 9 2-Fluorophenol	112	4.335	4.340	-0.005	76	22126	4.51	
$ 10 Phenol-d5	99	5.579	5.569	0.010	82	29893	4.38	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	85	33053	4.46	
$ 12 2-Fluorobiphenyl	172	9.079	9.078	0.001	95	70335	4.59	
$ 13 2,4,6-Tribromophenol	330	10.911	10.900	0.011	48	7208	6.50	
$ 14 p-Terphenyl-d14	244	13.203	13.197	0.006	91	72805	7.45	
81 N-Nitrosodimethylamine	42	2.769	2.748	0.021	0	25250	5.16	M
82 Pyridine	52	2.844	2.823	0.021	56	27183	5.22	M
90 Aniline	93	5.590	5.590	0.0	67	40219	4.49	
89 Phenol	94	5.595	5.590	0.005	68	34394	4.33	
91 Bis(2-chloroethyl)ether	93	5.670	5.670	0.0	93	27917	5.16	
93 2-Chlorophenol	128	5.750	5.745	0.005	79	24484	4.54	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	87	31057	4.84	
95 1,4-Dichlorobenzene	146	6.028	6.033	-0.005	35	31087	4.65	
96 Benzyl alcohol	108	6.215	6.210	0.005	76	16105	6.30	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	80	29960	4.53	
98 2-Methylphenol	108	6.375	6.370	0.005	71	23295	4.26	
99 2,2'-oxybis[1-chloropropane]	45	6.375	6.375	0.0	78	60639	4.80	
101 N-Nitrosodi-n-propylamine	70	6.546	6.546	0.0	89	23353	4.48	
102 4-Methylphenol	108	6.589	6.578	0.011	86	22902	4.26	
106 Hexachloroethane	117	6.664	6.664	0.0	79	12091	4.60	
107 Nitrobenzene	77	6.765	6.765	0.0	80	34145	4.49	
110 Isophorone	82	7.081	7.080	0.001	91	57003	4.48	
111 2-Nitrophenol	139	7.187	7.182	0.005	73	12167	3.95	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
112 2,4-Dimethylphenol	107	7.278	7.267	0.011	91	29261	6.10	
113 Tetraethyl lead	237	7.284	7.283	0.001	84	17091	4.57	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	79	29566	4.54	
119 Benzoic acid	105	7.497	7.513	-0.016	91	436057	88.0	
117 2,4-Dichlorophenol	162	7.540	7.518	0.022	52	22183	4.21	M
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	83	30137	4.57	
121 Naphthalene	128	7.700	7.700	0.0	60	75252	4.63	
123 4-Chloroaniline	127	7.812	7.796	0.016	76	26556	4.30	
126 Hexachlorobutadiene	225	7.861	7.860	0.0	82	19591	4.35	
131 4-Chloro-3-methylphenol	107	8.475	8.459	0.016	81	22775	4.14	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	80	55698	4.50	
136 Hexachlorocyclopentadiene	237	8.806	8.801	0.005	47	9621	6.55	
139 2,4,6-Trichlorophenol	196	8.993	8.988	0.005	78	18421	4.19	
140 2,4,5-Trichlorophenol	196	9.079	9.052	0.027	71	20031	4.49	M
143 2-Chloronaphthalene	162	9.228	9.228	0.0	95	53270	4.65	
145 2-Nitroaniline	65	9.410	9.394	0.016	0	17206	4.28	M
147 Dimethyl phthalate	163	9.623	9.623	0.0	92	67243	4.73	
148 2,6-Dinitrotoluene	165	9.714	9.703	0.011	53	12534	4.23	
149 Acenaphthylene	152	9.762	9.762	0.0	87	83703	4.56	
150 3-Nitroaniline	138	9.955	9.939	0.016	0	11585	3.92	M
151 Acenaphthene	153	9.987	9.987	0.0	80	57357	4.68	
152 2,4-Dinitrophenol	184	10.094	10.067	0.027	0	8793	11.2	M
155 Dibenzofuran	168	10.206	10.200	0.006	77	80802	4.39	
153 4-Nitrophenol	109	10.254	10.211	0.043	0	16353	13.1	M
154 2,4-Dinitrotoluene	165	10.222	10.216	0.006	53	17579	4.13	
160 Diethyl phthalate	149	10.500	10.499	0.001	92	66963	4.70	
161 Fluorene	166	10.617	10.612	0.005	81	67850	6.08	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	70	37709	4.07	
164 4-Nitroaniline	138	10.697	10.681	0.016	59	10581	3.86	
166 4,6-Dinitro-2-methylphenol	198	10.713	10.702	0.011	66	19363	11.8	
167 N-Nitrosodiphenylamine	169	10.767	10.767	0.0	92	41963	6.67	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	94	77925	5.07	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	86	19531	7.26	
177 Hexachlorobenzene	284	11.237	11.237	0.0	76	20942	6.55	
181 Pentachlorophenol	266	11.483	11.466	0.017	50	20021	11.6	
185 Phenanthrene	178	11.675	11.675	0.0	68	95586	6.19	
188 Anthracene	178	11.728	11.728	0.0	94	98591	4.26	
189 Carbazole	167	11.921	11.915	0.006	74	86387	6.50	
192 Di-n-butyl phthalate	149	12.246	12.246	0.0	98	104325	6.21	
197 Fluoranthene	202	12.856	12.855	0.001	94	103577	8.26	
198 Benzidine	184	13.000	12.989	0.011	75	54486	5.22	
199 Pyrene	202	13.069	13.069	0.0	97	109535	4.79	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	94	44718	4.31	
203 3,3'-Dimethylbenzidine	212	13.641	13.635	0.006	85	59111	5.98	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	94	64208	4.29	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	66	38138	5.90	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	65	109613	4.79	
211 Chrysene	228	14.175	14.175	0.0	63	92333	4.47	
212 Di-n-octyl phthalate	149	14.683	14.682	0.001	96	93670	4.81	
213 Benzo[b]fluoranthene	252	15.147	15.147	0.0	87	95781	8.26	
214 Benzo[k]fluoranthene	252	15.179	15.174	0.005	92	96656	7.12	
217 Benzo[a]pyrene	252	15.484	15.489	-0.005	99	76704	7.06	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
219 Indeno[1,2,3-cd]pyrene	276	16.809	16.809	0.0	90	88371	7.25	
220 Dibenz(a,h)anthracene	278	16.809	16.814	-0.005	37	79069	8.44	
221 Benzo[g,h,i]perylene	276	17.177	17.172	0.005	83	77714	4.13	
S 78 3-Methylphenol	1				0		4.26	
S 77 3 & 4 Methylphenol	108				0		4.26	
S 222 Total Cresols	1				0		8.52	

QC Flag Legend

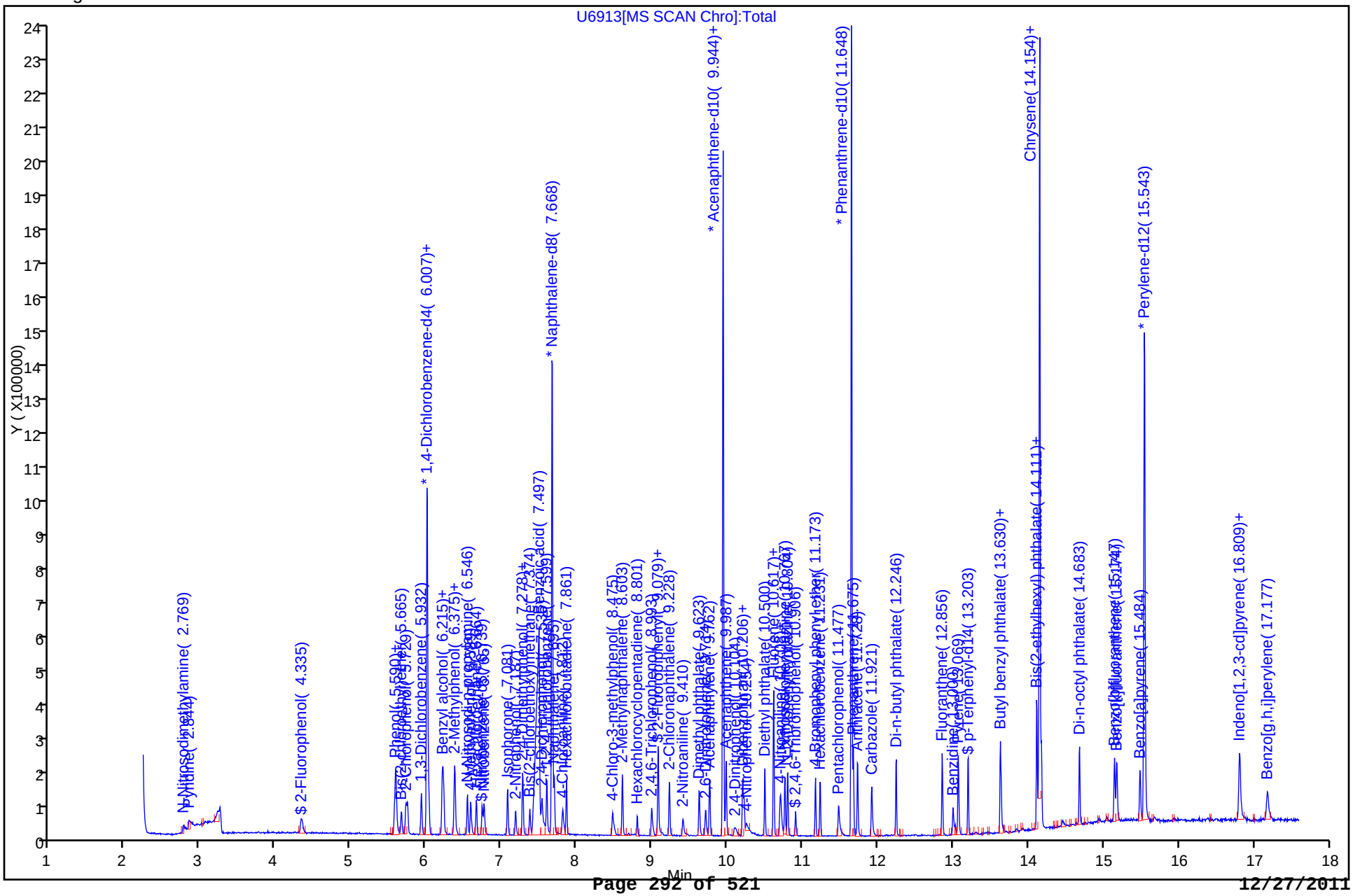
Review Flags
M - Manually Integrated

Report Date: 06-Dec-2011 17:08:52 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D

Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



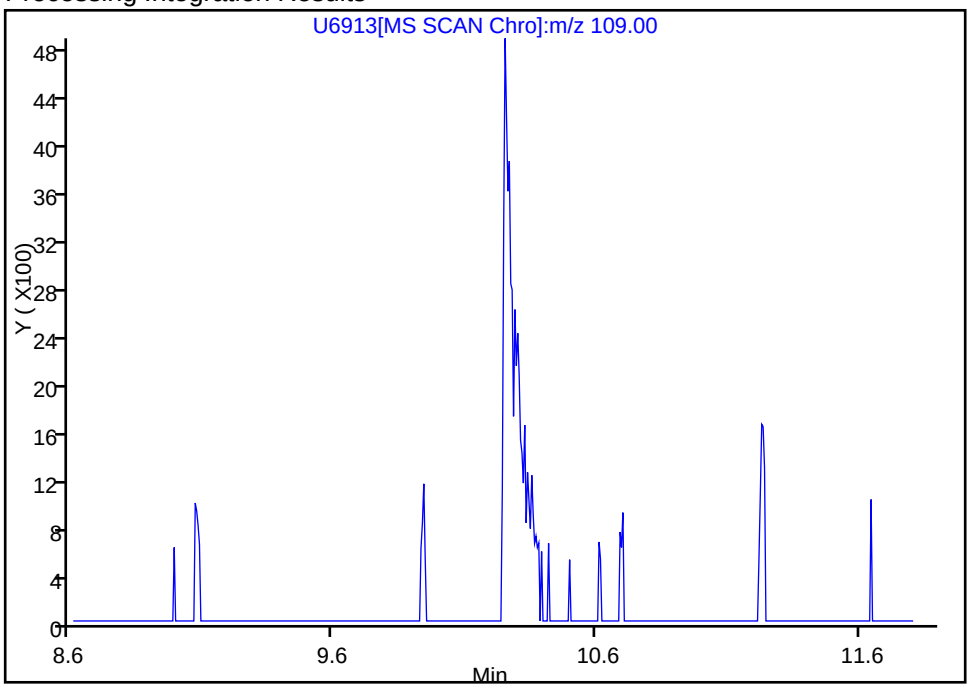
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

153 4-Nitrophenol, Signal: 1, m/z: 109.0 Type: quant, RT: 10.21

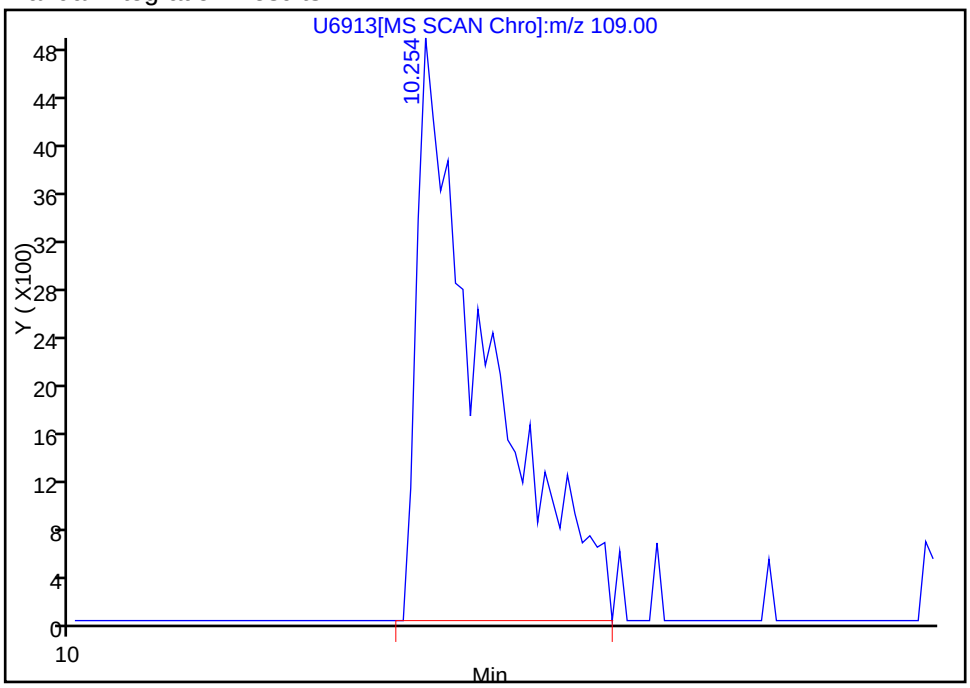
Not Detected
Expected RT: 10.21

Processing Integration Results



Manual Integration Results

RT: 10.25
Response: 16353
Amount: 13.101776



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Assign Peak

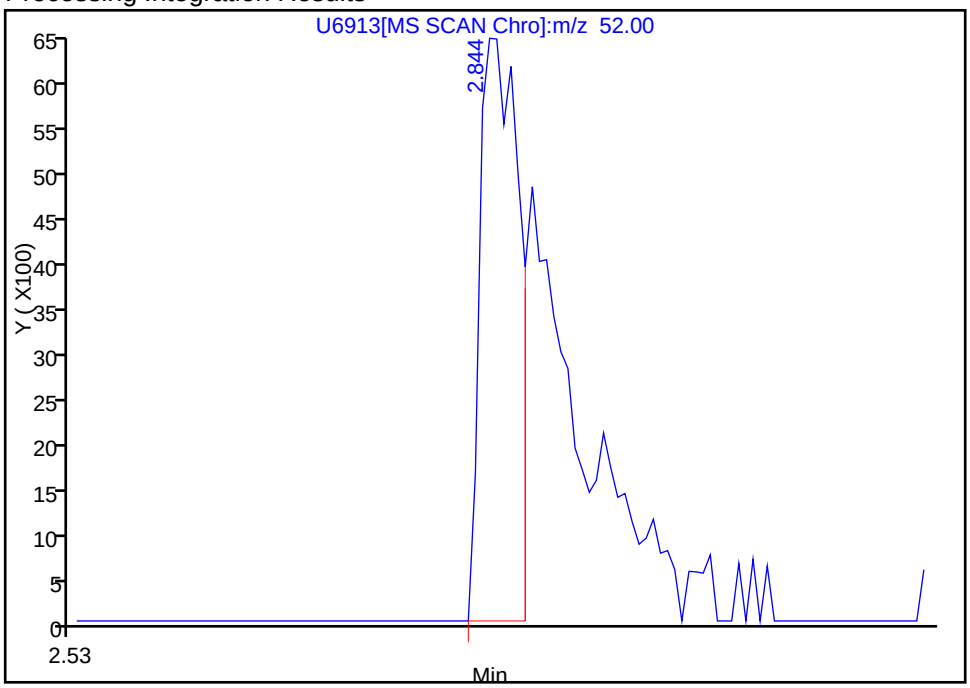
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

82 Pyridine, Signal: 1, m/z: 52.0 Type: quant, RT: 2.82

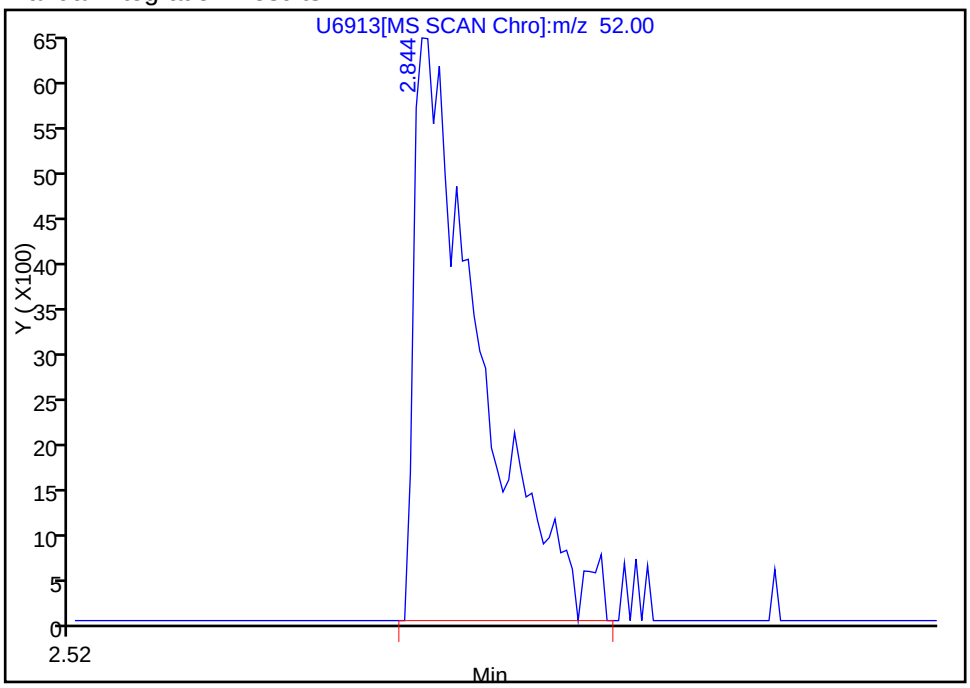
Processing Integration Results

RT: 2.84
Response: 13135
Amount: 5.000000



Manual Integration Results

RT: 2.84
Response: 27183
Amount: 5.220421



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Peak Tail

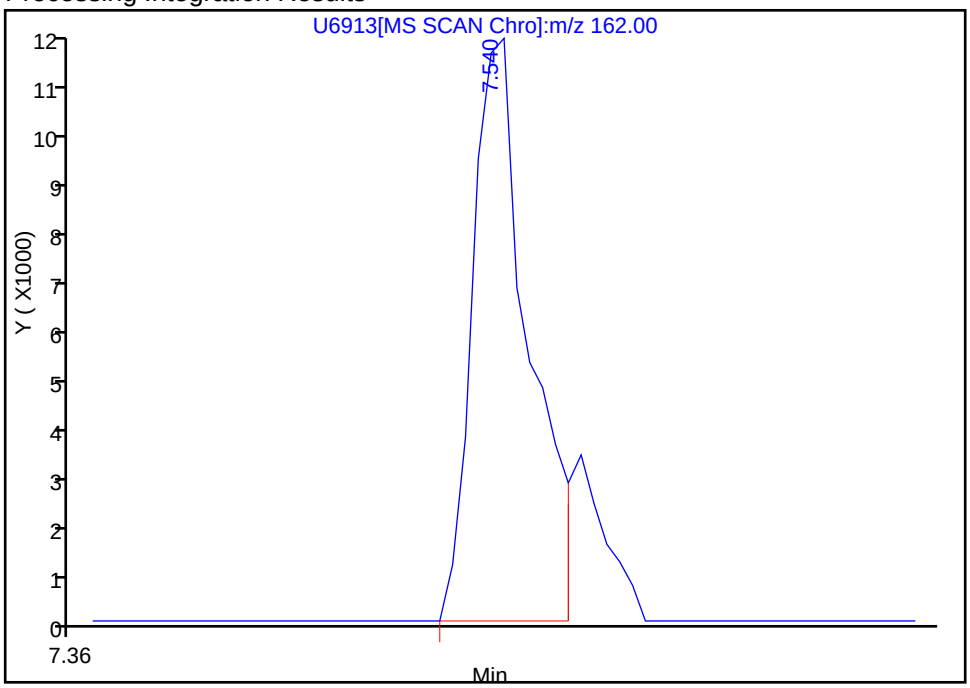
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

117 2,4-Dichlorophenol, Signal: 1, m/z: 162.0 Type: quant, RT: 7.52

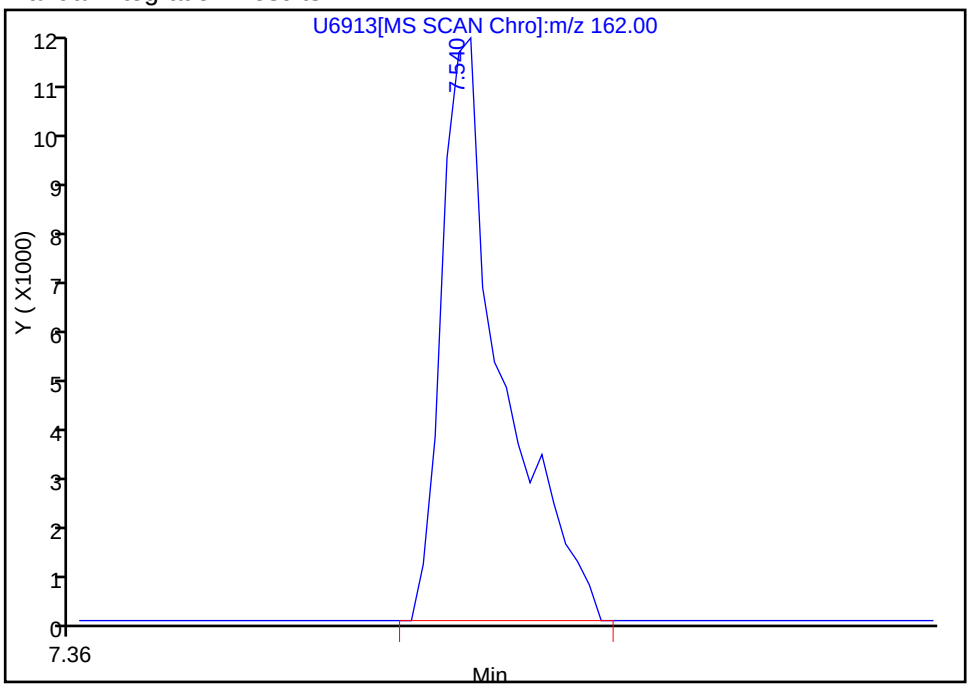
Processing Integration Results

RT: 7.54
Response: 19259
Amount: 5.000000



Manual Integration Results

RT: 7.54
Response: 22183
Amount: 4.213756



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Peak Tail

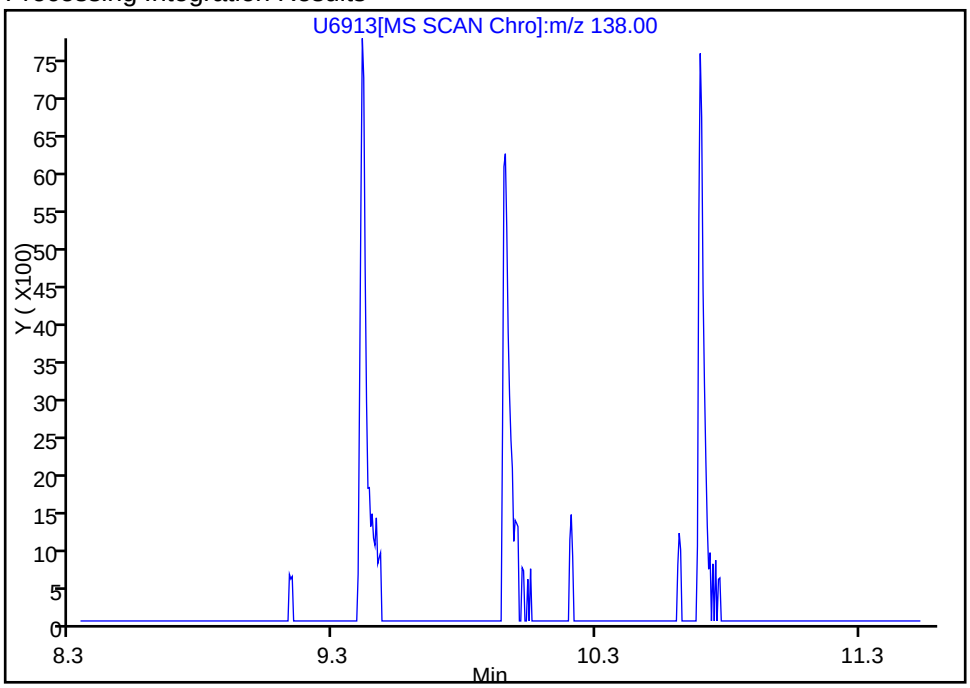
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

150 3-Nitroaniline, Signal: 1, m/z: 138.0 Type: quant, RT: 9.94

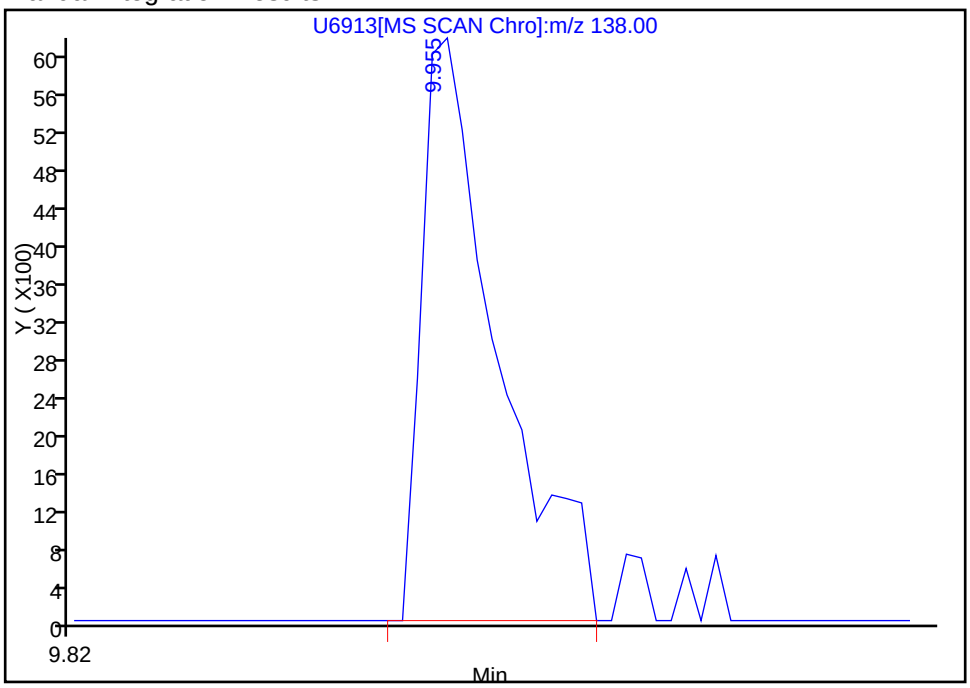
Not Detected
Expected RT: 9.94

Processing Integration Results



Manual Integration Results

RT: 9.95
Response: 11585
Amount: 3.919031



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Assign Peak

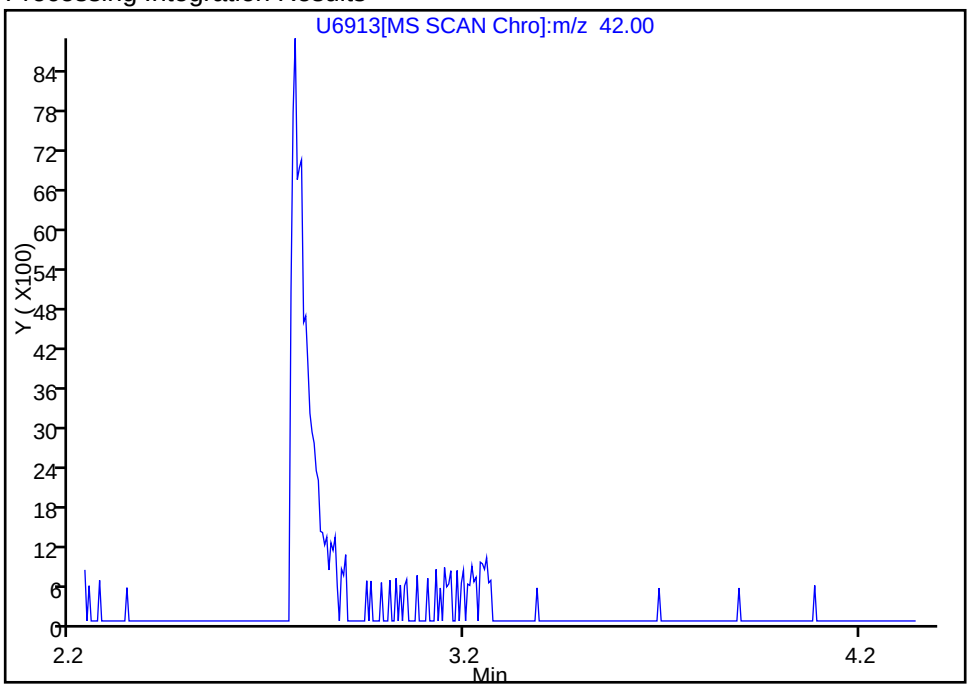
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

81 N-Nitrosodimethylamine, Signal: 1, m/z: 42.0 Type: quant, RT: 2.75

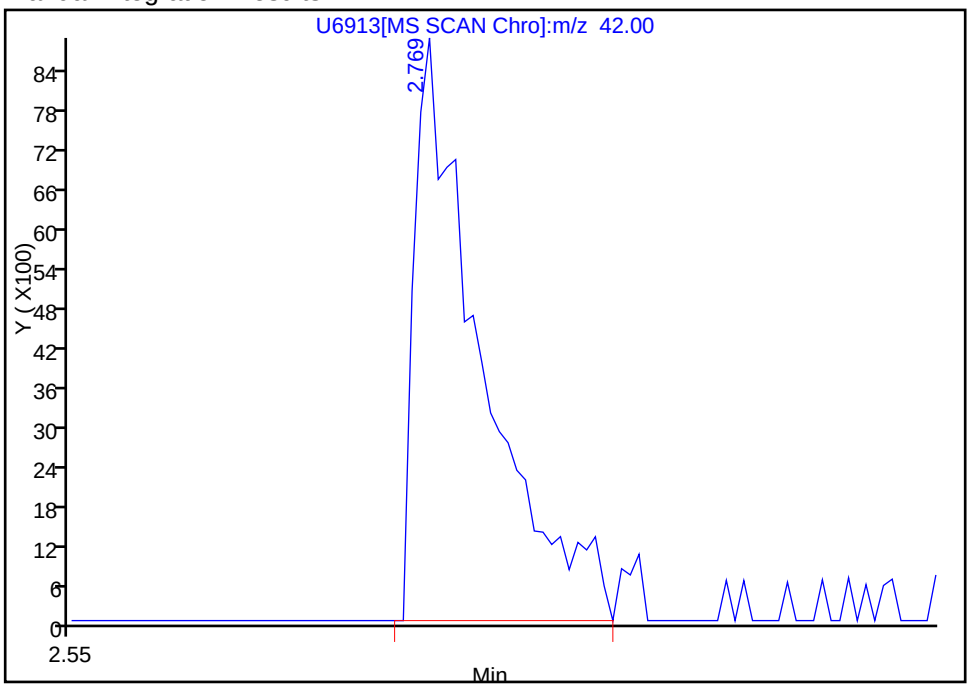
Not Detected
Expected RT: 2.75

Processing Integration Results



Manual Integration Results

RT: 2.77
Response: 25250
Amount: 5.155550



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Assign Peak

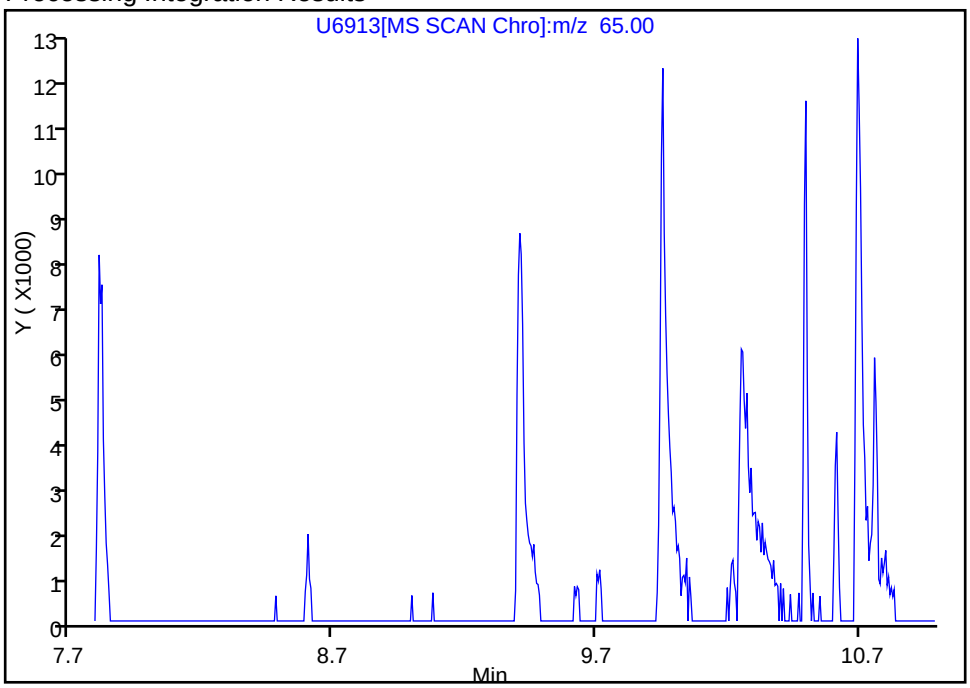
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

145 2-Nitroaniline, Signal: 1, m/z: 65.0 Type: quant, RT: 9.39

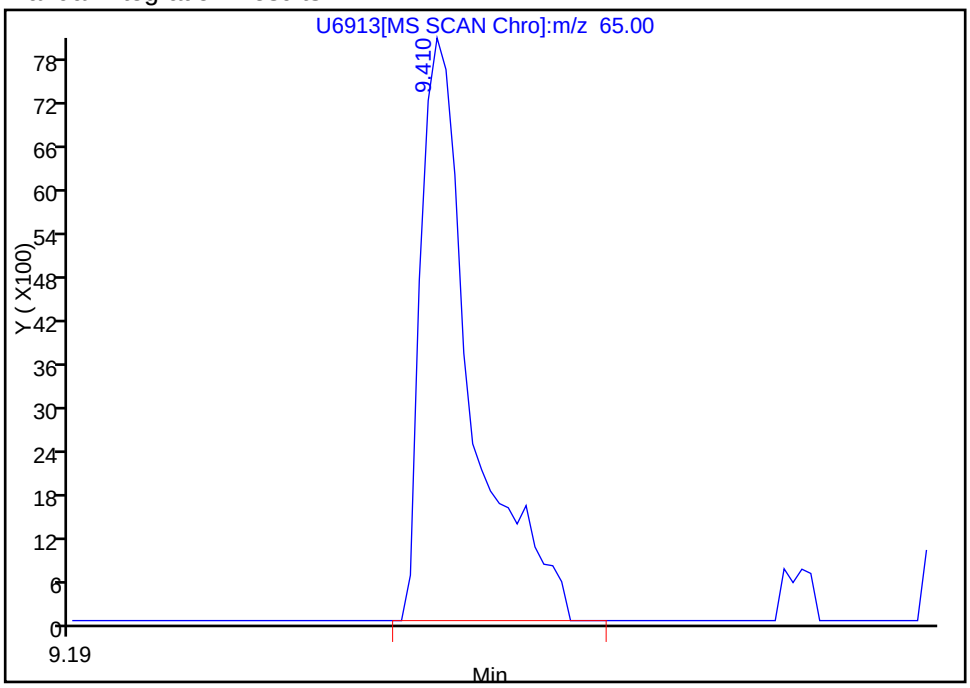
Not Detected
Expected RT: 9.39

Processing Integration Results



Manual Integration Results

RT: 9.41
Response: 17206
Amount: 4.277822



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Assign Peak

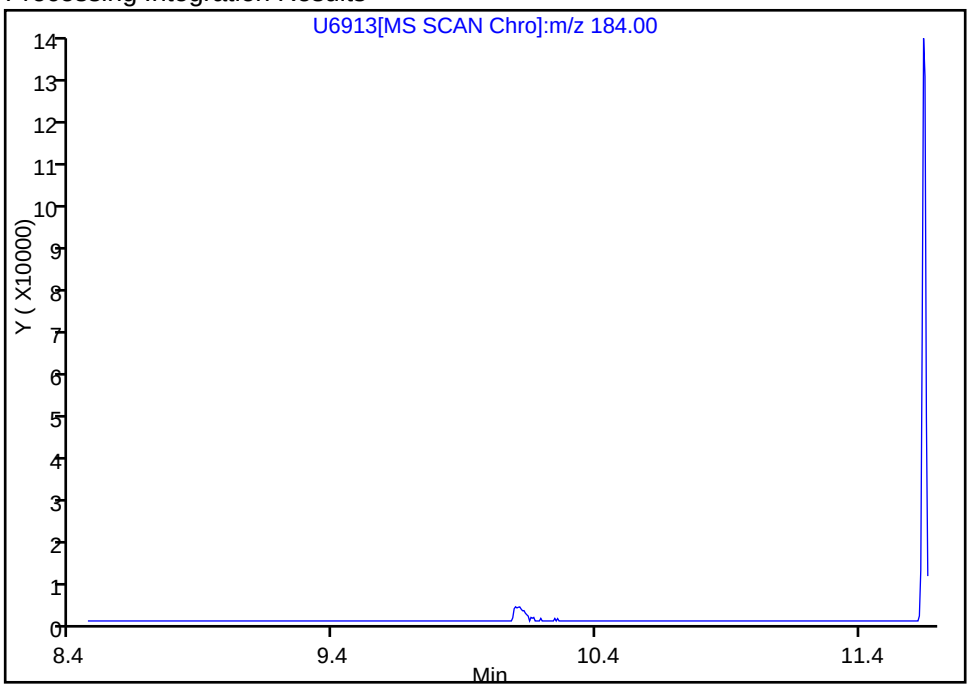
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

152 2,4-Dinitrophenol, Signal: 1, m/z: 184.0 Type: quant, RT: 10.07

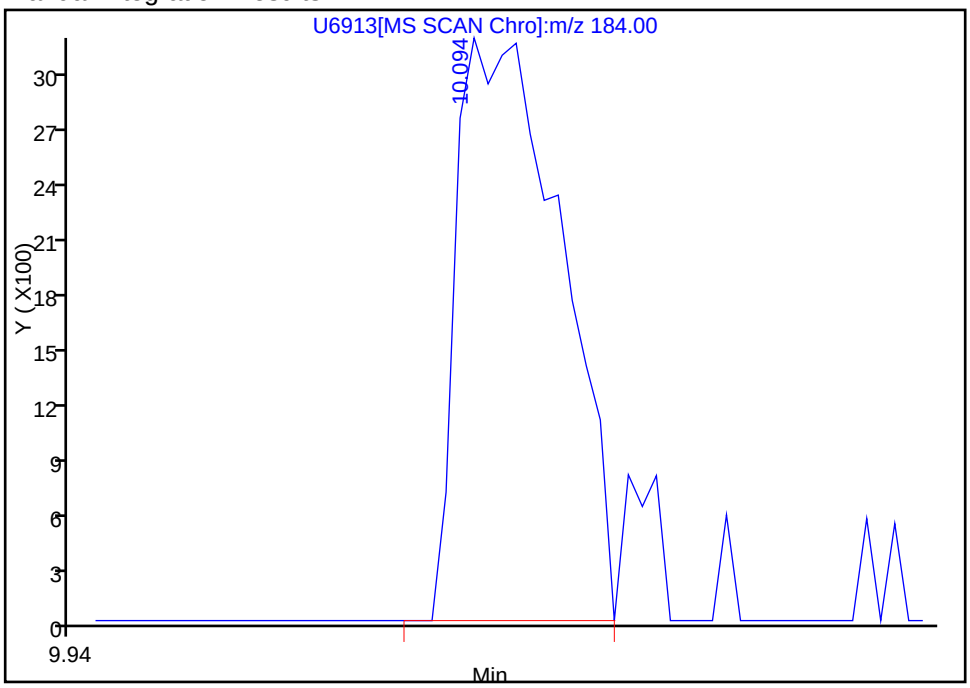
Not Detected
Expected RT: 10.07

Processing Integration Results



Manual Integration Results

RT: 10.09
Response: 8793
Amount: 11.185126



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Assign Peak

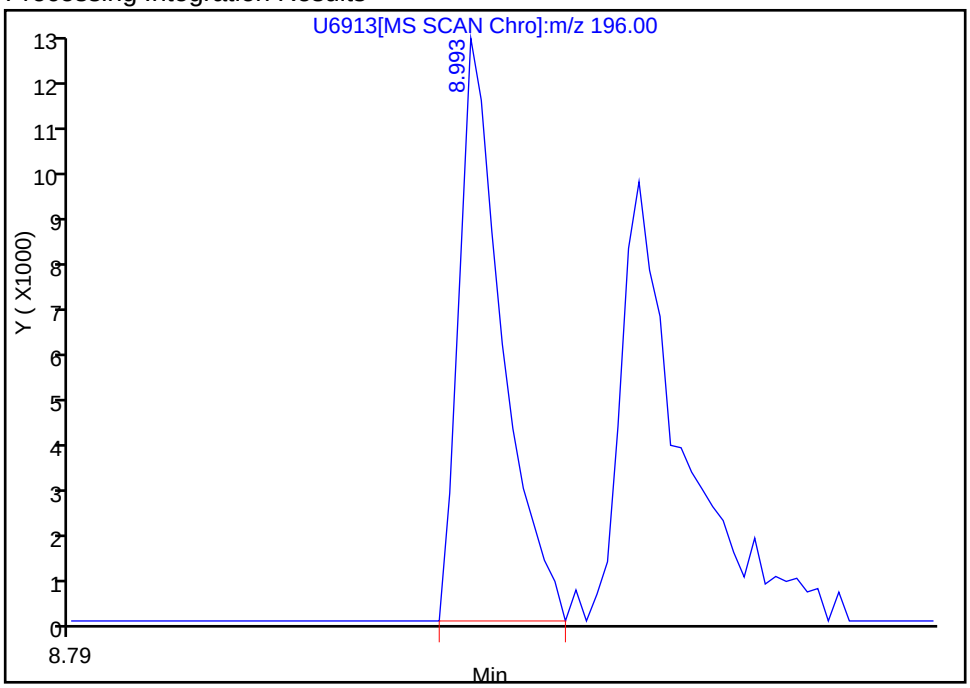
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6913.D		
Injection Date:	06-Dec-2011 13:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

140 2,4,5-Trichlorophenol, Signal: 1, m/z: 196.0 Type: quant, RT: 9.05

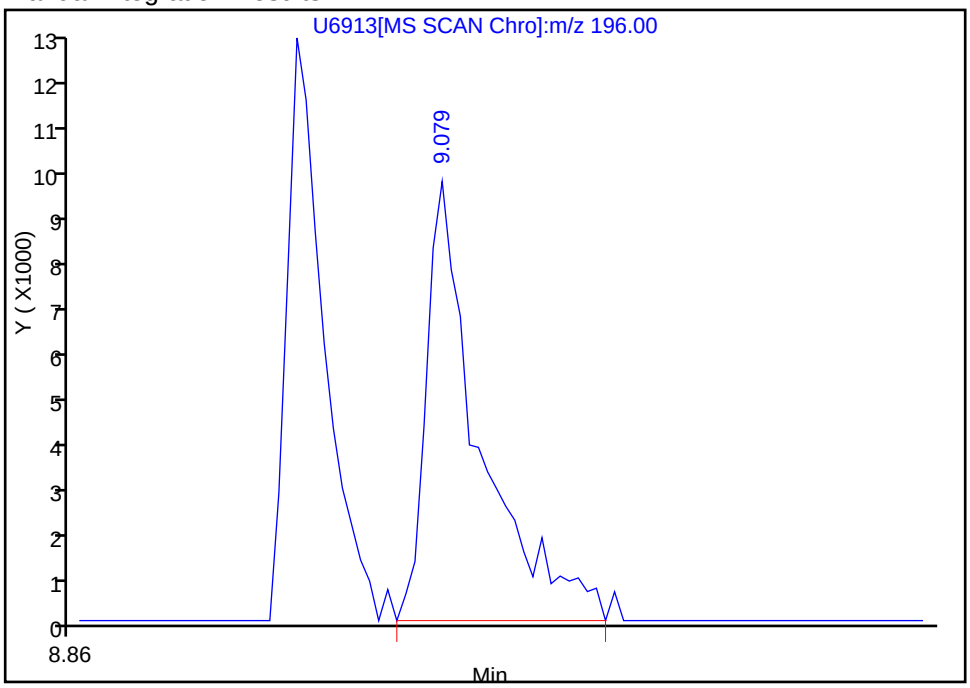
Processing Integration Results

RT: 8.99
Response: 18421
Amount: 5.000000



Manual Integration Results

RT: 9.08
Response: 20031
Amount: 4.487176



Reviewer: mckernar, 06-Dec-2011 13:52:37
Audit Action: Manually Integrated
Audit Reason: Assign Peak

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6914.D
Lims ID: IC - 20 PT
Client ID:
Inject. Date: 06-Dec-2011 13:50:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 2
Sample ID: 480-0007971-003
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 4
Lims Batch ID: 42934
Lims Sample ID: 3
Sublist: chrom-U-8270*sub16
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:47
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:27:58

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	94	143875	40.0	
* 2 Naphthalene-d8	136	7.668	7.673	-0.005	99	560027	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	97	401264	40.0	
* 4 Phenanthrene-d10	188	11.648	11.653	-0.005	98	767931	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	93	738565	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	670590	40.0	
$ 9 2-Fluorophenol	112	4.335	4.340	-0.005	89	77285	18.9	
$ 10 Phenol-d5	99	5.569	5.569	0.0	87	106142	18.7	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	93	121167	19.5	
$ 12 2-Fluorobiphenyl	172	9.078	9.078	0.0	95	250615	19.1	
$ 13 2,4,6-Tribromophenol	330	10.905	10.900	0.005	91	30742	21.0	
$ 14 p-Terphenyl-d14	244	13.197	13.197	0.0	98	277302	19.5	
81 N-Nitrosodimethylamine	42	2.753	2.748	0.005	58	83825	20.5	M
82 Pyridine	52	2.828	2.823	0.005	69	89257	20.6	M
90 Aniline	93	5.590	5.590	0.0	56	138085	18.5	
89 Phenol	94	5.590	5.590	0.0	65	120191	18.2	
91 Bis(2-chloroethyl)ether	93	5.665	5.670	-0.005	93	88562	19.7	
93 2-Chlorophenol	128	5.745	5.745	0.0	86	82748	18.4	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	89	101354	19.0	
95 1,4-Dichlorobenzene	146	6.033	6.033	0.0	78	106045	19.1	
96 Benzyl alcohol	108	6.210	6.210	0.0	73	59976	17.3	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	79	100643	18.3	
99 2,2'-oxybis[1-chloropropane]	45	6.370	6.375	-0.005	79	207318	19.7	
98 2-Methylphenol	108	6.370	6.370	0.0	76	84415	18.5	
101 N-Nitrosodi-n-propylamine	70	6.541	6.546	-0.005	94	86118	19.8	
102 4-Methylphenol	108	6.584	6.578	0.006	87	82991	18.5	
106 Hexachloroethane	117	6.664	6.664	0.0	85	42687	19.5	
107 Nitrobenzene	77	6.765	6.765	0.0	94	126995	19.9	
110 Isophorone	82	7.075	7.080	-0.005	93	207368	19.4	
111 2-Nitrophenol	139	7.182	7.182	0.0	88	49522	19.1	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
112 2,4-Dimethylphenol	107	7.273	7.267	0.006	95	109087	21.0	
113 Tetraethyl lead	237	7.283	7.283	0.0	90	60326	19.2	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	93	107010	19.6	
119 Benzoic acid	105	7.502	7.513	-0.011	90	453494	109.0	
117 2,4-Dichlorophenol	162	7.524	7.518	0.006	76	79154	17.9	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	93	100436	18.1	
121 Naphthalene	128	7.700	7.700	0.0	85	259856	19.0	
123 4-Chloroaniline	127	7.802	7.796	0.006	77	98658	19.0	
126 Hexachlorobutadiene	225	7.860	7.860	0.0	93	68889	18.2	
131 4-Chloro-3-methylphenol	107	8.459	8.459	0.0	94	85777	18.6	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	81	186077	17.9	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	96	51666	19.9	
139 2,4,6-Trichlorophenol	196	8.988	8.988	0.0	96	70927	18.8	
140 2,4,5-Trichlorophenol	196	9.062	9.052	0.010	92	74205	19.4	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	98	190701	19.4	
145 2-Nitroaniline	65	9.394	9.394	0.0	66	67190	19.5	
147 Dimethyl phthalate	163	9.623	9.623	0.0	96	238024	19.5	
148 2,6-Dinitrotoluene	165	9.703	9.703	0.0	76	50620	19.9	
149 Acenaphthylene	152	9.762	9.762	0.0	91	301637	19.2	
150 3-Nitroaniline	138	9.939	9.939	0.0	45	50613	20.0	
151 Acenaphthene	153	9.981	9.987	-0.006	93	203749	19.4	
152 2,4-Dinitrophenol	184	10.077	10.067	0.010	55	21046	19.1	M
155 Dibenzofuran	168	10.200	10.200	0.0	85	302636	19.2	
153 4-Nitrophenol	109	10.238	10.211	0.027	1	26525	19.6	
154 2,4-Dinitrotoluene	165	10.216	10.216	0.0	78	69852	19.1	
160 Diethyl phthalate	149	10.499	10.499	0.0	96	246552	20.2	
161 Fluorene	166	10.612	10.612	0.0	88	253741	17.8	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	83	140547	17.7	
164 4-Nitroaniline	138	10.681	10.681	0.0	73	45387	19.3	
166 4,6-Dinitro-2-methylphenol	198	10.702	10.702	0.0	46	37126	19.9	
167 N-Nitrosodiphenylamine	169	10.761	10.767	-0.006	96	164148	20.7	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	96	275355	20.9	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	94	74672	20.8	
177 Hexachlorobenzene	284	11.231	11.237	-0.006	91	78641	21.0	
181 Pentachlorophenol	266	11.472	11.466	0.006	72	33791	20.1	
185 Phenanthrene	178	11.675	11.675	0.0	94	358292	18.0	
188 Anthracene	178	11.728	11.728	0.0	97	355720	17.6	
189 Carbazole	167	11.915	11.915	0.0	83	312674	21.0	
192 Di-n-butyl phthalate	149	12.241	12.246	-0.005	99	374387	17.6	
197 Fluoranthene	202	12.855	12.855	0.0	96	391420	20.1	
198 Benzidine	184	12.989	12.989	0.0	96	203146	20.4	
199 Pyrene	202	13.069	13.069	0.0	98	401419	18.4	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	98	176672	17.8	
203 3,3'-Dimethylbenzidine	212	13.635	13.635	0.0	97	233148	17.5	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	95	251874	17.6	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	77	153799	17.4	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	74	412521	18.9	
211 Chrysene	228	14.175	14.175	0.0	89	372056	18.9	
212 Di-n-octyl phthalate	149	14.682	14.682	0.0	99	358283	19.3	
213 Benzo[b]fluoranthene	252	15.142	15.147	-0.005	90	368051	20.9	
214 Benzo[k]fluoranthene	252	15.174	15.174	0.0	97	364328	19.6	
217 Benzo[a]pyrene	252	15.484	15.489	-0.005	98	302652	20.4	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
219 Indeno[1,2,3-cd]pyrene	276	16.803	16.809	-0.006	95	367966	20.0	
220 Dibenz(a,h)anthracene	278	16.809	16.814	-0.005	57	304893	19.7	
221 Benzo[g,h,i]perylene	276	17.167	17.172	-0.005	87	280792	21.5	
S 78 3-Methylphenol	1				0		18.5	
S 77 3 & 4 Methylphenol	108				0		18.5	
S 222 Total Cresols	1				0		37.1	

QC Flag Legend

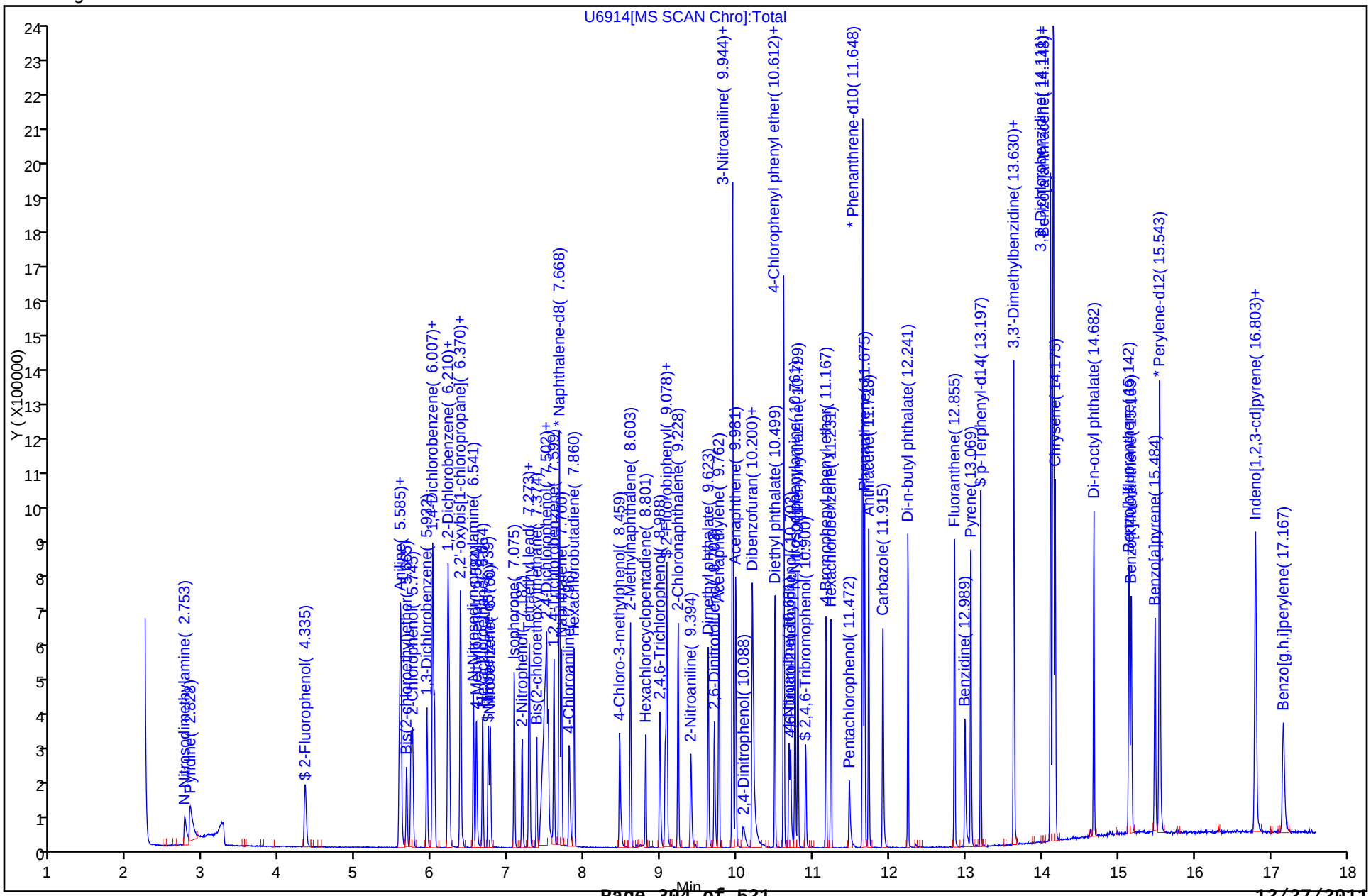
Review Flags
M - Manually Integrated

Report Date: 06-Dec-2011 17:08:48 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6914.D

Injection Date:	06-Dec-2011 13:50:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	3
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



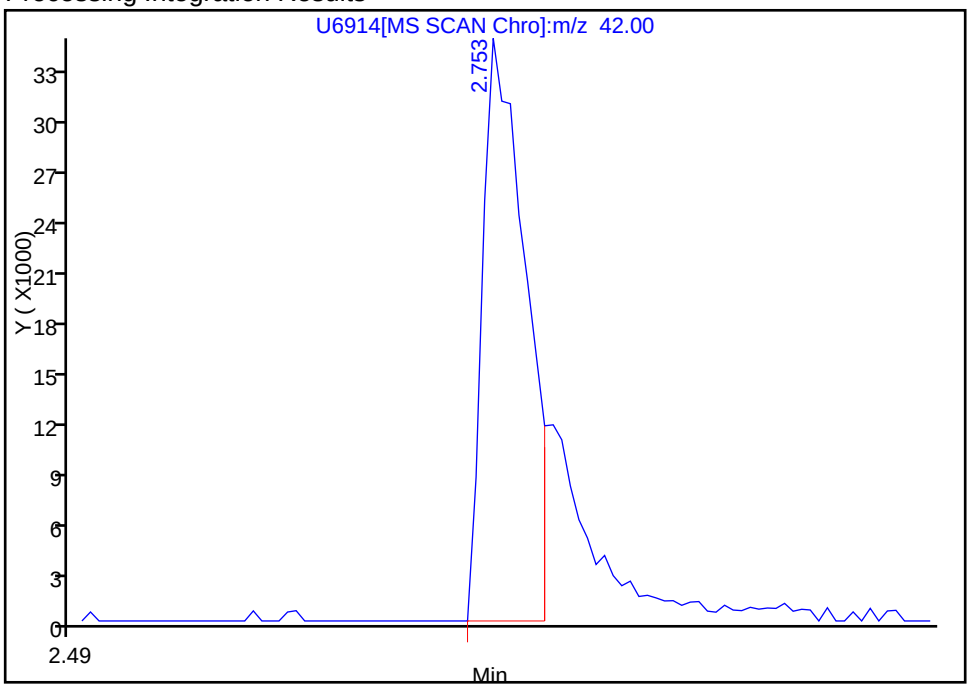
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6914.D		
Injection Date:	06-Dec-2011 13:50:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	3
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

81 N-Nitrosodimethylamine, Signal: 1, m/z: 42.0 Type: quant, RT: 2.75

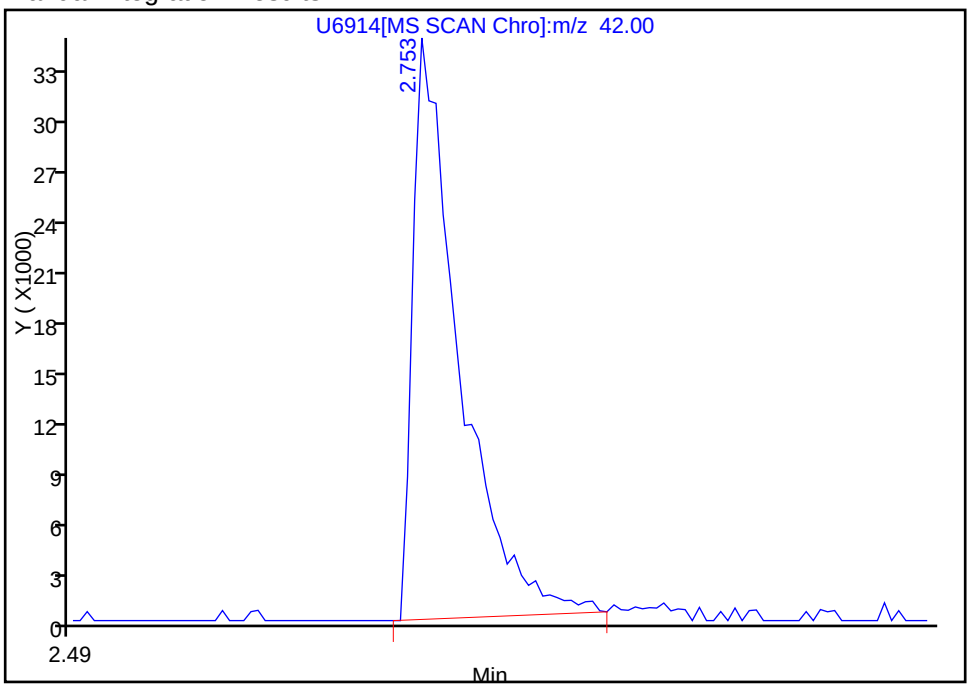
Processing Integration Results

RT: 2.75
Response: 64911
Amount: 17.421476



Manual Integration Results

RT: 2.75
Response: 83825
Amount: 20.548479



Reviewer: mckernar, 06-Dec-2011 14:15:26
Audit Action: Manually Integrated
Audit Reason: Peak Tail

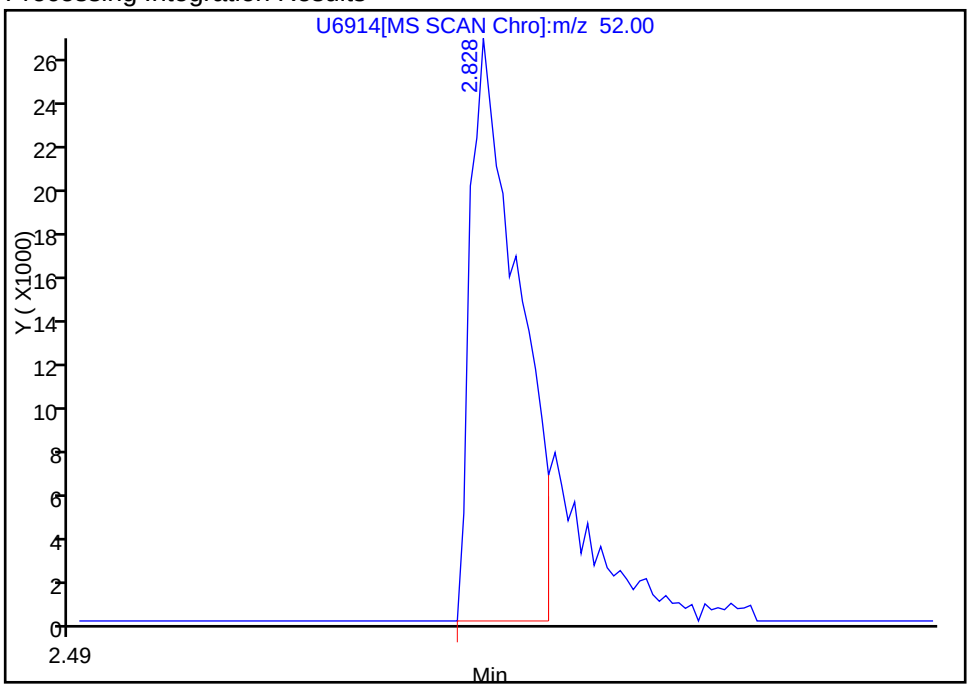
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6914.D		
Injection Date:	06-Dec-2011 13:50:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	3
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

82 Pyridine, Signal: 1, m/z: 52.0 Type: quant, RT: 2.82

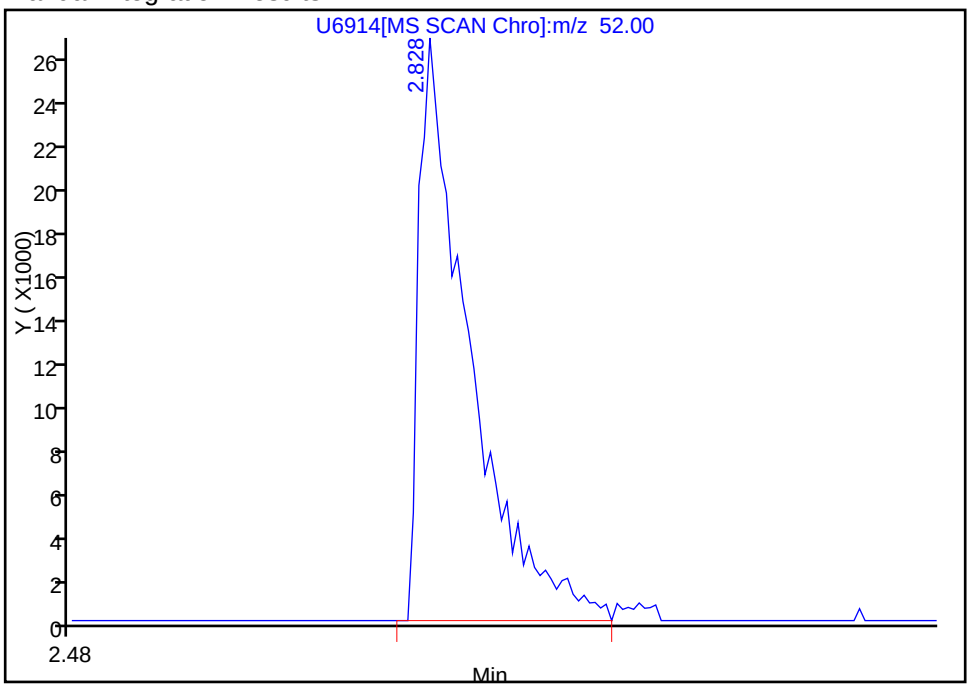
Processing Integration Results

RT: 2.83
Response: 71077
Amount: 17.588644



Manual Integration Results

RT: 2.83
Response: 89257
Amount: 20.579882



Reviewer: mckernar, 06-Dec-2011 14:15:26
Audit Action: Manually Integrated
Audit Reason: Peak Tail

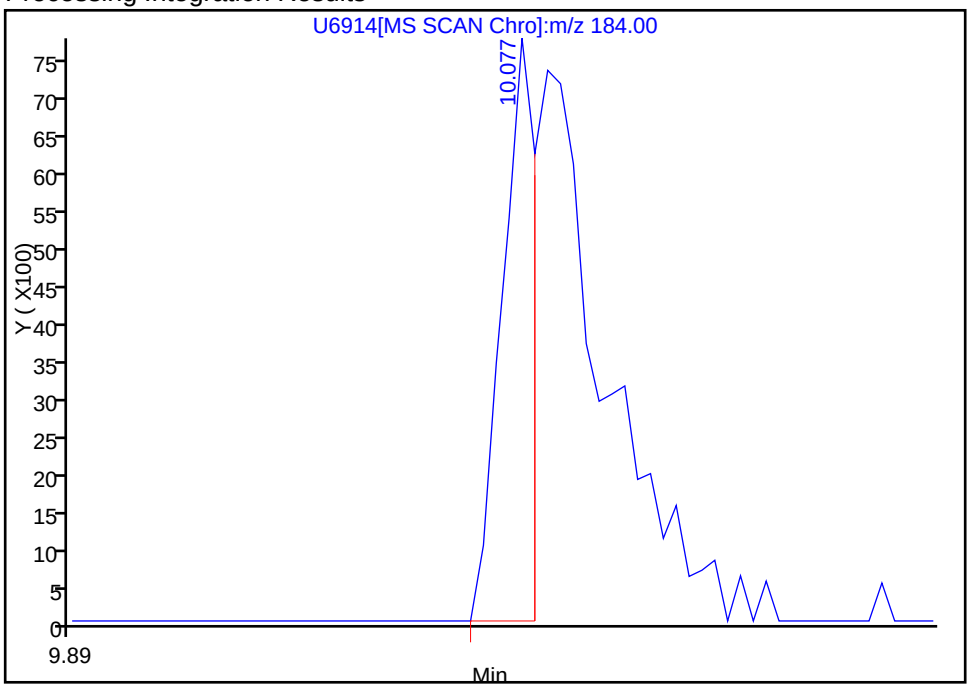
Manual Integration/User Assign Peak Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6914.D		
Injection Date:	06-Dec-2011 13:50:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	3
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

152 2,4-Dinitrophenol, Signal: 1, m/z: 184.0 Type: quant, RT: 10.07

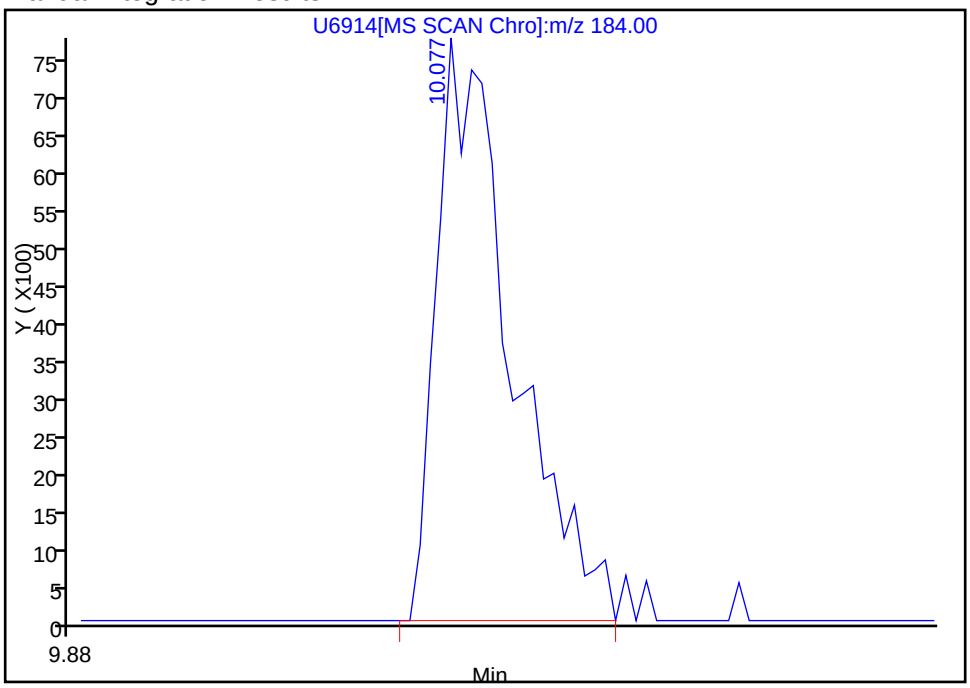
Processing Integration Results

RT: 10.08
Response: 7624
Amount: 13.436127



Manual Integration Results

RT: 10.08
Response: 21046
Amount: 19.121994



Reviewer: mckernar, 06-Dec-2011 14:15:26
Audit Action: Manually Integrated
Audit Reason: Split Peak

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6915.D
Lims ID: ICIS - 50 PT Client ID:
Inject. Date: 06-Dec-2011 14:13:30 Dil. Factor: 1.0000
Sample Type: ICIS Calib Level: 3
Sample ID: 480-0007971-004
Misc. Info.:
Operator: RMM Instrument ID: HP5973U
Vol. Injected: 1.0000 ALS Bottle#: 5
Lims Batch ID: 42934 Lims Sample ID: 4
Sublist: chrom-U-8270*sub16
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:44 Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar Date: 06-Dec-2011 16:27:55

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	94	153495	40.0	
* 2 Naphthalene-d8	136	7.673	7.673	0.0	99	604437	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	440232	40.0	
* 4 Phenanthrene-d10	188	11.653	11.653	0.0	98	813336	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	94	806728	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	707748	40.0	
$ 9 2-Fluorophenol	112	4.340	4.340	0.0	94	204273	46.9	
$ 10 Phenol-d5	99	5.569	5.569	0.0	92	277219	45.7	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	92	309248	46.1	
$ 12 2-Fluorobiphenyl	172	9.078	9.078	0.0	92	660840	45.9	
$ 13 2,4,6-Tribromophenol	330	10.900	10.900	0.0	90	82745	45.8	
$ 14 p-Terphenyl-d14	244	13.197	13.197	0.0	98	752200	43.5	
81 N-Nitrosodimethylamine	42	2.748	2.748	0.0	60	205983	47.3	
82 Pyridine	52	2.823	2.823	0.0	70	221063	47.8	
90 Aniline	93	5.590	5.590	0.0	58	361288	45.4	
89 Phenol	94	5.590	5.590	0.0	67	324444	46.0	
91 Bis(2-chloroethyl)ether	93	5.670	5.670	0.0	94	218986	45.6	
93 2-Chlorophenol	128	5.745	5.745	0.0	89	219665	45.8	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	92	259249	45.4	
95 1,4-Dichlorobenzene	146	6.033	6.033	0.0	78	265812	44.8	
96 Benzyl alcohol	108	6.210	6.210	0.0	76	172842	41.5	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	90	256411	43.6	
99 2,2'-oxybis[1-chloropropane]	45	6.375	6.375	0.0	79	518030	46.1	
98 2-Methylphenol	108	6.370	6.370	0.0	80	224354	46.2	
101 N-Nitrosodi-n-propylamine	70	6.546	6.546	0.0	94	220762	47.7	
102 4-Methylphenol	108	6.578	6.578	0.0	87	223919	46.9	
106 Hexachloroethane	117	6.664	6.664	0.0	88	108130	46.3	
107 Nitrobenzene	77	6.765	6.765	0.0	95	313239	45.4	
110 Isophorone	82	7.080	7.080	0.0	94	536932	46.6	
111 2-Nitrophenol	139	7.182	7.182	0.0	86	127551	45.7	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
112 2,4-Dimethylphenol	107	7.267	7.267	0.0	96	286104	45.8	
113 Tetraethyl lead	237	7.283	7.283	0.0	90	152145	44.9	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	94	266687	45.2	
119 Benzoic acid	105	7.513	7.513	0.0	86	583097	129.9	
117 2,4-Dichlorophenol	162	7.518	7.518	0.0	95	212777	44.6	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	93	262133	43.9	
121 Naphthalene	128	7.700	7.700	0.0	97	655346	44.5	
123 4-Chloroaniline	127	7.796	7.796	0.0	79	257293	46.0	
126 Hexachlorobutadiene	225	7.860	7.860	0.0	95	183781	45.0	
131 4-Chloro-3-methylphenol	107	8.459	8.459	0.0	95	224482	45.0	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	86	490717	43.7	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	97	159716	45.7	
139 2,4,6-Trichlorophenol	196	8.988	8.988	0.0	96	189010	45.8	
140 2,4,5-Trichlorophenol	196	9.052	9.052	0.0	97	187737	44.7	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	98	485607	45.1	
145 2-Nitroaniline	65	9.394	9.394	0.0	68	181064	47.9	
147 Dimethyl phthalate	163	9.623	9.623	0.0	96	628393	47.0	
148 2,6-Dinitrotoluene	165	9.703	9.703	0.0	79	131725	47.2	
149 Acenaphthylene	152	9.762	9.762	0.0	91	796279	46.1	
150 3-Nitroaniline	138	9.939	9.939	0.0	67	137992	49.6	
151 Acenaphthene	153	9.987	9.987	0.0	90	519593	45.1	
152 2,4-Dinitrophenol	184	10.067	10.067	0.0	74	71114	44.8	
155 Dibenzofuran	168	10.200	10.200	0.0	86	775590	44.8	
153 4-Nitrophenol	109	10.211	10.211	0.0	59	79182	42.2	
154 2,4-Dinitrotoluene	165	10.216	10.216	0.0	79	192938	48.2	
160 Diethyl phthalate	149	10.499	10.499	0.0	96	640906	47.9	
161 Fluorene	166	10.612	10.612	0.0	81	711257	41.5	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	81	389818	44.8	
164 4-Nitroaniline	138	10.681	10.681	0.0	74	123150	47.8	
166 4,6-Dinitro-2-methylphenol	198	10.702	10.702	0.0	56	117282	47.0	
167 N-Nitrosodiphenylamine	169	10.767	10.767	0.0	97	426679	45.3	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	95	683238	47.2	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	95	197572	44.7	
177 Hexachlorobenzene	284	11.237	11.237	0.0	92	208772	45.7	
181 Pentachlorophenol	266	11.466	11.466	0.0	87	103680	47.5	
185 Phenanthrene	178	11.675	11.675	0.0	95	934897	40.5	
188 Anthracene	178	11.728	11.728	0.0	97	943652	44.2	
189 Carbazole	167	11.915	11.915	0.0	83	786284	44.9	
192 Di-n-butyl phthalate	149	12.246	12.246	0.0	100	986798	40.0	
197 Fluoranthene	202	12.855	12.855	0.0	96	1077198	43.2	
198 Benzidine	184	12.989	12.989	0.0	98	521946	48.0	
199 Pyrene	202	13.069	13.069	0.0	97	1062760	44.6	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	98	503911	46.6	
203 3,3'-Dimethylbenzidine	212	13.635	13.635	0.0	96	666931	42.7	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	96	740584	47.5	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	77	446057	42.2	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	77	1079330	45.3	
211 Chrysene	228	14.175	14.175	0.0	90	980847	45.6	
212 Di-n-octyl phthalate	149	14.682	14.682	0.0	98	954998	47.0	
213 Benzo[b]fluoranthene	252	15.147	15.147	0.0	90	952588	43.0	
214 Benzo[k]fluoranthene	252	15.174	15.174	0.0	98	1031234	45.5	
217 Benzo[a]pyrene	252	15.489	15.489	0.0	99	813036	44.9	

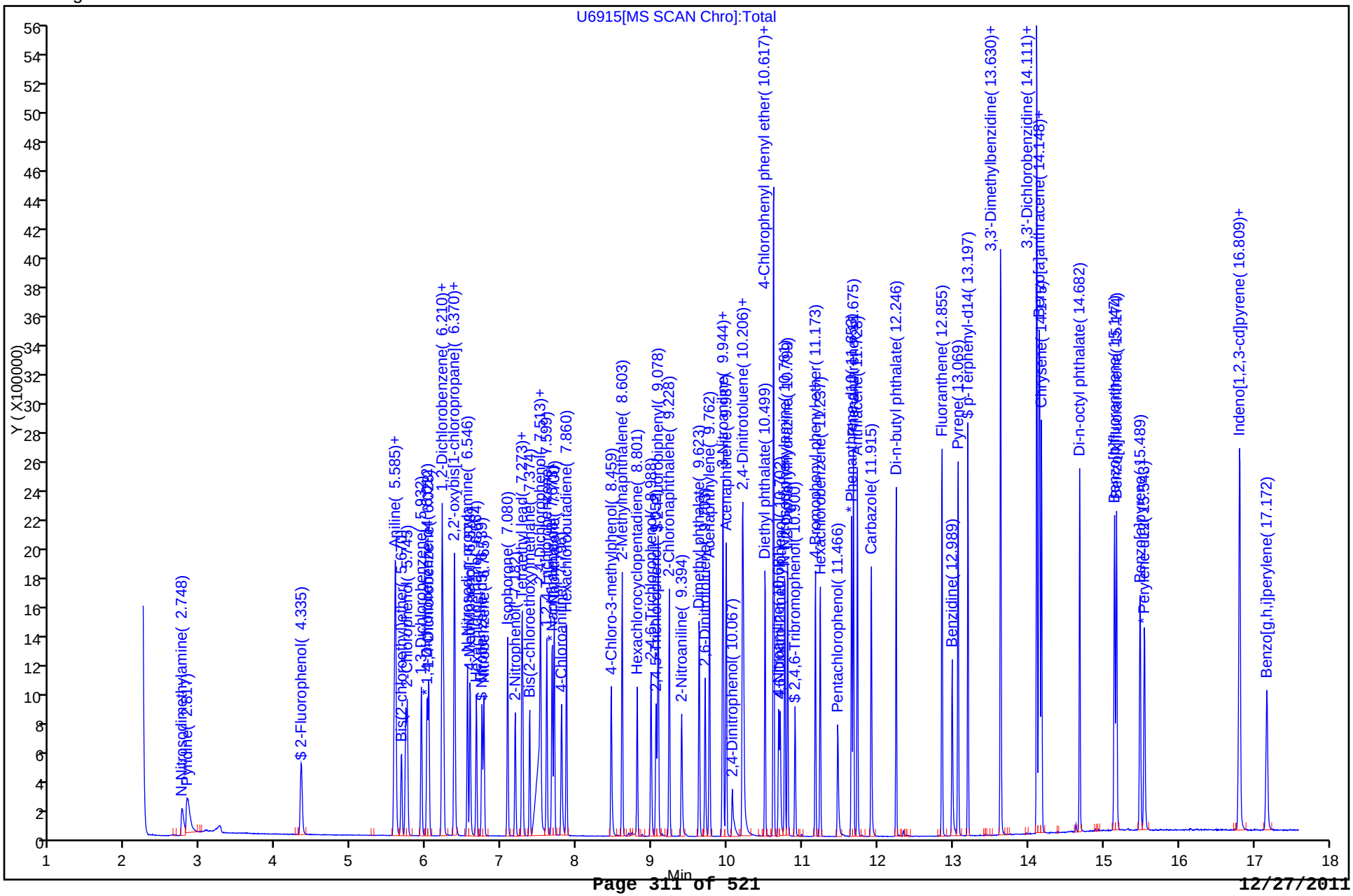
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
219 Indeno[1,2,3-cd]pyrene	276	16.809	16.809	0.0	94	1035067	44.7	
220 Dibenz(a,h)anthracene	278	16.814	16.814	0.0	61	873295	43.1	
221 Benzo[g,h,i]perylene	276	17.172	17.172	0.0	91	698823	47.6	
S 78 3-Methylphenol	1				0		46.9	
S 77 3 & 4 Methylphenol	108				0		46.9	
S 222 Total Cresols	1				0		93.1	

Report Date: 06-Dec-2011 17:08:44 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6915.D

Injection Date:	06-Dec-2011 14:13:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	4
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6916.D
Lims ID: IC - 80 PT
Client ID:
Inject. Date: 06-Dec-2011 14:36:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 4
Sample ID: 480-0007971-005
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 6
Lims Batch ID: 42934
Lims Sample ID: 5
Sublist: chrom-U-8270*sub16
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:40
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:27:53

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.012	6.007	0.005	94	156823	40.0	
* 2 Naphthalene-d8	136	7.674	7.668	0.006	99	594594	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	97	446459	40.0	
* 4 Phenanthrene-d10	188	11.654	11.648	0.006	98	786778	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	95	825420	40.0	
* 6 Perylene-d12	264	15.548	15.543	0.005	97	685490	40.0	
$ 9 2-Fluorophenol	112	4.335	4.335	0.0	93	370249	83.1	
$ 10 Phenol-d5	99	5.574	5.569	0.005	91	517305	83.5	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	91	561221	85.0	
$ 12 2-Fluorobiphenyl	172	9.084	9.079	0.005	85	1234440	84.5	
$ 13 2,4,6-Tribromophenol	330	10.900	10.900	0.0	89	157613	79.9	
$ 14 p-Terphenyl-d14	244	13.197	13.198	-0.001	98	1551290	84.1	
81 N-Nitrosodimethylamine	42	2.753	2.748	0.005	59	367484	82.6	
82 Pyridine	52	2.817	2.818	-0.001	73	395702	83.7	
90 Aniline	93	5.590	5.585	0.005	55	695588	85.5	
89 Phenol	94	5.590	5.585	0.005	66	601758	83.5	
91 Bis(2-chloroethyl)ether	93	5.670	5.670	0.0	93	397882	81.0	
93 2-Chlorophenol	128	5.750	5.745	0.005	90	408546	83.4	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	92	479006	82.2	
95 1,4-Dichlorobenzene	146	6.034	6.034	0.0	89	502513	82.9	
96 Benzyl alcohol	108	6.210	6.210	0.0	76	335483	76.1	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	89	493664	82.2	
99 2,2'-oxybis[1-chloropropane]	45	6.375	6.370	0.005	80	963041	83.9	
98 2-Methylphenol	108	6.375	6.370	0.005	78	422332	85.1	
101 N-Nitrosodi-n-propylamine	70	6.552	6.546	0.006	94	396937	83.9	
102 4-Methylphenol	108	6.584	6.578	0.006	89	413925	84.8	
106 Hexachloroethane	117	6.664	6.664	0.0	89	199637	83.7	
107 Nitrobenzene	77	6.765	6.765	0.0	95	576189	84.9	
110 Isophorone	82	7.086	7.081	0.005	94	974506	85.9	
111 2-Nitrophenol	139	7.182	7.182	0.0	87	239473	87.2	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
112 2,4-Dimethylphenol	107	7.273	7.268	0.005	97	552509	81.2	
113 Tetraethyl lead	237	7.284	7.284	0.0	91	279174	83.8	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	93	489178	84.2	
119 Benzoic acid	105	7.551	7.513	0.038	90	1122674	254.2	
117 2,4-Dichlorophenol	162	7.519	7.513	0.006	95	402431	85.8	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	91	483476	82.2	
121 Naphthalene	128	7.700	7.700	0.0	97	1224906	84.6	
123 4-Chloroaniline	127	7.796	7.797	0.0	79	479043	87.0	
126 Hexachlorobutadiene	225	7.866	7.861	0.005	94	339800	84.6	
131 4-Chloro-3-methylphenol	107	8.459	8.454	0.005	96	424257	86.4	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	87	927773	84.1	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	96	340319	83.3	
139 2,4,6-Trichlorophenol	196	8.988	8.982	0.006	95	361949	86.4	
140 2,4,5-Trichlorophenol	196	9.052	9.052	0.0	96	362206	85.1	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	98	923404	84.6	
145 2-Nitroaniline	65	9.394	9.394	0.0	74	336347	87.7	
147 Dimethyl phthalate	163	9.629	9.624	0.005	97	1166846	86.0	
148 2,6-Dinitrotoluene	165	9.709	9.704	0.005	81	246059	87.0	
149 Acenaphthylene	152	9.762	9.762	0.0	90	1499541	85.7	
150 3-Nitroaniline	138	9.939	9.933	0.006	84	248724	88.2	
151 Acenaphthene	153	9.987	9.987	0.0	91	974816	83.4	
152 2,4-Dinitrophenol	184	10.067	10.067	0.0	75	138056	79.7	
155 Dibenzofuran	168	10.206	10.201	0.005	87	1500618	85.4	
153 4-Nitrophenol	109	10.211	10.206	0.005	59	189053	85.5	
154 2,4-Dinitrotoluene	165	10.222	10.227	-0.005	84	363728	89.5	
160 Diethyl phthalate	149	10.505	10.500	0.005	96	1162696	85.6	
161 Fluorene	166	10.617	10.612	0.005	81	1412007	78.8	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	76	776394	87.9	
164 4-Nitroaniline	138	10.692	10.681	0.011	74	227890	87.2	
166 4,6-Dinitro-2-methylphenol	198	10.708	10.703	0.005	75	217938	80.1	
167 N-Nitrosodiphenylamine	169	10.767	10.761	0.006	97	799381	80.4	
168 1,2-Diphenylhydrazine	77	10.804	10.799	0.005	96	1231886	84.0	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	96	384098	79.6	
177 Hexachlorobenzene	284	11.237	11.237	0.0	94	405768	80.3	
181 Pentachlorophenol	266	11.467	11.467	0.0	83	201591	80.1	
185 Phenanthrene	178	11.680	11.675	0.005	95	1764553	76.5	
188 Anthracene	178	11.734	11.728	0.006	97	1742071	84.3	
189 Carbazole	167	11.915	11.915	0.0	83	1518662	81.3	
192 Di-n-butyl phthalate	149	12.247	12.241	0.006	100	1947529	79.0	
197 Fluoranthene	202	12.856	12.856	0.0	96	2176611	80.3	
198 Benzidine	184	12.989	12.989	0.0	98	931434	83.7	
199 Pyrene	202	13.069	13.069	0.0	97	2158080	88.5	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	97	1007131	91.0	
203 3,3'-Dimethylbenzidine	212	13.636	13.636	0.0	95	1253189	80.4	
210 Bis(2-ethylhexyl) phthalate	149	14.116	14.111	0.005	94	1486567	93.1	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	80	965172	86.6	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	77	2142181	87.8	
211 Chrysene	228	14.180	14.175	0.005	92	1935095	87.9	
212 Di-n-octyl phthalate	149	14.688	14.683	0.005	100	1828973	88.0	
213 Benzo[b]fluoranthene	252	15.153	15.147	0.006	91	1948362	78.9	
214 Benzo[k]fluoranthene	252	15.179	15.174	0.005	97	1980002	82.0	
217 Benzo[a]pyrene	252	15.489	15.484	0.005	99	1596440	81.1	

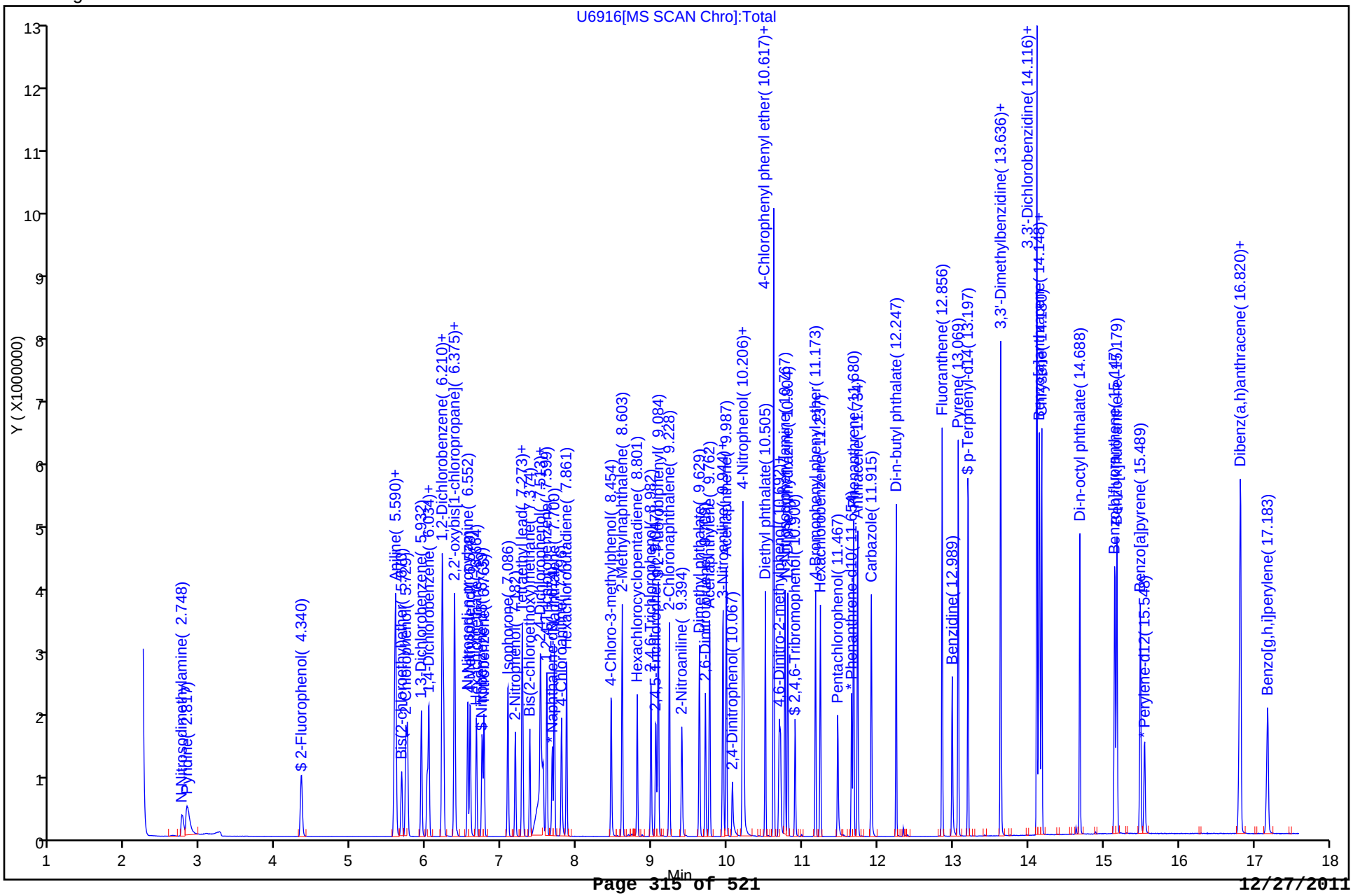
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
219 Indeno[1,2,3-cd]pyrene	276	16.820	16.809	0.011	88	2104521	82.4	
220 Dibenz(a,h)anthracene	278	16.825	16.814	0.011	69	1847517	81.7	
221 Benzo[g,h,i]perylene	276	17.183	17.172	0.011	90	1339203	83.2	
S 78 3-Methylphenol	1				0		84.8	
S 77 3 & 4 Methylphenol	108				0		84.8	
S 222 Total Cresols	1				0		170.0	

Report Date: 06-Dec-2011 17:08:40 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6916.D

Injection Date:	06-Dec-2011 14:36:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	5
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6917.D
Lims ID: IC - 120 PT
Client ID:
Inject. Date: 06-Dec-2011 15:00:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 5
Sample ID: 480-0007971-006
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 7
Lims Batch ID: 42934
Lims Sample ID: 6
Sublist: chrom-U-8270*sub16
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:32
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:27:50

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.012	6.007	0.005	95	179010	40.0	
* 2 Naphthalene-d8	136	7.674	7.668	0.006	99	682220	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	87	544708	40.0	
* 4 Phenanthrene-d10	188	11.654	11.648	0.006	98	873780	40.0	
* 5 Chrysene-d12	240	14.159	14.154	0.005	92	1061071	40.0	
* 6 Perylene-d12	264	15.548	15.543	0.005	98	806412	40.0	
$ 9 2-Fluorophenol	112	4.340	4.335	0.005	93	668038	131.4	
$ 10 Phenol-d5	99	5.579	5.569	0.010	87	942316	133.3	
$ 11 Nitrobenzene-d5	82	6.744	6.739	0.005	92	976390	128.9	
$ 12 2-Fluorobiphenyl	172	9.084	9.079	0.005	92	2266331	127.2	
$ 13 2,4,6-Tribromophenol	330	10.906	10.900	0.006	97	304555	123.1	
$ 14 p-Terphenyl-d14	244	13.203	13.198	0.005	99	2933046	121.9	
81 N-Nitrosodimethylamine	42	2.753	2.748	0.005	67	617131	121.6	
82 Pyridine	52	2.818	2.818	0.0	72	643664	119.3	
90 Aniline	93	5.596	5.585	0.011	53	1227066	132.1	
89 Phenol	94	5.596	5.585	0.011	70	1121088	136.2	
91 Bis(2-chloroethyl)ether	93	5.676	5.670	0.006	94	704063	125.6	
93 2-Chlorophenol	128	5.750	5.745	0.005	90	736473	131.8	
94 1,3-Dichlorobenzene	146	5.937	5.932	0.005	92	853233	128.2	
95 1,4-Dichlorobenzene	146	6.034	6.034	0.0	89	893711	129.1	
96 Benzyl alcohol	108	6.215	6.210	0.005	79	630927	123.3	
97 1,2-Dichlorobenzene	146	6.231	6.226	0.005	92	915299	133.5	
99 2,2'-oxybis[1-chloropropane]	45	6.375	6.370	0.005	79	1651541	126.1	
98 2-Methylphenol	108	6.375	6.370	0.005	81	750769	132.6	
101 N-Nitrosodi-n-propylamine	70	6.557	6.546	0.011	94	697637	129.2	
102 4-Methylphenol	108	6.584	6.578	0.006	89	733687	131.7	
106 Hexachloroethane	117	6.664	6.664	0.0	89	348659	128.1	
107 Nitrobenzene	77	6.771	6.765	0.006	95	998921	128.3	
110 Isophorone	82	7.091	7.081	0.010	95	1682772	129.4	
111 2-Nitrophenol	139	7.182	7.182	0.0	87	424630	134.8	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
112 2,4-Dimethylphenol	107	7.278	7.268	0.010	98	1049117	121.8	
113 Tetraethyl lead	237	7.284	7.284	0.0	92	507149	132.7	
115 Bis(2-chloroethoxy)methane	93	7.380	7.374	0.006	94	868439	130.3	
119 Benzoic acid	105	7.599	7.513	0.086	63	2066116	407.8	
117 2,4-Dichlorophenol	162	7.519	7.513	0.006	96	730423	135.7	
120 1,2,4-Trichlorobenzene	180	7.604	7.599	0.005	93	903542	134.0	
121 Naphthalene	128	7.700	7.700	0.0	99	2172290	130.7	
123 4-Chloroaniline	127	7.797	7.797	0.0	80	819318	129.7	
126 Hexachlorobutadiene	225	7.866	7.861	0.005	95	615445	133.5	
131 4-Chloro-3-methylphenol	107	8.459	8.454	0.005	96	757507	134.5	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	85	1692352	133.7	
136 Hexachlorocyclopentadiene	237	8.806	8.801	0.005	95	662807	119.7	
139 2,4,6-Trichlorophenol	196	8.988	8.982	0.006	96	663887	129.9	
140 2,4,5-Trichlorophenol	196	9.047	9.052	-0.005	97	657315	126.6	
143 2-Chloronaphthalene	162	9.234	9.228	0.006	97	1675478	125.8	
145 2-Nitroaniline	65	9.399	9.394	0.005	74	597670	127.7	
147 Dimethyl phthalate	163	9.634	9.624	0.010	97	2054646	124.2	
148 2,6-Dinitrotoluene	165	9.714	9.704	0.010	82	438911	127.2	
149 Acenaphthylene	152	9.768	9.762	0.006	92	2712145	127.0	
150 3-Nitroaniline	138	9.944	9.933	0.011	85	444538	129.2	
151 Acenaphthene	153	9.992	9.987	0.005	91	1798267	126.2	
152 2,4-Dinitrophenol	184	10.072	10.067	0.005	77	262132	120.2	
155 Dibenzofuran	168	10.206	10.201	0.005	86	2790500	130.2	
153 4-Nitrophenol	109	10.211	10.206	0.005	50	349010	120.0	
154 2,4-Dinitrotoluene	165	10.227	10.227	0.0	82	635671	128.3	
160 Diethyl phthalate	149	10.510	10.500	0.010	97	1999325	120.6	
161 Fluorene	166	10.617	10.612	0.005	81	2762604	124.7	
162 4-Chlorophenyl phenyl ether	204	10.623	10.617	0.006	80	1498440	139.1	
164 4-Nitroaniline	138	10.703	10.681	0.022	71	419805	131.6	
166 4,6-Dinitro-2-methylphenol	198	10.713	10.703	0.010	78	411081	122.2	
167 N-Nitrosodiphenylamine	169	10.772	10.761	0.011	96	1478444	123.4	
168 1,2-Diphenylhydrazine	77	10.804	10.799	0.005	96	2116775	118.3	
176 4-Bromophenyl phenyl ether	248	11.178	11.173	0.005	91	749450	124.4	
177 Hexachlorobenzene	284	11.242	11.237	0.005	95	784778	122.6	
181 Pentachlorophenol	266	11.472	11.467	0.005	90	407815	121.4	
185 Phenanthrene	178	11.680	11.675	0.005	96	3232516	124.6	
188 Anthracene	178	11.734	11.728	0.006	97	3174849	138.4	
189 Carbazole	167	11.921	11.915	0.006	83	2777097	122.3	
192 Di-n-butyl phthalate	149	12.247	12.241	0.006	99	3510169	126.6	
197 Fluoranthene	202	12.861	12.856	0.005	96	4138418	125.5	
198 Benzidine	184	12.989	12.989	0.0	98	1672401	117.0	
199 Pyrene	202	13.075	13.069	0.006	97	4079319	130.1	
205 Butyl benzyl phthalate	149	13.636	13.630	0.006	96	1861256	130.8	
203 3,3'-Dimethylbenzidine	212	13.641	13.636	0.005	97	2228241	127.1	
210 Bis(2-ethylhexyl) phthalate	149	14.116	14.111	0.005	95	2744439	133.8	
208 3,3'-Dichlorobenzidine	252	14.122	14.116	0.006	94	1780395	123.3	
209 Benzo[a]anthracene	228	14.148	14.143	0.005	96	4015952	128.0	
211 Chrysene	228	14.186	14.175	0.011	91	3735537	132.0	
212 Di-n-octyl phthalate	149	14.688	14.683	0.005	99	3317443	124.2	
213 Benzo[b]fluoranthene	252	15.158	15.147	0.011	92	4200907	126.4	
214 Benzo[k]fluoranthene	252	15.185	15.174	0.011	96	3733733	121.6	
217 Benzo[a]pyrene	252	15.500	15.484	0.016	99	3151985	122.7	

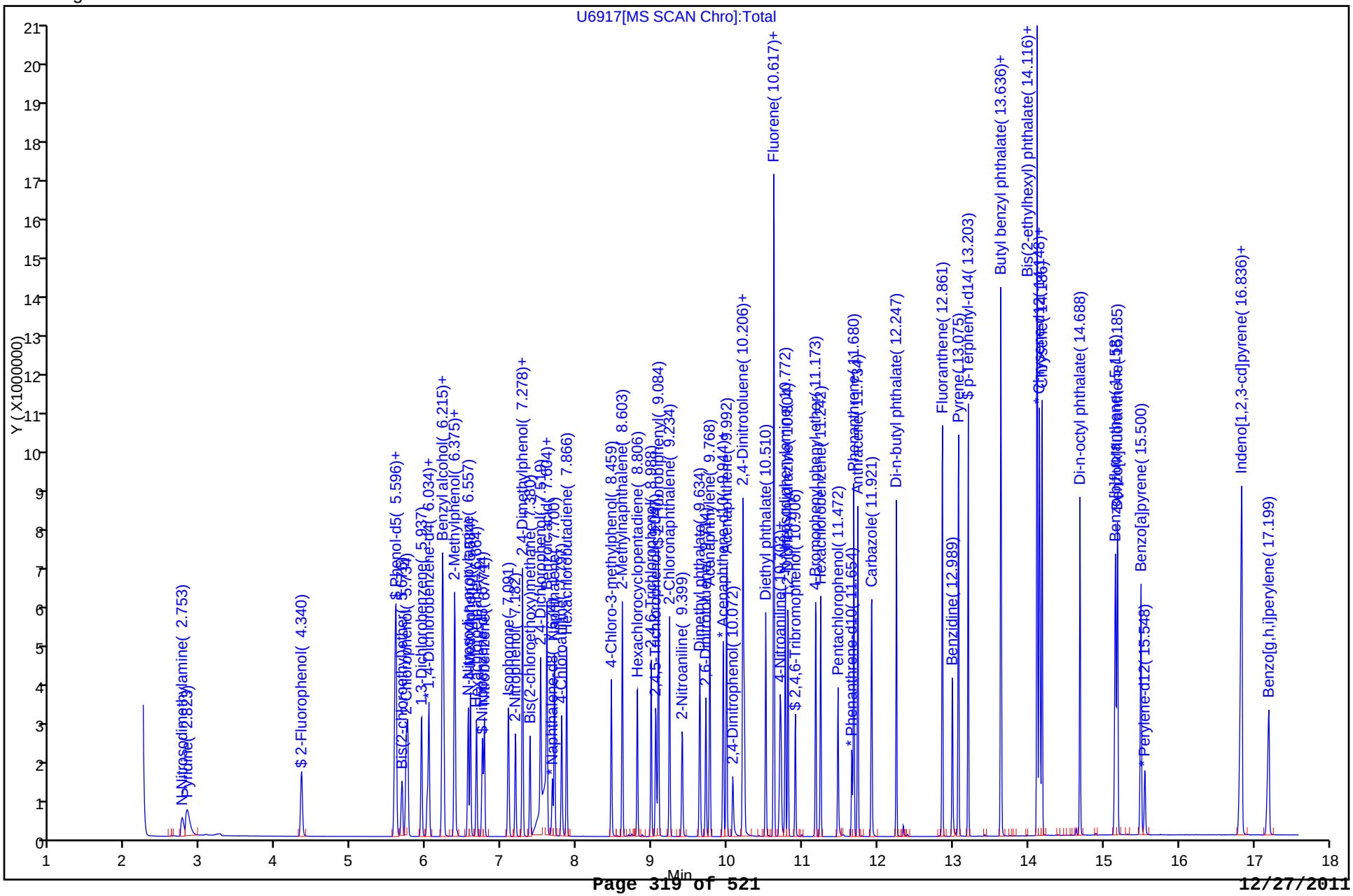
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
219 Indeno[1,2,3-cd]pyrene	276	16.836	16.809	0.027	81	4043529	121.6	
220 Dibenz(a,h)anthracene	278	16.836	16.814	0.022	68	3667072	123.9	
221 Benzo[g,h,i]perylene	276	17.199	17.172	0.027	90	2508167	117.9	
S 78 3-Methylphenol	1				0		131.7	
S 77 3 & 4 Methylphenol	108				0		131.7	
S 222 Total Cresols	1				0		264.3	

Report Date: 06-Dec-2011 17:08:32 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6917.D

Injection Date:	06-Dec-2011 15:00:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	6
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Lims ID: IC - 160 PT
Client ID:
Inject. Date: 06-Dec-2011 15:23:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 6
Sample ID: 480-0007971-007
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 8
Lims Batch ID: 42934
Lims Sample ID: 7
Sublist: chrom-U-8270*sub16
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:11
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:27:47

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.012	6.007	0.005	95	200765	40.0	
* 2 Naphthalene-d8	136	7.679	7.668	0.011	81	755810	40.0	
* 3 Acenaphthene-d10	164	9.949	9.944	0.005	82	603532	40.0	
* 4 Phenanthrene-d10	188	11.659	11.648	0.011	98	958378	40.0	
* 5 Chrysene-d12	240	14.159	14.154	0.005	55	1190346	40.0	
* 6 Perylene-d12	264	15.553	15.543	0.010	97	899523	40.0	
$ 9 2-Fluorophenol	112	4.340	4.335	0.005	93	985490	172.9	
$ 10 Phenol-d5	99	5.585	5.569	0.016	84	1420739	179.2	
$ 11 Nitrobenzene-d5	82	6.749	6.739	0.010	92	1443327	172.0	
$ 12 2-Fluorobiphenyl	172	9.089	9.079	0.010	81	3449143	174.7	
$ 13 2,4,6-Tribromophenol	330	10.911	10.900	0.011	95	470470	158.8	
$ 14 p-Terphenyl-d14	244	13.203	13.198	0.005	98	4312509	158.6	
81 N-Nitrosodimethylamine	42	2.753	2.748	0.005	66	863951	151.8	
82 Pyridine	52	2.817	2.818	-0.001	71	901619	149.0	
90 Aniline	93	5.595	5.585	0.010	60	1836594	176.3	
89 Phenol	94	5.601	5.585	0.016	73	1664715	180.4	
91 Bis(2-chloroethyl)ether	93	5.681	5.670	0.011	93	1020663	162.3	
93 2-Chlorophenol	128	5.756	5.745	0.011	92	1116417	178.1	
94 1,3-Dichlorobenzene	146	5.937	5.932	0.005	94	1289120	172.8	
95 1,4-Dichlorobenzene	146	6.033	6.034	-0.001	89	1376111	177.3	
96 Benzyl alcohol	108	6.220	6.210	0.010	81	985312	170.5	
97 1,2-Dichlorobenzene	146	6.231	6.226	0.005	91	1438540	187.1	
99 2,2'-oxybis[1-chloropropane]	45	6.381	6.370	0.011	80	2432730	165.6	
98 2-Methylphenol	108	6.381	6.370	0.011	82	1144692	180.3	
101 N-Nitrosodi-n-propylamine	70	6.562	6.546	0.016	94	1002158	165.4	
102 4-Methylphenol	108	6.589	6.578	0.011	90	1124246	180.0	
106 Hexachloroethane	117	6.669	6.664	0.005	88	518794	170.0	
107 Nitrobenzene	77	6.776	6.765	0.011	95	1477441	171.3	
110 Isophorone	82	7.097	7.081	0.016	94	2418262	167.8	
111 2-Nitrophenol	139	7.187	7.182	0.005	89	629019	180.2	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
112 2,4-Dimethylphenol	107	7.278	7.268	0.010	97	1647194	159.2	
113 Tetraethyl lead	237	7.284	7.284	0.0	66	726882	171.6	
115 Bis(2-chloroethoxy)methane	93	7.380	7.374	0.006	94	1267881	171.7	
119 Benzoic acid	105	7.604	7.513	0.091	50	3107127	553.5	
117 2,4-Dichlorophenol	162	7.519	7.513	0.006	96	1114181	186.8	
120 1,2,4-Trichlorobenzene	180	7.604	7.599	0.005	93	1383434	185.1	
121 Naphthalene	128	7.706	7.700	0.006	99	3198115	173.7	
123 4-Chloroaniline	127	7.802	7.797	0.006	80	1234381	176.3	
126 Hexachlorobutadiene	225	7.866	7.861	0.005	93	941137	184.2	
131 4-Chloro-3-methylphenol	107	8.459	8.454	0.005	96	1141008	182.9	
133 2-Methylnaphthalene	142	8.608	8.603	0.005	85	2615493	186.5	
136 Hexachlorocyclopentadiene	237	8.806	8.801	0.005	95	1081386	159.8	
139 2,4,6-Trichlorophenol	196	8.993	8.982	0.011	94	1033121	182.5	
140 2,4,5-Trichlorophenol	196	9.052	9.052	0.0	95	1031480	179.2	
143 2-Chloronaphthalene	162	9.233	9.228	0.005	97	2570550	174.2	
145 2-Nitroaniline	65	9.404	9.394	0.010	75	872825	168.3	
147 Dimethyl phthalate	163	9.639	9.624	0.015	97	3017238	164.6	
148 2,6-Dinitrotoluene	165	9.720	9.704	0.016	84	652243	170.6	
149 Acenaphthylene	152	9.773	9.762	0.011	88	4078626	172.4	
150 3-Nitroaniline	138	9.955	9.933	0.022	87	636927	167.1	
151 Acenaphthene	153	9.992	9.987	0.005	87	2772596	175.6	
152 2,4-Dinitrophenol	184	10.083	10.067	0.016	81	405103	165.0	
155 Dibenzofuran	168	10.211	10.201	0.010	86	4235111	178.4	
153 4-Nitrophenol	109	10.222	10.206	0.016	87	551679	159.4	
154 2,4-Dinitrotoluene	165	10.232	10.217	0.015	83	937250	173.1	
160 Diethyl phthalate	149	10.516	10.500	0.016	97	2989814	162.8	
161 Fluorene	166	10.622	10.612	0.010	81	4098035	166.1	
162 4-Chlorophenyl phenyl ether	204	10.622	10.617	0.005	70	2189424	183.4	
164 4-Nitroaniline	138	10.713	10.681	0.032	71	633161	179.2	
166 4,6-Dinitro-2-methylphenol	198	10.724	10.703	0.021	80	635294	159.1	
167 N-Nitrosodiphenylamine	169	10.777	10.761	0.016	95	2208977	158.5	
168 1,2-Diphenylhydrazine	77	10.809	10.799	0.010	96	3049883	153.8	
176 4-Bromophenyl phenyl ether	248	11.178	11.173	0.005	95	1127892	158.2	
177 Hexachlorobenzene	284	11.247	11.237	0.010	95	1231674	158.9	
181 Pentachlorophenol	266	11.477	11.467	0.010	91	676858	159.4	
185 Phenanthrene	178	11.686	11.675	0.011	96	4844099	169.2	
188 Anthracene	178	11.739	11.728	0.011	97	4729619	188.0	
189 Carbazole	167	11.921	11.915	0.006	83	4252274	158.9	
192 Di-n-butyl phthalate	149	12.252	12.241	0.011	99	5055699	165.5	
197 Fluoranthene	202	12.861	12.856	0.005	95	6017169	157.6	
198 Benzidine	184	12.994	12.989	0.005	98	2445998	152.5	
199 Pyrene	202	13.075	13.069	0.006	95	5860243	166.6	
205 Butyl benzyl phthalate	149	13.635	13.630	0.005	97	2774910	173.9	
203 3,3'-Dimethylbenzidine	212	13.646	13.636	0.010	96	3113612	161.2	
210 Bis(2-ethylhexyl) phthalate	149	14.122	14.111	0.011	93	3799693	165.1	
208 3,3'-Dichlorobenzidine	252	14.127	14.116	0.011	98	2598006	159.6	
209 Benzo[a]anthracene	228	14.154	14.143	0.011	95	5791085	164.6	
211 Chrysene	228	14.191	14.175	0.016	90	5349286	168.4	
212 Di-n-octyl phthalate	149	14.688	14.683	0.005	99	4788766	159.8	
213 Benzo[b]fluoranthene	252	15.169	15.147	0.022	91	6282777	157.4	
214 Benzo[k]fluoranthene	252	15.195	15.174	0.021	94	5808702	159.1	
217 Benzo[a]pyrene	252	15.505	15.484	0.021	98	4918306	158.8	

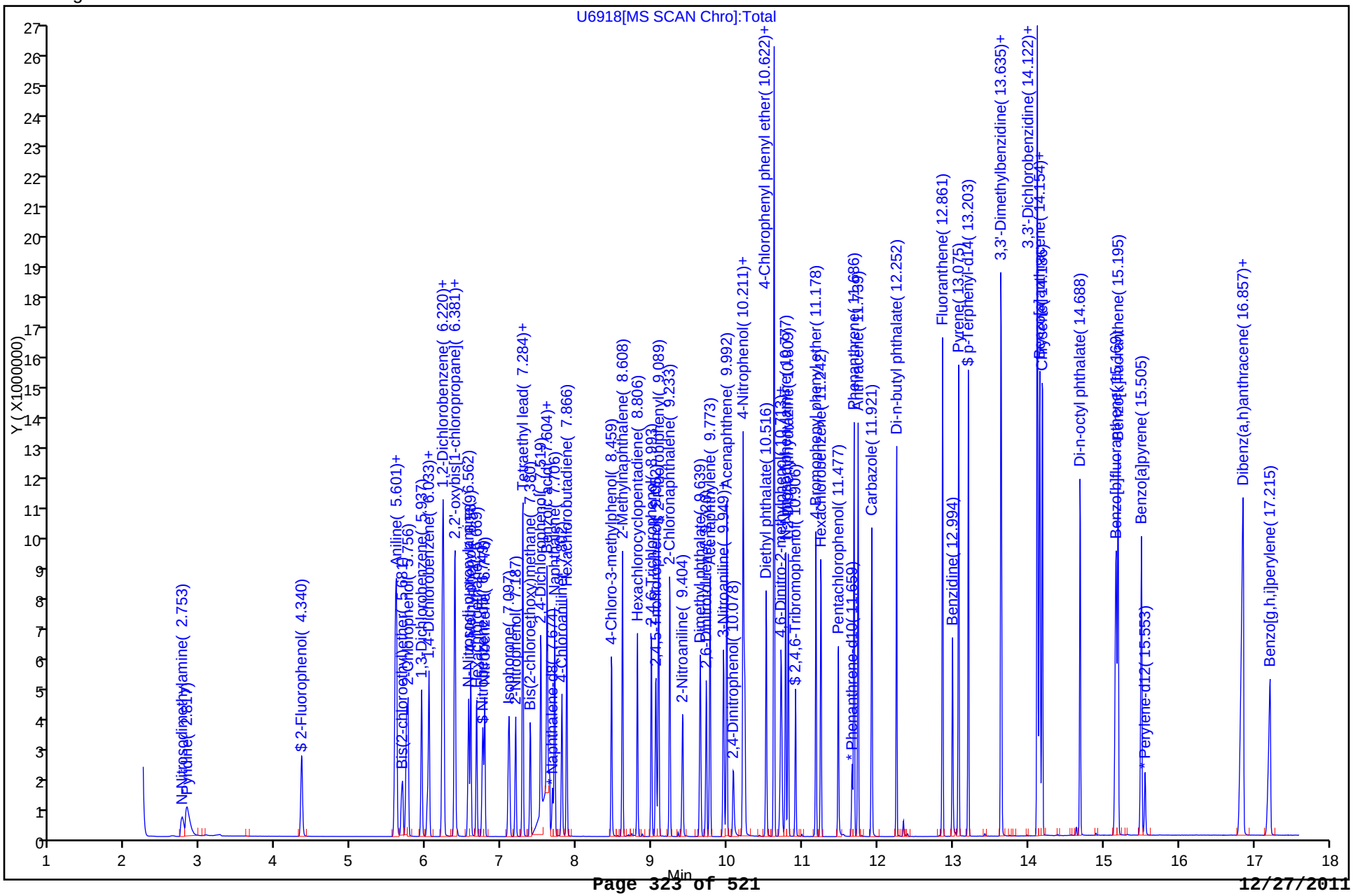
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
219 Indeno[1,2,3-cd]pyrene	276	16.857	16.809	0.048	91	6420037	159.1	
220 Dibenz(a,h)anthracene	278	16.851	16.814	0.037	77	5617339	158.2	
221 Benzo[g,h,i]perylene	276	17.215	17.172	0.043	90	4332056	160.5	
S 78 3-Methylphenol	1				0		180.0	
S 77 3 & 4 Methylphenol	108				0		180.0	
S 222 Total Cresols	1				0		360.2	

Report Date: 06-Dec-2011 17:08:11 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D

Injection Date:	06-Dec-2011 15:23:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	7
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-40664/2	X0979.D
Level 2	IC 480-40664/3	X0980.D
Level 3	ICIS 480-40664/4	X0981.D
Level 4	IC 480-40664/5	X0982.D
Level 5	IC 480-40664/6	X0983.D
Level 6	IC 480-40664/7	X0984.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
N-Nitrosodimethylamine	1.0052 0.8152	0.9306	0.9064	0.8724	0.8390	Ave		0.8948				7.7		15.0			
Pyridine	1.4972 1.2481	1.4486	1.4128	1.3563	1.3013	Ave		1.3774				6.8		15.0			
Phenol	1.9350 1.4041	1.8884	1.7833	1.6508	1.5166	Ave		1.6964				12.0		15.0			
Aniline	2.1973 1.5890	2.1306	1.9941	1.8981	1.7343	Ave		1.9239				12.0		15.0			
Bis(2-chloroethyl)ether	1.4617 1.2111	1.3636	1.3503	1.3080	1.2440	Ave		1.3231				6.8		15.0			
2-Chlorophenol	1.4223 1.1914	1.3970	1.3631	1.3052	1.2449	Ave		1.3207				6.8		15.0			
1,3-Dichlorobenzene	1.5466 1.2695	1.5058	1.4875	1.4245	1.3395	Ave		1.4289				7.4		15.0			
1,4-Dichlorobenzene	1.5933 1.2939	1.5327	1.5092	1.4419	1.3767	Ave		1.4579				7.5		15.0			
Benzyl alcohol	0.9199 0.7845	0.9352	0.9240	0.8792	0.8425	Ave		0.8809				6.6		15.0			
1,2-Dichlorobenzene	1.4490 1.1774	1.4261	1.3897	1.3460	1.2647	Ave		1.3421				7.7		15.0			
2-Methylphenol	1.2757 1.0769	1.2510	1.2246	1.1950	1.1301	Ave		1.1922				6.3		15.0			
bis (2-chloroisopropyl) ether	1.9665 1.4993	1.8948	1.8380	1.7476	1.6280	Ave		1.7624				9.9		15.0			
N-Nitrosodi-n-propylamine	0.9799 0.8301	0.9849	0.9680	0.9394	0.8824	Ave		0.9308			0.0500	6.7		15.0			
4-Methylphenol	1.3343 1.0596	1.2970	1.2631	1.2195	1.1384	Ave		1.2186				8.5		15.0			
Hexachloroethane	0.5381 0.4977	0.5663	0.5590	0.5380	0.5238	Ave		0.5372				4.6		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Nitrobenzene	0.4145 0.3830	0.4254	0.4158	0.4125	0.3982	Ave		0.4082				3.7		15.0			
Isophorone	0.7424 0.6667	0.7527	0.7291	0.7225	0.6816	Ave		0.7159				4.8		15.0			
2-Nitrophenol	0.1834 0.1800	0.1938	0.1898	0.1919	0.1843	Ave		0.1872				2.9		15.0			
2,4-Dimethylphenol	0.4045 0.3427	0.3956	0.3808	0.3801	0.3570	Ave		0.3768				6.2		15.0			
Tetraethyl lead	0.1946 0.1514	0.1954	0.1763	0.1749	0.1628	Ave		0.1759				9.9		15.0			
Bis(2-chloroethoxy)methane	0.4359 0.3548	0.4216	0.4006	0.3937	0.3721	Ave		0.3964				7.6		15.0			
2,4-Dichlorophenol	0.3109 0.2595	0.3043	0.2943	0.2841	0.2675	Ave		0.2868				7.1		15.0			
Benzoic acid	0.2707 0.2979	0.2768	0.2785	0.2972	0.2972	Ave		0.2864				4.3		15.0			
1,2,4-Trichlorobenzene	0.3622 0.2865	0.3471	0.3348	0.3308	0.3110	Ave		0.3287				8.2		15.0			
Naphthalene	1.0466 0.8173	1.0169	0.9575	0.9452	0.8684	Ave		0.9420				9.2		15.0			
4-Chloroaniline	0.4371 0.3823	0.4342	0.4168	0.4138	0.3933	Ave		0.4129				5.3		15.0			
Hexachlorobutadiene	0.2212 0.1973	0.2283	0.2199	0.2185	0.2074	Ave		0.2154				5.2		15.0			
4-Chloro-3-methylphenol	0.2908 0.2868	0.3117	0.3135	0.3151	0.2967	Ave		0.3024				4.1		15.0			
2-Methylnaphthalene	0.6682 0.5305	0.6483	0.6192	0.6084	0.5646	Ave		0.6065				8.5		15.0			
Hexachlorocyclopentadiene	0.3961 0.4404	0.4354	0.4611	0.4717	0.4547	Ave		0.4432			0.0500	6.0		15.0			
2,4,6-Trichlorophenol	0.3837 0.3835	0.4019	0.4161	0.4131	0.3975	Ave		0.3993				3.5		15.0			
2,4,5-Trichlorophenol	0.4103 0.4119	0.4227	0.4362	0.4319	0.4303	Ave		0.4239				2.6		15.0			
2-Chloronaphthalene	1.1927 0.9826	1.1437	1.1321	1.1158	1.0391	Ave		1.1010				7.0		15.0			
2-Nitroaniline	0.3334 0.3543	0.3560	0.3752	0.3725	0.3652	Ave		0.3594				4.2		15.0			
Dimethyl phthalate	1.3655 1.1979	1.3743	1.3442	1.3216	1.2639	Ave		1.3112				5.2		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,6-Dinitrotoluene	0.2726 0.2848	0.2900	0.2991	0.3001	0.2910	Ave		0.2896				3.5		15.0			
Acenaphthylene	1.7735 1.4998	1.7795	1.7757	1.7333	1.5958	Ave		1.6929				6.9		15.0			
3-Nitroaniline	0.2813 0.3032	0.3114	0.3217	0.3250	0.3162	Ave		0.3098				5.1		15.0			
Acenaphthene	1.0964 0.9241	1.0788	1.0554	1.0345	0.9721	Ave		1.0269				6.5		15.0			
2,4-Dinitrophenol	0.0626 0.1979	0.0962	0.1472	0.1713	0.1900	Lin1	-1.730	0.2010			0.0500				0.9950		0.9900
4-Nitrophenol	0.1924 0.2238	0.2006	0.2128	0.2259	0.2252	Ave		0.2135			0.0500	6.7		15.0			
2,4-Dinitrotoluene	0.3639 0.3513	0.3853	0.3997	0.3814	0.3648	Ave		0.3744				4.7		15.0			
Dibenzofuran	1.7316 1.2848	1.6760	1.5815	1.5274	1.4083	Ave		1.5349				11.0		15.0			
Diethyl phthalate	1.3859 1.1579	1.3905	1.3567	1.3175	1.2334	Ave		1.3070				7.1		15.0			
Fluorene	1.3449 1.0267	1.3149	1.2482	1.1909	1.0941	Ave		1.2033				10.0		15.0			
4-Chlorophenyl phenyl ether	0.7317 0.5634	0.7054	0.6742	0.6375	0.6009	Ave		0.6522				9.8		15.0			
4-Nitroaniline	0.2915 0.3039	0.3168	0.3125	0.3187	0.3105	Ave		0.3090				3.2		15.0			
4,6-Dinitro-2-methylphenol	0.1006 0.1353	0.1180	0.1376	0.1378	0.1394	Ave		0.1281				12.0		15.0			
N-Nitrosodiphenylamine	0.5126 0.4188	0.5139	0.4986	0.4727	0.4507	Ave		0.4779				7.9		15.0			
1,2-Diphenylhydrazine	1.3759 1.0947	1.3544	1.3010	1.2723	1.1843	Ave		1.2638				8.5		15.0			
4-Bromophenyl phenyl ether	0.2166 0.1825	0.2239	0.2133	0.2065	0.1959	Ave		0.2065				7.3		15.0			
Hexachlorobenzene	0.2020 0.2057	0.2456	0.2373	0.2282	0.2165	Ave		0.2225				7.8		15.0			
Pentachlorophenol	0.0960 0.1404	0.1089	0.1308	0.1423	0.1433	Lin1	-0.576	0.1458							0.9990		0.9900
Phenanthrene	1.0610 0.8071	1.0213	0.9894	0.9378	0.8659	Ave		0.9471				10.0		15.0			
Anthracene	1.0522 0.8191	1.0482	1.0068	0.9560	0.8956	Ave		0.9630				9.6		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Carbazole	1.0266 0.7821	1.0241	0.9663	0.9188	0.8545	Ave		0.9287				10.0		15.0			
Di-n-butyl phthalate	1.2880 0.9560	1.2827	1.2379	1.1528	1.0705	Ave		1.1647				11.0		15.0			
Fluoranthene	1.3628 0.9623	1.2891	1.2134	1.1460	1.0587	Ave		1.1720				13.0		15.0			
Benzidine	0.5435 0.5283	0.6315	0.5956	0.6122	0.5795	Ave		0.5818				6.8		15.0			
Pyrene	1.2548 0.9639	1.1889	1.1564	1.1273	1.0636	Ave		1.1258				9.0		15.0			
3,3'-Dimethylbenzidine	0.6410 0.5035	0.7591	0.6545	0.6281	0.5567	Ave		0.6238				14.0		15.0			
Butyl benzyl phthalate	0.5763 0.4320	0.5528	0.5398	0.5186	0.4807	Ave		0.5167				10.0		15.0			
3,3'-Dichlorobenzidine	0.4758 0.4310	0.4885	0.4908	0.4931	0.4628	Ave		0.4737				5.0		15.0			
Benz(a)anthracene	1.3408 0.9458	1.1921	1.1051	1.0525	1.0023	Ave		1.1064				13.0		15.0			
Bis(2-ethylhexyl) phthalate	0.8307 0.5752	0.7852	0.7546	0.7231	0.6607	Ave		0.7216				13.0		15.0			
Chrysene	1.3769 0.9512	1.1692	1.1347	1.1179	1.0313	Ave		1.1302				13.0		15.0			
Di-n-octyl phthalate	1.4974 1.1266	1.4372	1.4388	1.3942	1.2737	Ave		1.3613				10.0		15.0			
Benzo(b)fluoranthene	1.2623 1.0251	1.2272	1.0867	1.0938	0.9662	Ave		1.1102				10.0		15.0			
Benzo(k)fluoranthene	1.4325 0.8349	1.1424	1.1300	1.0258	1.0409	Qua	-1.846	1.3480	-0.003						0.9920		0.9900
Benzo(a)pyrene	1.0966 0.8200	0.9996	0.9479	0.9257	0.8887	Ave		0.9464				10.0		15.0			
Indeno(1,2,3-c,d)pyrene	1.3391 1.1054	1.2461	1.1923	1.1621	1.1410	Ave		1.1977				7.0		15.0			
Dibenz(a,h)anthracene	1.1451 0.9066	1.0545	1.0289	0.9872	0.9471	Ave		1.0116				8.4		15.0			
Benzo(g,h,i)perylene	1.1085 0.9127	0.9904	0.9640	0.9466	0.9364	Ave		0.9764				7.1		15.0			
2-Fluorophenol	1.5468 1.2983	1.5078	1.5059	1.4367	1.3583	Ave		1.4423				6.7		15.0			
Phenol-d5	1.6792 1.4005	1.7076	1.6645	1.5850	1.4877	Ave		1.5874				7.6		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Nitrobenzene-d5	0.4189 0.3986	0.4275	0.4190	0.4254	0.4087	Ave		0.4163				2.6		15.0			
2-Fluorobiphenyl	1.4657 1.1905	1.4444	1.4002	1.3827	1.2826	Ave		1.3610				7.7		15.0			
2,4,6-Tribromophenol	0.1025 0.1064	0.1113	0.1165	0.1148	0.1107	Lin1	-0.003	0.1105							0.9980		0.9900
p-Terphenyl-d14	0.7746 0.6482	0.7638	0.7581	0.7382	0.7003	Ave		0.7305				6.6		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-40664/2	X0979.D
Level 2	IC 480-40664/3	X0980.D
Level 3	ICIS 480-40664/4	X0981.D
Level 4	IC 480-40664/5	X0982.D
Level 5	IC 480-40664/6	X0983.D
Level 6	IC 480-40664/7	X0984.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
N-Nitrosodimethylamine	DCB	Ave	19309 538708	68329	150931	229990	354275	5.00 160	20.0	50.0	80.0	120
Pyridine	DCB	Ave	28759 824762	106366	235261	357567	549475	5.00 160	20.0	50.0	80.0	120
Phenol	DCB	Ave	37169 927856	138659	296945	435198	640382	5.00 160	20.0	50.0	80.0	120
Aniline	DCB	Ave	42208 1050046	156446	332052	500398	732310	5.00 160	20.0	50.0	80.0	120
Bis(2-chloroethyl)ether	DCB	Ave	28077 800294	100126	224852	344816	525266	5.00 160	20.0	50.0	80.0	120
2-Chlorophenol	DCB	Ave	27321 787296	102581	226987	344093	525642	5.00 160	20.0	50.0	80.0	120
1,3-Dichlorobenzene	DCB	Ave	29708 838891	110567	247690	375540	565595	5.00 160	20.0	50.0	80.0	120
1,4-Dichlorobenzene	DCB	Ave	30606 854987	112541	251301	380134	581315	5.00 160	20.0	50.0	80.0	120
Benzyl alcohol	DCB	Ave	17671 518424	68672	153870	231780	355729	5.00 160	20.0	50.0	80.0	120
1,2-Dichlorobenzene	DCB	Ave	27833 778046	104712	231416	354838	534038	5.00 160	20.0	50.0	80.0	120
2-Methylphenol	DCB	Ave	24505 711620	91856	203921	315028	477164	5.00 160	20.0	50.0	80.0	120
bis (2-chloroisopropyl) ether	DCB	Ave	37775 990725	139131	306055	460711	687434	5.00 160	20.0	50.0	80.0	120
N-Nitrosodi-n-propylamine	DCB	Ave	18823 548541	72316	161196	247648	372584	5.00 160	20.0	50.0	80.0	120
4-Methylphenol	DCB	Ave	25631 700180	95233	210323	321484	480703	5.00 160	20.0	50.0	80.0	120
Hexachloroethane	DCB	Ave	10337 328882	41584	93083	141838	221162	5.00 160	20.0	50.0	80.0	120
Nitrobenzene	NPT	Ave	27270 887805	108581	246060	374985	589044	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Isophorone	NPT	Ave	48844 1545581	192109	431512	656797	1008315	5.00 160	20.0	50.0	80.0	120
2-Nitrophenol	NPT	Ave	12066 417204	49461	112321	174477	272609	5.00 160	20.0	50.0	80.0	120
2,4-Dimethylphenol	NPT	Ave	26612 794292	100979	225358	345505	528139	5.00 160	20.0	50.0	80.0	120
Tetraethyl lead	NPT	Ave	12802 350878	49881	104324	158974	240794	5.00 160	20.0	50.0	80.0	120
Bis(2-chloroethoxy)methane	NPT	Ave	28676 822387	107620	237079	357903	550398	5.00 160	20.0	50.0	80.0	120
2,4-Dichlorophenol	NPT	Ave	20451 601500	77674	174145	258263	395767	5.00 160	20.0	50.0	80.0	120
Benzoic acid	NPT	Ave	356208 2071822	423910	494472	810558	1319001	100 480	120	150	240	360
1,2,4-Trichlorobenzene	NPT	Ave	23827 664178	88588	198139	300698	460113	5.00 160	20.0	50.0	80.0	120
Naphthalene	NPT	Ave	68858 1894506	259543	566648	859241	1284633	5.00 160	20.0	50.0	80.0	120
4-Chloroaniline	NPT	Ave	28758 886208	110826	246646	376133	581824	5.00 160	20.0	50.0	80.0	120
Hexachlorobutadiene	NPT	Ave	14553 457331	58276	130154	198673	306794	5.00 160	20.0	50.0	80.0	120
4-Chloro-3-methylphenol	NPT	Ave	19129 664849	79560	185520	286434	438931	5.00 160	20.0	50.0	80.0	120
2-Methylnaphthalene	NPT	Ave	43959 1229648	165470	366463	553067	835147	5.00 160	20.0	50.0	80.0	120
Hexachlorocyclopentadiene	ANT	Ave	14405 562548	62301	149661	236233	368241	5.00 160	20.0	50.0	80.0	120
2,4,6-Trichlorophenol	ANT	Ave	13953 489876	57507	135056	206895	321976	5.00 160	20.0	50.0	80.0	120
2,4,5-Trichlorophenol	ANT	Ave	14922 526089	60475	141569	216301	348532	5.00 160	20.0	50.0	80.0	120
2-Chloronaphthalene	ANT	Ave	43378 1255038	163638	367440	558867	841562	5.00 160	20.0	50.0	80.0	120
2-Nitroaniline	ANT	Ave	12126 452541	50940	121765	186553	295800	5.00 160	20.0	50.0	80.0	120
Dimethyl phthalate	ANT	Ave	49659 1530038	196623	436271	661949	1023657	5.00 160	20.0	50.0	80.0	120
2,6-Dinitrotoluene	ANT	Ave	9913 363707	41488	97074	150309	235654	5.00 160	20.0	50.0	80.0	120
Acenaphthylene	ANT	Ave	64499 1915631	254603	576295	868145	1292530	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
3-Nitroaniline	ANT	Ave	10230 387291	44557	104407	162772	256088	5.00 160	20.0	50.0	80.0	120
Acenaphthene	ANT	Ave	39875 1180296	154348	342539	518153	787303	5.00 160	20.0	50.0	80.0	120
2,4-Dinitrophenol	ANT	Lin1	4552 252750	13770	47784	85785	153863	10.0 160	20.0	50.0	80.0	120
4-Nitrophenol	ANT	Ave	13997 285899	28701	69080	113162	182428	10.0 160	20.0	50.0	80.0	120
2,4-Dinitrotoluene	ANT	Ave	13235 448702	55129	129740	191009	295472	5.00 160	20.0	50.0	80.0	120
Dibenzofuran	ANT	Ave	62976 1641021	239799	513290	764982	1140619	5.00 160	20.0	50.0	80.0	120
Diethyl phthalate	ANT	Ave	50403 1478907	198940	440319	659864	999013	5.00 160	20.0	50.0	80.0	120
Fluorene	ANT	Ave	48910 1311425	188129	405117	596491	886187	5.00 160	20.0	50.0	80.0	120
4-Chlorophenyl phenyl ether	ANT	Ave	26609 719572	100931	218830	319302	486678	5.00 160	20.0	50.0	80.0	120
4-Nitroaniline	ANT	Ave	10601 388198	45324	101434	159624	251488	5.00 160	20.0	50.0	80.0	120
4,6-Dinitro-2-methylphenol	PHN	Ave	13508 336237	31246	83880	131987	216177	10.0 160	20.0	50.0	80.0	120
N-Nitrosodiphenylamine	PHN	Ave	34419 1040775	136132	303882	452877	698905	5.00 160	20.0	50.0	80.0	120
1,2-Diphenylhydrazine	ANT	Ave	50038 1398206	193786	422248	637234	959179	5.00 160	20.0	50.0	80.0	120
4-Bromophenyl phenyl ether	PHN	Ave	14545 453616	59298	129976	197870	303870	5.00 160	20.0	50.0	80.0	120
Hexachlorobenzene	PHN	Ave	13561 511276	65059	144608	218605	335758	5.00 160	20.0	50.0	80.0	120
Pentachlorophenol	PHN	Lin1	12889 348878	28835	79686	136350	222230	10.0 160	20.0	50.0	80.0	120
Phenanthrene	PHN	Ave	71239 2005598	270518	602972	898468	1342858	5.00 160	20.0	50.0	80.0	120
Anthracene	PHN	Ave	70647 2035566	277641	613584	915889	1388889	5.00 160	20.0	50.0	80.0	120
Carbazole	PHN	Ave	68928 1943594	271278	588892	880262	1325081	5.00 160	20.0	50.0	80.0	120
Di-n-butyl phthalate	PHN	Ave	86479 2375791	339760	754434	1104513	1660074	5.00 160	20.0	50.0	80.0	120
Fluoranthene	PHN	Ave	91499 2391323	341447	739493	1097985	1641801	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Benzidine	CRY	Ave	41182 1339249	186436	390672	611375	918372	5.00 160	20.0	50.0	80.0	120
Pyrene	CRY	Ave	95086 2443597	350982	758589	1125754	1685507	5.00 160	20.0	50.0	80.0	120
3,3'-Dimethylbenzidine	PHN	Ave	43038 1251238	201078	398864	601728	863306	5.00 160	20.0	50.0	80.0	120
Butyl benzyl phthalate	CRY	Ave	43673 1095003	163203	354106	517888	761717	5.00 160	20.0	50.0	80.0	120
3,3'-Dichlorobenzidine	CRY	Ave	36056 1092670	144199	321963	492400	733431	5.00 160	20.0	50.0	80.0	120
Benz(a)anthracene	CRY	Ave	101598 2397519	351913	724909	1051037	1588351	5.00 160	20.0	50.0	80.0	120
Bis(2-ethylhexyl) phthalate	CRY	Ave	62944 1458125	231799	495017	722074	1047059	5.00 160	20.0	50.0	80.0	120
Chrysene	CRY	Ave	104333 2411171	345169	744328	1116379	1634426	5.00 160	20.0	50.0	80.0	120
Di-n-octyl phthalate	CRY	Ave	113467 2855845	424290	943831	1392225	2018493	5.00 160	20.0	50.0	80.0	120
Benzo(b)fluoranthene	PRY	Ave	117684 3389064	456105	898599	1417458	1979165	5.00 160	20.0	50.0	80.0	120
Benzo(k)fluoranthene	PRY	Qua	133552 2760310	424613	934399	1329267	2132129	5.00 160	20.0	50.0	80.0	120
Benzo(a)pyrene	PRY	Ave	102240 2710943	371531	783786	1199593	1820317	5.00 160	20.0	50.0	80.0	120
Indeno(1,2,3-c,d)pyrene	PRY	Ave	124842 3654465	463142	985873	1505936	2337088	5.00 160	20.0	50.0	80.0	120
Dibenz(a,h)anthracene	PRY	Ave	106760 2997195	391925	850772	1279286	1939950	5.00 160	20.0	50.0	80.0	120
Benzo(g,h,i)perylene	PRY	Ave	103346 3017418	368090	797080	1226644	1918113	5.00 160	20.0	50.0	80.0	120
2-Fluorophenol	DCB	Ave	29712 857930	110712	250757	378754	573550	5.00 160	20.0	50.0	80.0	120
Phenol-d5	DCB	Ave	32256 925460	125384	277174	417866	628192	5.00 160	20.0	50.0	80.0	120
Nitrobenzene-d5	NPT	Ave	27562 923898	109107	247949	386668	604554	5.00 160	20.0	50.0	80.0	120
2-Fluorobiphenyl	ANT	Ave	53306 1520631	206654	454455	692535	1038842	5.00 160	20.0	50.0	80.0	120
2,4,6-Tribromophenol	PHN	Lin1	6882 264313	29477	71023	110015	171629	5.00 160	20.0	50.0	80.0	120
p-Terphenyl-d14	CRY	Ave	58700 1643198	225483	497305	737135	1109775	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 40664

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/16/2011 12:25 Calibration End Date: 11/16/2011 14:19 Calibration ID: 4708

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD
Qua = Quadratic ISTD

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0979.D		
Lims ID:	IC 8270 - 5PT	Client ID:	
Inject. Date:	16-Nov-2011 12:25:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	1
Sample ID:	480-0007579-002		
Misc. Info.:	IC 8270 - 5PT		
Operator:	RJF	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	4
Lims Batch ID:	40664	Lims Sample ID:	2
Sublist:	chrom-X-8270*sub28		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X-8270.m		
Last Update:	16-Nov-2011 13:33:07	Calib Date:	16-Nov-2011 13:10:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0981.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: franzr		Date:	16-Nov-2011 13:33:07

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.194	6.194	0.0	93	153672	40.0	
* 2 Naphthalene-d8	136	7.695	7.695	0.0	99	526315	40.0	
* 3 Acenaphthene-d10	164	9.752	9.752	0.0	37	290945	40.0	
* 4 Phenanthrene-d10	188	11.344	11.344	0.0	100	537134	40.0	
* 5 Chrysene-d12	240	13.748	13.748	0.0	99	606211	40.0	
* 6 Perylene-d12	264	15.009	15.009	0.0	100	745842	40.0	
$ 7 2-Fluorophenol	112	4.634	4.634	0.0	81	29712	5.09	
$ 8 Phenol-d5	99	5.777	5.783	-0.006	78	32256	4.99	
$ 9 Nitrobenzene-d5	82	6.846	6.846	0.0	87	27562	4.97	
$ 10 2-Fluorobiphenyl	172	8.977	8.972	0.005	97	53306	5.11	
$ 11 2,4,6-Tribromophenol	330	10.639	10.639	0.0	55	6882	5.06	
$ 12 p-Terphenyl-d14	244	12.818	12.824	-0.006	98	58700	5.06	
55 N-Nitrosodimethylamine	42	2.930	2.930	0.0	72	19309	5.31	
56 Pyridine	52	3.005	3.000	0.005	87	28759	5.15	
63 Phenol	94	5.793	5.793	0.0	83	37169	5.18	
64 Aniline	93	5.799	5.804	-0.005	81	42208	5.21	
66 Bis(2-chloroethyl)ether	93	5.873	5.879	-0.006	73	28077	5.25	
67 2-Chlorophenol	128	5.948	5.954	-0.006	96	27321	5.10	
69 1,3-Dichlorobenzene	146	6.130	6.130	0.0	90	29708	5.11	
70 1,4-Dichlorobenzene	146	6.210	6.210	0.0	33	30606	5.16	
71 Benzyl alcohol	108	6.365	6.365	0.0	91	17671	4.97	
72 1,2-Dichlorobenzene	146	6.397	6.397	0.0	71	27833	5.10	
73 2-Methylphenol	108	6.509	6.515	-0.006	91	24505	5.10	
74 2,2'-oxybis[1-chloropropane]	45	6.525	6.531	-0.006	83	37775	5.18	
78 N-Nitrosodi-n-propylamine	70	6.680	6.686	-0.006	88	18823	5.01	
79 4-Methylphenol	108	6.696	6.696	0.0	91	25631	5.14	
81 Hexachloroethane	117	6.798	6.798	0.0	91	10337	4.85	
83 Nitrobenzene	77	6.872	6.867	0.005	73	27270	4.95	
86 Isophorone	82	7.161	7.161	0.0	91	48844	5.01	
87 2-Nitrophenol	139	7.252	7.252	0.0	72	12066	4.85	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.326	7.321	0.005	89	26612	5.14	
90 Tetraethyl lead	237	7.375	7.375	0.0	52	12802	5.15	
94 Bis(2-chloroethoxy)methane	93	7.417	7.418	-0.001	91	28676	5.20	
95 Benzoic acid	105	7.508	7.524	-0.016	62	356208	98.6	
97 2,4-Dichlorophenol	162	7.546	7.546	0.0	78	20451	5.13	
98 1,2,4-Trichlorobenzene	180	7.631	7.631	0.0	86	23827	5.20	
99 Naphthalene	128	7.716	7.717	-0.001	80	68858	5.20	
101 4-Chloroaniline	127	7.797	7.791	0.006	95	28758	5.09	
104 Hexachlorobutadiene	225	7.887	7.888	-0.001	77	14553	4.96	
110 4-Chloro-3-methylphenol	107	8.390	8.384	0.006	83	19129	4.76	
113 2-Methylnaphthalene	142	8.539	8.534	0.005	94	43959	5.18	
116 Hexachlorocyclopentadiene	237	8.737	8.737	0.0	76	14405	4.62	
118 2,4,6-Trichlorophenol	196	8.881	8.881	0.0	74	13953	4.80	
119 2,4,5-Trichlorophenol	196	8.940	8.929	0.011	63	14922	4.85	
124 2-Chloronaphthalene	162	9.105	9.100	0.005	96	43378	5.13	
125 2-Nitroaniline	65	9.239	9.239	0.0	75	12126	4.71	
128 Dimethyl phthalate	163	9.463	9.458	0.005	98	49659	5.04	
130 2,6-Dinitrotoluene	165	9.517	9.517	0.0	14	9913	4.77	
131 Acenaphthylene	152	9.586	9.586	0.0	99	64499	5.00	
132 3-Nitroaniline	138	9.725	9.725	0.0	82	10230	4.66	
133 Acenaphthene	153	9.789	9.789	0.0	96	39875	5.10	
134 2,4-Dinitrophenol	184	9.843	9.843	0.0	39	4552	5.97	
135 4-Nitrophenol	109	9.960	9.955	0.005	86	13997	9.50	
137 2,4-Dinitrotoluene	165	9.987	9.987	0.0	47	13235	4.77	
138 Dibenzofuran	168	9.992	9.992	0.0	89	62976	5.23	
142 Diethyl phthalate	149	10.270	10.270	0.0	100	50403	5.05	
144 Fluorene	166	10.372	10.372	0.0	97	48910	5.19	
145 4-Chlorophenyl phenyl ether	204	10.377	10.377	0.0	77	26609	5.20	
147 4-Nitroaniline	138	10.414	10.420	-0.006	79	10601	4.83	
148 4,6-Dinitro-2-methylphenol	198	10.441	10.441	0.0	90	13508	8.47	
149 N-Nitrosodiphenylamine	169	10.510	10.511	-0.001	90	34419	5.04	
152 1,2-Diphenylhydrazine	77	10.548	10.548	0.0	99	50038	5.14	
159 4-Bromophenyl phenyl ether	248	10.895	10.895	0.0	82	14545	4.97	
160 Hexachlorobenzene	284	10.965	10.965	0.0	77	13561	4.42	
165 Pentachlorophenol	266	11.178	11.173	0.005	57	12889	8.58	
171 Phenanthrene	178	11.365	11.365	0.0	81	71239	5.18	
172 Anthracene	178	11.413	11.414	-0.001	99	70647	5.08	
173 Carbazole	167	11.579	11.584	-0.005	99	68928	5.10	
176 Di-n-butyl phthalate	149	11.921	11.916	0.005	99	86479	5.07	
182 Fluoranthene	202	12.482	12.487	-0.005	99	91499	5.29	
183 Benzidine	184	12.605	12.605	0.0	97	41182	4.60	
185 Pyrene	202	12.685	12.685	0.0	98	95086	5.23	
191 3,3'-Dimethylbenzidine	212	13.235	13.241	-0.006	95	43038	4.68	
192 Butyl benzyl phthalate	149	13.240	13.246	-0.006	99	43673	5.18	
196 3,3'-Dichlorobenzidine	252	13.710	13.710	0.0	38	36056	4.91	
197 Benzo[a]anthracene	228	13.732	13.737	-0.005	54	101598	5.53	
198 Bis(2-ethylhexyl) phthalate	149	13.743	13.743	0.0	45	62944	5.26	
199 Chrysene	228	13.769	13.769	0.0	90	104333	5.61	
201 Di-n-octyl phthalate	149	14.271	14.272	-0.001	100	113467	5.14	
203 Benzo[b]fluoranthene	252	14.656	14.662	-0.006	100	117684	5.29	
204 Benzo[k]fluoranthene	252	14.677	14.683	-0.006	96	133552	5.80	
206 Benzo[a]pyrene	252	14.955	14.961	-0.006	99	102240	5.40	

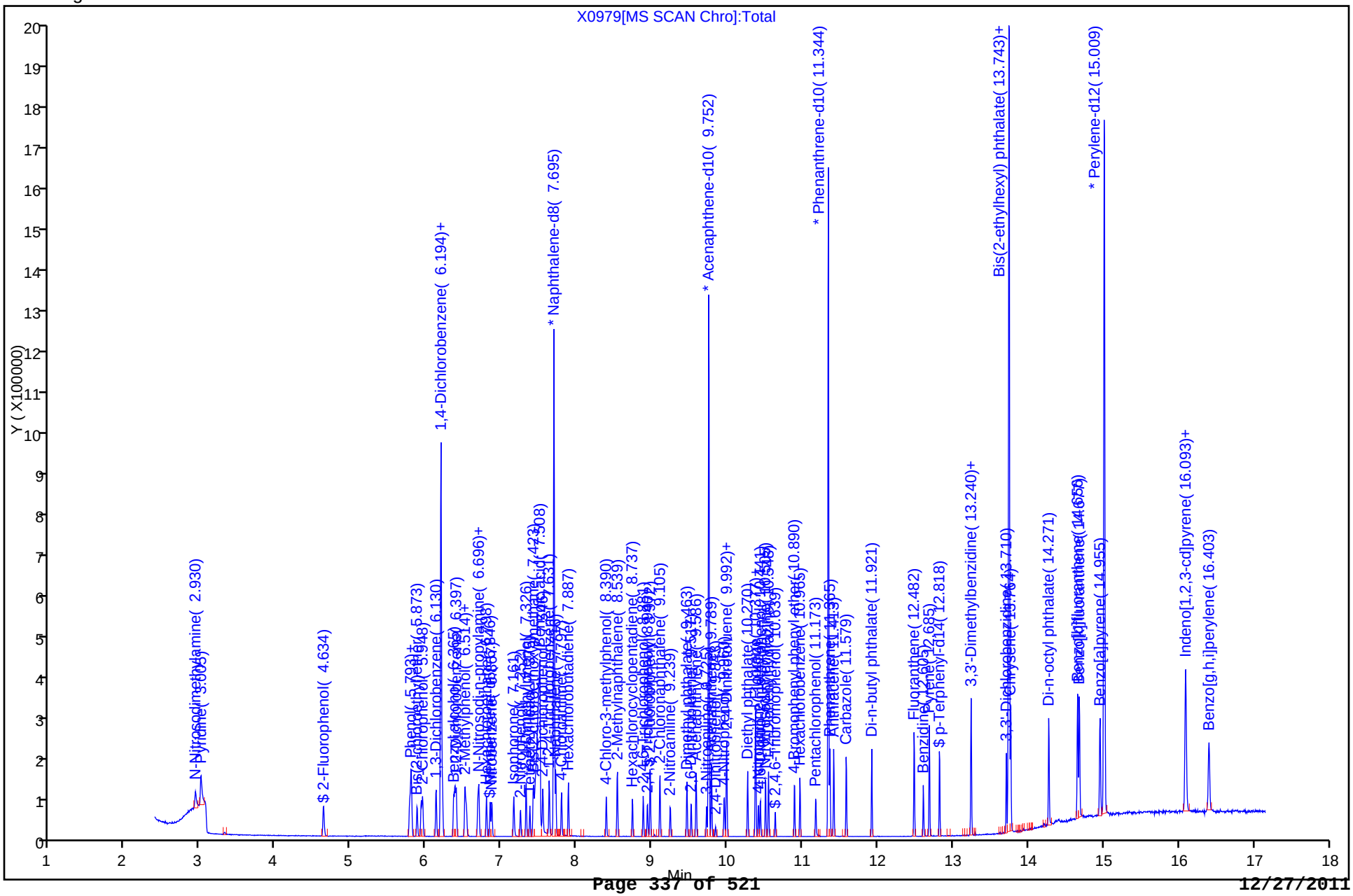
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	16.088	16.099	-0.011	91	124842	5.32	
209 Dibenz(a,h)anthracene	278	16.093	16.104	-0.011	77	106760	5.32	
210 Benzo[g,h,i]perylene	276	16.403	16.414	-0.011	99	103346	5.43	
S 212 3 & 4 Methylphenol	108				0		5.14	
S 213 Total Cresols	1				0		10.2	
S 214 3-Methylphenol	1				0		5.14	

Report Date: 16-Nov-2011 13:33:07 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0979.D

Injection Date:	16-Nov-2011 12:25:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	40664	Lims Sample ID:	2
Operator ID:	RJF	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0980.D		
Lims ID:	IC 8270 - 20PT	Client ID:	
Inject. Date:	16-Nov-2011 12:47:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	2
Sample ID:	480-0007579-003		
Misc. Info.:	IC 8270 - 20PT		
Operator:	RJF	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	5
Lims Batch ID:	40664	Lims Sample ID:	3
Sublist:	chrom-X-8270*sub28		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X-8270.m		
Last Update:	16-Nov-2011 13:34:28	Calib Date:	16-Nov-2011 13:10:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0981.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: franzr		Date:	16-Nov-2011 13:34:28

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.194	6.194	0.0	95	146854	40.0	
* 2 Naphthalene-d8	136	7.695	7.695	0.0	99	510481	40.0	
* 3 Acenaphthene-d10	164	9.752	9.752	0.0	31	286148	40.0	
* 4 Phenanthrene-d10	188	11.344	11.344	0.0	100	529765	40.0	
* 5 Chrysene-d12	240	13.748	13.748	0.0	99	590433	40.0	
* 6 Perylene-d12	264	15.009	15.009	0.0	99	743352	40.0	
$ 7 2-Fluorophenol	112	4.634	4.634	0.0	94	110712	19.8	
$ 8 Phenol-d5	99	5.777	5.783	-0.006	88	125384	20.3	
$ 9 Nitrobenzene-d5	82	6.846	6.846	0.0	96	109107	20.3	
$ 10 2-Fluorobiphenyl	172	8.972	8.972	0.0	100	206654	20.1	
$ 11 2,4,6-Tribromophenol	330	10.639	10.639	0.0	89	29477	19.6	
$ 12 p-Terphenyl-d14	244	12.819	12.824	-0.005	99	225483	20.0	
55 N-Nitrosodimethylamine	42	2.930	2.930	0.0	77	68329	19.6	
56 Pyridine	52	2.999	3.000	-0.001	87	106366	19.9	
63 Phenol	94	5.793	5.793	0.0	89	138659	20.2	
64 Aniline	93	5.799	5.804	-0.005	79	156446	20.2	
66 Bis(2-chloroethyl)ether	93	5.879	5.879	0.0	84	100126	19.6	
67 2-Chlorophenol	128	5.948	5.954	-0.006	99	102581	20.0	
69 1,3-Dichlorobenzene	146	6.130	6.130	0.0	97	110567	19.9	
70 1,4-Dichlorobenzene	146	6.216	6.210	0.006	87	112541	19.8	
71 Benzyl alcohol	108	6.365	6.365	0.0	94	68672	20.2	
72 1,2-Dichlorobenzene	146	6.397	6.397	0.0	73	104712	20.1	
73 2-Methylphenol	108	6.515	6.515	0.0	97	91856	20.0	
74 2,2'-oxybis[1-chloropropane]	45	6.531	6.531	0.0	92	139131	19.9	
78 N-Nitrosodi-n-propylamine	70	6.680	6.686	-0.006	94	72316	20.1	
79 4-Methylphenol	108	6.696	6.696	0.0	94	95233	20.0	
81 Hexachloroethane	117	6.798	6.798	0.0	95	41584	20.4	
83 Nitrobenzene	77	6.867	6.867	0.0	92	108581	20.3	
86 Isophorone	82	7.156	7.161	-0.005	97	192109	20.3	
87 2-Nitrophenol	139	7.252	7.252	0.0	85	49461	20.5	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.321	7.321	0.0	97	100979	20.1	
90 Tetraethyl lead	237	7.375	7.375	0.0	54	49881	20.7	
94 Bis(2-chloroethoxy)methane	93	7.418	7.418	0.0	98	107620	20.1	
95 Benzoic acid	105	7.519	7.524	-0.005	62	423910	120.6	
97 2,4-Dichlorophenol	162	7.546	7.546	0.0	73	77674	20.1	
98 1,2,4-Trichlorobenzene	180	7.631	7.631	0.0	93	88588	19.9	
99 Naphthalene	128	7.717	7.717	0.0	91	259543	20.2	
101 4-Chloroaniline	127	7.791	7.791	0.0	99	110826	20.2	
104 Hexachlorobutadiene	225	7.888	7.888	0.0	94	58276	20.5	
110 4-Chloro-3-methylphenol	107	8.390	8.384	0.006	97	79560	20.4	
113 2-Methylnaphthalene	142	8.534	8.534	0.0	97	165470	20.1	
116 Hexachlorocyclopentadiene	237	8.737	8.737	0.0	86	62301	20.2	
118 2,4,6-Trichlorophenol	196	8.881	8.881	0.0	94	57507	20.1	
119 2,4,5-Trichlorophenol	196	8.935	8.929	0.006	94	60475	20.0	
124 2-Chloronaphthalene	162	9.100	9.100	0.0	100	163638	19.8	
125 2-Nitroaniline	65	9.239	9.239	0.0	93	50940	20.1	
128 Dimethyl phthalate	163	9.458	9.458	0.0	99	196623	20.2	
130 2,6-Dinitrotoluene	165	9.517	9.517	0.0	22	41488	20.2	
131 Acenaphthylene	152	9.586	9.586	0.0	99	254603	20.0	
132 3-Nitroaniline	138	9.725	9.725	0.0	96	44557	20.4	
133 Acenaphthene	153	9.789	9.789	0.0	100	154348	20.0	
134 2,4-Dinitrophenol	184	9.838	9.843	-0.005	73	13770	18.9	
135 4-Nitrophenol	109	9.955	9.955	0.0	93	28701	19.9	
137 2,4-Dinitrotoluene	165	9.987	9.987	0.0	59	55129	20.1	
138 Dibenzofuran	168	9.992	9.992	0.0	91	239799	20.2	
142 Diethyl phthalate	149	10.270	10.270	0.0	100	198940	20.2	
144 Fluorene	166	10.372	10.372	0.0	97	188129	20.2	
145 4-Chlorophenyl phenyl ether	204	10.377	10.377	0.0	96	100931	20.0	
147 4-Nitroaniline	138	10.415	10.420	-0.005	87	45324	20.6	
148 4,6-Dinitro-2-methylphenol	198	10.441	10.441	0.0	90	31246	19.9	
149 N-Nitrosodiphenylamine	169	10.505	10.511	-0.006	99	136132	20.2	
152 1,2-Diphenylhydrazine	77	10.543	10.548	-0.005	98	193786	20.2	
159 4-Bromophenyl phenyl ether	248	10.895	10.895	0.0	93	59298	20.5	
160 Hexachlorobenzene	284	10.965	10.965	0.0	95	65059	21.5	
165 Pentachlorophenol	266	11.173	11.173	0.0	94	28835	19.5	
171 Phenanthrene	178	11.365	11.365	0.0	98	270518	19.9	
172 Anthracene	178	11.414	11.414	0.0	99	277641	20.2	
173 Carbazole	167	11.579	11.584	-0.005	100	271278	20.4	
176 Di-n-butyl phthalate	149	11.921	11.916	0.005	99	339760	20.2	
182 Fluoranthene	202	12.482	12.487	-0.005	99	341447	20.0	
183 Benzidine	184	12.605	12.605	0.0	100	186436	21.4	
185 Pyrene	202	12.685	12.685	0.0	99	350982	19.8	
191 3,3'-Dimethylbenzidine	212	13.235	13.241	-0.006	99	201078	22.2	
192 Butyl benzyl phthalate	149	13.241	13.246	-0.005	94	163203	19.9	
196 3,3'-Dichlorobenzidine	252	13.711	13.710	0.001	55	144199	20.1	
197 Benzo[a]anthracene	228	13.732	13.737	-0.005	51	351913	19.7	
198 Bis(2-ethylhexyl) phthalate	149	13.737	13.743	-0.005	85	231799	19.9	
199 Chrysene	228	13.769	13.769	0.0	97	345169	19.1	
201 Di-n-octyl phthalate	149	14.272	14.272	0.0	100	424290	19.7	
203 Benzo[b]fluoranthene	252	14.656	14.662	-0.006	98	456105	20.6	
204 Benzo[k]fluoranthene	252	14.683	14.683	0.0	98	424613	18.5	
206 Benzo[a]pyrene	252	14.955	14.961	-0.006	99	371531	19.7	

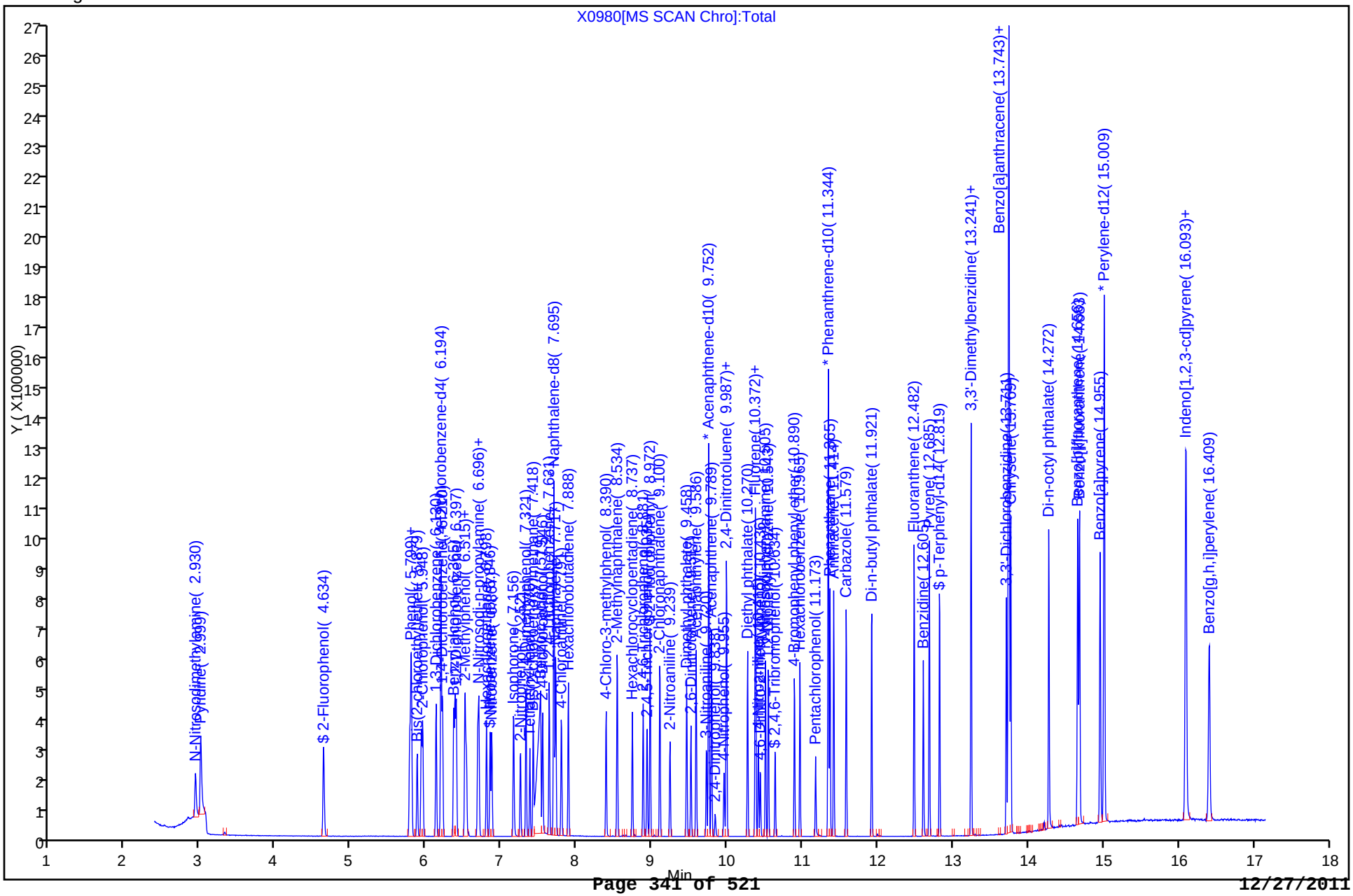
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	16.093	16.099	-0.006	88	463142	19.8	
209 Dibenz(a,h)anthracene	278	16.099	16.104	-0.005	81	391925	19.6	
210 Benzo[g,h,i]perylene	276	16.409	16.414	-0.006	100	368090	19.4	
S 212 3 & 4 Methylphenol	108				0		20.0	
S 213 Total Cresols	1				0		40.0	
S 214 3-Methylphenol	1				0		20.0	

Report Date: 16-Nov-2011 13:34:28 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0980.D

Injection Date:	16-Nov-2011 12:47:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	40664	Lims Sample ID:	3
Operator ID:	RJF	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0981.D
Lims ID: ICIS 8270 - 50PT Client ID:
Inject. Date: 16-Nov-2011 13:10:30 Dil. Factor: 1.0000
Sample Type: ICIS Calib Level: 3
Sample ID: 480-0007579-004
Misc. Info.: ICIS 8270 - 50PT
Operator: RJF Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 6
Lims Batch ID: 40664 Lims Sample ID: 4
Sublist: chrom-X-8270*sub28
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X-8270.m
Last Update: 16-Nov-2011 15:23:28 Calib Date: 16-Nov-2011 14:19:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0984.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: franzr Date: 16-Nov-2011 13:31:07

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.194	6.194	0.0	95	133214	40.0	
* 2 Naphthalene-d8	136	7.695	7.695	0.0	88	473448	40.0	
* 3 Acenaphthene-d10	164	9.752	9.752	0.0	17	259643	40.0	
* 4 Phenanthrene-d10	188	11.344	11.344	0.0	100	487543	40.0	
* 5 Chrysene-d12	240	13.748	13.748	0.0	99	524782	40.0	
* 6 Perylene-d12	264	15.009	15.009	0.0	99	661507	40.0	
$ 7 2-Fluorophenol	112	4.634	4.634	0.0	96	250757	52.2	
$ 8 Phenol-d5	99	5.783	5.783	0.0	91	277174	52.4	
$ 9 Nitrobenzene-d5	82	6.846	6.846	0.0	96	247949	50.3	
$ 10 2-Fluorobiphenyl	172	8.972	8.972	0.0	100	454455	51.4	
$ 11 2,4,6-Tribromophenol	330	10.639	10.639	0.0	42	71023	52.8	
$ 12 p-Terphenyl-d14	244	12.824	12.824	0.0	99	497305	51.9	
55 N-Nitrosodimethylamine	42	2.930	2.930	0.0	78	150931	50.6	
56 Pyridine	52	3.000	3.000	0.0	87	235261	51.3	
63 Phenol	94	5.793	5.793	0.0	91	296945	52.6	
64 Aniline	93	5.804	5.804	0.0	90	332052	51.8	
66 Bis(2-chloroethyl)ether	93	5.879	5.879	0.0	84	224852	51.0	
67 2-Chlorophenol	128	5.954	5.954	0.0	98	226987	51.6	
69 1,3-Dichlorobenzene	146	6.130	6.130	0.0	97	247690	52.1	
70 1,4-Dichlorobenzene	146	6.216	6.216	0.0	90	251301	51.8	
71 Benzyl alcohol	108	6.365	6.365	0.0	95	153870	52.4	
72 1,2-Dichlorobenzene	146	6.397	6.397	0.0	82	231416	51.8	
73 2-Methylphenol	108	6.515	6.515	0.0	97	203921	51.4	
74 2,2'-oxybis[1-chloropropane]	45	6.531	6.531	0.0	93	306055	52.1	
78 N-Nitrosodi-n-propylamine	70	6.686	6.686	0.0	93	161196	52.0	
79 4-Methylphenol	108	6.696	6.696	0.0	95	210323	51.8	
81 Hexachloroethane	117	6.798	6.798	0.0	95	93083	52.0	
83 Nitrobenzene	77	6.867	6.867	0.0	91	246060	50.9	
86 Isophorone	82	7.161	7.161	0.0	97	431512	50.9	
87 2-Nitrophenol	139	7.252	7.252	0.0	88	112321	50.7	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.321	7.321	0.0	97	225358	50.5	
90 Tetraethyl lead	237	7.375	7.375	0.0	55	104324	50.1	
94 Bis(2-chloroethoxy)methane	93	7.418	7.418	0.0	98	237079	50.5	
95 Benzoic acid	105	7.524	7.524	0.0	61	494472	145.9	
97 2,4-Dichlorophenol	162	7.546	7.546	0.0	80	174145	51.3	
98 1,2,4-Trichlorobenzene	180	7.631	7.631	0.0	95	198139	50.9	
99 Naphthalene	128	7.717	7.717	0.0	95	566648	50.8	
101 4-Chloroaniline	127	7.791	7.791	0.0	99	246646	50.5	
104 Hexachlorobutadiene	225	7.888	7.888	0.0	97	130154	51.0	
110 4-Chloro-3-methylphenol	107	8.384	8.384	0.0	96	185520	51.8	
113 2-Methylnaphthalene	142	8.534	8.534	0.0	97	366463	51.0	
116 Hexachlorocyclopentadiene	237	8.737	8.737	0.0	94	149661	52.0	
118 2,4,6-Trichlorophenol	196	8.881	8.881	0.0	94	135056	52.1	
119 2,4,5-Trichlorophenol	196	8.929	8.929	0.0	97	141569	51.5	
124 2-Chloronaphthalene	162	9.100	9.100	0.0	99	367440	51.4	
125 2-Nitroaniline	65	9.239	9.239	0.0	94	121765	52.2	
128 Dimethyl phthalate	163	9.458	9.458	0.0	99	436271	51.3	
130 2,6-Dinitrotoluene	165	9.517	9.517	0.0	24	97074	51.6	
131 Acenaphthylene	152	9.586	9.586	0.0	99	576295	52.4	
132 3-Nitroaniline	138	9.725	9.725	0.0	97	104407	51.9	
133 Acenaphthene	153	9.789	9.789	0.0	99	342539	51.4	
134 2,4-Dinitrophenol	184	9.838	9.838	0.0	88	47784	45.2	
135 4-Nitrophenol	109	9.955	9.955	0.0	92	69080	49.9	
137 2,4-Dinitrotoluene	165	9.987	9.987	0.0	62	129740	53.4	
138 Dibenzofuran	168	9.992	9.992	0.0	92	513290	51.5	
142 Diethyl phthalate	149	10.270	10.270	0.0	100	440319	51.9	
144 Fluorene	166	10.372	10.372	0.0	97	405117	51.9	
145 4-Chlorophenyl phenyl ether	204	10.377	10.377	0.0	96	218830	51.7	
147 4-Nitroaniline	138	10.420	10.420	0.0	88	101434	50.6	
148 4,6-Dinitro-2-methylphenol	198	10.441	10.441	0.0	93	83880	53.7	
149 N-Nitrosodiphenylamine	169	10.511	10.511	0.0	97	303882	52.2	
152 1,2-Diphenylhydrazine	77	10.548	10.548	0.0	99	422248	51.5	
159 4-Bromophenyl phenyl ether	248	10.895	10.895	0.0	94	129976	51.6	
160 Hexachlorobenzene	284	10.965	10.965	0.0	98	144608	53.3	
165 Pentachlorophenol	266	11.173	11.173	0.0	96	79686	48.8	
171 Phenanthrene	178	11.365	11.365	0.0	100	602972	52.2	
172 Anthracene	178	11.414	11.414	0.0	99	613584	52.3	
173 Carbazole	167	11.584	11.584	0.0	100	588892	52.0	
176 Di-n-butyl phthalate	149	11.916	11.916	0.0	100	754434	53.1	
182 Fluoranthene	202	12.487	12.487	0.0	99	739493	51.8	
183 Benzidine	184	12.605	12.605	0.0	100	390672	51.2	
185 Pyrene	202	12.685	12.685	0.0	99	758589	51.4	
191 3,3'-Dimethylbenzidine	212	13.241	13.241	0.0	98	398864	52.5	
192 Butyl benzyl phthalate	149	13.246	13.246	0.0	98	354106	52.2	
196 3,3'-Dichlorobenzidine	252	13.711	13.711	0.0	57	321963	51.8	
197 Benzo[a]anthracene	228	13.737	13.737	0.0	52	724909	49.9	
198 Bis(2-ethylhexyl) phthalate	149	13.737	13.737	0.0	82	495017	52.3	
199 Chrysene	228	13.769	13.769	0.0	97	744328	50.2	
201 Di-n-octyl phthalate	149	14.272	14.272	0.0	100	943831	52.8	
203 Benzo[b]fluoranthene	252	14.662	14.662	0.0	100	898599	48.9	
204 Benzo[k]fluoranthene	252	14.683	14.683	0.0	99	934399	48.5	
206 Benzo[a]pyrene	252	14.961	14.961	0.0	100	783786	50.1	

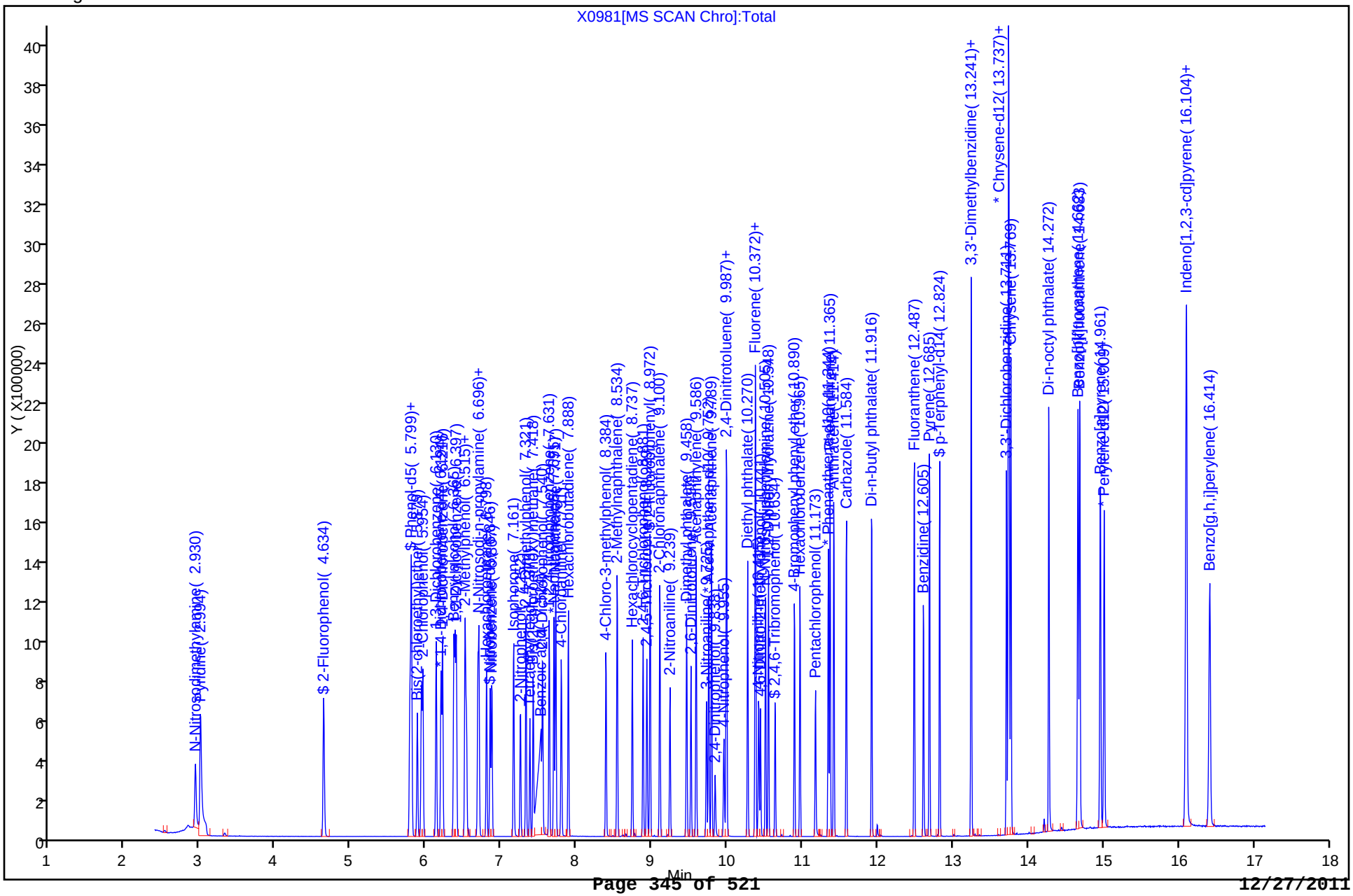
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	16.099	16.099	0.0	88	985873	49.8	
209 Dibenz(a,h)anthracene	278	16.104	16.104	0.0	83	850772	50.9	
210 Benzo[g,h,i]perylene	276	16.414	16.414	0.0	100	797080	49.4	
S 212 3 & 4 Methylphenol	108				0		51.8	
S 213 Total Cresols	1				0		103.2	
S 214 3-Methylphenol	1				0		51.8	

Report Date: 16-Nov-2011 15:23:28 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0981.D

Injection Date:	16-Nov-2011 13:10:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	40664	Lims Sample ID:	4
Operator ID:	RJF	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0982.D		
Lims ID:	IC 8270 - 80PT	Client ID:	
Inject. Date:	16-Nov-2011 13:33:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	4
Sample ID:	480-0007579-005		
Misc. Info.:	IC 8270 - 80PT		
Operator:	RJF	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	7
Lims Batch ID:	40664	Lims Sample ID:	5
Sublist:	chrom-X-8270*sub28		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X-8270.m		
Last Update:	16-Nov-2011 14:03:03	Calib Date:	16-Nov-2011 13:33:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0982.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: franzr		Date:	16-Nov-2011 14:03:03

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.194	6.194	0.0	95	131815	40.0	
* 2 Naphthalene-d8	136	7.695	7.695	0.0	93	454528	40.0	
* 3 Acenaphthene-d10	164	9.752	9.752	0.0	17	250427	40.0	
* 4 Phenanthrene-d10	188	11.344	11.344	0.0	100	479038	40.0	
* 5 Chrysene-d12	240	13.748	13.748	0.0	97	499304	40.0	
* 6 Perylene-d12	264	15.009	15.009	0.0	100	647942	40.0	
$ 7 2-Fluorophenol	112	4.634	4.634	0.0	96	378754	76.7	
$ 8 Phenol-d5	99	5.783	5.783	0.0	91	417866	76.4	
$ 9 Nitrobenzene-d5	82	6.851	6.846	0.005	95	386668	80.5	
$ 10 2-Fluorobiphenyl	172	8.972	8.972	0.0	100	692535	77.7	
$ 11 2,4,6-Tribromophenol	330	10.639	10.639	0.0	94	110015	79.5	
$ 12 p-Terphenyl-d14	244	12.824	12.824	0.0	99	737135	77.8	
55 N-Nitrosodimethylamine	42	2.930	2.930	0.0	78	229990	75.2	
56 Pyridine	52	2.994	3.000	-0.006	88	357567	75.9	
63 Phenol	94	5.799	5.793	0.006	85	435198	72.8	
64 Aniline	93	5.804	5.804	0.0	84	500398	73.9	
66 Bis(2-chloroethyl)ether	93	5.879	5.879	0.0	84	344816	76.3	
67 2-Chlorophenol	128	5.954	5.954	0.0	99	344093	76.1	
69 1,3-Dichlorobenzene	146	6.130	6.130	0.0	97	375540	76.4	
70 1,4-Dichlorobenzene	146	6.215	6.210	0.005	93	380134	75.9	
71 Benzyl alcohol	108	6.365	6.365	0.0	95	231780	76.9	
72 1,2-Dichlorobenzene	146	6.397	6.397	0.0	83	354838	76.8	
73 2-Methylphenol	108	6.515	6.515	0.0	98	315028	77.3	
74 2,2'-oxybis[1-chloropropane]	45	6.531	6.531	0.0	93	460711	75.1	
78 N-Nitrosodi-n-propylamine	70	6.686	6.686	0.0	94	247648	77.6	
79 4-Methylphenol	108	6.702	6.696	0.006	95	321484	76.3	
81 Hexachloroethane	117	6.798	6.798	0.0	96	141838	78.2	
83 Nitrobenzene	77	6.873	6.867	0.006	91	374985	79.1	
86 Isophorone	82	7.161	7.161	0.0	97	656797	78.5	
87 2-Nitrophenol	139	7.252	7.252	0.0	88	174477	80.9	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.327	7.321	0.006	97	345505	77.9	
90 Tetraethyl lead	237	7.375	7.375	0.0	55	158974	75.5	
94 Bis(2-chloroethoxy)methane	93	7.417	7.418	-0.001	98	357903	76.3	
95 Benzoic acid	105	7.556	7.524	0.032	72	810558	254.0	
97 2,4-Dichlorophenol	162	7.546	7.546	0.0	96	258263	76.2	
98 1,2,4-Trichlorobenzene	180	7.631	7.631	0.0	94	300698	77.0	
99 Naphthalene	128	7.722	7.717	0.005	98	859241	76.3	
101 4-Chloroaniline	127	7.791	7.791	0.0	99	376133	77.8	
104 Hexachlorobutadiene	225	7.888	7.888	0.0	98	198673	78.8	
110 4-Chloro-3-methylphenol	107	8.384	8.384	0.0	96	286434	81.9	
113 2-Methylnaphthalene	142	8.534	8.534	0.0	98	553067	76.5	
116 Hexachlorocyclopentadiene	237	8.737	8.737	0.0	90	236233	85.5	
118 2,4,6-Trichlorophenol	196	8.881	8.881	0.0	95	206895	81.9	
119 2,4,5-Trichlorophenol	196	8.929	8.929	0.0	96	216301	81.2	
124 2-Chloronaphthalene	162	9.106	9.100	0.006	99	558867	77.9	
125 2-Nitroaniline	65	9.239	9.239	0.0	95	186553	82.9	
128 Dimethyl phthalate	163	9.464	9.458	0.006	99	661949	78.2	
130 2,6-Dinitrotoluene	165	9.522	9.522	0.0	27	150309	82.7	
131 Acenaphthylene	152	9.586	9.586	0.0	99	868145	78.5	
132 3-Nitroaniline	138	9.725	9.725	0.0	97	162772	83.9	
133 Acenaphthene	153	9.795	9.789	0.006	100	518153	77.6	
134 2,4-Dinitrophenol	184	9.843	9.843	0.0	87	85785	114.8	
135 4-Nitrophenol	109	9.955	9.955	0.0	93	113162	86.9	
137 2,4-Dinitrotoluene	165	9.987	9.987	0.0	62	191009	79.7	
138 Dibenzofuran	168	9.992	9.992	0.0	94	764982	75.0	
142 Diethyl phthalate	149	10.270	10.270	0.0	99	659864	77.3	
144 Fluorene	166	10.372	10.372	0.0	97	596491	74.7	
145 4-Chlorophenyl phenyl ether	204	10.377	10.377	0.0	87	319302	74.2	
147 4-Nitroaniline	138	10.420	10.420	0.0	89	159624	82.3	
148 4,6-Dinitro-2-methylphenol	198	10.447	10.441	0.005	97	131987	89.2	
149 N-Nitrosodiphenylamine	169	10.511	10.511	0.0	96	452877	75.7	
152 1,2-Diphenylhydrazine	77	10.548	10.548	0.0	99	637234	76.8	
159 4-Bromophenyl phenyl ether	248	10.895	10.895	0.0	97	197870	76.8	
160 Hexachlorobenzene	284	10.970	10.965	0.005	96	218605	80.0	
165 Pentachlorophenol	266	11.173	11.173	0.0	96	136350	95.3	
171 Phenanthrene	178	11.365	11.365	0.0	100	898468	74.8	
172 Anthracene	178	11.419	11.414	0.005	100	915889	75.3	
173 Carbazole	167	11.584	11.584	0.0	100	880262	74.7	
176 Di-n-butyl phthalate	149	11.921	11.916	0.005	99	1104513	74.4	
182 Fluoranthene	202	12.487	12.487	0.0	99	1097985	73.2	
183 Benzidine	184	12.610	12.605	0.005	100	611375	82.2	
185 Pyrene	202	12.690	12.685	0.005	99	1125754	76.3	
191 3,3'-Dimethylbenzidine	212	13.241	13.241	-0.001	99	601728	74.9	
192 Butyl benzyl phthalate	149	13.246	13.246	0.0	98	517888	75.9	
196 3,3'-Dichlorobenzidine	252	13.711	13.710	0.001	59	492400	81.0	
197 Benzo[a]anthracene	228	13.737	13.737	0.0	52	1051037	71.8	
198 Bis(2-ethylhexyl) phthalate	149	13.743	13.743	0.001	94	722074	74.8	
199 Chrysene	228	13.769	13.769	0.0	98	1116379	74.5	
201 Di-n-octyl phthalate	149	14.277	14.272	0.005	100	1392225	77.4	
203 Benzo[b]fluoranthene	252	14.662	14.662	0.0	98	1417458	75.0	
204 Benzo[k]fluoranthene	252	14.688	14.683	0.005	99	1329267	69.4	
206 Benzo[a]pyrene	252	14.961	14.961	0.0	100	1199593	74.6	

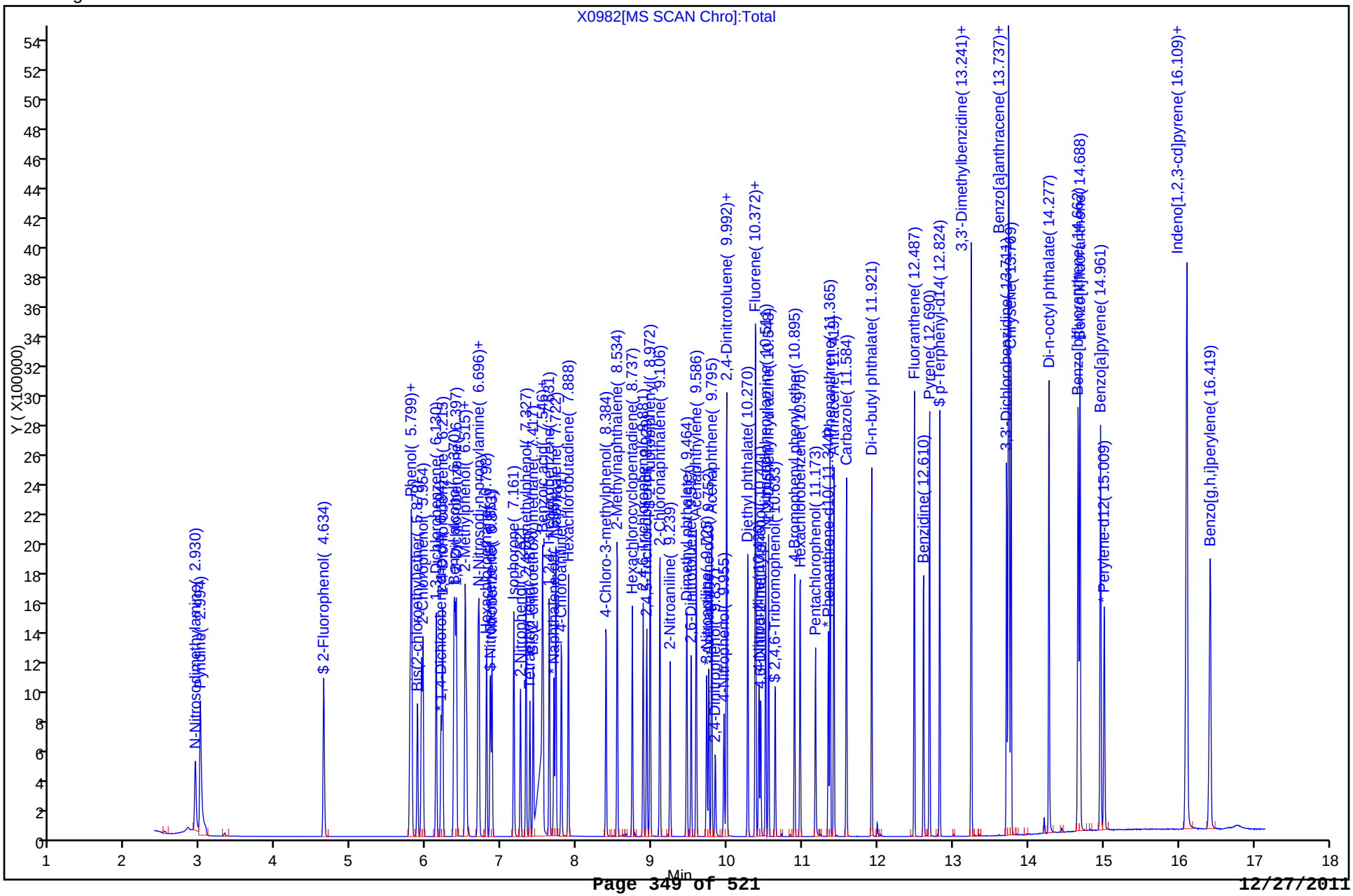
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	16.109	16.099	0.010	79	1505936	75.3	
209 Dibenz(a,h)anthracene	278	16.109	16.104	0.005	84	1279286	74.9	
210 Benzo[g,h,i]perylene	276	16.419	16.414	0.005	100	1226644	75.5	
S 212 3 & 4 Methylphenol	108				0		76.3	
S 213 Total Cresols	1				0		153.6	
S 214 3-Methylphenol	1				0		76.3	

Report Date: 16-Nov-2011 14:03:03 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0982.D

Injection Date:	16-Nov-2011 13:33:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	40664	Lims Sample ID:	5
Operator ID:	RJF	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0983.D
Lims ID: IC 8270 - 120PT
Client ID:
Inject. Date: 16-Nov-2011 13:56:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 5
Sample ID: 480-0007579-006
Misc. Info.: IC 8270 - 120PT
Operator: RJF
Instrument ID: HP5973X
Vol. Injected: 1.0000
ALS Bottle#: 8
Lims Batch ID: 40664
Lims Sample ID: 6
Sublist: chrom-X-8270*sub28
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X-8270.m
Last Update: 16-Nov-2011 15:00:33
Calib Date: 16-Nov-2011 14:19:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0984.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: franzr
Date: 16-Nov-2011 14:16:55

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.194	6.194	0.0	96	140750	40.0	
* 2 Naphthalene-d8	136	7.695	7.695	0.0	88	493084	40.0	
* 3 Acenaphthene-d10	164	9.752	9.757	-0.005	16	269978	40.0	
* 4 Phenanthrene-d10	188	11.344	11.344	0.0	100	516929	40.0	
* 5 Chrysene-d12	240	13.753	13.748	0.005	88	528249	40.0	
* 6 Perylene-d12	264	15.014	15.009	0.005	99	682766	40.0	
$ 7 2-Fluorophenol	112	4.639	4.634	0.005	96	573550	113.0	
$ 8 Phenol-d5	99	5.788	5.783	0.005	95	628192	112.5	
$ 9 Nitrobenzene-d5	82	6.851	6.846	0.005	96	604554	117.8	
$ 10 2-Fluorobiphenyl	172	8.977	8.972	0.005	100	1038842	113.1	
$ 11 2,4,6-Tribromophenol	330	10.639	10.639	0.0	47	171629	120.2	
$ 12 p-Terphenyl-d14	244	12.824	12.824	0.0	99	1109775	115.0	
55 N-Nitrosodimethylamine	42	2.930	2.930	0.0	80	354275	112.5	
56 Pyridine	52	2.994	3.000	-0.006	88	549475	113.4	
63 Phenol	94	5.804	5.793	0.011	82	640382	107.3	
64 Aniline	93	5.804	5.804	0.0	73	732310	108.2	
66 Bis(2-chloroethyl)ether	93	5.884	5.879	0.005	84	525266	112.8	
67 2-Chlorophenol	128	5.959	5.954	0.005	99	525642	113.1	
69 1,3-Dichlorobenzene	146	6.130	6.130	0.0	98	565595	112.5	
70 1,4-Dichlorobenzene	146	6.215	6.210	0.005	99	581315	113.3	
71 Benzyl alcohol	108	6.370	6.365	0.005	94	355729	114.8	
72 1,2-Dichlorobenzene	146	6.402	6.397	0.005	82	534038	113.1	
73 2-Methylphenol	108	6.515	6.515	-0.001	98	477164	113.7	
74 2,2'-oxybis[1-chloropropane]	45	6.531	6.531	0.0	94	687434	110.9	
78 N-Nitrosodi-n-propylamine	70	6.691	6.686	0.005	93	372584	113.8	
79 4-Methylphenol	108	6.701	6.696	0.005	96	480703	112.1	
81 Hexachloroethane	117	6.798	6.798	0.0	97	221162	117.0	
83 Nitrobenzene	77	6.872	6.867	0.005	95	589044	117.1	
86 Isophorone	82	7.166	7.161	0.005	98	1008315	114.3	
87 2-Nitrophenol	139	7.252	7.252	0.0	91	272609	118.1	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.327	7.321	0.006	97	528139	113.7	
90 Tetraethyl lead	237	7.375	7.375	0.0	55	240794	111.1	
94 Bis(2-chloroethoxy)methane	93	7.423	7.418	0.005	97	550398	112.6	
95 Benzoic acid	105	7.588	7.524	0.064	61	1319001	373.6	
97 2,4-Dichlorophenol	162	7.546	7.546	0.0	97	395767	112.0	
98 1,2,4-Trichlorobenzene	180	7.636	7.631	0.005	92	460113	113.5	
99 Naphthalene	128	7.722	7.717	0.005	99	1284633	110.6	
101 4-Chloroaniline	127	7.797	7.791	0.006	99	581824	114.3	
104 Hexachlorobutadiene	225	7.887	7.888	-0.001	99	306794	115.5	
110 4-Chloro-3-methylphenol	107	8.390	8.384	0.006	96	438931	117.7	
113 2-Methylnaphthalene	142	8.539	8.534	0.005	98	835147	111.7	
116 Hexachlorocyclopentadiene	237	8.737	8.737	0.0	90	368241	123.1	
118 2,4,6-Trichlorophenol	196	8.881	8.881	0.0	97	321976	119.5	
119 2,4,5-Trichlorophenol	196	8.929	8.929	0.0	97	348532	121.8	
124 2-Chloronaphthalene	162	9.106	9.100	0.006	100	841562	113.2	
125 2-Nitroaniline	65	9.244	9.239	0.005	94	295800	121.9	
128 Dimethyl phthalate	163	9.463	9.458	0.005	100	1023657	115.7	
130 2,6-Dinitrotoluene	165	9.522	9.528	-0.006	30	235654	120.6	
131 Acenaphthylene	152	9.592	9.586	0.006	98	1292530	113.1	
132 3-Nitroaniline	138	9.731	9.725	0.006	97	256088	122.5	
133 Acenaphthene	153	9.795	9.789	0.006	99	787303	113.6	
134 2,4-Dinitrophenol	184	9.843	9.843	0.0	89	153863	122.0	
135 4-Nitrophenol	109	9.960	9.955	0.005	93	182428	126.6	
137 2,4-Dinitrotoluene	165	9.992	9.987	0.005	53	295472	116.9	
138 Dibenzofuran	168	9.992	9.992	0.0	87	1140619	110.1	
142 Diethyl phthalate	149	10.275	10.270	0.005	100	999013	113.2	
144 Fluorene	166	10.372	10.372	0.0	97	886187	109.1	
145 4-Chlorophenyl phenyl ether	204	10.377	10.377	0.0	78	486678	110.6	
147 4-Nitroaniline	138	10.430	10.420	0.010	89	251488	120.6	
148 4,6-Dinitro-2-methylphenol	198	10.452	10.441	0.011	96	216177	130.6	
149 N-Nitrosodiphenylamine	169	10.511	10.511	-0.001	97	698905	113.2	
152 1,2-Diphenylhydrazine	77	10.548	10.548	0.0	99	959179	112.5	
159 4-Bromophenyl phenyl ether	248	10.895	10.895	0.0	97	303870	113.9	
160 Hexachlorobenzene	284	10.970	10.965	0.005	97	335758	116.7	
165 Pentachlorophenol	266	11.173	11.173	0.0	97	222230	121.9	
171 Phenanthrene	178	11.371	11.365	0.006	100	1342858	109.7	
172 Anthracene	178	11.419	11.414	0.005	100	1388889	111.6	
173 Carbazole	167	11.584	11.584	0.0	100	1325081	110.4	
176 Di-n-butyl phthalate	149	11.921	11.916	0.005	100	1660074	110.3	
182 Fluoranthene	202	12.487	12.487	0.0	99	1641801	108.4	
183 Benzidine	184	12.610	12.605	0.005	100	918372	119.5	
185 Pyrene	202	12.690	12.685	0.005	99	1685507	113.4	
191 3,3'-Dimethylbenzidine	212	13.240	13.241	-0.001	99	863306	107.1	
192 Butyl benzyl phthalate	149	13.246	13.246	0.0	98	761717	111.6	
196 3,3'-Dichlorobenzidine	252	13.716	13.710	0.006	69	733431	117.2	
197 Benzo[a]anthracene	228	13.743	13.737	0.006	52	1588351	108.7	
198 Bis(2-ethylhexyl) phthalate	149	13.743	13.743	0.001	86	1047059	109.9	
199 Chrysene	228	13.775	13.769	0.006	99	1634426	109.5	
201 Di-n-octyl phthalate	149	14.277	14.272	0.005	100	2018493	112.3	
203 Benzo[b]fluoranthene	252	14.667	14.662	0.005	100	1979165	104.4	
204 Benzo[k]fluoranthene	252	14.693	14.683	0.010	99	2132129	134.2	
206 Benzo[a]pyrene	252	14.966	14.961	0.005	100	1820317	112.7	

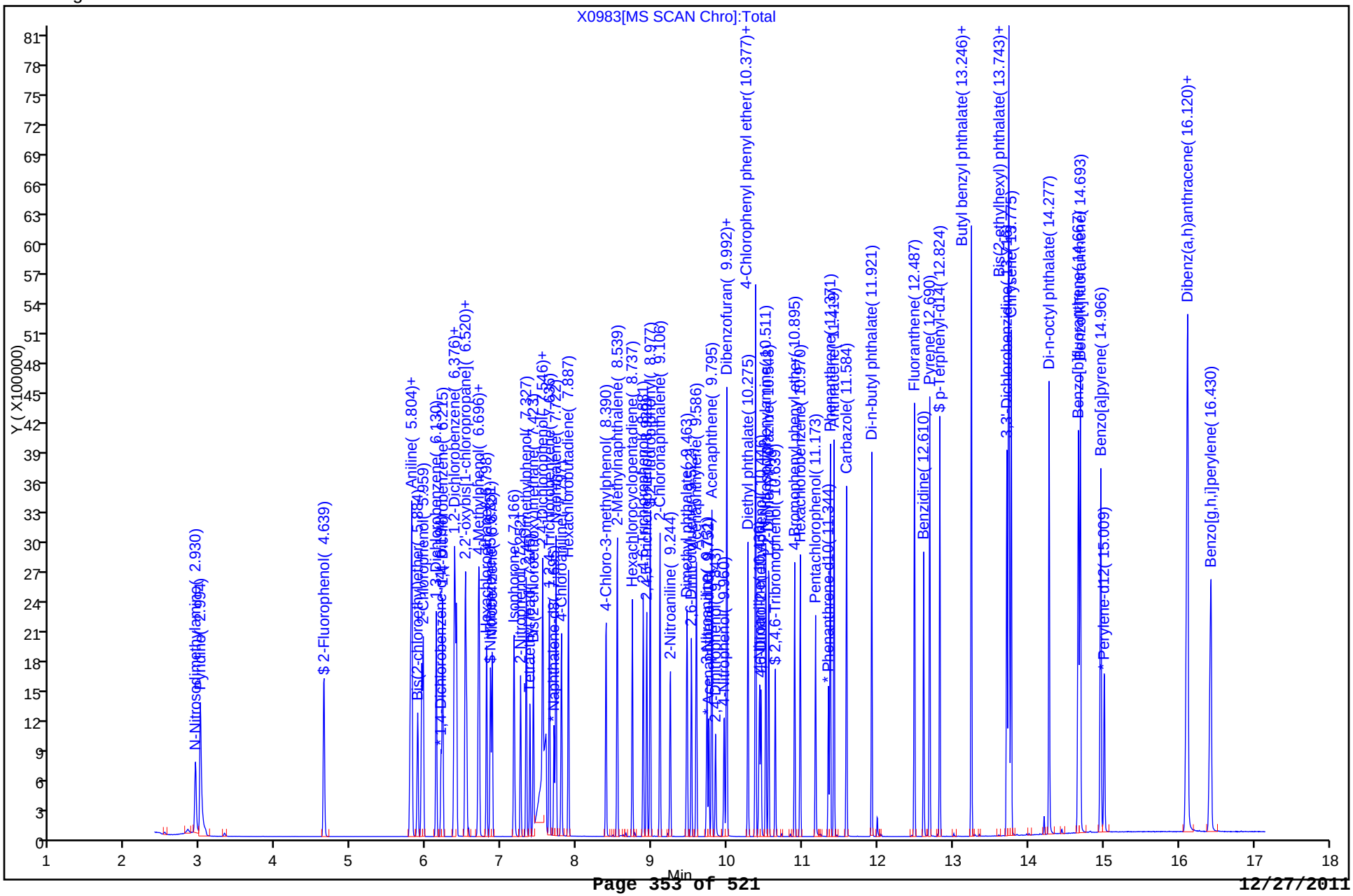
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	16.115	16.099	0.016	80	2337088	114.3	
209 Dibenz(a,h)anthracene	278	16.120	16.104	0.016	90	1939950	112.4	
210 Benzo[g,h,i]perylene	276	16.430	16.414	0.016	99	1918113	115.1	
S 212 3 & 4 Methylphenol	108				0		112.1	
S 213 Total Cresols	1				0		225.8	
S 214 3-Methylphenol	1				0		112.1	

Report Date: 16-Nov-2011 15:00:33 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0983.D

Injection Date:	16-Nov-2011 13:56:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	40664	Lims Sample ID:	6
Operator ID:	RJF	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0984.D		
Lims ID:	IC 8270 - 160PT	Client ID:	
Inject. Date:	16-Nov-2011 14:19:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	6
Sample ID:	480-0007579-007		
Misc. Info.:	IC 8270 - 160PT		
Operator:	RJF	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	9
Lims Batch ID:	40664	Lims Sample ID:	7
Sublist:	chrom-X-8270*sub28		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X-8270.m		
Last Update:	16-Nov-2011 15:05:05	Calib Date:	16-Nov-2011 14:19:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0984.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: franzr		Date:	16-Nov-2011 14:40:12

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.194	6.194	0.0	95	165202	40.0	
* 2 Naphthalene-d8	136	7.695	7.695	0.0	79	579521	40.0	
* 3 Acenaphthene-d10	164	9.757	9.757	0.0	5	319318	40.0	
* 4 Phenanthrene-d10	188	11.344	11.344	0.0	99	621267	40.0	
* 5 Chrysene-d12	240	13.753	13.748	0.005	98	633750	40.0	
* 6 Perylene-d12	264	15.014	15.009	0.005	99	826505	40.0	
$ 7 2-Fluorophenol	112	4.645	4.634	0.011	96	857930	144.0	
$ 8 Phenol-d5	99	5.793	5.783	0.010	95	925460	141.2	
$ 9 Nitrobenzene-d5	82	6.857	6.846	0.011	95	923898	153.2	
$ 10 2-Fluorobiphenyl	172	8.977	8.972	0.005	100	1520631	140.0	
$ 11 2,4,6-Tribromophenol	330	10.644	10.639	0.005	76	264313	154.0	
$ 12 p-Terphenyl-d14	244	12.829	12.824	0.005	100	1643198	142.0	
55 N-Nitrosodimethylamine	42	2.946	2.930	0.016	79	538708	145.8	
56 Pyridine	52	3.005	3.000	0.005	88	824762	145.0	
63 Phenol	94	5.815	5.793	0.022	84	927856	132.4	
64 Aniline	93	5.809	5.804	0.005	75	1050046	132.2	
66 Bis(2-chloroethyl)ether	93	5.890	5.879	0.011	84	800294	146.5	
67 2-Chlorophenol	128	5.964	5.954	0.010	99	787296	144.3	
69 1,3-Dichlorobenzene	146	6.135	6.130	0.005	98	838891	142.2	
70 1,4-Dichlorobenzene	146	6.215	6.210	0.005	99	854987	142.0	
71 Benzyl alcohol	108	6.376	6.365	0.011	93	518424	142.5	
72 1,2-Dichlorobenzene	146	6.402	6.397	0.005	77	778046	140.4	
73 2-Methylphenol	108	6.520	6.515	0.005	97	711620	144.5	
74 2,2'-oxybis[1-chloropropane]	45	6.536	6.531	0.005	94	990725	136.1	
78 N-Nitrosodi-n-propylamine	70	6.696	6.686	0.010	92	548541	142.7	
79 4-Methylphenol	108	6.707	6.696	0.011	96	700180	139.1	
81 Hexachloroethane	117	6.798	6.798	0.0	97	328882	148.2	
83 Nitrobenzene	77	6.878	6.867	0.011	95	887805	150.1	
86 Isophorone	82	7.172	7.161	0.011	98	1545581	149.0	
87 2-Nitrophenol	139	7.257	7.252	0.005	89	417204	153.8	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.332	7.321	0.011	97	794292	145.5	
90 Tetraethyl lead	237	7.375	7.375	0.0	55	350878	137.7	
94 Bis(2-chloroethoxy)methane	93	7.423	7.418	0.005	98	822387	143.2	
95 Benzoic acid	105	7.615	7.524	0.091	61	2071822	499.3	
97 2,4-Dichlorophenol	162	7.551	7.546	0.005	97	601500	144.8	
98 1,2,4-Trichlorobenzene	180	7.637	7.631	0.005	91	664178	139.5	
99 Naphthalene	128	7.727	7.717	0.010	98	1894506	138.8	
101 4-Chloroaniline	127	7.797	7.791	0.006	99	886208	148.1	
104 Hexachlorobutadiene	225	7.888	7.888	0.0	99	457331	146.5	
110 4-Chloro-3-methylphenol	107	8.390	8.384	0.006	97	664849	151.7	
113 2-Methylnaphthalene	142	8.539	8.534	0.005	98	1229648	139.9	
116 Hexachlorocyclopentadiene	237	8.737	8.737	0.0	90	562548	159.0	
118 2,4,6-Trichlorophenol	196	8.887	8.881	0.006	94	489876	153.7	
119 2,4,5-Trichlorophenol	196	8.929	8.929	0.0	97	526089	155.5	
124 2-Chloronaphthalene	162	9.106	9.100	0.006	99	1255038	142.8	
125 2-Nitroaniline	65	9.245	9.239	0.006	96	452541	157.7	
128 Dimethyl phthalate	163	9.469	9.458	0.011	99	1530038	146.2	
130 2,6-Dinitrotoluene	165	9.528	9.528	0.0	31	363707	157.3	
131 Acenaphthylene	152	9.592	9.586	0.006	98	1915631	141.7	
132 3-Nitroaniline	138	9.736	9.725	0.011	98	387291	156.6	
133 Acenaphthene	153	9.795	9.789	0.006	100	1180296	144.0	
134 2,4-Dinitrophenol	184	9.848	9.843	0.005	90	252750	166.1	
135 4-Nitrophenol	109	9.966	9.955	0.011	93	285899	167.8	
137 2,4-Dinitrotoluene	165	9.998	9.987	0.011	52	448702	150.1	
138 Dibenzofuran	168	9.998	9.992	0.006	88	1641021	133.9	
142 Diethyl phthalate	149	10.281	10.270	0.011	100	1478907	141.7	
144 Fluorene	166	10.377	10.372	0.005	97	1311425	136.5	
145 4-Chlorophenyl phenyl ether	204	10.382	10.377	0.005	91	719572	138.2	
147 4-Nitroaniline	138	10.436	10.420	0.016	89	388198	157.4	
148 4,6-Dinitro-2-methylphenol	198	10.457	10.441	0.016	97	336237	169.0	
149 N-Nitrosodiphenylamine	169	10.516	10.511	0.005	98	1040775	140.2	
152 1,2-Diphenylhydrazine	77	10.553	10.548	0.005	100	1398206	138.6	
159 4-Bromophenyl phenyl ether	248	10.901	10.895	0.006	95	453616	141.5	
160 Hexachlorobenzene	284	10.975	10.965	0.010	96	511276	147.9	
165 Pentachlorophenol	266	11.178	11.173	0.005	95	348878	158.0	
171 Phenanthrene	178	11.371	11.365	0.006	100	2005598	136.3	
172 Anthracene	178	11.424	11.414	0.010	100	2035566	136.1	
173 Carbazole	167	11.590	11.584	0.006	100	1943594	134.7	
176 Di-n-butyl phthalate	149	11.921	11.916	0.005	100	2375791	131.3	
182 Fluoranthene	202	12.493	12.487	0.006	100	2391323	131.4	
183 Benzidine	184	12.615	12.605	0.010	100	1339249	145.3	
185 Pyrene	202	12.696	12.685	0.011	100	2443597	137.0	
191 3,3'-Dimethylbenzidine	212	13.246	13.241	0.005	98	1251238	129.1	
192 Butyl benzyl phthalate	149	13.251	13.246	0.005	98	1095003	133.8	
196 3,3'-Dichlorobenzidine	252	13.721	13.710	0.011	74	1092670	145.6	
197 Benzo[a]anthracene	228	13.743	13.737	0.006	55	2397519	136.8	
198 Bis(2-ethylhexyl) phthalate	149	13.743	13.743	0.001	84	1458125	127.5	
199 Chrysene	228	13.780	13.769	0.011	98	2411171	134.7	
201 Di-n-octyl phthalate	149	14.282	14.272	0.010	99	2855845	132.4	
203 Benzo[b]fluoranthene	252	14.678	14.662	0.016	100	3389064	147.7	
204 Benzo[k]fluoranthene	252	14.699	14.683	0.016	98	2760310	151.9	
206 Benzo[a]pyrene	252	14.971	14.961	0.010	99	2710943	138.6	

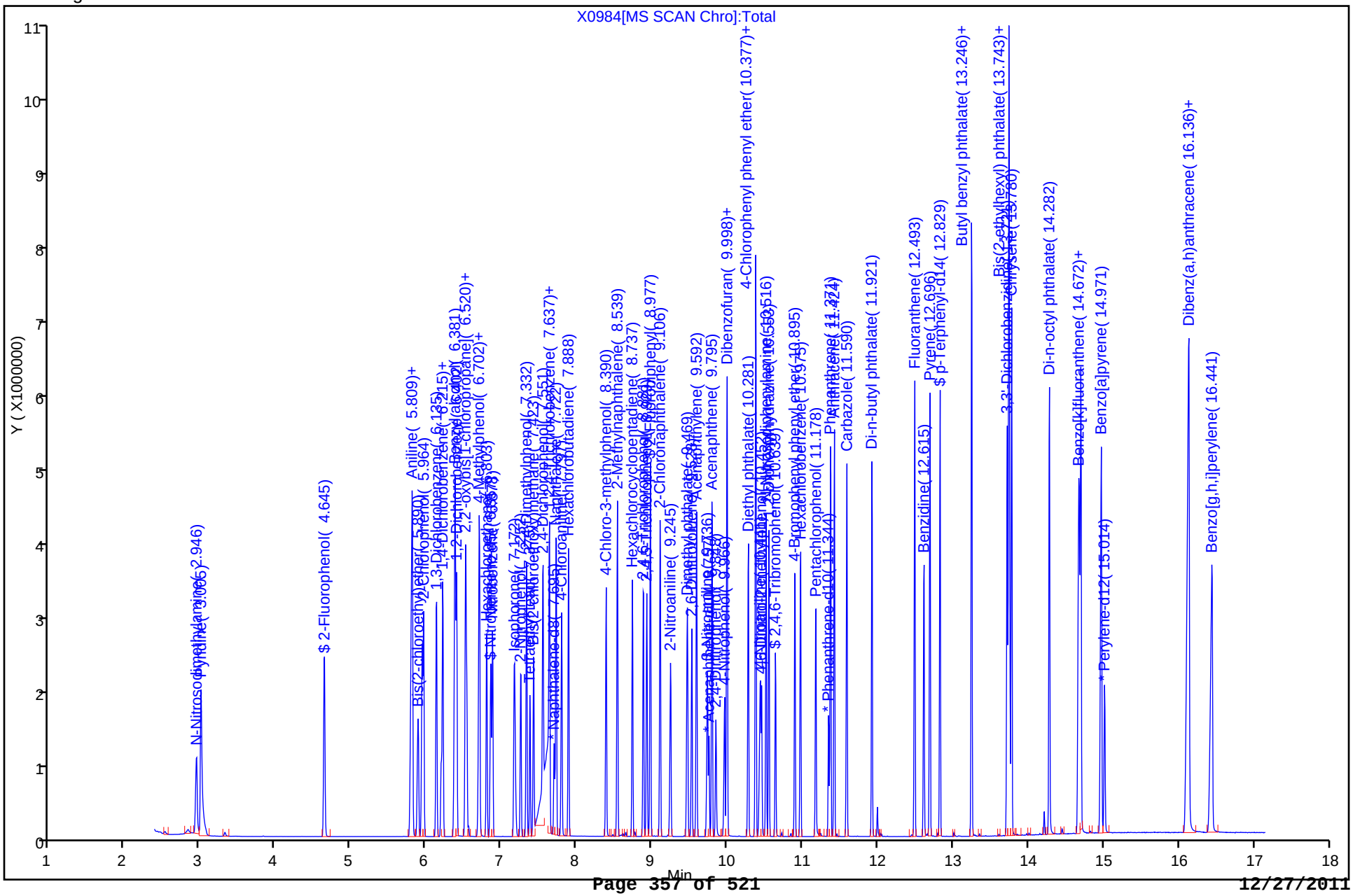
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	16.131	16.099	0.032	72	3654465	147.7	
209 Dibenz(a,h)anthracene	278	16.136	16.104	0.032	91	2997195	143.4	
210 Benzo[g,h,i]perylene	276	16.441	16.414	0.027	99	3017418	149.6	
S 212 3 & 4 Methylphenol	108				0		139.1	
S 213 Total Cresols	1				0		283.6	
S 214 3-Methylphenol	1				0		139.1	

Report Date: 16-Nov-2011 15:05:05 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0984.D

Injection Date:	16-Nov-2011 14:19:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	40664	Lims Sample ID:	7
Operator ID:	RJF	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-43924/2	X1680.D
Level 2	IC 480-43924/3	X1681.D
Level 3	ICIS 480-43924/4	X1682.D
Level 4	IC 480-43924/5	X1683.D
Level 5	IC 480-43924/6	X1686.D
Level 6	IC 480-43924/7	X1685.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
N-Nitrosodimethylamine	0.7270 0.5776	0.6951	0.7043	0.6873	0.5824	Ave		0.6623				9.8		15.0			
Pyridine	0.8800 0.9377	1.0025	1.0421	1.0411	0.9352	Ave		0.9731				6.8		15.0			
Phenol	1.8366 1.4977	1.7584	1.7924	1.7452	1.5432	Ave		1.6956				8.3		15.0			
Aniline	2.2594 1.9580	2.1855	2.2358	2.1739	1.9711	Ave		2.1306				6.2		15.0			
Bis(2-chloroethyl)ether	1.5303 1.1840	1.4557	1.4545	1.4100	1.2288	Ave		1.3772				10.0		15.0			
2-Chlorophenol	1.4504 1.2427	1.4189	1.4587	1.4378	1.2825	Ave		1.3819				6.8		15.0			
1,3-Dichlorobenzene	1.6456 1.2652	1.5453	1.5529	1.5086	1.3091	Ave		1.4711				10.0		15.0			
1,4-Dichlorobenzene	1.6542 1.2680	1.5424	1.5694	1.5162	1.3264	Ave		1.4794				10.0		15.0			
Benzyl alcohol	0.8723 0.7208	0.9034	0.9245	0.9056	0.7757	Ave		0.8504				9.7		15.0			
1,2-Dichlorobenzene	1.5741 1.1846	1.4724	1.4901	1.4538	1.2530	Ave		1.4046				11.0		15.0			
2-Methylphenol	1.2787 1.0678	1.2445	1.2731	1.2451	1.0989	Ave		1.2013				7.7		15.0			
bis (2-chloroisopropyl) ether	1.9642 1.4340	1.8359	1.8392	1.7535	1.4786	Ave		1.7176				12.0		15.0			
4-Methylphenol	1.2711 0.9994	1.2831	1.3106	1.2671	1.0596	Ave		1.1985				11.0		15.0			
N-Nitrosodi-n-propylamine	0.9796 0.7807	0.9681	0.9921	0.9565	0.8043	Ave		0.9136			0.0500	10.0		15.0			
Hexachloroethane	0.5706 0.4589	0.5523	0.5612	0.5484	0.4782	Ave		0.5283				9.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Nitrobenzene	0.3447 0.2924	0.3439	0.3566	0.3441	0.3043	Ave		0.3310				7.9		15.0			
Isophorone	0.6254 0.5139	0.6186	0.6319	0.6092	0.5321	Ave		0.5885				8.8		15.0			
2-Nitrophenol	0.1272 0.1663	0.1471	0.1691	0.1756	0.1697	Ave		0.1592				12.0		15.0			
2,4-Dimethylphenol	0.3276 0.2697	0.3285	0.3325	0.3200	0.2822	Ave		0.3101				8.7		15.0			
Tetraethyl lead	0.1435 0.1080	0.1381	0.1410	0.1332	0.1180	Ave		0.1303				11.0		15.0			
Bis(2-chloroethoxy)methane	0.4547 0.3160	0.4134	0.4036	0.3862	0.3313	Ave		0.3842				14.0		15.0			
Benzoic acid	0.1847 0.2454	0.1961	0.2165	0.2355	0.2400	Ave		0.2197				11.0		15.0			
2,4-Dichlorophenol	0.2910 0.2297	0.2828	0.2889	0.2742	0.2394	Ave		0.2677				9.9		15.0			
1,2,4-Trichlorobenzene	0.3467 0.2580	0.3246	0.3238	0.3090	0.2702	Ave		0.3054				11.0		15.0			
Naphthalene	1.0969 0.6654	1.0125	0.9777	0.8996	0.7359	Qua	0.3836	1.0833	-0.003						0.9970		0.9900
4-Chloroaniline	0.4398 0.3448	0.4324	0.4366	0.4204	0.3646	Ave		0.4064				10.0		15.0			
Hexachlorobutadiene	0.1837 0.1403	0.1719	0.1749	0.1660	0.1480	Ave		0.1641				10.0		15.0			
4-Chloro-3-methylphenol	0.2718 0.2239	0.2725	0.2761	0.2666	0.2356	Ave		0.2577				8.6		15.0			
2-Methylnaphthalene	0.6954 0.4461	0.6613	0.6411	0.5941	0.4895	Qua	0.1387	0.7103	-0.002						0.9980		0.9900
Hexachlorocyclopentadiene	0.2996 0.3230	0.3238	0.3529	0.3594	0.3332	Ave		0.3320			0.0500	6.6		15.0			
2,4,6-Trichlorophenol	0.3440 0.3266	0.3600	0.3673	0.3660	0.3402	Ave		0.3507				4.7		15.0			
2,4,5-Trichlorophenol	0.3750 0.3431	0.3825	0.4102	0.4070	0.3663	Ave		0.3807				6.7		15.0			
2-Chloronaphthalene	1.1825 0.8223	1.1248	1.1028	1.0266	0.8872	Ave		1.0244				14.0		15.0			
2-Nitroaniline	0.2299 0.2703	0.2752	0.2982	0.3004	0.2741	Ave		0.2747				9.3		15.0			
Dimethyl phthalate	1.2889 0.9880	1.2476	1.2328	1.1741	1.0290	Ave		1.1601				11.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,6-Dinitrotoluene	0.1999 0.2625	0.2493	0.2790	0.2837	0.2689	Ave		0.2572				12.0		15.0			
Acenaphthylene	1.7638 1.2030	1.7640	1.6976	1.5780	1.3162	Ave		1.5538				15.0		15.0			
3-Nitroaniline	0.2430 0.2992	0.3013	0.3299	0.3297	0.3032	Ave		0.3011				11.0		15.0			
Acenaphthene	1.1633 0.7623	1.0959	1.0429	0.9583	0.8184	Qua	0.9657	1.1079	-0.002						0.9980		0.9900
2,4-Dinitrophenol	0.0210 0.1284	0.0309	0.0657	0.0931	0.1237	Qua	-1.080	0.0826	0.0003		0.0500				0.9940		0.9900
4-Nitrophenol	0.1172 0.1480	0.1327	0.1501	0.1554	0.1496	Ave		0.1422			0.0500	10.0		15.0			
Dibenzofuran	1.6915 0.9876	1.5546	1.4413	1.2957	1.0776	Qua	2.1636	1.5267	-0.004						0.9970		0.9900
2,4-Dinitrotoluene	0.2591 0.3180	0.3242	0.3572	0.3499	0.3185	Ave		0.3211				11.0		15.0			
Diethyl phthalate	1.2442 0.8616	1.1967	1.1738	1.0890	0.9298	Ave		1.0825				14.0		15.0			
Fluorene	1.3473 0.7812	1.2742	1.1829	1.0582	0.8564	Qua	1.6633	1.2642	-0.003						0.9960		0.9900
4-Chlorophenyl phenyl ether	0.7024 0.4319	0.6527	0.6138	0.5588	0.4633	Qua	0.8192	0.6484	-0.001						0.9970		0.9900
4-Nitroaniline	0.2626 0.3039	0.2995	0.3300	0.3364	0.3063	Ave		0.3065				8.5		15.0			
4,6-Dinitro-2-methylphenol	0.0464 0.1201	0.0675	0.1043	0.1193	0.1220	Lin1	-0.938	0.1274							0.9980		0.9900
N-Nitrosodiphenylamine	0.5280 0.3670	0.5197	0.5080	0.4716	0.4064	Ave		0.4668				14.0		15.0			
1,2-Diphenylhydrazine	1.2620 0.7839	1.2079	1.1584	1.0574	0.8530	Qua	0.8429	1.2601	-0.003						0.9960		0.9900
4-Bromophenyl phenyl ether	0.2244 0.1672	0.2166	0.2178	0.2031	0.1777	Ave		0.2011				12.0		15.0			
Hexachlorobenzene	0.2568 0.1852	0.2391	0.2360	0.2241	0.1939	Ave		0.2225				12.0		15.0			
Pentachlorophenol	0.1204 0.1273	0.1234	0.1371	0.1418	0.1305	Ave		0.1301				6.3		15.0			
Phenanthrene	1.2448 0.6690	1.1322	1.0503	0.9447	0.7575	Qua	1.1007	1.1607	-0.003						0.9970		0.9900
Anthracene	1.1677 0.6865	1.1455	1.0758	0.9649	0.7646	Qua	0.9292	1.1810	-0.003						0.9960		0.9900

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Carbazole	1.0443 0.6578	1.0192	0.9752	0.8819	0.7255	Qua	0.5719	1.0644	-0.003						0.9970		0.9900
Di-n-butyl phthalate	1.0808 +++++	1.1501	1.1099	0.9929	0.7858	Ave		1.0239				14.0		15.0			
Fluoranthene	1.2263 0.7293	1.2205	1.1451	1.0253	0.8139	Qua	0.9338	1.2584	-0.003						0.9960		0.9900
Benzidine	0.4660 0.5757	0.6176	0.6950	0.6961	0.6263	Ave		0.6128				14.0		15.0			
Pyrene	1.2355 0.8386	1.1788	1.1693	1.1003	0.9060	Ave		1.0714				15.0		15.0			
3,3'-Dimethylbenzidine	0.4995 0.4205	0.6710	0.6611	0.6012	0.4908	Qua	-1.154	0.7858	-0.002						0.9990		0.9900
Butyl benzyl phthalate	0.4099 0.3720	0.4731	0.5177	0.4873	0.4046	Ave		0.4441				13.0		15.0			
3,3'-Dichlorobenzidine	0.3431 0.4116	0.4167	0.4679	0.4788	0.4309	Ave		0.4248				11.0		15.0			
Benz(a)anthracene	1.1987 0.8114	1.1659	1.1530	1.0668	0.8811	Qua	0.0591	1.2690	-0.003						0.9970		0.9900
Bis(2-ethylhexyl) phthalate	0.5996 0.4715	0.6495	0.6880	0.6433	0.5170	Ave		0.5948				14.0		15.0			
Chrysene	1.2434 0.8449	1.2029	1.1390	1.1168	0.9265	Ave		1.0789				15.0		15.0			
Di-n-octyl phthalate	0.7237 0.9575	0.9859	1.2017	1.2370	1.0509	Qua	-6.289	1.5255	-0.003						0.9970		0.9900
Benzo(b)fluoranthene	0.9697 0.7859	0.9669	1.0354	1.0404	0.8142	Ave		0.9354				12.0		15.0			
Benzo(k)fluoranthene	1.1462 0.7860	1.2118	1.1740	1.0441	0.8999	Qua	-0.335	1.3134	-0.003						0.9990		0.9900
Benzo(a)pyrene	0.8196 0.7027	0.8853	0.9420	0.9031	0.7705	Ave		0.8372				11.0		15.0			
Indeno(1,2,3-cd)pyrene	0.9818 0.9424	1.0407	1.1407	1.1141	0.9685	Ave		1.0314				7.9		15.0			
Dibenz(a,h)anthracene	0.8857 0.7702	0.9468	1.0322	0.9928	0.8223	Ave		0.9083				11.0		15.0			
Benzo(ghi)perylene	0.9078 0.8312	0.8621	0.9272	0.9306	0.8406	Ave		0.8832				5.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-43924/2	X1680.D
Level 2	IC 480-43924/3	X1681.D
Level 3	ICIS 480-43924/4	X1682.D
Level 4	IC 480-43924/5	X1683.D
Level 5	IC 480-43924/6	X1686.D
Level 6	IC 480-43924/7	X1685.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
N-Nitrosodimethylamine	DCB	Ave	32691 936034	119841	298689	477756	692638	5.00 160	20.0	50.0	80.0	120
Pyridine	DCB	Ave	39570 1519484	172839	441927	723721	1112243	5.00 160	20.0	50.0	80.0	120
Phenol	DCB	Ave	82587 2426960	303141	760083	1213124	1835463	5.00 160	20.0	50.0	80.0	120
Aniline	DCB	Ave	101598 3172947	376776	948134	1511125	2344367	5.00 160	20.0	50.0	80.0	120
Bis(2-chloroethyl)ether	DCB	Ave	68811 1918641	250965	616799	980137	1461443	5.00 160	20.0	50.0	80.0	120
2-Chlorophenol	DCB	Ave	65222 2013723	244625	618593	999487	1525415	5.00 160	20.0	50.0	80.0	120
1,3-Dichlorobenzene	DCB	Ave	73999 2050157	266407	658535	1048660	1557046	5.00 160	20.0	50.0	80.0	120
1,4-Dichlorobenzene	DCB	Ave	74382 2054815	265908	665532	1053949	1577520	5.00 160	20.0	50.0	80.0	120
Benzyl alcohol	DCB	Ave	39224 1168029	155748	392042	629512	922563	5.00 160	20.0	50.0	80.0	120
1,2-Dichlorobenzene	DCB	Ave	70784 1919548	253840	631896	1010561	1490227	5.00 160	20.0	50.0	80.0	120
2-Methylphenol	DCB	Ave	57500 1730343	214556	539890	865484	1306949	5.00 160	20.0	50.0	80.0	120
bis (2-chloroisopropyl) ether	DCB	Ave	88323 2323750	316510	779966	1218877	1758596	5.00 160	20.0	50.0	80.0	120
4-Methylphenol	DCB	Ave	57157 1619508	221210	555769	880827	1260230	5.00 160	20.0	50.0	80.0	120
N-Nitrosodi-n-propylamine	DCB	Ave	44051 1265086	166900	420721	664883	956641	5.00 160	20.0	50.0	80.0	120
Hexachloroethane	DCB	Ave	25660 743565	95212	237978	381231	568734	5.00 160	20.0	50.0	80.0	120
Nitrobenzene	NPT	Ave	61251 1874945	235191	604223	964130	1420849	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Isophorone	NPT	Ave	111137 3295784	423011	1070723	1707010	2484477	5.00 160	20.0	50.0	80.0	120
2-Nitrophenol	NPT	Ave	22614 1066483	100585	286499	492152	792516	5.00 160	20.0	50.0	80.0	120
2,4-Dimethylphenol	NPT	Ave	58224 1729476	224634	563404	896709	1317689	5.00 160	20.0	50.0	80.0	120
Tetraethyl lead	NPT	Ave	25500 692583	94438	238916	373105	550764	5.00 160	20.0	50.0	80.0	120
Bis(2-chloroethoxy)methane	NPT	Ave	80807 2026298	282728	683939	1082111	1546771	5.00 160	20.0	50.0	80.0	120
Benzoic acid	NPT	Ave	656489 4721122	804468	1100606	1979961	3362500	100 480	120	150	240	360
2,4-Dichlorophenol	NPT	Ave	51714 1472880	193367	489524	768222	1118009	5.00 160	20.0	50.0	80.0	120
1,2,4-Trichlorobenzene	NPT	Ave	61616 1654559	221953	548630	865875	1261495	5.00 160	20.0	50.0	80.0	120
Naphthalene	NPT	Qua	194930 4267256	692401	1656774	2520795	3436114	5.00 160	20.0	50.0	80.0	120
4-Chloroaniline	NPT	Ave	78166 2211092	295679	739834	1177957	1702315	5.00 160	20.0	50.0	80.0	120
Hexachlorobutadiene	NPT	Ave	32647 899633	117560	296391	465158	691006	5.00 160	20.0	50.0	80.0	120
4-Chloro-3-methylphenol	NPT	Ave	48296 1435540	186318	467882	746903	1099882	5.00 160	20.0	50.0	80.0	120
2-Methylnaphthalene	NPT	Qua	123588 2860769	452226	1086312	1664685	2285869	5.00 160	20.0	50.0	80.0	120
Hexachlorocyclopentadiene	ANT	Ave	29294 1098123	121379	331025	551662	827769	5.00 160	20.0	50.0	80.0	120
2,4,6-Trichlorophenol	ANT	Ave	33637 1110224	134971	344596	561661	845081	5.00 160	20.0	50.0	80.0	120
2,4,5-Trichlorophenol	ANT	Ave	36671 1166502	143400	384781	624690	910123	5.00 160	20.0	50.0	80.0	120
2-Chloronaphthalene	ANT	Ave	115641 2795622	421699	1034589	1575575	2204034	5.00 160	20.0	50.0	80.0	120
2-Nitroaniline	ANT	Ave	22478 918870	103171	279745	461091	681064	5.00 160	20.0	50.0	80.0	120
Dimethyl phthalate	ANT	Ave	126046 3358935	467703	1156503	1802043	2556352	5.00 160	20.0	50.0	80.0	120
2,6-Dinitrotoluene	ANT	Ave	19548 892277	93471	261728	435487	668056	5.00 160	20.0	50.0	80.0	120
Acenaphthylene	ANT	Ave	172487 4089876	661309	1592570	2421874	3269778	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
3-Nitroaniline	ANT	Ave	23768 1017104	112971	309455	506062	753262	5.00 160	20.0	50.0	80.0	120
Acenaphthene	ANT	Qua	113761 2591593	410837	978354	1470816	2033157	5.00 160	20.0	50.0	80.0	120
2,4-Dinitrophenol	ANT	Qua	4100 436671	11579	61659	142914	307413	10.0 160	20.0	50.0	80.0	120
4-Nitrophenol	ANT	Ave	22930 503002	49767	140845	238580	371552	10.0 160	20.0	50.0	80.0	120
Dibenzofuran	ANT	Qua	165413 3357636	582801	1352157	1988663	2676989	5.00 160	20.0	50.0	80.0	120
2,4-Dinitrotoluene	ANT	Ave	25340 1081132	121550	335060	537047	791211	5.00 160	20.0	50.0	80.0	120
Diethyl phthalate	ANT	Ave	121668 2929177	448655	1101227	1671340	2310051	5.00 160	20.0	50.0	80.0	120
Fluorene	ANT	Qua	131751 2655883	477680	1109693	1624138	2127514	5.00 160	20.0	50.0	80.0	120
4-Chlorophenyl phenyl ether	ANT	Qua	68689 1468234	244686	575820	857704	1151080	5.00 160	20.0	50.0	80.0	120
4-Nitroaniline	ANT	Ave	25684 1033243	112297	309612	516327	761051	5.00 160	20.0	50.0	80.0	120
4,6-Dinitro-2-methylphenol	PHN	Lin1	15388 727415	43404	167268	316454	529838	10.0 160	20.0	50.0	80.0	120
N-Nitrosodiphenylamine	PHN	Ave	87642 2223597	334406	814669	1250868	1764669	5.00 160	20.0	50.0	80.0	120
1,2-Diphenylhydrazine	ANT	Qua	123410 2664917	452838	1086708	1622960	2119018	5.00 160	20.0	50.0	80.0	120
4-Bromophenyl phenyl ether	PHN	Ave	37242 1013020	139347	349298	538830	771729	5.00 160	20.0	50.0	80.0	120
Hexachlorobenzene	PHN	Ave	42626 1122273	153885	378511	594517	842146	5.00 160	20.0	50.0	80.0	120
Pentachlorophenol	PHN	Ave	39960 771116	79415	219953	376094	566816	10.0 160	20.0	50.0	80.0	120
Phenanthrene	PHN	Qua	206618 4053050	728532	1684359	2505726	3289200	5.00 160	20.0	50.0	80.0	120
Anthracene	PHN	Qua	193819 4159378	737116	1725360	2559500	3320053	5.00 160	20.0	50.0	80.0	120
Carbazole	PHN	Qua	173334 3985471	655826	1563994	2339114	3150063	5.00 160	20.0	50.0	80.0	120
Di-n-butyl phthalate	PHN	Ave	179400 +++++	740072	1780019	2633565	3411928	5.00 +++++	20.0	50.0	80.0	120
Fluoranthene	PHN	Qua	203545 4418762	785367	1836527	2719510	3533988	5.00 160	20.0	50.0	80.0	120

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 43924

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/10/2011 14:13 Calibration End Date: 12/10/2011 16:31 Calibration ID: 5323

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Benzidine	CRY	Ave	82124 3058052	429631	1130135	1764534	2496536	5.00 160	20.0	50.0	80.0	120
Pyrene	CRY	Ave	217723 4454428	820001	1901341	2789376	3611437	5.00 160	20.0	50.0	80.0	120
3,3'-Dimethylbenzidine	PHN	Qua	82910 2547840	431779	1060229	1594658	2131002	5.00 160	20.0	50.0	80.0	120
Butyl benzyl phthalate	CRY	Ave	72229 1976087	329114	841892	1235244	1612745	5.00 160	20.0	50.0	80.0	120
3,3'-Dichlorobenzidine	CRY	Ave	60457 2186358	289870	760792	1213758	1717779	5.00 160	20.0	50.0	80.0	120
Benz(a)anthracene	CRY	Qua	211225 4309968	811043	1874803	2704482	3511949	5.00 160	20.0	50.0	80.0	120
Bis(2-ethylhexyl) phthalate	CRY	Ave	105667 2504276	451840	1118675	1630829	2060951	5.00 160	20.0	50.0	80.0	120
Chrysene	CRY	Ave	219109 4487648	836824	1852092	2831268	3693116	5.00 160	20.0	50.0	80.0	120
Di-n-octyl phthalate	CRY	Qua	127528 5085947	685870	1954137	3135853	4189064	5.00 160	20.0	50.0	80.0	120
Benzo(b)fluoranthene	PRY	Ave	182238 5890538	732579	1966062	3286630	4404352	5.00 160	20.0	50.0	80.0	120
Benzo(k)fluoranthene	PRY	Qua	215416 5891115	918127	2229303	3298534	4868050	5.00 160	20.0	50.0	80.0	120
Benzo(a)pyrene	PRY	Ave	154036 5266258	670759	1788629	2852976	4167950	5.00 160	20.0	50.0	80.0	120
Indeno(1,2,3-cd)pyrene	PRY	Ave	184511 7063107	788465	2165948	3519560	5239184	5.00 160	20.0	50.0	80.0	120
Dibenz(a,h)anthracene	PRY	Ave	166454 5772396	717302	1960047	3136351	4448199	5.00 160	20.0	50.0	80.0	120
Benzo(ghi)perylene	PRY	Ave	170598 6229605	653199	1760562	2939934	4547304	5.00 160	20.0	50.0	80.0	120

Curve Type Legend:

Ave = Average ISTD
Lin1 = Linear 1/conc ISTD
Qua = Quadratic ISTD

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1680.D
Lims ID: IC - 5 PT
Client ID:
Inject. Date: 10-Dec-2011 14:13:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 1
Sample ID: 480-0008136-002
Misc. Info.:
Operator: RMM
Instrument ID: HP5973X
Vol. Injected: 1.0000
ALS Bottle#: 2
Lims Batch ID: 43924
Lims Sample ID: 2
Sublist: chrom-X-8270*sub35
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X-8270.m
Last Update: 13-Dec-2011 09:20:42
Calib Date: 11-Dec-2011 00:07:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1706.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 12-Dec-2011 10:31:50

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.001	94	359734	40.0	
* 2 Naphthalene-d8	136	7.583	7.588	-0.005	93	1421714	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	44	782333	40.0	
* 4 Phenanthrene-d10	188	11.243	11.242	0.001	99	1327889	40.0	
* 5 Chrysene-d12	240	13.641	13.646	-0.005	98	1409743	40.0	
* 6 Perylene-d12	264	14.886	14.891	-0.005	98	1503466	40.0	
55 N-Nitrosodimethylamine	42	2.951	2.946	0.005	80	32691	5.49	
56 Pyridine	52	3.021	3.005	0.016	85	39570	4.52	
63 Phenol	94	5.671	5.676	-0.005	78	82587	5.42	
64 Aniline	93	5.713	5.713	0.0	86	101598	5.30	
66 Bis(2-chloroethyl)ether	93	5.788	5.793	-0.005	82	68811	5.56	
67 2-Chlorophenol	128	5.842	5.847	-0.005	94	65222	5.25	
69 1,3-Dichlorobenzene	146	6.023	6.028	-0.005	95	73999	5.59	
70 1,4-Dichlorobenzene	146	6.114	6.114	0.0	59	74382	5.59	
71 Benzyl alcohol	108	6.264	6.263	0.001	89	39224	5.13	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	65	70784	5.60	
73 2-Methylphenol	108	6.386	6.392	-0.006	95	57500	5.32	
74 2,2'-oxybis[1-chloropropane]	45	6.419	6.429	-0.010	65	88323	5.72	
79 4-Methylphenol	108	6.568	6.573	-0.005	94	57157	5.30	
78 N-Nitrosodi-n-propylamine	70	6.573	6.579	-0.006	80	44051	5.36	
81 Hexachloroethane	117	6.686	6.685	0.001	91	25660	5.40	
83 Nitrobenzene	77	6.766	6.771	-0.005	94	61251	5.21	
86 Isophorone	82	7.054	7.059	-0.005	96	111137	5.31	
87 2-Nitrophenol	139	7.140	7.145	-0.005	81	22614	4.00	
89 2,4-Dimethylphenol	107	7.199	7.204	-0.006	93	58224	5.28	
90 Tetraethyl lead	237	7.236	7.241	-0.005	52	25500	5.51	
94 Bis(2-chloroethoxy)methane	93	7.316	7.321	-0.005	95	80807	5.92	
95 Benzoic acid	105	7.364	7.385	-0.021	59	656489	84.1	
97 2,4-Dichlorophenol	162	7.418	7.423	-0.005	91	51714	5.44	
98 1,2,4-Trichlorobenzene	180	7.519	7.519	0.0	93	61616	5.68	

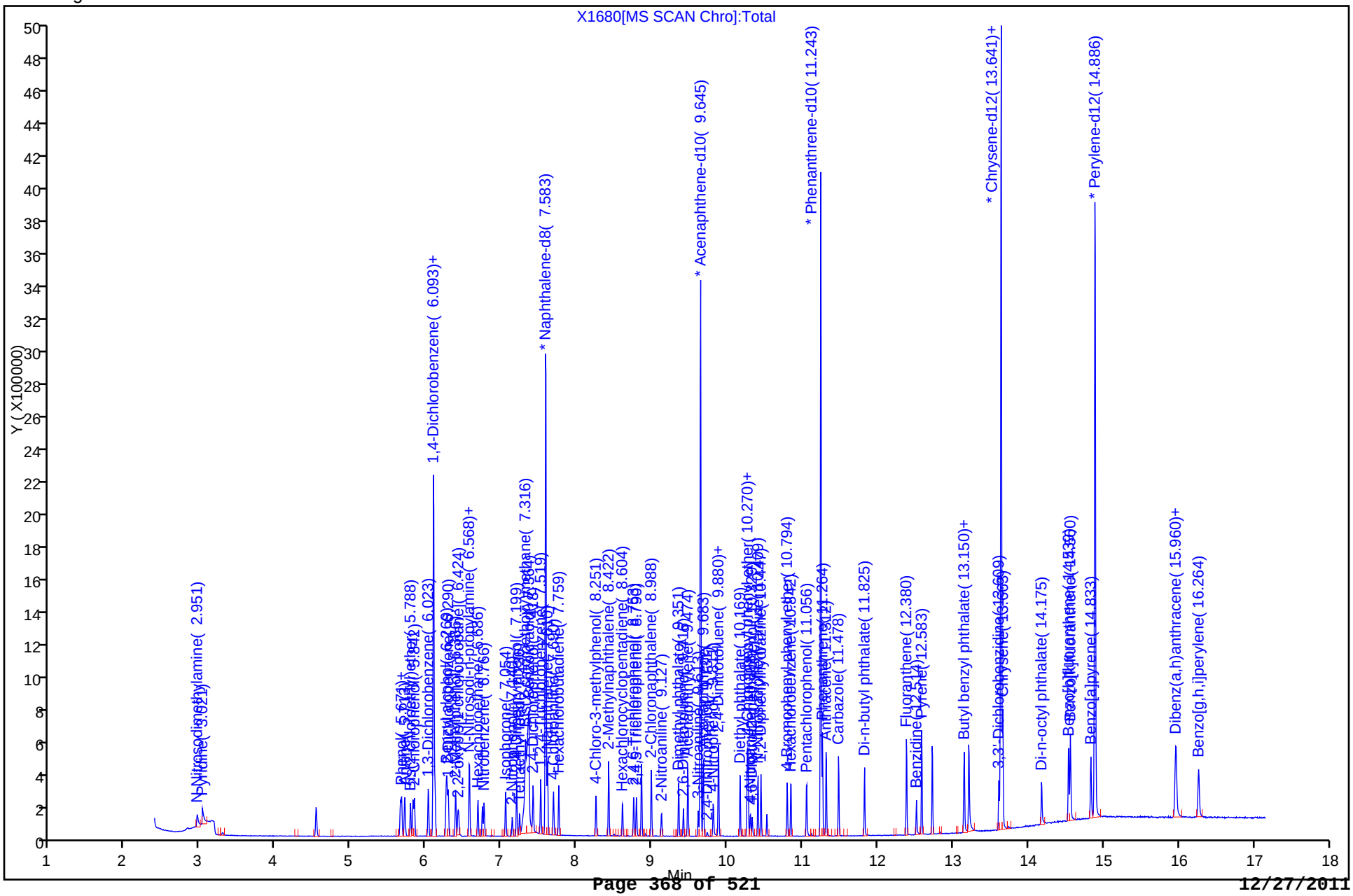
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
99 Naphthalene	128	7.610	7.610	0.0	79	194930	4.76	
101 4-Chloroaniline	127	7.690	7.690	0.0	97	78166	5.41	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	32647	5.60	
110 4-Chloro-3-methylphenol	107	8.251	8.256	-0.005	92	48296	5.27	
113 2-Methylnaphthalene	142	8.422	8.427	-0.005	94	123588	4.75	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	87	29294	4.51	
118 2,4,6-Trichlorophenol	196	8.753	8.758	-0.005	91	33637	4.90	
119 2,4,5-Trichlorophenol	196	8.790	8.790	0.0	93	36671	4.93	
124 2-Chloronaphthalene	162	8.988	8.993	-0.005	98	115641	5.77	
125 2-Nitroaniline	65	9.127	9.127	0.0	87	22478	4.18	
128 Dimethyl phthalate	163	9.351	9.357	-0.006	98	126046	5.56	
130 2,6-Dinitrotoluene	165	9.416	9.421	-0.005	26	19548	3.89	
131 Acenaphthylene	152	9.474	9.479	-0.005	98	172487	5.68	
132 3-Nitroaniline	138	9.613	9.618	-0.005	93	23768	4.04	
133 Acenaphthene	153	9.683	9.682	0.001	97	113761	4.42	
134 2,4-Dinitrophenol	184	9.731	9.736	-0.005	46	4100	14.7	
135 4-Nitrophenol	109	9.811	9.821	-0.010	83	22930	8.25	
138 Dibenzofuran	168	9.880	9.885	-0.005	95	165413	4.16	
137 2,4-Dinitrotoluene	165	9.886	9.891	-0.005	52	25340	4.03	
142 Diethyl phthalate	149	10.169	10.174	-0.005	99	121668	5.75	
144 Fluorene	166	10.265	10.270	-0.005	98	131751	4.05	
145 4-Chlorophenyl phenyl ether	204	10.276	10.281	-0.005	96	68689	4.19	
147 4-Nitroaniline	138	10.308	10.313	-0.005	84	25684	4.28	
148 4,6-Dinitro-2-methylphenol	198	10.329	10.340	-0.011	91	15388	11.0	
149 N-Nitrosodiphenylamine	169	10.409	10.409	0.0	96	87642	5.66	
152 1,2-Diphenylhydrazine	77	10.447	10.452	-0.005	98	123410	4.39	
159 4-Bromophenyl phenyl ether	248	10.794	10.799	-0.005	93	37242	5.58	
160 Hexachlorobenzene	284	10.847	10.847	0.0	89	42626	5.77	
165 Pentachlorophenol	266	11.056	11.055	0.001	92	39960	9.25	
171 Phenanthrene	178	11.264	11.269	-0.005	95	206618	4.47	
172 Anthracene	178	11.312	11.317	-0.005	98	193819	4.20	
173 Carbazole	167	11.478	11.483	-0.005	99	173334	4.42	
176 Di-n-butyl phthalate	149	11.825	11.825	0.0	99	179400	5.28	
182 Fluoranthene	202	12.380	12.386	-0.006	98	203545	4.18	
183 Benzidine	184	12.514	12.519	-0.005	98	82124	3.92	
185 Pyrene	202	12.583	12.589	-0.006	98	217723	5.77	
191 3,3'-Dimethylbenzidine	212	13.144	13.144	0.0	98	82910	4.17	
192 Butyl benzyl phthalate	149	13.150	13.155	-0.005	99	72229	4.61	
196 3,3'-Dichlorobenzidine	252	13.609	13.614	-0.005	41	60457	4.18	
197 Benzo[a]anthracene	228	13.631	13.630	0.001	36	211225	4.73	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	38	105667	5.04	
199 Chrysene	228	13.663	13.668	-0.005	95	219109	5.76	
201 Di-n-octyl phthalate	149	14.175	14.181	-0.006	99	127528	6.59	
203 Benzo[b]fluoranthene	252	14.539	14.544	-0.005	98	182238	5.18	
204 Benzo[k]fluoranthene	252	14.560	14.571	-0.011	97	215416	4.67	
206 Benzo[a]pyrene	252	14.833	14.838	-0.005	96	154036	4.90	
208 Indeno[1,2,3-cd]pyrene	276	15.960	15.965	-0.005	86	184511	4.76	
209 Dibenz(a,h)anthracene	278	15.965	15.976	-0.011	87	166454	4.88	
210 Benzo[g,h,i]perylene	276	16.264	16.280	-0.016	98	170598	5.14	
S 214 3-Methylphenol	1				0		5.30	
S 213 Total Cresols	1				0		10.6	
S 212 3 & 4 Methylphenol	108				0		5.30	

Report Date: 13-Dec-2011 09:20:42 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1680.D

Injection Date:	10-Dec-2011 14:13:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43924	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1681.D
Lims ID: IC - 20 PT
Client ID:
Inject. Date: 10-Dec-2011 14:36:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 2
Sample ID: 480-0008136-003
Misc. Info.:
Operator: RMM
Instrument ID: HP5973X
Vol. Injected: 1.0000
ALS Bottle#: 3
Lims Batch ID: 43924
Lims Sample ID: 3
Sublist: chrom-X-8270*sub35
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X-8270.m
Last Update: 13-Dec-2011 09:20:38
Calib Date: 11-Dec-2011 00:07:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1706.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 12-Dec-2011 10:29:38

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.001	94	344801	40.0	
* 2 Naphthalene-d8	136	7.589	7.588	0.0	93	1367689	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	35	749793	40.0	
* 4 Phenanthrene-d10	188	11.243	11.242	0.001	99	1286949	40.0	
* 5 Chrysene-d12	240	13.641	13.646	-0.005	97	1391306	40.0	
* 6 Perylene-d12	264	14.891	14.891	0.0	99	1515284	40.0	
55 N-Nitrosodimethylamine	42	2.946	2.946	0.0	79	119841	21.0	
56 Pyridine	52	3.010	3.005	0.005	86	172839	20.6	
63 Phenol	94	5.671	5.676	-0.005	80	303141	20.7	
64 Aniline	93	5.713	5.713	0.0	86	376776	20.5	
66 Bis(2-chloroethyl)ether	93	5.788	5.793	-0.005	83	250965	21.1	
67 2-Chlorophenol	128	5.842	5.847	-0.005	99	244625	20.5	
69 1,3-Dichlorobenzene	146	6.023	6.028	-0.005	96	266407	21.0	
70 1,4-Dichlorobenzene	146	6.114	6.114	0.0	89	265908	20.9	
71 Benzyl alcohol	108	6.264	6.263	0.001	91	155748	21.2	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	81	253840	21.0	
73 2-Methylphenol	108	6.392	6.392	0.0	94	214556	20.7	
74 2,2'-oxybis[1-chloropropane]	45	6.424	6.429	-0.005	65	316510	21.4	
79 4-Methylphenol	108	6.573	6.573	0.0	93	221210	21.4	
78 N-Nitrosodi-n-propylamine	70	6.573	6.579	-0.006	73	166900	21.2	
81 Hexachloroethane	117	6.686	6.685	0.001	93	95212	20.9	
83 Nitrobenzene	77	6.766	6.771	-0.005	88	235191	20.8	
86 Isophorone	82	7.054	7.059	-0.005	96	423011	21.0	
87 2-Nitrophenol	139	7.140	7.145	-0.005	83	100585	18.5	
89 2,4-Dimethylphenol	107	7.199	7.204	-0.005	93	224634	21.2	
90 Tetraethyl lead	237	7.236	7.241	-0.005	53	94438	21.2	
94 Bis(2-chloroethoxy)methane	93	7.316	7.321	-0.005	96	282728	21.5	
95 Benzoic acid	105	7.369	7.385	-0.016	58	804468	107.1	
97 2,4-Dichlorophenol	162	7.418	7.423	-0.005	90	193367	21.1	
98 1,2,4-Trichlorobenzene	180	7.519	7.519	0.0	93	221953	21.3	

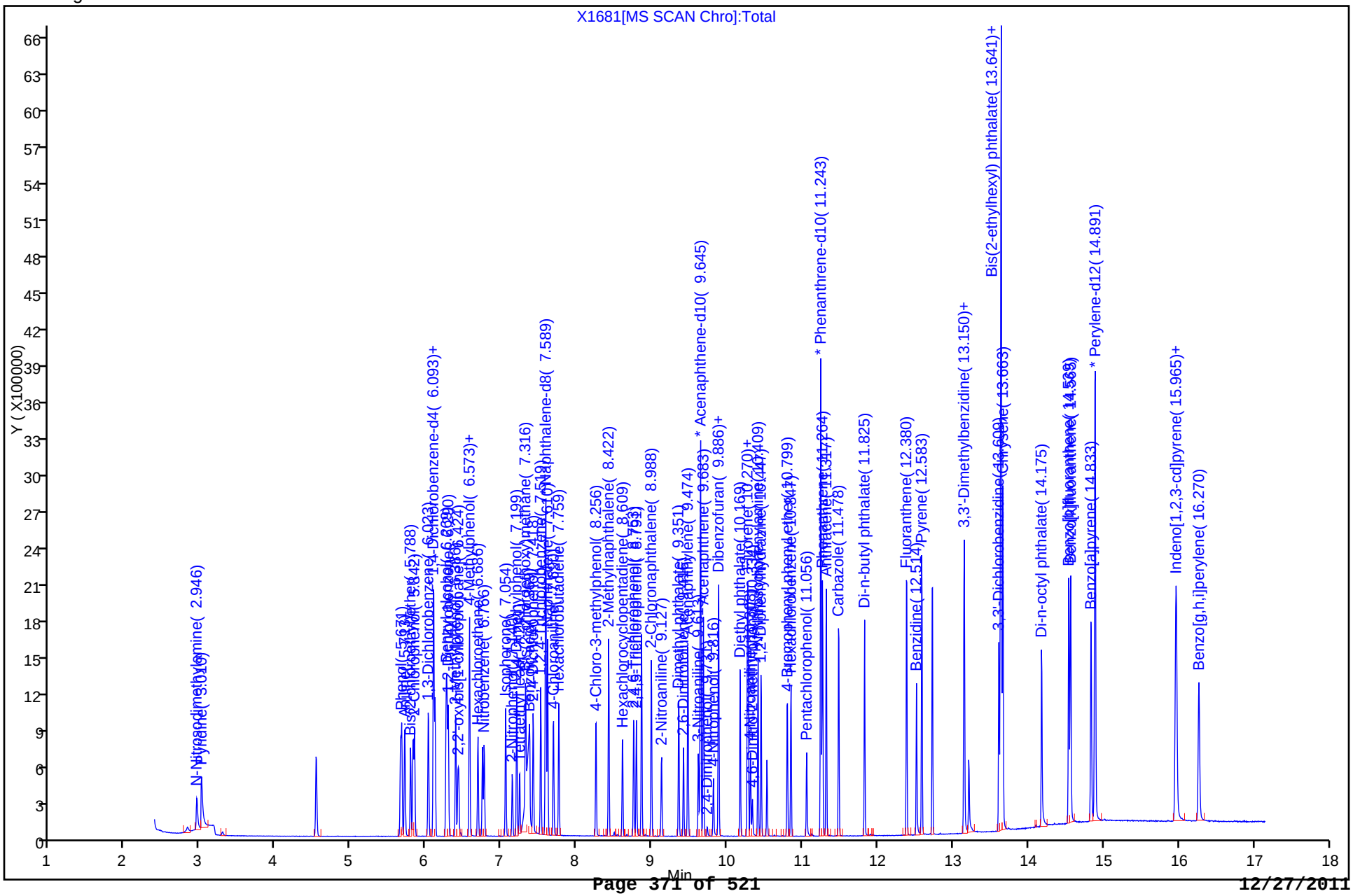
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
99 Naphthalene	128	7.610	7.610	0.0	90	692401	19.3	
101 4-Chloroaniline	127	7.690	7.690	0.0	97	295679	21.3	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	117560	20.9	
110 4-Chloro-3-methylphenol	107	8.256	8.256	0.0	91	186318	21.1	
113 2-Methylnaphthalene	142	8.422	8.427	-0.005	94	452226	19.3	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	121379	19.5	
118 2,4,6-Trichlorophenol	196	8.753	8.758	-0.005	95	134971	20.5	
119 2,4,5-Trichlorophenol	196	8.791	8.790	0.0	96	143400	20.1	
124 2-Chloronaphthalene	162	8.988	8.993	-0.005	98	421699	22.0	
125 2-Nitroaniline	65	9.127	9.127	0.0	86	103171	20.0	
128 Dimethyl phthalate	163	9.357	9.357	0.0	96	467703	21.5	
130 2,6-Dinitrotoluene	165	9.416	9.421	-0.005	27	93471	19.4	
131 Acenaphthylene	152	9.474	9.479	-0.005	97	661309	22.7	
132 3-Nitroaniline	138	9.613	9.618	-0.005	93	112971	20.0	
133 Acenaphthene	153	9.683	9.682	0.001	99	410837	19.7	
134 2,4-Dinitrophenol	184	9.736	9.736	0.0	69	11579	19.0	
135 4-Nitrophenol	109	9.816	9.821	-0.005	81	49767	18.7	
138 Dibenzofuran	168	9.886	9.885	0.001	94	582801	19.9	
137 2,4-Dinitrotoluene	165	9.886	9.891	-0.005	58	121550	20.2	
142 Diethyl phthalate	149	10.169	10.174	-0.005	99	448655	22.1	
144 Fluorene	166	10.265	10.270	-0.005	98	477680	19.8	
145 4-Chlorophenyl phenyl ether	204	10.276	10.281	-0.005	96	244686	19.7	
147 4-Nitroaniline	138	10.308	10.313	-0.005	81	112297	19.5	
148 4,6-Dinitro-2-methylphenol	198	10.334	10.340	-0.006	85	43404	18.0	
149 N-Nitrosodiphenylamine	169	10.409	10.409	0.0	97	334406	22.3	
152 1,2-Diphenylhydrazine	77	10.447	10.452	-0.005	98	452838	19.4	
159 4-Bromophenyl phenyl ether	248	10.799	10.799	0.0	91	139347	21.5	
160 Hexachlorobenzene	284	10.847	10.847	0.0	95	153885	21.5	
165 Pentachlorophenol	266	11.056	11.055	0.001	93	79415	19.0	
171 Phenanthrene	178	11.264	11.269	-0.005	99	728532	19.6	
172 Anthracene	178	11.317	11.317	0.0	99	737116	19.7	
173 Carbazole	167	11.483	11.483	0.0	99	655826	19.6	
176 Di-n-butyl phthalate	149	11.825	11.825	0.0	99	740072	22.5	
182 Fluoranthene	202	12.386	12.386	0.0	98	785367	19.7	
183 Benzidine	184	12.514	12.519	-0.005	100	429631	19.8	
185 Pyrene	202	12.583	12.589	-0.006	98	820001	22.0	
191 3,3'-Dimethylbenzidine	212	13.144	13.144	0.0	99	431779	21.1	
192 Butyl benzyl phthalate	149	13.150	13.155	-0.005	99	329114	21.3	
196 3,3'-Dichlorobenzidine	252	13.609	13.614	-0.005	56	289870	19.7	
197 Benzo[a]anthracene	228	13.631	13.630	0.001	53	811043	19.2	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	59	451840	21.8	
199 Chrysene	228	13.663	13.668	-0.005	98	836824	22.3	
201 Di-n-octyl phthalate	149	14.175	14.181	-0.006	99	685870	17.7	
203 Benzo[b]fluoranthene	252	14.539	14.544	-0.005	97	732579	20.7	
204 Benzo[k]fluoranthene	252	14.565	14.571	-0.006	96	918127	19.7	
206 Benzo[a]pyrene	252	14.833	14.838	-0.005	98	670759	21.1	
208 Indeno[1,2,3-cd]pyrene	276	15.960	15.965	-0.005	94	788465	20.2	
209 Dibenz(a,h)anthracene	278	15.970	15.976	-0.006	92	717302	20.8	
210 Benzo[g,h,i]perylene	276	16.270	16.280	-0.010	98	653199	19.5	
S 214 3-Methylphenol	1				0		21.4	
S 213 Total Cresols	1				0		42.1	
S 212 3 & 4 Methylphenol	108				0		21.4	

Report Date: 13-Dec-2011 09:20:39 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1681.D

Injection Date:	10-Dec-2011 14:36:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43924	Lims Sample ID:	3
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1682.D
Lims ID: ICIS - 50 PT
Client ID:
Inject. Date: 10-Dec-2011 14:59:30
Dil. Factor: 1.0000
Sample Type: ICIS
Calib Level: 3
Sample ID: 480-0008136-004
Misc. Info.:
Operator: RMM
Instrument ID: HP5973X
Vol. Injected: 1.0000
ALS Bottle#: 4
Lims Batch ID: 43924
Lims Sample ID: 4
Sublist: chrom-X-8270*sub35
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X-8270.m
Last Update: 13-Dec-2011 09:20:35
Calib Date: 11-Dec-2011 00:07:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1706.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 13-Dec-2011 09:20:35

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.0	94	339256	40.0	
* 2 Naphthalene-d8	136	7.588	7.588	0.0	93	1355634	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	18	750510	40.0	
* 4 Phenanthrene-d10	188	11.242	11.242	0.0	98	1283000	40.0	
* 5 Chrysene-d12	240	13.646	13.646	0.0	95	1300861	40.0	
* 6 Perylene-d12	264	14.891	14.891	0.0	98	1519081	40.0	
55 N-Nitrosodimethylamine	42	2.946	2.946	0.0	77	298689	53.2	
56 Pyridine	52	3.005	3.005	0.0	85	441927	53.5	
63 Phenol	94	5.676	5.676	0.0	79	760083	52.9	
64 Aniline	93	5.713	5.713	0.0	54	948134	52.5	
66 Bis(2-chloroethyl)ether	93	5.793	5.793	0.0	81	616799	52.8	
67 2-Chlorophenol	128	5.847	5.847	0.0	98	618593	52.8	
69 1,3-Dichlorobenzene	146	6.028	6.028	0.0	94	658535	52.8	
70 1,4-Dichlorobenzene	146	6.114	6.114	0.0	96	665532	53.0	
71 Benzyl alcohol	108	6.263	6.263	0.0	92	392042	54.4	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	81	631896	53.0	
73 2-Methylphenol	108	6.392	6.392	0.0	94	539890	53.0	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	91	779966	53.5	
79 4-Methylphenol	108	6.573	6.573	0.0	93	555769	54.7	
78 N-Nitrosodi-n-propylamine	70	6.579	6.579	0.0	74	420721	54.3	
81 Hexachloroethane	117	6.685	6.685	0.0	94	237978	53.1	
83 Nitrobenzene	77	6.771	6.771	0.0	88	604223	53.9	
86 Isophorone	82	7.059	7.059	0.0	96	1070723	53.7	
87 2-Nitrophenol	139	7.145	7.145	0.0	80	286499	53.1	
89 2,4-Dimethylphenol	107	7.204	7.204	0.0	91	563404	53.6	
90 Tetraethyl lead	237	7.241	7.241	0.0	50	238916	54.1	
94 Bis(2-chloroethoxy)methane	93	7.321	7.321	0.0	95	683939	52.5	
95 Benzoic acid	105	7.385	7.385	0.0	58	1100606	147.8	
97 2,4-Dichlorophenol	162	7.423	7.423	0.0	85	489524	54.0	
98 1,2,4-Trichlorobenzene	180	7.519	7.519	0.0	93	548630	53.0	

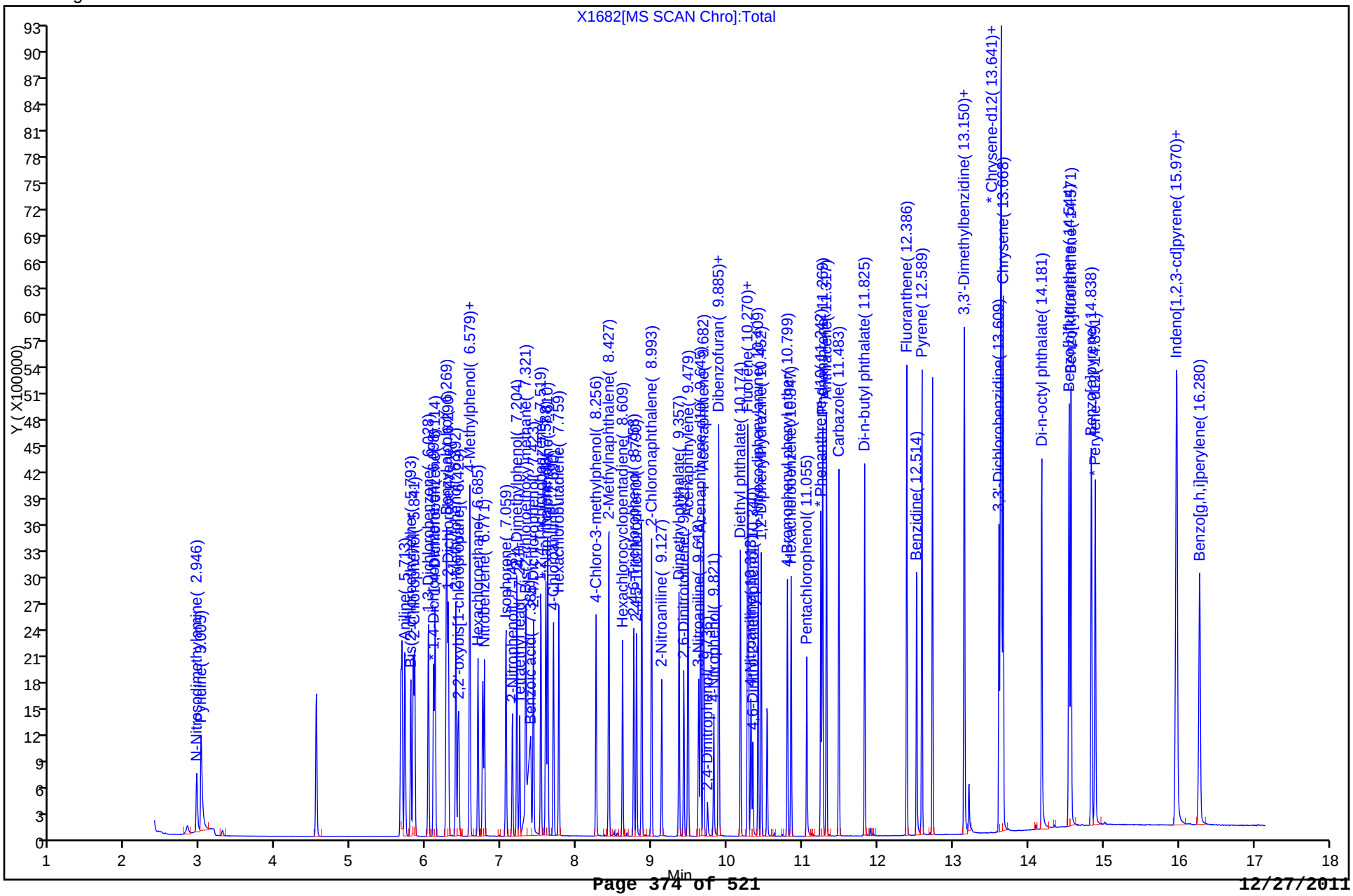
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
99 Naphthalene	128	7.610	7.610	0.0	97	1656774	51.3	
101 4-Chloroaniline	127	7.690	7.690	0.0	97	739834	53.7	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	296391	53.3	
110 4-Chloro-3-methylphenol	107	8.256	8.256	0.0	91	467882	53.6	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	94	1086312	51.2	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	331025	53.1	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	92	344596	52.4	
119 2,4,5-Trichlorophenol	196	8.790	8.790	0.0	96	384781	53.9	
124 2-Chloronaphthalene	162	8.993	8.993	0.0	98	1034589	53.8	
125 2-Nitroaniline	65	9.127	9.127	0.0	88	279745	54.3	
128 Dimethyl phthalate	163	9.357	9.357	0.0	97	1156503	53.1	
130 2,6-Dinitrotoluene	165	9.421	9.421	0.0	37	261728	54.2	
131 Acenaphthylene	152	9.479	9.479	0.0	97	1592570	54.6	
132 3-Nitroaniline	138	9.618	9.618	0.0	92	309455	54.8	
133 Acenaphthene	153	9.682	9.682	0.0	99	978354	51.6	
134 2,4-Dinitrophenol	184	9.736	9.736	0.0	85	61659	44.5	
135 4-Nitrophenol	109	9.821	9.821	0.0	81	140845	52.8	
138 Dibenzofuran	168	9.885	9.885	0.0	95	1352157	52.1	
137 2,4-Dinitrotoluene	165	9.891	9.891	0.0	66	335060	55.6	
142 Diethyl phthalate	149	10.174	10.174	0.0	99	1101227	54.2	
144 Fluorene	166	10.270	10.270	0.0	99	1109693	52.3	
145 4-Chlorophenyl phenyl ether	204	10.281	10.281	0.0	97	575820	52.0	
147 4-Nitroaniline	138	10.313	10.313	0.0	81	309612	53.8	
148 4,6-Dinitro-2-methylphenol	198	10.340	10.340	0.0	86	167268	48.3	
149 N-Nitrosodiphenylamine	169	10.409	10.409	0.0	97	814669	54.4	
152 1,2-Diphenylhydrazine	77	10.452	10.452	0.0	97	1086708	51.9	
159 4-Bromophenyl phenyl ether	248	10.799	10.799	0.0	92	349298	54.1	
160 Hexachlorobenzene	284	10.847	10.847	0.0	97	378511	53.0	
165 Pentachlorophenol	266	11.055	11.055	0.0	95	219953	52.7	
171 Phenanthrene	178	11.269	11.269	0.0	99	1684359	51.6	
172 Anthracene	178	11.317	11.317	0.0	99	1725360	52.1	
173 Carbazole	167	11.483	11.483	0.0	99	1563994	51.9	
176 Di-n-butyl phthalate	149	11.825	11.825	0.0	99	1780019	54.2	
182 Fluoranthene	202	12.386	12.386	0.0	99	1836527	52.2	
183 Benzidine	184	12.519	12.519	0.0	99	1130135	54.3	
185 Pyrene	202	12.589	12.589	0.0	99	1901341	54.6	
191 3,3'-Dimethylbenzidine	212	13.144	13.144	0.0	99	1060229	50.1	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	97	841892	58.3	
196 3,3'-Dichlorobenzidine	252	13.614	13.614	0.0	72	760792	54.2	
197 Benzo[a]anthracene	228	13.630	13.630	0.0	58	1874803	51.5	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	92	1118675	57.8	
199 Chrysene	228	13.668	13.668	0.0	98	1852092	52.8	
201 Di-n-octyl phthalate	149	14.181	14.181	0.0	100	1954137	48.7	
203 Benzo[b]fluoranthene	252	14.544	14.544	0.0	98	1966062	55.3	
204 Benzo[k]fluoranthene	252	14.571	14.571	0.0	98	2229303	51.7	
206 Benzo[a]pyrene	252	14.838	14.838	0.0	98	1788629	56.3	
208 Indeno[1,2,3-cd]pyrene	276	15.965	15.965	0.0	95	2165948	55.3	
209 Dibenz(a,h)anthracene	278	15.976	15.976	0.0	90	1960047	56.8	
210 Benzo[g,h,i]perylene	276	16.280	16.280	0.0	98	1760562	52.5	
S 214 3-Methylphenol	1				0		54.7	
S 213 Total Cresols	1				0		107.7	
S 212 3 & 4 Methylphenol	108				0		54.7	

Report Date: 13-Dec-2011 09:20:35 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1682.D

Injection Date:	10-Dec-2011 14:59:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43924	Lims Sample ID:	4
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1683.D
Lims ID: IC - 80 PT
Client ID:
Inject. Date: 10-Dec-2011 15:22:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 4
Sample ID: 480-0008136-005
Misc. Info.:
Operator: RMM
Instrument ID: HP5973X
Vol. Injected: 1.0000
ALS Bottle#: 5
Lims Batch ID: 43924
Lims Sample ID: 5
Sublist: chrom-X-8270*sub35
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X-8270.m
Last Update: 13-Dec-2011 09:20:56
Calib Date: 11-Dec-2011 00:07:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1706.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 12-Dec-2011 10:23:43

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.098	6.093	0.006	93	347564	40.0	
* 2 Naphthalene-d8	136	7.588	7.588	0.0	87	1401021	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	18	767395	40.0	
* 4 Phenanthrene-d10	188	11.248	11.242	0.006	99	1326247	40.0	
* 5 Chrysene-d12	240	13.646	13.646	0.0	92	1267524	40.0	
* 6 Perylene-d12	264	14.891	14.891	0.0	98	1579566	40.0	
55 N-Nitrosodimethylamine	42	2.946	2.946	0.0	77	477756	83.0	
56 Pyridine	52	3.005	3.005	0.0	85	723721	85.6	
63 Phenol	94	5.681	5.676	0.005	79	1213124	82.3	
64 Aniline	93	5.719	5.713	0.006	60	1511125	81.6	
66 Bis(2-chloroethyl)ether	93	5.793	5.793	0.0	82	980137	81.9	
67 2-Chlorophenol	128	5.847	5.847	0.0	98	999487	83.2	
69 1,3-Dichlorobenzene	146	6.028	6.028	0.0	94	1048660	82.0	
70 1,4-Dichlorobenzene	146	6.114	6.114	0.0	96	1053949	82.0	
71 Benzyl alcohol	108	6.269	6.263	0.006	88	629512	85.2	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	84	1010561	82.8	
73 2-Methylphenol	108	6.392	6.392	0.0	94	865484	82.9	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	64	1218877	81.7	
79 4-Methylphenol	108	6.579	6.573	0.006	93	880827	84.6	
78 N-Nitrosodi-n-propylamine	70	6.584	6.579	0.005	69	664883	83.8	
81 Hexachloroethane	117	6.685	6.685	0.0	93	381231	83.1	
83 Nitrobenzene	77	6.771	6.771	0.0	91	964130	83.2	
86 Isophorone	82	7.059	7.059	0.0	96	1707010	82.8	
87 2-Nitrophenol	139	7.145	7.145	0.0	79	492152	88.3	
89 2,4-Dimethylphenol	107	7.204	7.204	0.0	91	896709	82.6	
90 Tetraethyl lead	237	7.241	7.241	0.0	51	373105	81.8	
94 Bis(2-chloroethoxy)methane	93	7.321	7.321	0.0	95	1082111	80.4	
95 Benzoic acid	105	7.423	7.385	0.038	59	1979961	257.3	
97 2,4-Dichlorophenol	162	7.428	7.423	0.005	88	768222	81.9	
98 1,2,4-Trichlorobenzene	180	7.524	7.519	0.005	92	865875	81.0	

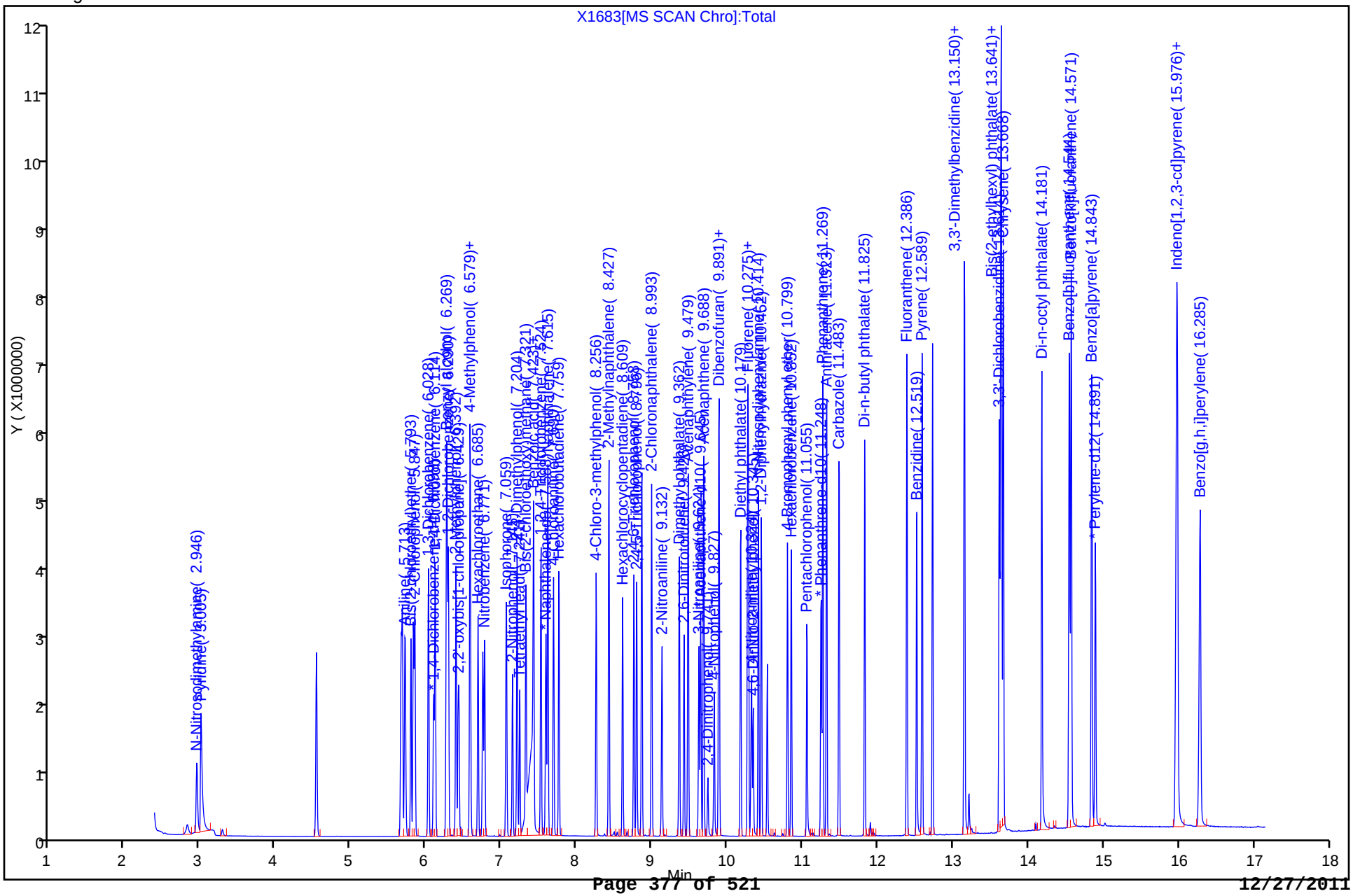
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
99 Naphthalene	128	7.615	7.610	0.005	97	2520795	83.2	
101 4-Chloroaniline	127	7.690	7.690	0.0	97	1177957	82.7	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	465158	80.9	
110 4-Chloro-3-methylphenol	107	8.256	8.256	0.0	91	746903	82.7	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	95	1664685	83.2	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	551662	86.6	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	92	561661	83.5	
119 2,4,5-Trichlorophenol	196	8.796	8.790	0.006	94	624690	85.5	
124 2-Chloronaphthalene	162	8.993	8.993	0.0	98	1575575	80.2	
125 2-Nitroaniline	65	9.132	9.127	0.005	86	461091	87.5	
128 Dimethyl phthalate	163	9.362	9.357	0.005	97	1802043	81.0	
130 2,6-Dinitrotoluene	165	9.426	9.421	0.005	39	435487	88.2	
131 Acenaphthylene	152	9.479	9.479	0.0	97	2421874	81.2	
132 3-Nitroaniline	138	9.624	9.618	0.006	92	506062	87.6	
133 Acenaphthene	153	9.688	9.682	0.006	99	1470816	82.0	
134 2,4-Dinitrophenol	184	9.741	9.736	0.005	81	142914	77.9	
135 4-Nitrophenol	109	9.827	9.821	0.006	80	238580	87.5	
138 Dibenzofuran	168	9.885	9.885	0.0	96	1988663	82.1	
137 2,4-Dinitrotoluene	165	9.891	9.891	0.0	60	537047	87.2	
142 Diethyl phthalate	149	10.179	10.174	0.005	98	1671340	80.5	
144 Fluorene	166	10.270	10.270	0.0	99	1624138	82.8	
145 4-Chlorophenyl phenyl ether	204	10.281	10.281	0.0	97	857704	82.7	
147 4-Nitroaniline	138	10.324	10.313	0.011	82	516327	87.8	
148 4,6-Dinitro-2-methylphenol	198	10.345	10.340	0.005	92	316454	82.3	
149 N-Nitrosodiphenylamine	169	10.414	10.409	0.005	95	1250868	80.8	
152 1,2-Diphenylhydrazine	77	10.452	10.452	0.0	96	1622960	83.6	
159 4-Bromophenyl phenyl ether	248	10.799	10.799	0.0	95	538830	80.8	
160 Hexachlorobenzene	284	10.852	10.847	0.005	95	594517	80.6	
165 Pentachlorophenol	266	11.061	11.055	0.006	92	376094	87.2	
171 Phenanthrene	178	11.269	11.269	0.0	99	2505726	83.0	
172 Anthracene	178	11.323	11.317	0.006	99	2559500	83.5	
173 Carbazole	167	11.488	11.483	0.005	99	2339114	82.5	
176 Di-n-butyl phthalate	149	11.825	11.825	0.0	99	2633565	77.6	
182 Fluoranthene	202	12.386	12.386	0.0	99	2719510	83.3	
183 Benzidine	184	12.519	12.519	0.0	99	1764534	92.2	
185 Pyrene	202	12.589	12.589	0.0	99	2789376	82.2	
191 3,3'-Dimethylbenzidine	212	13.150	13.144	0.006	99	1594658	82.8	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	97	1235244	87.8	
196 3,3'-Dichlorobenzidine	252	13.614	13.614	0.0	72	1213758	91.5	
197 Benzo[a]anthracene	228	13.636	13.630	0.006	59	2704482	83.2	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	93	1630829	86.5	
199 Chrysene	228	13.668	13.668	0.0	98	2831268	82.8	
201 Di-n-octyl phthalate	149	14.181	14.181	0.0	99	3135853	84.6	
203 Benzo[b]fluoranthene	252	14.544	14.544	0.0	96	3286630	89.0	
204 Benzo[k]fluoranthene	252	14.571	14.571	0.0	93	3298534	80.0	
206 Benzo[a]pyrene	252	14.843	14.838	0.005	96	2852976	86.3	
208 Indeno[1,2,3-cd]pyrene	276	15.970	15.965	0.005	91	3519560	86.4	
209 Dibenz(a,h)anthracene	278	15.981	15.976	0.005	90	3136351	87.4	
210 Benzo[g,h,i]perylene	276	16.285	16.280	0.005	97	2939934	84.3	
S 214 3-Methylphenol	1				0		84.6	
S 213 Total Cresols	1				0		167.5	
S 212 3 & 4 Methylphenol	108				0		84.6	

Report Date: 13-Dec-2011 09:20:56 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1683.D

Injection Date:	10-Dec-2011 15:22:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43924	Lims Sample ID:	5
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1686.D
Lims ID: IC - 120 PT
Client ID:
Inject. Date: 10-Dec-2011 16:31:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 5
Sample ID: 480-0008136-006
Misc. Info.:
Operator: RMM
Instrument ID: HP5973X
Vol. Injected: 1.0000
ALS Bottle#: 6
Lims Batch ID: 43924
Lims Sample ID: 6
Sublist: chrom-X-8270*sub35
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X-8270.m
Last Update: 13-Dec-2011 09:21:02
Calib Date: 11-Dec-2011 00:07:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1706.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 12-Dec-2011 10:24:13

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.098	6.093	0.006	93	396454	40.0	
* 2 Naphthalene-d8	136	7.588	7.588	0.0	85	1556452	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	31	828109	40.0	
* 4 Phenanthrene-d10	188	11.248	11.242	0.006	99	1447370	40.0	
* 5 Chrysene-d12	240	13.652	13.646	0.006	91	1328691	40.0	
* 6 Perylene-d12	264	14.891	14.891	0.0	98	1803163	40.0	
55 N-Nitrosodimethylamine	42	2.951	2.946	0.005	73	692638	105.5	
56 Pyridine	52	2.999	3.005	-0.006	84	1112243	115.3	
63 Phenol	94	5.686	5.676	0.010	78	1835463	109.2	
64 Aniline	93	5.719	5.713	0.006	1	2344367	111.0	
66 Bis(2-chloroethyl)ether	93	5.799	5.793	0.006	81	1461443	107.1	
67 2-Chlorophenol	128	5.852	5.847	0.005	97	1525415	111.4	
69 1,3-Dichlorobenzene	146	6.028	6.028	0.0	94	1557046	106.8	
70 1,4-Dichlorobenzene	146	6.119	6.114	0.005	94	1577520	107.6	
71 Benzyl alcohol	108	6.269	6.263	0.006	88	922563	109.5	
72 1,2-Dichlorobenzene	146	6.295	6.290	0.005	85	1490227	107.0	
73 2-Methylphenol	108	6.397	6.392	0.005	94	1306949	109.8	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	64	1758596	103.3	
79 4-Methylphenol	108	6.584	6.573	0.011	93	1260230	106.1	
78 N-Nitrosodi-n-propylamine	70	6.589	6.579	0.010	61	956641	105.7	
81 Hexachloroethane	117	6.685	6.685	0.0	93	568734	108.6	
83 Nitrobenzene	77	6.776	6.771	0.005	90	1420849	110.3	
86 Isophorone	82	7.070	7.059	0.011	96	2484477	108.5	
87 2-Nitrophenol	139	7.145	7.145	0.0	79	792516	128.0	
89 2,4-Dimethylphenol	107	7.209	7.204	0.005	91	1317689	109.2	
90 Tetraethyl lead	237	7.241	7.241	0.0	51	550764	108.6	
94 Bis(2-chloroethoxy)methane	93	7.327	7.321	0.006	94	1546771	103.5	
95 Benzoic acid	105	7.460	7.385	0.075	59	3362500	393.3	
97 2,4-Dichlorophenol	162	7.428	7.423	0.005	93	1118009	107.3	
98 1,2,4-Trichlorobenzene	180	7.524	7.519	0.005	91	1261495	106.2	

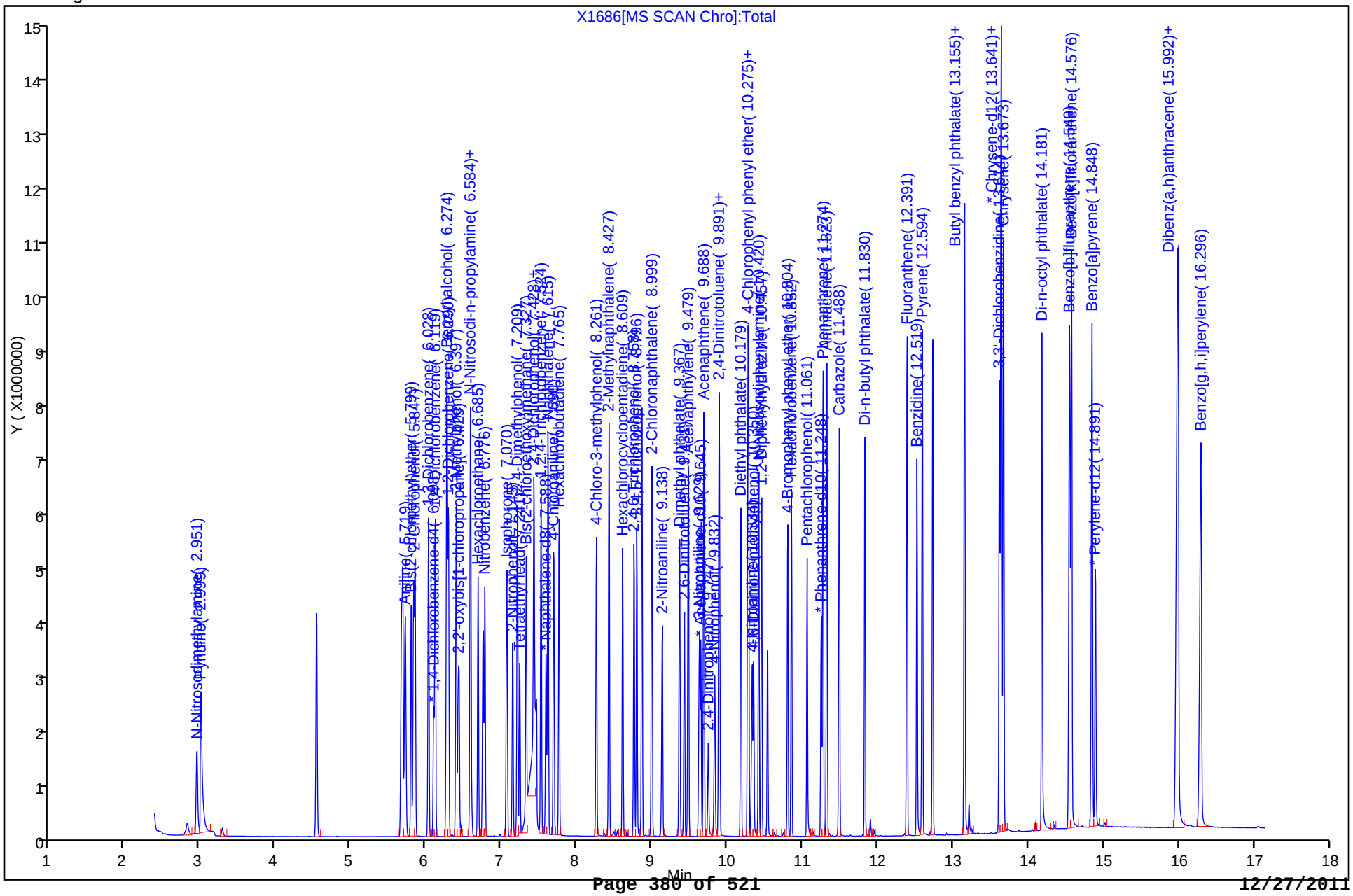
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
99 Naphthalene	128	7.615	7.610	0.005	97	3436114	112.4	
101 4-Chloroaniline	127	7.695	7.690	0.005	96	1702315	107.6	
104 Hexachlorobutadiene	225	7.765	7.759	0.006	96	691006	108.2	
110 4-Chloro-3-methylphenol	107	8.261	8.256	0.005	90	1099882	109.7	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	94	2285869	112.8	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	827769	120.4	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	93	845081	116.4	
119 2,4,5-Trichlorophenol	196	8.796	8.790	0.006	95	910123	115.5	
124 2-Chloronaphthalene	162	8.999	8.993	0.006	98	2204034	103.9	
125 2-Nitroaniline	65	9.138	9.127	0.011	84	681064	119.8	
128 Dimethyl phthalate	163	9.367	9.357	0.010	97	2556352	106.4	
130 2,6-Dinitrotoluene	165	9.431	9.421	0.010	41	668056	125.5	
131 Acenaphthylene	152	9.479	9.479	0.0	97	3269778	101.7	
132 3-Nitroaniline	138	9.629	9.618	0.011	92	753262	120.9	
133 Acenaphthene	153	9.688	9.682	0.006	100	2033157	114.3	
134 2,4-Dinitrophenol	184	9.747	9.736	0.011	80	307413	126.2	
135 4-Nitrophenol	109	9.832	9.821	0.011	81	371552	126.2	
138 Dibenzofuran	168	9.891	9.885	0.006	98	2676989	112.7	
137 2,4-Dinitrotoluene	165	9.902	9.891	0.011	95	791211	119.0	
142 Diethyl phthalate	149	10.185	10.174	0.011	98	2310051	103.1	
144 Fluorene	166	10.275	10.270	0.005	100	2127514	110.6	
145 4-Chlorophenyl phenyl ether	204	10.286	10.281	0.005	95	1151080	112.1	
147 4-Nitroaniline	138	10.334	10.313	0.021	83	761051	119.9	
148 4,6-Dinitro-2-methylphenol	198	10.350	10.340	0.010	94	529838	122.3	
149 N-Nitrosodiphenylamine	169	10.420	10.409	0.011	95	1764669	104.5	
152 1,2-Diphenylhydrazine	77	10.457	10.452	0.005	94	2119018	110.5	
159 4-Bromophenyl phenyl ether	248	10.804	10.799	0.005	90	771729	106.0	
160 Hexachlorobenzene	284	10.852	10.847	0.005	95	842146	104.6	
165 Pentachlorophenol	266	11.061	11.055	0.006	94	566816	120.4	
171 Phenanthrene	178	11.274	11.269	0.005	99	3289200	111.2	
172 Anthracene	178	11.323	11.317	0.006	99	3320053	109.3	
173 Carbazole	167	11.488	11.483	0.005	99	3150063	112.3	
176 Di-n-butyl phthalate	149	11.830	11.825	0.005	99	3411928	92.1	
182 Fluoranthene	202	12.391	12.386	0.005	98	3533988	109.5	
183 Benzidine	184	12.519	12.519	0.0	99	2496536	122.6	
185 Pyrene	202	12.594	12.589	0.005	98	3611437	101.5	
191 3,3'-Dimethylbenzidine	212	13.150	13.144	0.006	99	2131002	113.6	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	97	1612745	109.3	
196 3,3'-Dichlorobenzidine	252	13.614	13.614	0.0	71	1717779	121.7	
197 Benzo[a]anthracene	228	13.636	13.630	0.006	59	3511949	112.5	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	87	2060951	104.3	
199 Chrysene	228	13.673	13.668	0.005	95	3693116	103.0	
201 Di-n-octyl phthalate	149	14.181	14.181	0.0	99	4189064	116.3	
203 Benzo[b]fluoranthene	252	14.549	14.544	0.005	97	4404352	104.4	
204 Benzo[k]fluoranthene	252	14.576	14.571	0.005	91	4868050	117.0	
206 Benzo[a]pyrene	252	14.848	14.838	0.010	96	4167950	110.4	
208 Indeno[1,2,3-cd]pyrene	276	15.976	15.965	0.011	92	5239184	112.7	
209 Dibenz(a,h)anthracene	278	15.992	15.976	0.016	93	4448199	108.6	
210 Benzo[g,h,i]perylene	276	16.296	16.280	0.016	96	4547304	114.2	
S 214 3-Methylphenol	1				0		106.1	
S 213 Total Cresols	1				0		215.9	
S 212 3 & 4 Methylphenol	108				0		106.1	

Report Date: 13-Dec-2011 09:21:03 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1686.D

Injection Date:	10-Dec-2011 16:31:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43924	Lims Sample ID:	6
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1685.D
Lims ID: IC - 160 PT
Client ID:
Inject. Date: 10-Dec-2011 16:08:30
Dil. Factor: 1.0000
Sample Type: IC
Calib Level: 6
Sample ID: 480-0008136-007
Misc. Info.:
Operator: RMM
Instrument ID: HP5973X
Vol. Injected: 1.0000
ALS Bottle#: 7
Lims Batch ID: 43924
Lims Sample ID: 7
Sublist: chrom-X-8270*sub35
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X-8270.m
Last Update: 13-Dec-2011 09:21:08
Calib Date: 11-Dec-2011 00:07:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1706.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 12-Dec-2011 12:22:23

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.098	6.093	0.006	93	405121	40.0	
* 2 Naphthalene-d8	136	7.588	7.588	0.0	78	1603208	40.0	
* 3 Acenaphthene-d10	164	9.651	9.645	0.006	17	849942	40.0	
* 4 Phenanthrene-d10	188	11.248	11.242	0.006	99	1514673	40.0	
* 5 Chrysene-d12	240	13.652	13.646	0.006	90	1327898	40.0	
* 6 Perylene-d12	264	14.897	14.891	0.006	98	1873708	40.0	
55 N-Nitrosodimethylamine	42	2.951	2.946	0.005	72	936034	139.5	
56 Pyridine	52	2.999	3.005	-0.006	84	1519484	154.2	
63 Phenol	94	5.692	5.676	0.016	79	2426960	141.3	
64 Aniline	93	5.719	5.713	0.006	97	3172947	147.0	
66 Bis(2-chloroethyl)ether	93	5.799	5.793	0.006	82	1918641	137.6	
67 2-Chlorophenol	128	5.852	5.847	0.005	98	2013723	143.9	
69 1,3-Dichlorobenzene	146	6.029	6.028	0.001	94	2050157	137.6	
70 1,4-Dichlorobenzene	146	6.119	6.114	0.005	90	2054815	137.1	
71 Benzyl alcohol	108	6.274	6.263	0.011	84	1168029	135.6	
72 1,2-Dichlorobenzene	146	6.296	6.290	0.006	87	1919548	134.9	
73 2-Methylphenol	108	6.397	6.392	0.005	94	1730343	142.2	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	83	2323750	133.6	
79 4-Methylphenol	108	6.589	6.573	0.016	92	1619508	133.4	
78 N-Nitrosodi-n-propylamine	70	6.595	6.579	0.016	59	1265086	136.7	
81 Hexachloroethane	117	6.686	6.685	0.001	93	743565	139.0	
83 Nitrobenzene	77	6.782	6.771	0.011	89	1874945	141.3	
86 Isophorone	82	7.076	7.059	0.017	96	3295784	139.7	
87 2-Nitrophenol	139	7.150	7.145	0.005	78	1066483	167.2	
89 2,4-Dimethylphenol	107	7.215	7.204	0.010	91	1729476	139.2	
90 Tetraethyl lead	237	7.241	7.241	0.0	51	692583	132.6	
94 Bis(2-chloroethoxy)methane	93	7.327	7.321	0.006	94	2026298	131.6	
95 Benzoic acid	105	7.487	7.385	0.102	58	4721122	536.1	
97 2,4-Dichlorophenol	162	7.434	7.423	0.011	92	1472880	137.3	
98 1,2,4-Trichlorobenzene	180	7.524	7.519	0.005	81	1654559	135.2	

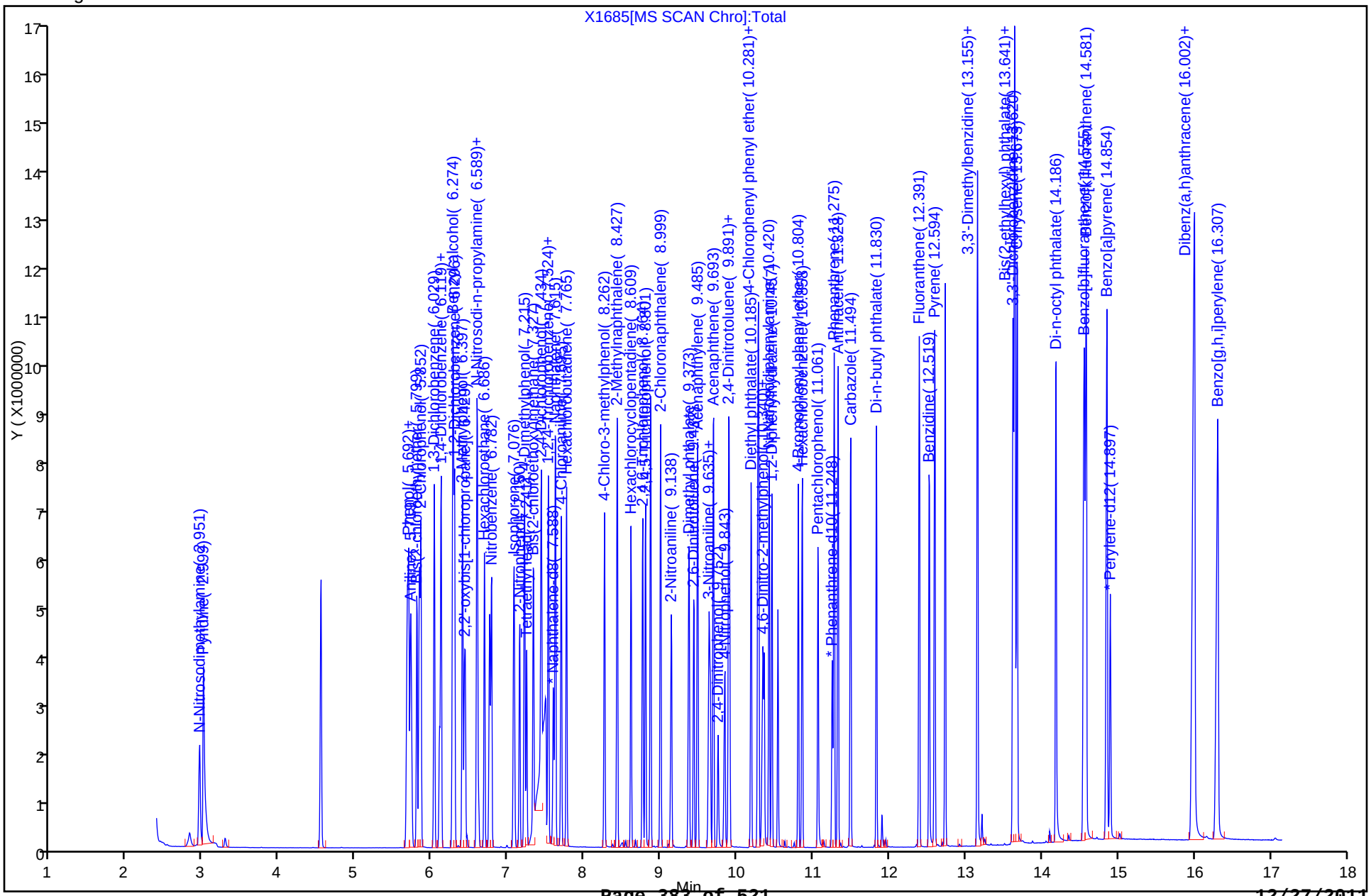
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
99 Naphthalene	128	7.621	7.610	0.011	97	4267256	166.5	
101 4-Chloroaniline	127	7.695	7.690	0.005	96	2211092	135.7	
104 Hexachlorobutadiene	225	7.765	7.759	0.006	96	899633	136.8	
110 4-Chloro-3-methylphenol	107	8.262	8.256	0.006	91	1435540	139.0	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	95	2860769	165.5	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	1098123	155.7	
118 2,4,6-Trichlorophenol	196	8.764	8.758	0.006	92	1110224	149.0	
119 2,4,5-Trichlorophenol	196	8.801	8.790	0.011	93	1166502	144.2	
124 2-Chloronaphthalene	162	8.999	8.993	0.006	99	2795622	128.4	
125 2-Nitroaniline	65	9.138	9.127	0.011	86	918870	157.4	
128 Dimethyl phthalate	163	9.373	9.357	0.016	97	3358935	136.3	
130 2,6-Dinitrotoluene	165	9.437	9.421	0.016	41	892277	163.3	
131 Acenaphthylene	152	9.485	9.479	0.006	96	4089876	123.9	
132 3-Nitroaniline	138	9.635	9.618	0.017	91	1017104	159.0	
133 Acenaphthene	153	9.693	9.682	0.011	100	2591593	163.6	
134 2,4-Dinitrophenol	184	9.752	9.736	0.016	81	436671	157.7	
135 4-Nitrophenol	109	9.843	9.821	0.022	78	503002	166.5	
138 Dibenzofuran	168	9.891	9.885	0.006	99	3357636	165.7	
137 2,4-Dinitrotoluene	165	9.907	9.891	0.016	95	1081132	158.4	
142 Diethyl phthalate	149	10.185	10.174	0.011	98	2929177	127.3	
144 Fluorene	166	10.276	10.270	0.006	100	2655883	169.4	
145 4-Chlorophenyl phenyl ether	204	10.286	10.281	0.005	96	1468234	165.6	
147 4-Nitroaniline	138	10.340	10.313	0.027	83	1033243	158.7	
148 4,6-Dinitro-2-methylphenol	198	10.356	10.340	0.016	95	727415	158.2	
149 N-Nitrosodiphenylamine	169	10.420	10.409	0.011	95	2223597	125.8	
152 1,2-Diphenylhydrazine	77	10.457	10.452	0.005	95	2664917	168.5	
159 4-Bromophenyl phenyl ether	248	10.804	10.799	0.005	92	1013020	133.0	
160 Hexachlorobenzene	284	10.858	10.847	0.011	92	1122273	133.2	
165 Pentachlorophenol	266	11.066	11.055	0.011	92	771116	156.5	
171 Phenanthrene	178	11.275	11.269	0.006	98	4053050	176.2	
172 Anthracene	178	11.328	11.317	0.011	98	4159378	NaN	
173 Carbazole	167	11.494	11.483	0.011	99	3985471	166.9	
176 Di-n-butyl phthalate	149	11.830	11.825	0.005	99	4117636	106.2	
182 Fluoranthene	202	12.391	12.386	0.005	97	4418762	NaN	
183 Benzidine	184	12.525	12.519	0.006	99	3058052	150.3	
185 Pyrene	202	12.594	12.589	0.005	97	4454428	125.2	
191 3,3'-Dimethylbenzidine	212	13.155	13.144	0.011	98	2547840	NaN	
192 Butyl benzyl phthalate	149	13.160	13.155	0.005	95	1976087	134.0	
196 3,3'-Dichlorobenzidine	252	13.620	13.614	0.006	80	2186358	155.0	
197 Benzo[a]anthracene	228	13.641	13.630	0.011	59	4309968	165.5	
198 Bis(2-ethylhexyl) phthalate	149	13.647	13.641	0.006	92	2504276	126.8	
199 Chrysene	228	13.679	13.668	0.011	95	4487648	125.3	
201 Di-n-octyl phthalate	149	14.186	14.181	0.005	98	5085947	161.3	
203 Benzo[b]fluoranthene	252	14.555	14.544	0.011	94	5890538	134.4	
204 Benzo[k]fluoranthene	252	14.581	14.571	0.010	89	5891115	163.0	
206 Benzo[a]pyrene	252	14.854	14.838	0.016	95	5266258	134.3	
208 Indeno[1,2,3-cd]pyrene	276	15.992	15.965	0.027	78	7063107	146.2	
209 Dibenz(a,h)anthracene	278	16.002	15.976	0.026	91	5772396	135.7	
210 Benzo[g,h,i]perylene	276	16.307	16.280	0.027	96	6229605	150.6	
S 214 3-Methylphenol	1				0		133.4	
S 213 Total Cresols	1				0		275.6	
S 212 3 & 4 Methylphenol	108				0		133.4	

Report Date: 13-Dec-2011 09:21:09 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1685.D

Injection Date:	10-Dec-2011 16:08:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43924	Lims Sample ID:	7
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 44019

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/12/2011 15:35 Calibration End Date: 12/12/2011 17:29 Calibration ID: 5350

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-44019/9	X1717.D
Level 2	IC 480-44019/10	X1718.D
Level 3	IC 480-44019/11	X1719.D
Level 4	IC 480-44019/12	X1720.D
Level 5	IC 480-44019/13	X1721.D
Level 6	IC 480-44019/14	X1722.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2-Fluorophenol	1.4545 1.2287	1.4800	1.4533	1.4117	1.2766	Ave		1.3841				7.6		15.0			
Phenol-d5	1.7475 1.4124	1.7711	1.7296	1.6600	1.4872	Ave		1.6346				9.2		15.0			
Nitrobenzene-d5	0.3472 0.2938	0.3396	0.3448	0.3356	0.3033	Ave		0.3274				7.0		15.0			
2-Fluorobiphenyl	1.4650 0.9425	1.3645	1.2888	1.1952	1.0089	Qua	1.2949	1.3748	-0.003						0.9980		0.9900
2,4,6-Tribromophenol	0.0690 0.0917	0.0861	0.1000	0.0985	0.0937	Ave		0.0898				13.0		15.0			
p-Terphenyl-d14	0.8507 0.5889	0.8506	0.8084	0.7364	0.6340	Ave		0.7448				15.0		15.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1 Analy Batch No.: 44019

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/12/2011 15:35 Calibration End Date: 12/12/2011 17:29 Calibration ID: 5350

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-44019/9	X1717.D
Level 2	IC 480-44019/10	X1718.D
Level 3	IC 480-44019/11	X1719.D
Level 4	IC 480-44019/12	X1720.D
Level 5	IC 480-44019/13	X1721.D
Level 6	IC 480-44019/14	X1722.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
2-Fluorophenol	DCB	Ave	57659 1725167	237710	583696	896362	1358007	5.00 160	20.0	50.0	80.0	120
Phenol-d5	DCB	Ave	69273 1983125	284467	694646	1054048	1582019	5.00 160	20.0	50.0	80.0	120
Nitrobenzene-d5	NPT	Ave	49500 1475001	197486	502088	774898	1171206	5.00 160	20.0	50.0	80.0	120
2-Fluorobiphenyl	ANT	Qua	107880 2436178	408171	957432	1406821	2020085	5.00 160	20.0	50.0	80.0	120
2,4,6-Tribromophenol	PHN	Ave	8922 414673	45524	131685	203367	325804	5.00 160	20.0	50.0	80.0	120
p-Terphenyl-d14	CRY	Ave	122090 2950907	490170	1166432	1676446	2381417	5.00 160	20.0	50.0	80.0	120

Curve Type Legend:

Ave = Average ISTD
Qua = Quadratic ISTD

TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1717.D		
Lims ID:	IC - SCAL 5 PT	Client ID:	
Inject. Date:	12-Dec-2011 15:35:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	1
Sample ID:	480-0008158-009		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	10
Lims Batch ID:	44019	Lims Sample ID:	9
Sublist:	chrom-X-8270*sub36		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X-8270.m		
Last Update:	13-Dec-2011 09:26:49	Calib Date:	12-Dec-2011 15:35:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1717.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	12-Dec-2011 17:15:25

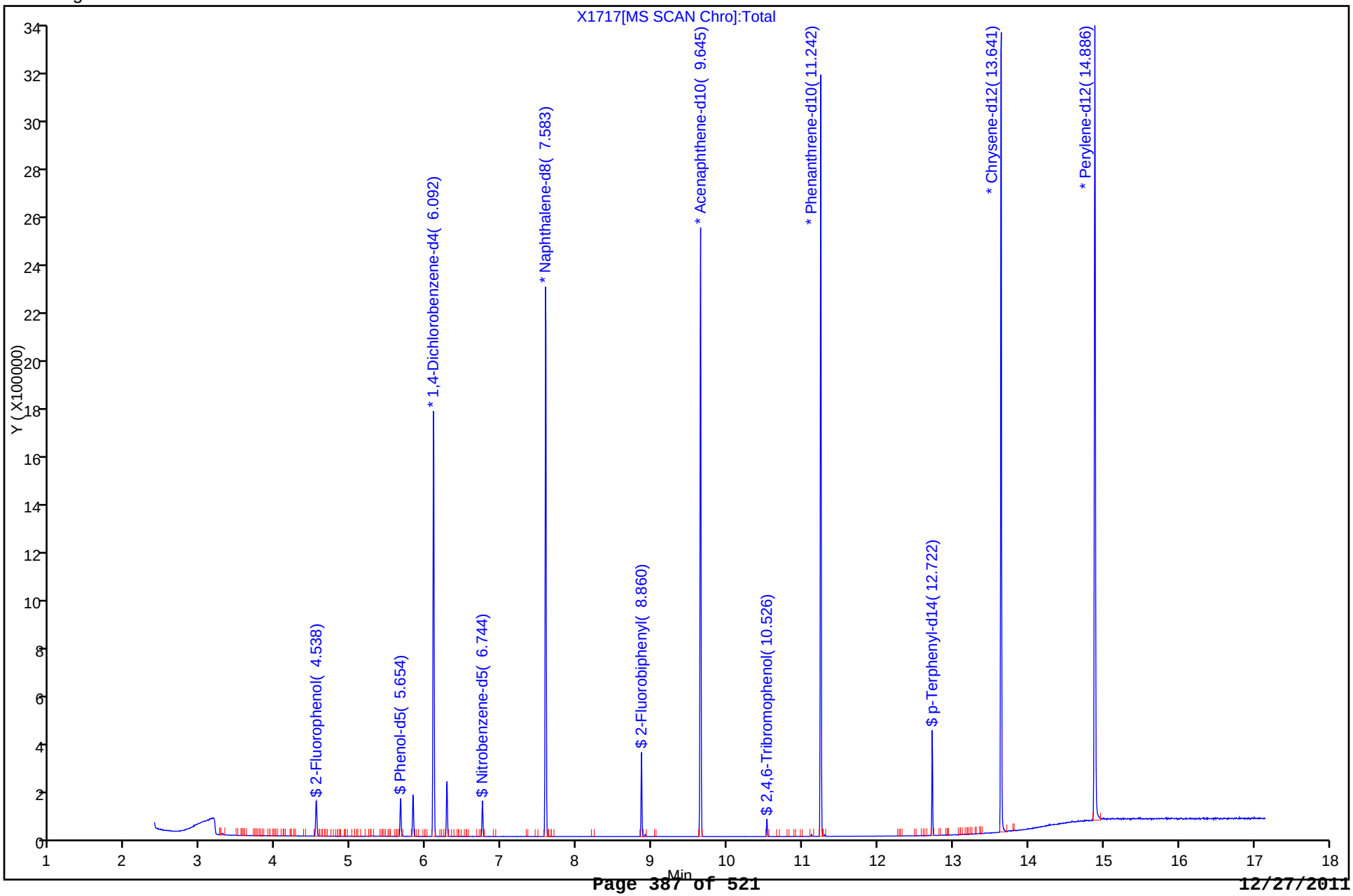
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.092	6.093	-0.001	92	317126	40.0	
* 2 Naphthalene-d8	136	7.583	7.588	-0.005	93	1140638	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	59	589110	40.0	
* 4 Phenanthrene-d10	188	11.242	11.243	-0.001	99	1034713	40.0	
* 5 Chrysene-d12	240	13.641	13.641	0.0	99	1148094	40.0	
* 6 Perylene-d12	264	14.886	14.891	-0.005	99	1328030	40.0	
$ 7 2-Fluorophenol	112	4.538	4.538	0.0	90	57659	5.53	
$ 8 Phenol-d5	99	5.654	5.660	-0.006	61	69273	5.22	
$ 9 Nitrobenzene-d5	82	6.744	6.750	-0.006	89	49500	5.20	
$ 10 2-Fluorobiphenyl	172	8.860	8.860	0.0	98	107880	4.93	
$ 11 2,4,6-Tribromophenol	330	10.526	10.532	-0.006	37	8922	3.75	
$ 12 p-Terphenyl-d14	244	12.722	12.728	-0.006	98	122090	5.33	

Report Date: 13-Dec-2011 09:26:49 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1717.D

Injection Date:	12-Dec-2011 15:35:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44019	Lims Sample ID:	9
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1718.D		
Lims ID:	IC - SCAL 20 PT	Client ID:	
Inject. Date:	12-Dec-2011 15:57:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	2
Sample ID:	480-0008158-010		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	11
Lims Batch ID:	44019	Lims Sample ID:	10
Sublist:	chrom-X-8270*sub36		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X-8270.m		
Last Update:	13-Dec-2011 09:26:54	Calib Date:	12-Dec-2011 15:57:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1718.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	12-Dec-2011 17:15:12

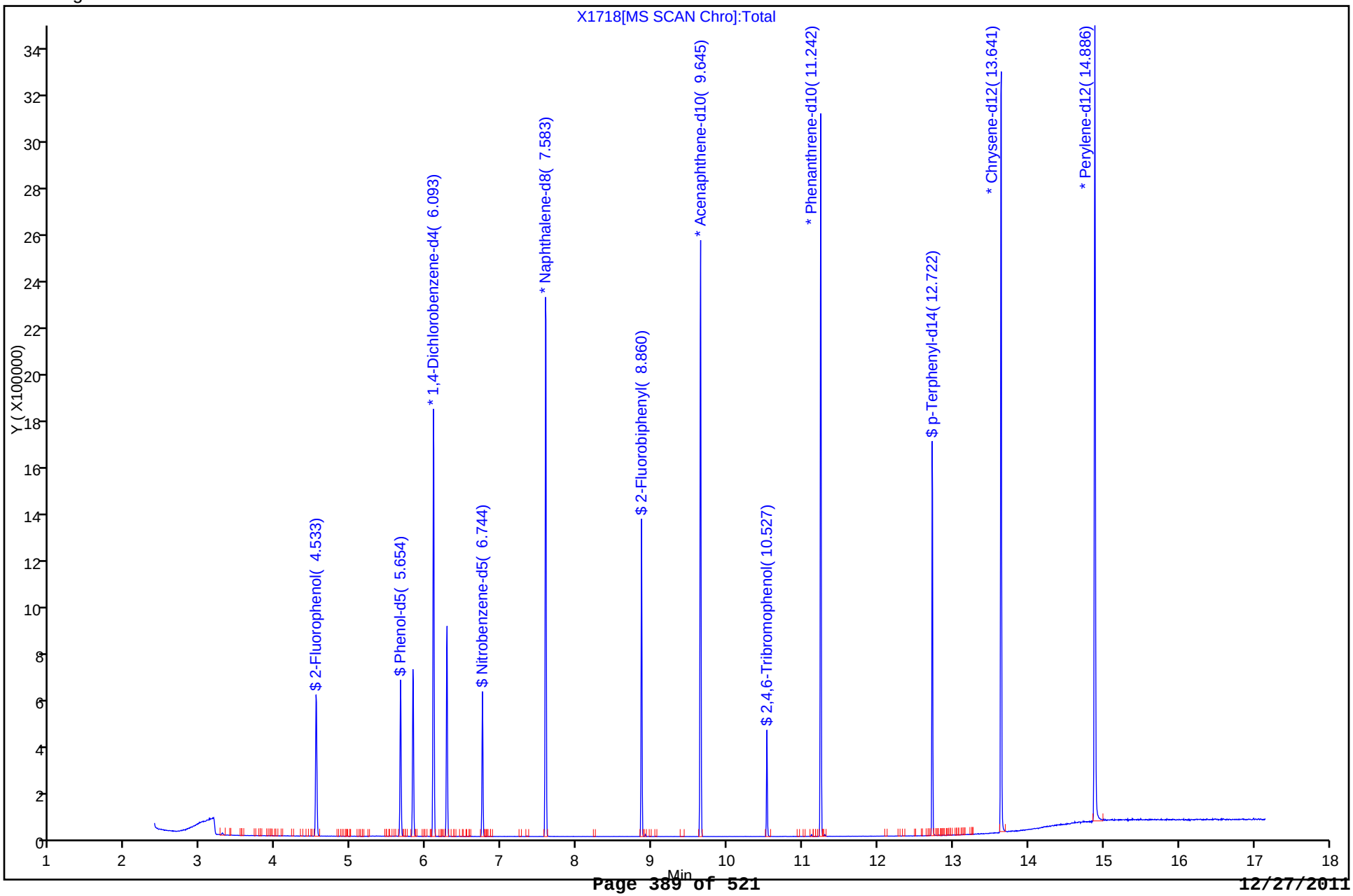
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.0	92	321226	40.0	
* 2 Naphthalene-d8	136	7.583	7.588	-0.005	93	1162976	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	60	598261	40.0	
* 4 Phenanthrene-d10	188	11.242	11.243	-0.001	99	1057098	40.0	
* 5 Chrysene-d12	240	13.641	13.641	0.0	99	1152563	40.0	
* 6 Perylene-d12	264	14.886	14.891	-0.005	98	1334252	40.0	
$ 7 2-Fluorophenol	112	4.533	4.538	-0.005	91	237710	22.0	
$ 8 Phenol-d5	99	5.654	5.660	-0.006	69	284467	21.1	
$ 9 Nitrobenzene-d5	82	6.744	6.750	-0.006	91	197486	20.3	
$ 10 2-Fluorobiphenyl	172	8.860	8.860	0.0	99	408171	20.1	
$ 11 2,4,6-Tribromophenol	330	10.527	10.532	-0.005	63	45524	19.0	
$ 12 p-Terphenyl-d14	244	12.722	12.728	-0.006	98	490170	21.4	

Report Date: 13-Dec-2011 09:26:54 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1718.D

Injection Date:	12-Dec-2011 15:57:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44019	Lims Sample ID:	10
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1719.D		
Lims ID:	IC - SCAL 50 PT	Client ID:	
Inject. Date:	12-Dec-2011 16:20:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	3
Sample ID:	480-0008158-011		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	12
Lims Batch ID:	44019	Lims Sample ID:	11
Sublist:	chrom-X-8270*sub36		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X-8270.m		
Last Update:	13-Dec-2011 09:26:57	Calib Date:	12-Dec-2011 16:20:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1719.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	12-Dec-2011 17:14:51

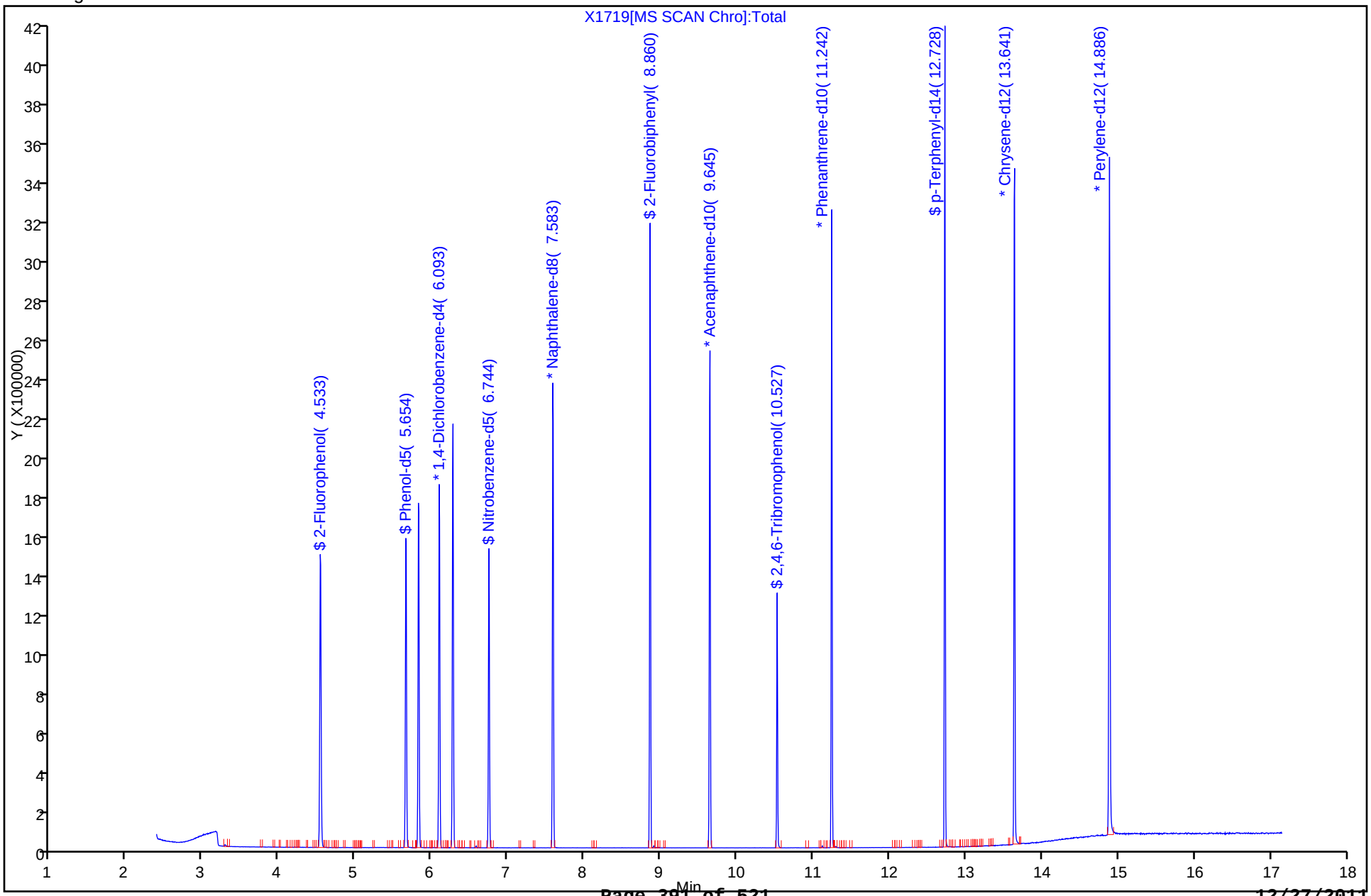
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.0	93	321302	40.0	
* 2 Naphthalene-d8	136	7.583	7.583	0.0	98	1165001	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	59	594330	40.0	
* 4 Phenanthrene-d10	188	11.242	11.242	0.0	99	1053205	40.0	
* 5 Chrysene-d12	240	13.641	13.641	0.0	99	1154373	40.0	
* 6 Perylene-d12	264	14.886	14.886	0.0	98	1353416	40.0	
$ 7 2-Fluorophenol	112	4.533	4.533	0.0	92	583696	53.4	
$ 8 Phenol-d5	99	5.660	5.660	0.0	73	694646	51.7	
$ 9 Nitrobenzene-d5	82	6.744	6.744	0.0	90	502088	51.7	
$ 10 2-Fluorobiphenyl	172	8.860	8.860	0.0	99	957432	51.9	
$ 11 2,4,6-Tribromophenol	330	10.527	10.527	0.0	65	131685	55.6	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	99	1166432	51.4	

Report Date: 13-Dec-2011 09:26:57 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1719.D

Injection Date:	12-Dec-2011 16:20:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44019	Lims Sample ID:	11
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1720.D		
Lims ID:	IC - SCAL 80 PT	Client ID:	
Inject. Date:	12-Dec-2011 16:43:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	4
Sample ID:	480-0008158-012		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	13
Lims Batch ID:	44019	Lims Sample ID:	12
Sublist:	chrom-X-8270*sub36		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X-8270.m		
Last Update:	13-Dec-2011 09:27:06	Calib Date:	12-Dec-2011 17:06:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1721.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	12-Dec-2011 17:15:00

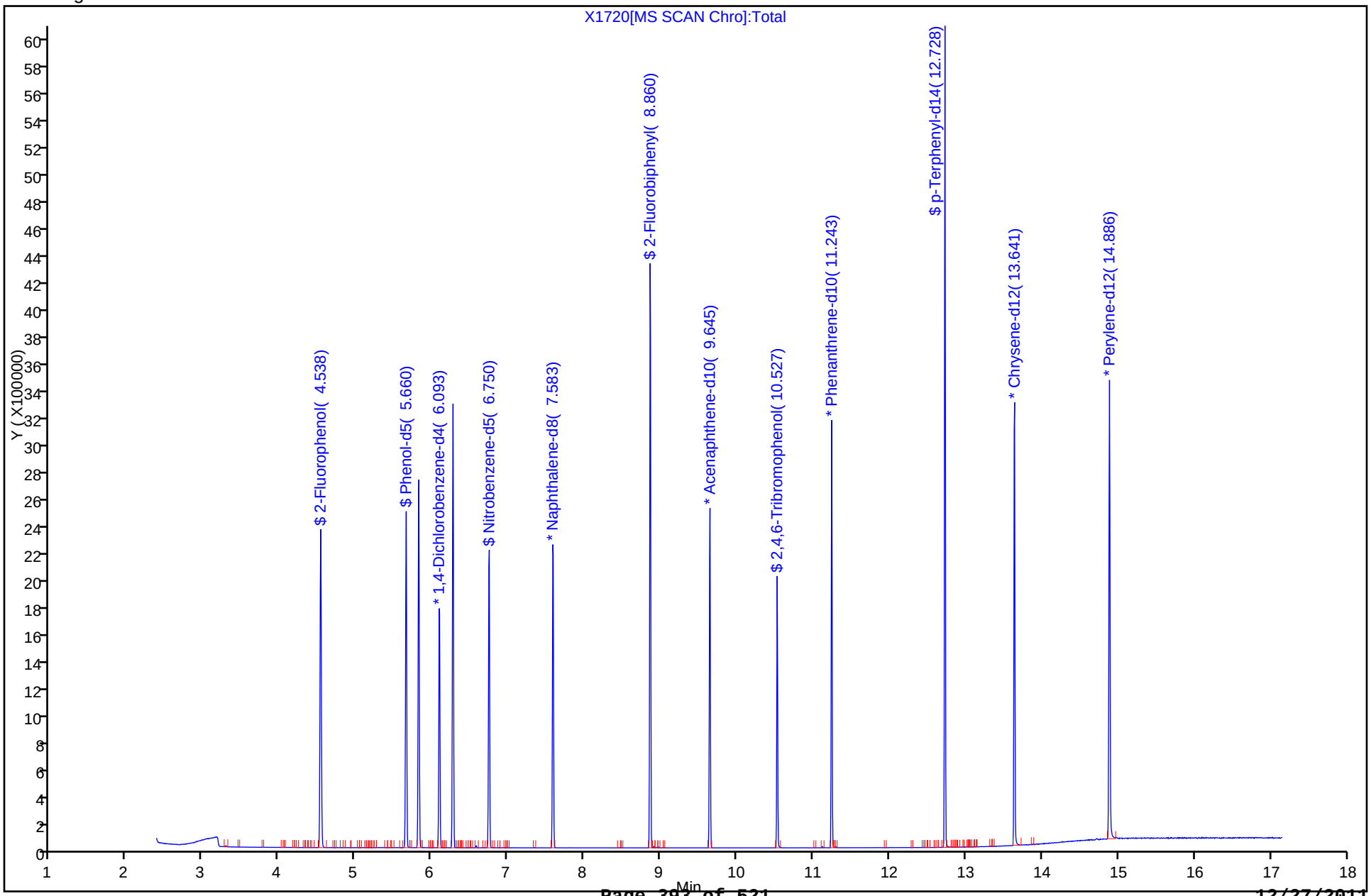
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.0	92	317476	40.0	
* 2 Naphthalene-d8	136	7.583	7.583	0.0	90	1154402	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	53	588529	40.0	
* 4 Phenanthrene-d10	188	11.243	11.242	0.001	99	1032636	40.0	
* 5 Chrysene-d12	240	13.641	13.641	0.0	99	1138342	40.0	
* 6 Perylene-d12	264	14.886	14.886	0.0	98	1326700	40.0	
$ 7 2-Fluorophenol	112	4.538	4.533	0.005	91	896362	81.8	
$ 8 Phenol-d5	99	5.660	5.660	0.0	73	1054048	80.4	
$ 9 Nitrobenzene-d5	82	6.750	6.744	0.006	90	774898	81.5	
$ 10 2-Fluorobiphenyl	172	8.860	8.860	0.0	99	1406821	82.4	
$ 11 2,4,6-Tribromophenol	330	10.527	10.527	0.0	63	203367	88.1	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	99	1676446	77.8	

Report Date: 13-Dec-2011 09:27:06 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1720.D

Injection Date:	12-Dec-2011 16:43:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44019	Lims Sample ID:	12
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1721.D		
Lims ID:	IC - SCAL 120 PT	Client ID:	
Inject. Date:	12-Dec-2011 17:06:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	5
Sample ID:	480-0008158-013		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	14
Lims Batch ID:	44019	Lims Sample ID:	13
Sublist:	chrom-X-8270*sub36		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X-8270.m		
Last Update:	13-Dec-2011 09:27:03	Calib Date:	12-Dec-2011 17:06:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1721.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	13-Dec-2011 08:34:34

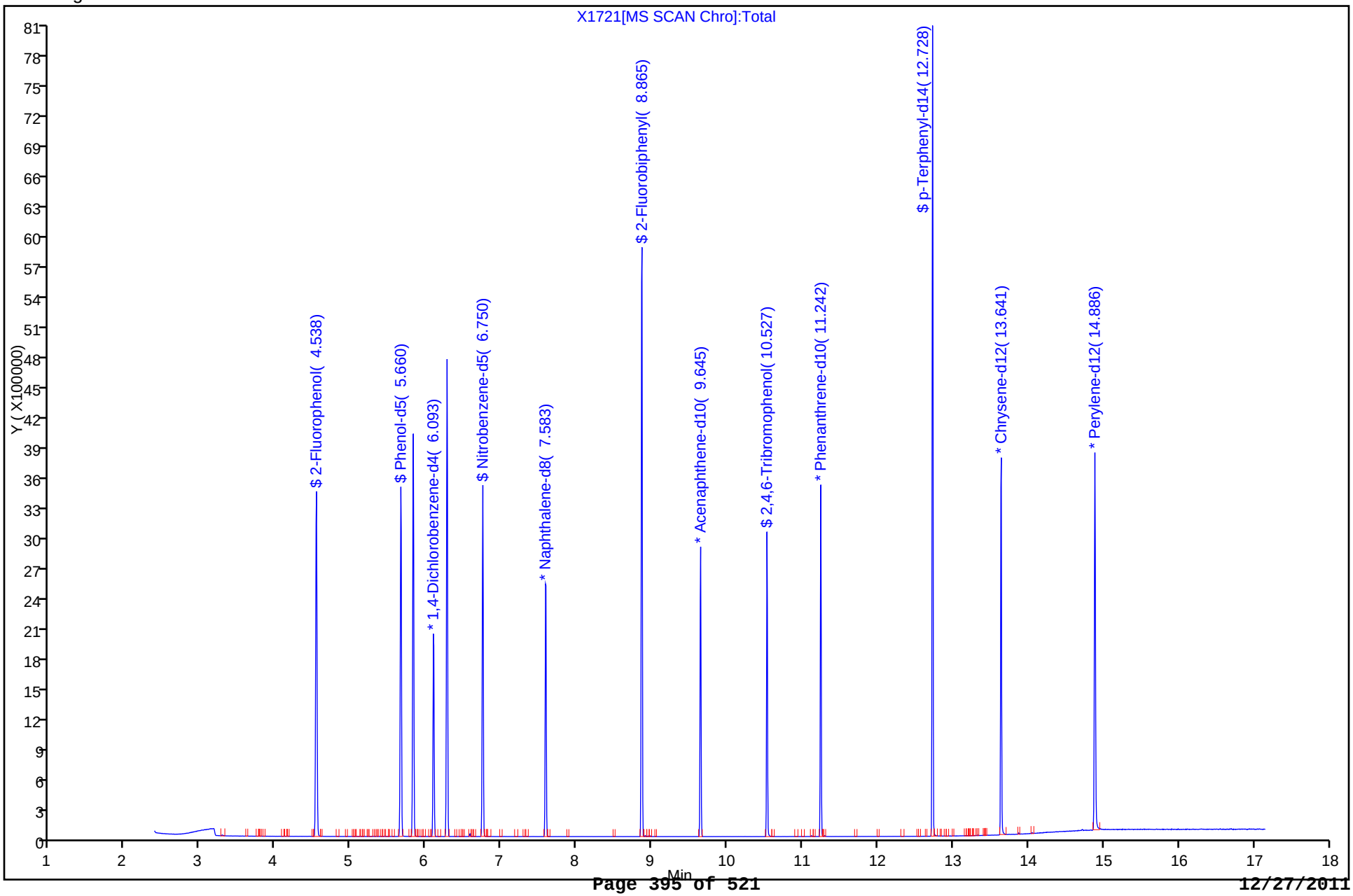
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.0	92	354583	40.0	
* 2 Naphthalene-d8	136	7.588	7.583	0.005	92	1287171	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	62	667418	40.0	
* 4 Phenanthrene-d10	188	11.242	11.242	0.0	99	1159507	40.0	
* 5 Chrysene-d12	240	13.641	13.641	0.0	99	1252039	40.0	
* 6 Perylene-d12	264	14.886	14.886	0.0	98	1486188	40.0	
$ 7 2-Fluorophenol	112	4.538	4.533	0.005	91	1358007	111.9	
$ 8 Phenol-d5	99	5.660	5.660	0.0	73	1582019	107.3	
$ 9 Nitrobenzene-d5	82	6.750	6.744	0.006	90	1171206	109.9	
$ 10 2-Fluorobiphenyl	172	8.865	8.860	0.005	100	2020085	115.7	
$ 11 2,4,6-Tribromophenol	330	10.527	10.527	0.0	62	325804	124.5	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	99	2381417	98.3	

Report Date: 13-Dec-2011 09:27:03 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1721.D

Injection Date:	12-Dec-2011 17:06:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44019	Lims Sample ID:	13
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D		
Lims ID:	IC - SCAL 160 PT	Client ID:	
Inject. Date:	12-Dec-2011 17:29:30	Dil. Factor:	1.0000
Sample Type:	IC	Calib Level:	6
Sample ID:	480-0008158-014		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	15
Lims Batch ID:	44019	Lims Sample ID:	14
Sublist:	chrom-X-8270*sub36		
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X-8270.m		
Last Update:	13-Dec-2011 09:27:13	Calib Date:	12-Dec-2011 17:29:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	13-Dec-2011 08:36:21

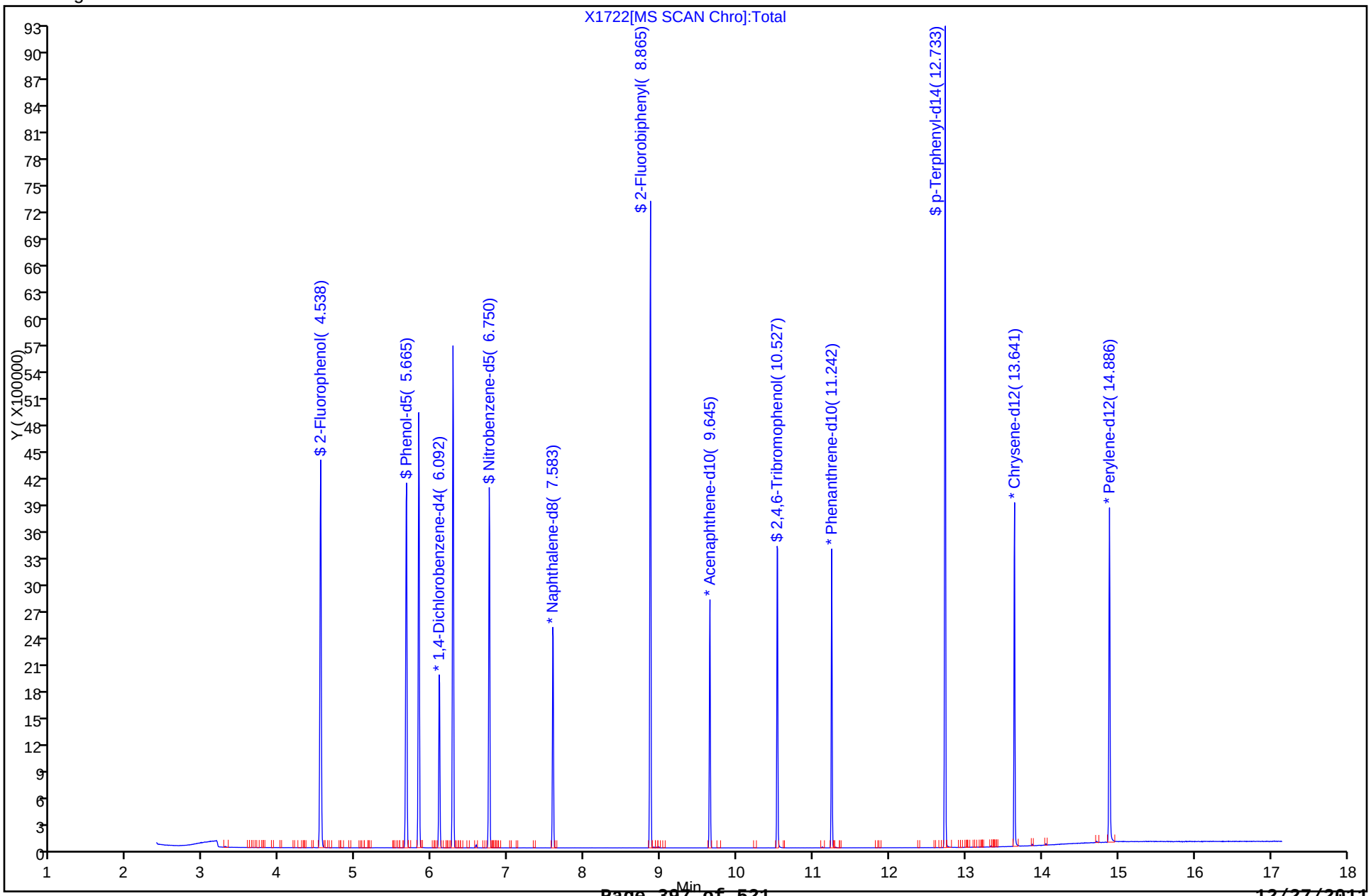
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.092	6.093	-0.001	92	351021	40.0	
* 2 Naphthalene-d8	136	7.583	7.583	0.0	93	1255259	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	58	646178	40.0	
* 4 Phenanthrene-d10	188	11.242	11.242	0.0	99	1130047	40.0	
* 5 Chrysene-d12	240	13.641	13.641	0.0	99	1252743	40.0	
* 6 Perylene-d12	264	14.886	14.886	0.0	98	1462921	40.0	
$ 7 2-Fluorophenol	112	4.538	4.533	0.005	91	1725167	142.0	
$ 8 Phenol-d5	99	5.665	5.660	0.005	73	1983125	138.2	
$ 9 Nitrobenzene-d5	82	6.750	6.744	0.006	90	1475001	143.6	
$ 10 2-Fluorobiphenyl	172	8.865	8.860	0.005	99	2436178	164.0	
$ 11 2,4,6-Tribromophenol	330	10.532	10.527	0.005	62	414673	163.4	
$ 12 p-Terphenyl-d14	244	12.733	12.728	0.005	99	2950907	126.5	

Report Date: 13-Dec-2011 09:27:13 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D

Injection Date:	12-Dec-2011 17:29:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44019	Lims Sample ID:	14
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: ICV 480-42934/8 Calibration Date: 12/06/2011 15:46

Instrument ID: HP5973U Calib Start Date: 01/07/2011 16:25

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 01/07/2011 18:21

Lab File ID: U6919.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,3-Dinitrobenzene	Ave	0.0852	0.1476	0.0100		50000	73.3*	25.0
1,4-Dinitrobenzene	Ave	0.0852	0.1476	0.0100		50000	73.3*	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D
Lims ID: ICV
Client ID:
Inject. Date: 06-Dec-2011 15:46:30
Dil. Factor: 1.0000
Sample Type: ICV
Sample ID: 480-0007971-008
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 9
Lims Batch ID: 42934
Lims Sample ID: 8
Sublist:
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:52
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:27:44

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	96	142420	40.0	
* 2 Naphthalene-d8	136	7.668	7.673	-0.005	99	536679	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	386961	40.0	
* 4 Phenanthrene-d10	188	11.653	11.653	0.0	97	725453	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	96	700116	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	567771	40.0	
80 1,4-Dioxane	88	2.454	2.518	-0.064	83	71297	36.5	E
81 N-Nitrosodimethylamine	42	2.732	2.748	-0.016	62	216174	53.5	
82 Pyridine	52	2.796	2.823	-0.027	73	229268	53.4	
88 Benzaldehyde	77	5.440	5.456	-0.016	81	186918	44.9	
90 Aniline	93	5.585	5.590	-0.005	43	208599	28.2	
89 Phenol	94	5.585	5.590	-0.005	75	331078	50.6	
91 Bis(2-chloroethyl)ether	93	5.665	5.670	-0.005	95	243787	54.7	
93 2-Chlorophenol	128	5.745	5.745	0.0	89	240472	54.1	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	93	288289	54.5	
95 1,4-Dichlorobenzene	146	6.028	6.033	-0.005	87	298313	54.2	
96 Benzyl alcohol	108	6.210	6.210	0.0	82	174864	45.0	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	91	284800	52.2	
98 2-Methylphenol	108	6.375	6.370	0.005	80	246164	54.6	
99 2,2'-oxybis[1-chloropropane]	45	6.370	6.375	-0.005	79	557517	53.5	
101 N-Nitrosodi-n-propylamine	70	6.546	6.546	0.0	94	242636	56.5	
104 Acetophenone	105	6.541	6.552	-0.011	79	387268	52.6	
102 4-Methylphenol	108	6.584	6.578	0.006	72	525510	118.6	
106 Hexachloroethane	117	6.664	6.664	0.0	87	115916	53.5	
107 Nitrobenzene	77	6.760	6.765	-0.005	95	332063	54.2	
110 Isophorone	82	7.080	7.080	0.0	94	565829	55.3	
111 2-Nitrophenol	139	7.177	7.182	-0.005	84	139925	56.4	
112 2,4-Dimethylphenol	107	7.267	7.267	0.0	97	307173	54.0	
113 Tetraethyl lead	237	7.278	7.283	-0.005	89	85109	28.3	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	95	291324	55.6	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
119 Benzoic acid	105	7.460	7.513	-0.053	88	208540	52.3	
117 2,4-Dichlorophenol	162	7.518	7.518	0.0	95	234777	55.4	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	90	285837	53.9	
121 Naphthalene	128	7.700	7.700	0.0	96	736024	56.3	
123 4-Chloroaniline	127	7.796	7.796	0.0	81	162425	32.7	
126 Hexachlorobutadiene	225	7.860	7.860	0.0	95	196284	54.1	
127 Caprolactam	113	8.277	8.256	0.021	58	63790	47.9	
131 4-Chloro-3-methylphenol	107	8.459	8.459	0.0	96	245608	55.4	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	88	526755	52.9	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	96	178880	55.7	
139 2,4,6-Trichlorophenol	196	8.988	8.988	0.0	96	208866	57.5	
140 2,4,5-Trichlorophenol	196	9.057	9.052	0.005	97	207210	56.2	
144 1,1'-Biphenyl	154	9.207	9.217	-0.010	96	704036	48.8	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	95	529390	56.0	
145 2-Nitroaniline	65	9.394	9.394	0.0	68	198911	59.8	
146 1,4-Dinitrobenzene	168	9.575	9.480	0.095	92	99031	0	
50 1,3-Dinitrobenzene	168	9.575	9.480	0.095	80	99031	0	
147 Dimethyl phthalate	163	9.629	9.623	0.006	97	683655	58.2	
148 2,6-Dinitrotoluene	165	9.709	9.703	0.006	68	149179	60.9	
149 Acenaphthylene	152	9.762	9.762	0.0	92	893169	58.9	
150 3-Nitroaniline	138	9.939	9.939	-0.001	62	99224	40.6	
151 Acenaphthene	153	9.987	9.987	0.0	94	560299	55.3	
152 2,4-Dinitrophenol	184	10.067	10.067	0.0	73	75799	52.9	
155 Dibenzofuran	168	10.200	10.200	0.0	86	813461	53.4	
153 4-Nitrophenol	109	10.211	10.211	0.0	56	91796	52.9	
154 2,4-Dinitrotoluene	165	10.216	10.216	0.0	80	204733	58.1	
158 2,3,4,6-Tetrachlorophenol	232	10.377	10.393	-0.016	96	164103	69.2	
160 Diethyl phthalate	149	10.499	10.499	0.0	96	689236	58.5	
161 Fluorene	166	10.612	10.612	0.0	81	767191	50.3	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	81	417560	54.6	
164 4-Nitroaniline	138	10.686	10.681	0.005	73	119652	52.8	
166 4,6-Dinitro-2-methylphenol	198	10.702	10.702	0.0	54	123897	54.0	
167 N-Nitrosodiphenylamine	169	10.767	10.767	0.0	96	465068	54.0	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	95	719012	56.6	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	94	212165	52.2	
177 Hexachlorobenzene	284	11.237	11.237	0.0	94	222644	52.9	
180 Atrazine	200	11.370	11.381	-0.011	89	212724	69.0	
181 Pentachlorophenol	266	11.466	11.466	0.0	87	108593	53.8	
185 Phenanthrene	178	11.675	11.675	0.0	96	1013529	48.7	
188 Anthracene	178	11.728	11.728	0.0	97	1029715	54.1	
189 Carbazole	167	11.910	11.915	-0.005	83	850750	53.2	
192 Di-n-butyl phthalate	149	12.246	12.246	0.0	100	1073208	48.2	
197 Fluoranthene	202	12.855	12.855	0.0	96	1172034	51.0	
198 Benzidine	184	12.989	12.989	0.0	97	255909	27.1	
199 Pyrene	202	13.069	13.069	0.0	97	1150159	55.6	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	99	480282	51.2	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	95	719868	53.2	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	66	275837	30.7	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	77	1146070	55.4	
211 Chrysene	228	14.175	14.175	0.0	90	1034317	55.4	
212 Di-n-octyl phthalate	149	14.682	14.682	0.0	98	1018289	57.8	
213 Benzo[b]fluoranthene	252	15.147	15.147	0.0	90	962729	51.9	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
214 Benzo[k]fluoranthene	252	15.174	15.174	0.0	96	1042109	55.6	
217 Benzo[a]pyrene	252	15.489	15.489	0.0	99	831306	55.2	
219 Indeno[1,2,3-cd]pyrene	276	16.809	16.809	0.0	94	1050997	54.4	
220 Dibenz(a,h)anthracene	278	16.814	16.814	0.0	68	913117	53.5	
221 Benzo[g,h,i]perylene	276	17.172	17.172	0.0	90	749188	60.8	
S 78 3-Methylphenol	1				0		118.6	

QC Flag Legend

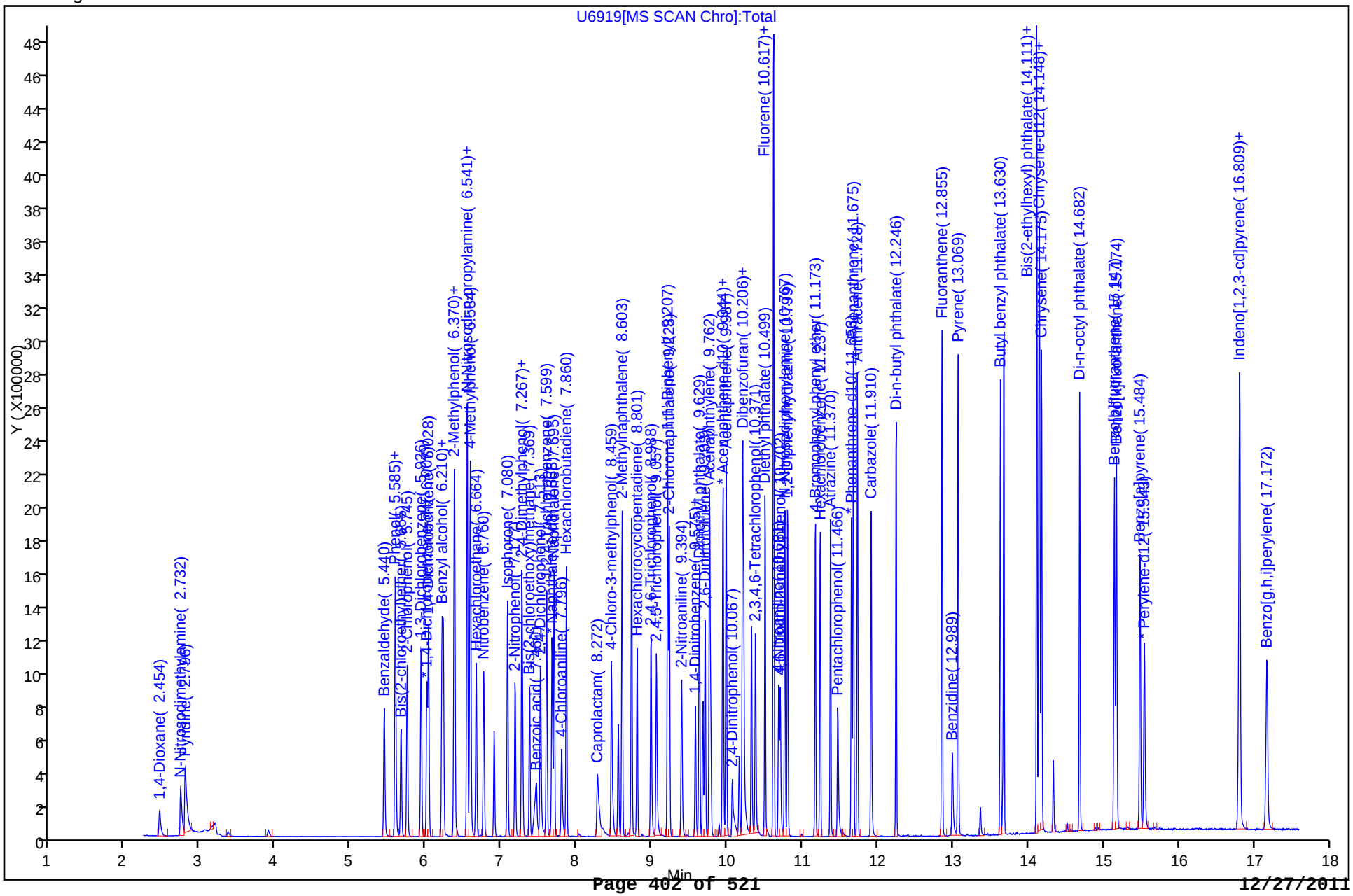
Processing Flags
E - Exceeded Maximum Amount

Report Date: 06-Dec-2011 17:09:04 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D

Injection Date:	06-Dec-2011 15:46:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	8
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: ICV 480-42934/8 Calibration Date: 12/06/2011 15:46

Instrument ID: HP5973U Calib Start Date: 09/30/2011 02:48

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 09/30/2011 04:46

Lab File ID: U6919.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,4-Dioxane	Ave	0.6956	0.4005	0.0100	36500	50000	-42.4*	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D
Lims ID: ICV Client ID:
Inject. Date: 06-Dec-2011 15:46:30 Dil. Factor: 1.0000
Sample Type: ICV
Sample ID: 480-0007971-008
Misc. Info.:
Operator: RMM Instrument ID: HP5973U
Vol. Injected: 1.0000 ALS Bottle#: 9
Lims Batch ID: 42934 Lims Sample ID: 8
Sublist:
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:52 Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar Date: 06-Dec-2011 16:27:44

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	96	142420	40.0	
* 2 Naphthalene-d8	136	7.668	7.673	-0.005	99	536679	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	386961	40.0	
* 4 Phenanthrene-d10	188	11.653	11.653	0.0	97	725453	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	96	700116	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	567771	40.0	
80 1,4-Dioxane	88	2.454	2.518	-0.064	83	71297	36.5	E
81 N-Nitrosodimethylamine	42	2.732	2.748	-0.016	62	216174	53.5	
82 Pyridine	52	2.796	2.823	-0.027	73	229268	53.4	
88 Benzaldehyde	77	5.440	5.456	-0.016	81	186918	44.9	
90 Aniline	93	5.585	5.590	-0.005	43	208599	28.2	
89 Phenol	94	5.585	5.590	-0.005	75	331078	50.6	
91 Bis(2-chloroethyl)ether	93	5.665	5.670	-0.005	95	243787	54.7	
93 2-Chlorophenol	128	5.745	5.745	0.0	89	240472	54.1	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	93	288289	54.5	
95 1,4-Dichlorobenzene	146	6.028	6.033	-0.005	87	298313	54.2	
96 Benzyl alcohol	108	6.210	6.210	0.0	82	174864	45.0	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	91	284800	52.2	
98 2-Methylphenol	108	6.375	6.370	0.005	80	246164	54.6	
99 2,2'-oxybis[1-chloropropane]	45	6.370	6.375	-0.005	79	557517	53.5	
101 N-Nitrosodi-n-propylamine	70	6.546	6.546	0.0	94	242636	56.5	
104 Acetophenone	105	6.541	6.552	-0.011	79	387268	52.6	
102 4-Methylphenol	108	6.584	6.578	0.006	72	525510	118.6	
106 Hexachloroethane	117	6.664	6.664	0.0	87	115916	53.5	
107 Nitrobenzene	77	6.760	6.765	-0.005	95	332063	54.2	
110 Isophorone	82	7.080	7.080	0.0	94	565829	55.3	
111 2-Nitrophenol	139	7.177	7.182	-0.005	84	139925	56.4	
112 2,4-Dimethylphenol	107	7.267	7.267	0.0	97	307173	54.0	
113 Tetraethyl lead	237	7.278	7.283	-0.005	89	85109	28.3	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	95	291324	55.6	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
119 Benzoic acid	105	7.460	7.513	-0.053	88	208540	52.3	
117 2,4-Dichlorophenol	162	7.518	7.518	0.0	95	234777	55.4	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	90	285837	53.9	
121 Naphthalene	128	7.700	7.700	0.0	96	736024	56.3	
123 4-Chloroaniline	127	7.796	7.796	0.0	81	162425	32.7	
126 Hexachlorobutadiene	225	7.860	7.860	0.0	95	196284	54.1	
127 Caprolactam	113	8.277	8.256	0.021	58	63790	47.9	
131 4-Chloro-3-methylphenol	107	8.459	8.459	0.0	96	245608	55.4	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	88	526755	52.9	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	96	178880	55.7	
139 2,4,6-Trichlorophenol	196	8.988	8.988	0.0	96	208866	57.5	
140 2,4,5-Trichlorophenol	196	9.057	9.052	0.005	97	207210	56.2	
144 1,1'-Biphenyl	154	9.207	9.217	-0.010	96	704036	48.8	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	95	529390	56.0	
145 2-Nitroaniline	65	9.394	9.394	0.0	68	198911	59.8	
146 1,4-Dinitrobenzene	168	9.575	9.480	0.095	92	99031	0	
50 1,3-Dinitrobenzene	168	9.575	9.480	0.095	80	99031	0	
147 Dimethyl phthalate	163	9.629	9.623	0.006	97	683655	58.2	
148 2,6-Dinitrotoluene	165	9.709	9.703	0.006	68	149179	60.9	
149 Acenaphthylene	152	9.762	9.762	0.0	92	893169	58.9	
150 3-Nitroaniline	138	9.939	9.939	-0.001	62	99224	40.6	
151 Acenaphthene	153	9.987	9.987	0.0	94	560299	55.3	
152 2,4-Dinitrophenol	184	10.067	10.067	0.0	73	75799	52.9	
155 Dibenzofuran	168	10.200	10.200	0.0	86	813461	53.4	
153 4-Nitrophenol	109	10.211	10.211	0.0	56	91796	52.9	
154 2,4-Dinitrotoluene	165	10.216	10.216	0.0	80	204733	58.1	
158 2,3,4,6-Tetrachlorophenol	232	10.377	10.393	-0.016	96	164103	69.2	
160 Diethyl phthalate	149	10.499	10.499	0.0	96	689236	58.5	
161 Fluorene	166	10.612	10.612	0.0	81	767191	50.3	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	81	417560	54.6	
164 4-Nitroaniline	138	10.686	10.681	0.005	73	119652	52.8	
166 4,6-Dinitro-2-methylphenol	198	10.702	10.702	0.0	54	123897	54.0	
167 N-Nitrosodiphenylamine	169	10.767	10.767	0.0	96	465068	54.0	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	95	719012	56.6	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	94	212165	52.2	
177 Hexachlorobenzene	284	11.237	11.237	0.0	94	222644	52.9	
180 Atrazine	200	11.370	11.381	-0.011	89	212724	69.0	
181 Pentachlorophenol	266	11.466	11.466	0.0	87	108593	53.8	
185 Phenanthrene	178	11.675	11.675	0.0	96	1013529	48.7	
188 Anthracene	178	11.728	11.728	0.0	97	1029715	54.1	
189 Carbazole	167	11.910	11.915	-0.005	83	850750	53.2	
192 Di-n-butyl phthalate	149	12.246	12.246	0.0	100	1073208	48.2	
197 Fluoranthene	202	12.855	12.855	0.0	96	1172034	51.0	
198 Benzidine	184	12.989	12.989	0.0	97	255909	27.1	
199 Pyrene	202	13.069	13.069	0.0	97	1150159	55.6	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	99	480282	51.2	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	95	719868	53.2	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	66	275837	30.7	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	77	1146070	55.4	
211 Chrysene	228	14.175	14.175	0.0	90	1034317	55.4	
212 Di-n-octyl phthalate	149	14.682	14.682	0.0	98	1018289	57.8	
213 Benzo[b]fluoranthene	252	15.147	15.147	0.0	90	962729	51.9	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
214 Benzo[k]fluoranthene	252	15.174	15.174	0.0	96	1042109	55.6	
217 Benzo[a]pyrene	252	15.489	15.489	0.0	99	831306	55.2	
219 Indeno[1,2,3-cd]pyrene	276	16.809	16.809	0.0	94	1050997	54.4	
220 Dibenz(a,h)anthracene	278	16.814	16.814	0.0	68	913117	53.5	
221 Benzo[g,h,i]perylene	276	17.172	17.172	0.0	90	749188	60.8	
S 78 3-Methylphenol	1				0		118.6	

QC Flag Legend

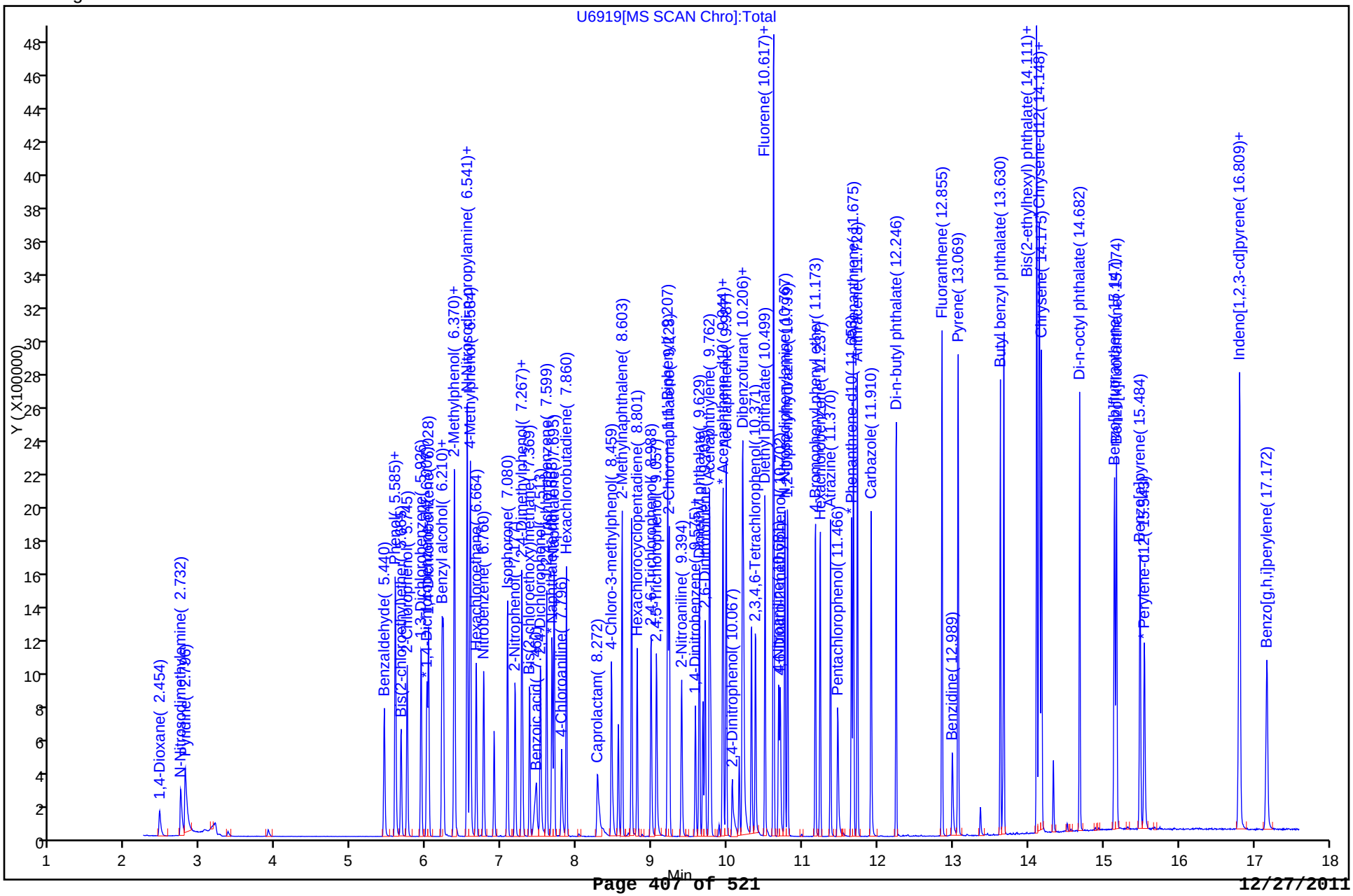
Processing Flags
E - Exceeded Maximum Amount

Report Date: 06-Dec-2011 17:09:04 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D

Injection Date:	06-Dec-2011 15:46:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	8
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: ICV 480-42934/8 Calibration Date: 12/06/2011 15:46

Instrument ID: HP5973U Calib Start Date: 10/28/2011 19:24

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 10/28/2011 21:20

Lab File ID: U6919.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Benzaldehyde	Ave	1.170	1.050	0.0100	44900	50000	-10.2	25.0
Acetophenone	Ave	2.068	2.175	0.0100	52600	50000	5.2	25.0
Caprolactam	Lin1		0.0951	0.0100	47900	50000	-4.2	25.0
Biphenyl	Ave	1.490	1.456	0.0100	48800	50000	-2.3	25.0
2,3,4,6-Tetrachlorophenol	Qua		0.3393	0.0100	69200	50000	38.4*	25.0
Atrazine	Lin1		0.4398	0.0100	69000	50000	38.0*	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D
Lims ID: ICV
Client ID:
Inject. Date: 06-Dec-2011 15:46:30
Dil. Factor: 1.0000
Sample Type: ICV
Sample ID: 480-0007971-008
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 9
Lims Batch ID: 42934
Lims Sample ID: 8
Sublist:
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:52
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:27:44

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	96	142420	40.0	
* 2 Naphthalene-d8	136	7.668	7.673	-0.005	99	536679	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	386961	40.0	
* 4 Phenanthrene-d10	188	11.653	11.653	0.0	97	725453	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	96	700116	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	567771	40.0	
80 1,4-Dioxane	88	2.454	2.518	-0.064	83	71297	36.5	E
81 N-Nitrosodimethylamine	42	2.732	2.748	-0.016	62	216174	53.5	
82 Pyridine	52	2.796	2.823	-0.027	73	229268	53.4	
88 Benzaldehyde	77	5.440	5.456	-0.016	81	186918	44.9	
90 Aniline	93	5.585	5.590	-0.005	43	208599	28.2	
89 Phenol	94	5.585	5.590	-0.005	75	331078	50.6	
91 Bis(2-chloroethyl)ether	93	5.665	5.670	-0.005	95	243787	54.7	
93 2-Chlorophenol	128	5.745	5.745	0.0	89	240472	54.1	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	93	288289	54.5	
95 1,4-Dichlorobenzene	146	6.028	6.033	-0.005	87	298313	54.2	
96 Benzyl alcohol	108	6.210	6.210	0.0	82	174864	45.0	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	91	284800	52.2	
98 2-Methylphenol	108	6.375	6.370	0.005	80	246164	54.6	
99 2,2'-oxybis[1-chloropropane]	45	6.370	6.375	-0.005	79	557517	53.5	
101 N-Nitrosodi-n-propylamine	70	6.546	6.546	0.0	94	242636	56.5	
104 Acetophenone	105	6.541	6.552	-0.011	79	387268	52.6	
102 4-Methylphenol	108	6.584	6.578	0.006	72	525510	118.6	
106 Hexachloroethane	117	6.664	6.664	0.0	87	115916	53.5	
107 Nitrobenzene	77	6.760	6.765	-0.005	95	332063	54.2	
110 Isophorone	82	7.080	7.080	0.0	94	565829	55.3	
111 2-Nitrophenol	139	7.177	7.182	-0.005	84	139925	56.4	
112 2,4-Dimethylphenol	107	7.267	7.267	0.0	97	307173	54.0	
113 Tetraethyl lead	237	7.278	7.283	-0.005	89	85109	28.3	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	95	291324	55.6	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
119 Benzoic acid	105	7.460	7.513	-0.053	88	208540	52.3	
117 2,4-Dichlorophenol	162	7.518	7.518	0.0	95	234777	55.4	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	90	285837	53.9	
121 Naphthalene	128	7.700	7.700	0.0	96	736024	56.3	
123 4-Chloroaniline	127	7.796	7.796	0.0	81	162425	32.7	
126 Hexachlorobutadiene	225	7.860	7.860	0.0	95	196284	54.1	
127 Caprolactam	113	8.277	8.256	0.021	58	63790	47.9	
131 4-Chloro-3-methylphenol	107	8.459	8.459	0.0	96	245608	55.4	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	88	526755	52.9	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	96	178880	55.7	
139 2,4,6-Trichlorophenol	196	8.988	8.988	0.0	96	208866	57.5	
140 2,4,5-Trichlorophenol	196	9.057	9.052	0.005	97	207210	56.2	
144 1,1'-Biphenyl	154	9.207	9.217	-0.010	96	704036	48.8	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	95	529390	56.0	
145 2-Nitroaniline	65	9.394	9.394	0.0	68	198911	59.8	
146 1,4-Dinitrobenzene	168	9.575	9.480	0.095	92	99031	0	
50 1,3-Dinitrobenzene	168	9.575	9.480	0.095	80	99031	0	
147 Dimethyl phthalate	163	9.629	9.623	0.006	97	683655	58.2	
148 2,6-Dinitrotoluene	165	9.709	9.703	0.006	68	149179	60.9	
149 Acenaphthylene	152	9.762	9.762	0.0	92	893169	58.9	
150 3-Nitroaniline	138	9.939	9.939	-0.001	62	99224	40.6	
151 Acenaphthene	153	9.987	9.987	0.0	94	560299	55.3	
152 2,4-Dinitrophenol	184	10.067	10.067	0.0	73	75799	52.9	
155 Dibenzofuran	168	10.200	10.200	0.0	86	813461	53.4	
153 4-Nitrophenol	109	10.211	10.211	0.0	56	91796	52.9	
154 2,4-Dinitrotoluene	165	10.216	10.216	0.0	80	204733	58.1	
158 2,3,4,6-Tetrachlorophenol	232	10.377	10.393	-0.016	96	164103	69.2	
160 Diethyl phthalate	149	10.499	10.499	0.0	96	689236	58.5	
161 Fluorene	166	10.612	10.612	0.0	81	767191	50.3	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	81	417560	54.6	
164 4-Nitroaniline	138	10.686	10.681	0.005	73	119652	52.8	
166 4,6-Dinitro-2-methylphenol	198	10.702	10.702	0.0	54	123897	54.0	
167 N-Nitrosodiphenylamine	169	10.767	10.767	0.0	96	465068	54.0	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	95	719012	56.6	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	94	212165	52.2	
177 Hexachlorobenzene	284	11.237	11.237	0.0	94	222644	52.9	
180 Atrazine	200	11.370	11.381	-0.011	89	212724	69.0	
181 Pentachlorophenol	266	11.466	11.466	0.0	87	108593	53.8	
185 Phenanthrene	178	11.675	11.675	0.0	96	1013529	48.7	
188 Anthracene	178	11.728	11.728	0.0	97	1029715	54.1	
189 Carbazole	167	11.910	11.915	-0.005	83	850750	53.2	
192 Di-n-butyl phthalate	149	12.246	12.246	0.0	100	1073208	48.2	
197 Fluoranthene	202	12.855	12.855	0.0	96	1172034	51.0	
198 Benzidine	184	12.989	12.989	0.0	97	255909	27.1	
199 Pyrene	202	13.069	13.069	0.0	97	1150159	55.6	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	99	480282	51.2	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	95	719868	53.2	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	66	275837	30.7	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	77	1146070	55.4	
211 Chrysene	228	14.175	14.175	0.0	90	1034317	55.4	
212 Di-n-octyl phthalate	149	14.682	14.682	0.0	98	1018289	57.8	
213 Benzo[b]fluoranthene	252	15.147	15.147	0.0	90	962729	51.9	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
214 Benzo[k]fluoranthene	252	15.174	15.174	0.0	96	1042109	55.6	
217 Benzo[a]pyrene	252	15.489	15.489	0.0	99	831306	55.2	
219 Indeno[1,2,3-cd]pyrene	276	16.809	16.809	0.0	94	1050997	54.4	
220 Dibenz(a,h)anthracene	278	16.814	16.814	0.0	68	913117	53.5	
221 Benzo[g,h,i]perylene	276	17.172	17.172	0.0	90	749188	60.8	
S 78 3-Methylphenol	1				0		118.6	

QC Flag Legend

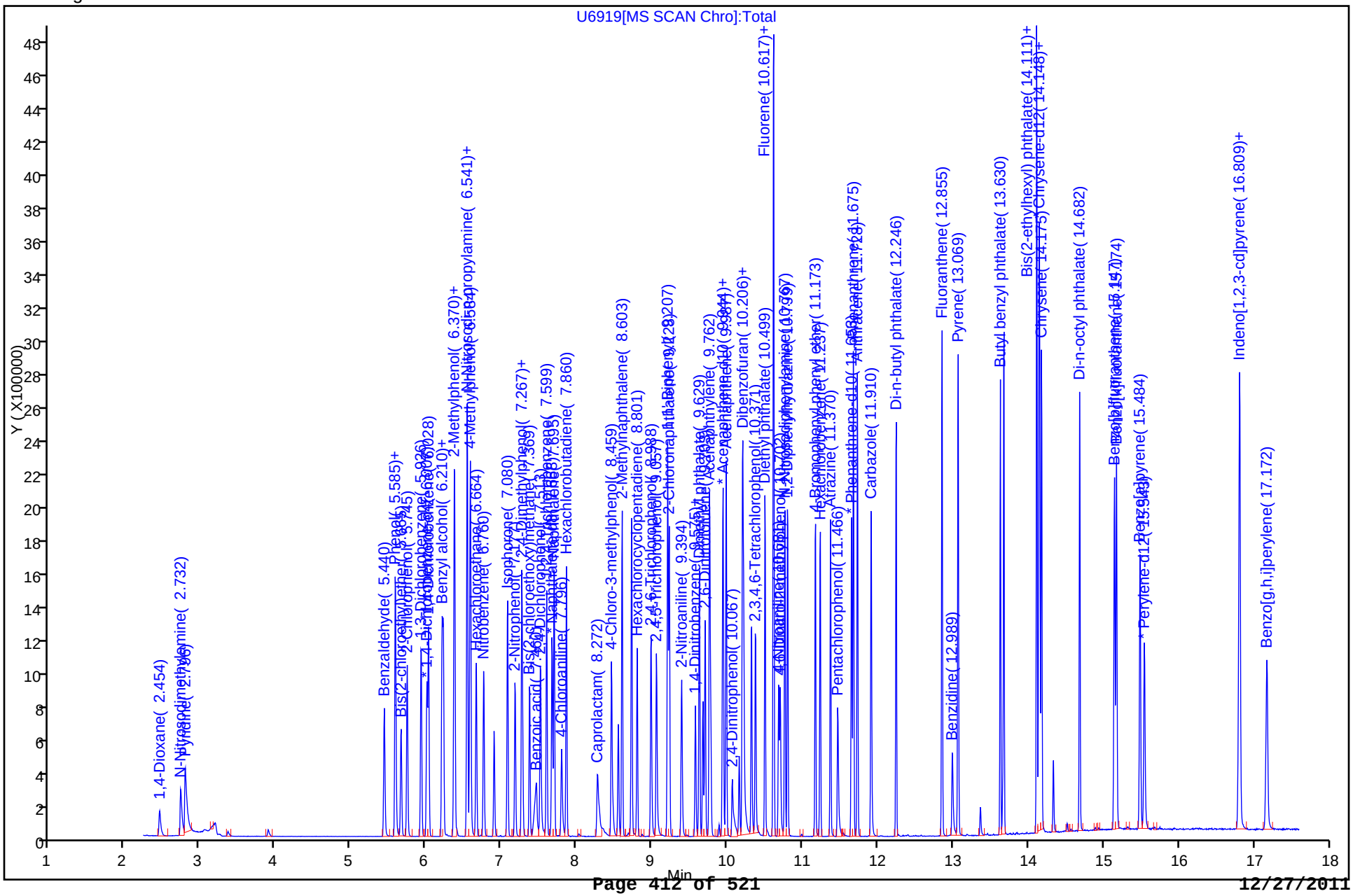
Processing Flags
E - Exceeded Maximum Amount

Report Date: 06-Dec-2011 17:09:04 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D

Injection Date:	06-Dec-2011 15:46:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	8
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: ICV 480-42934/8 Calibration Date: 12/06/2011 15:46

Instrument ID: HP5973U Calib Start Date: 12/06/2011 13:27

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/06/2011 15:23

Lab File ID: U6919.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
N-Nitrosodimethylamine	Ave	1.134	1.214	0.0100	53500	50000	7.1	25.0
Pyridine	Ave	1.206	1.288	0.0100	53400	50000	6.8	25.0
Aniline	Ave	2.076	1.465	0.0100	28200	40000	-29.4*	25.0
Phenol	Ave	1.839	1.860	0.0100	50600	50000	1.1	25.0
Bis(2-chloroethyl)ether	Ave	1.253	1.369	0.0100	54700	50000	9.3	25.0
2-Chlorophenol	Ave	1.249	1.351	0.0100	54100	50000	8.2	25.0
1,3-Dichlorobenzene	Ave	1.487	1.619	0.0100	54500	50000	8.9	25.0
1,4-Dichlorobenzene	Ave	1.547	1.676	0.0100	54200	50000	8.4	25.0
Benzyl alcohol	Lin1		0.9822	0.0100	45000	50000	-10.0	25.0
1,2-Dichlorobenzene	Ave	1.532	1.600	0.0100	52200	50000	4.4	25.0
bis (2-chloroisopropyl) ether	Ave	2.928	3.132	0.0100	53500	50000	7.0	25.0
2-Methylphenol	Ave	1.265	1.383	0.0100	54600	50000	9.3	25.0
N-Nitrosodi-n-propylamine	Ave	1.207	1.363	0.0500	56500	50000	12.9	25.0
4-Methylphenol	Ave	1.245	1.476	0.0100	119000	100000	18.6	25.0
Hexachloroethane	Ave	0.6081	0.6511	0.0100	53500	50000	7.1	25.0
Nitrobenzene	Ave	0.4565	0.4950	0.0100	54200	50000	8.4	25.0
Isophorone	Ave	0.7627	0.8435	0.0100	55300	50000	10.6	25.0
2-Nitrophenol	Ave	0.1848	0.2086	0.0100	56400	50000	12.9	25.0
2,4-Dimethylphenol	Qua		0.4579	0.0100	54000	50000	8.0	25.0
Tetraethyl lead	Ave	0.2241	0.2537	0.0100	28300	25000	13.2	25.0
Bis(2-chloroethoxy)methane	Ave	0.3908	0.4343	0.0100	55600	50000	11.1	25.0
Benzoic acid	Ave	0.2971	0.3109	0.0100	52300	50000	4.6	25.0
2,4-Dichlorophenol	Ave	0.3157	0.3500	0.0100	55400	50000	10.9	25.0
1,2,4-Trichlorobenzene	Ave	0.3955	0.4261	0.0100	53900	50000	7.7	25.0
Naphthalene	Ave	0.9745	1.097	0.0100	56300	50000	12.6	25.0
4-Chloroaniline	Ave	0.3705	0.2720	0.0100	32700	44500	-26.6*	25.0
Hexachlorobutadiene	Ave	0.2703	0.2926	0.0100	54100	50000	8.2	25.0
4-Chloro-3-methylphenol	Ave	0.3301	0.3661	0.0100	55400	50000	10.9	25.0
2-Methylnaphthalene	Ave	0.7424	0.7852	0.0100	52900	50000	5.8	25.0
Hexachlorocyclopentadiene	Qua		0.3698	0.0500	55700	50000	11.4	25.0
2,4,6-Trichlorophenol	Ave	0.3752	0.4318	0.0100	57500	50000	15.1	25.0
2,4,5-Trichlorophenol	Ave	0.3814	0.4284	0.0100	56200	50000	12.3	25.0
2-Chloronaphthalene	Ave	0.9779	1.094	0.0100	56000	50000	11.9	25.0
2-Nitroaniline	Ave	0.3437	0.4112	0.0100	59800	50000	19.7	25.0
Dimethyl phthalate	Ave	1.215	1.413	0.0100	58200	50000	16.3	25.0
2,6-Dinitrotoluene	Ave	0.2534	0.3084	0.0100	60900	50000	21.7	25.0
Acenaphthylene	Ave	1.568	1.847	0.0100	58900	50000	17.7	25.0
3-Nitroaniline	Ave	0.2526	0.2051	0.0100	40600	50000	-18.8	25.0
Acenaphthene	Ave	1.047	1.158	0.0100	55300	50000	10.7	25.0
2,4-Dinitrophenol	Lin1		0.1567	0.0500	52900	50000	5.8	25.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: ICV 480-42934/8 Calibration Date: 12/06/2011 15:46

Instrument ID: HP5973U Calib Start Date: 12/06/2011 13:27

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/06/2011 15:23

Lab File ID: U6919.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dibenzofuran	Ave	1.574	1.682	0.0100	53400	50000	6.9	25.0
4-Nitrophenol	Qua		0.1898	0.0500	52900	50000	5.8	25.0
2,4-Dinitrotoluene	Ave	0.3589	0.4233	0.0100	58100	50000	17.9	25.0
Diethyl phthalate	Ave	1.217	1.425	0.0100	58500	50000	17.1	25.0
Fluorene	Lin1		1.586	0.0100	50300	50000	0.6	25.0
4-Chlorophenyl phenyl ether	Ave	0.7911	0.8633	0.0100	54600	50000	9.1	25.0
4-Nitroaniline	Ave	0.2342	0.2474	0.0100	52800	50000	5.6	25.0
4,6-Dinitro-2-methylphenol	Qua		0.1366	0.0100	54000	50000	8.0	25.0
N-Nitrosodiphenylamine	Qua		0.5129	0.0100	54000	50000	8.0	25.0
1,2-Diphenylhydrazine	Ave	1.314	1.486	0.0100	56600	50000	13.1	25.0
4-Bromophenyl phenyl ether	Qua		0.2340	0.0100	52200	50000	4.4	25.0
Hexachlorobenzene	Qua		0.2455	0.0100	52900	50000	5.8	25.0
Pentachlorophenol	Qua		0.1198	0.0100	53800	50000	7.6	25.0
Phenanthrene	Lin1		1.118	0.0100	48700	50000	-2.6	25.0
Anthracene	Ave	1.050	1.136	0.0100	54100	50000	8.1	25.0
Carbazole	Qua		0.9382	0.0100	53200	50000	6.4	25.0
Di-n-butyl phthalate	Lin1		1.183	0.0100	48200	50000	-3.6	25.0
Fluoranthene	Qua		1.292	0.0100	51000	50000	2.0	25.0
Benzidine	Ave	0.5390	0.2924	0.0100	27100	50000	-45.7*	25.0
Pyrene	Ave	1.182	1.314	0.0100	55600	50000	11.2	25.0
Butyl benzyl phthalate	Ave	0.5363	0.5488	0.0100	51200	50000	2.3	25.0
Bis(2-ethylhexyl) phthalate	Ave	0.7734	0.8226	0.0100	53200	50000	6.4	25.0
3,3'-Dichlorobenzidine	Lin1		0.3152	0.0100	30700	50000	-38.6*	25.0
Benz(a)anthracene	Ave	1.183	1.310	0.0100	55400	50000	10.7	25.0
Chrysene	Ave	1.067	1.182	0.0100	55400	50000	10.7	25.0
Di-n-octyl phthalate	Ave	1.007	1.164	0.0100	57800	50000	15.6	25.0
Benzo(b)fluoranthene	Qua		1.357	0.0100	51900	50000	3.8	25.0
Benzo(k)fluoranthene	Qua		1.468	0.0100	55600	50000	11.2	25.0
Benzo(a)pyrene	Qua		1.171	0.0100	55200	50000	10.4	25.0
Indeno(1,2,3-c,d)pyrene	Qua		1.481	0.0100	54400	50000	8.8	25.0
Dibenz(a,h)anthracene	Qua		1.287	0.0100	53500	50000	7.0	25.0
Benzo(g,h,i)perylene	Qua		1.056	0.0100	60800	50000	21.6	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D
Lims ID: ICV
Client ID:
Inject. Date: 06-Dec-2011 15:46:30
Dil. Factor: 1.0000
Sample Type: ICV
Sample ID: 480-0007971-008
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 9
Lims Batch ID: 42934
Lims Sample ID: 8
Sublist:
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 06-Dec-2011 17:08:52
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-16

First Level Reviewer: mckernar
Date: 06-Dec-2011 16:27:44

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	96	142420	40.0	
* 2 Naphthalene-d8	136	7.668	7.673	-0.005	99	536679	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	386961	40.0	
* 4 Phenanthrene-d10	188	11.653	11.653	0.0	97	725453	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	96	700116	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	567771	40.0	
80 1,4-Dioxane	88	2.454	2.518	-0.064	83	71297	36.5	E
81 N-Nitrosodimethylamine	42	2.732	2.748	-0.016	62	216174	53.5	
82 Pyridine	52	2.796	2.823	-0.027	73	229268	53.4	
88 Benzaldehyde	77	5.440	5.456	-0.016	81	186918	44.9	
90 Aniline	93	5.585	5.590	-0.005	43	208599	28.2	
89 Phenol	94	5.585	5.590	-0.005	75	331078	50.6	
91 Bis(2-chloroethyl)ether	93	5.665	5.670	-0.005	95	243787	54.7	
93 2-Chlorophenol	128	5.745	5.745	0.0	89	240472	54.1	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	93	288289	54.5	
95 1,4-Dichlorobenzene	146	6.028	6.033	-0.005	87	298313	54.2	
96 Benzyl alcohol	108	6.210	6.210	0.0	82	174864	45.0	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	91	284800	52.2	
98 2-Methylphenol	108	6.375	6.370	0.005	80	246164	54.6	
99 2,2'-oxybis[1-chloropropane]	45	6.370	6.375	-0.005	79	557517	53.5	
101 N-Nitrosodi-n-propylamine	70	6.546	6.546	0.0	94	242636	56.5	
104 Acetophenone	105	6.541	6.552	-0.011	79	387268	52.6	
102 4-Methylphenol	108	6.584	6.578	0.006	72	525510	118.6	
106 Hexachloroethane	117	6.664	6.664	0.0	87	115916	53.5	
107 Nitrobenzene	77	6.760	6.765	-0.005	95	332063	54.2	
110 Isophorone	82	7.080	7.080	0.0	94	565829	55.3	
111 2-Nitrophenol	139	7.177	7.182	-0.005	84	139925	56.4	
112 2,4-Dimethylphenol	107	7.267	7.267	0.0	97	307173	54.0	
113 Tetraethyl lead	237	7.278	7.283	-0.005	89	85109	28.3	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	95	291324	55.6	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
119 Benzoic acid	105	7.460	7.513	-0.053	88	208540	52.3	
117 2,4-Dichlorophenol	162	7.518	7.518	0.0	95	234777	55.4	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	90	285837	53.9	
121 Naphthalene	128	7.700	7.700	0.0	96	736024	56.3	
123 4-Chloroaniline	127	7.796	7.796	0.0	81	162425	32.7	
126 Hexachlorobutadiene	225	7.860	7.860	0.0	95	196284	54.1	
127 Caprolactam	113	8.277	8.256	0.021	58	63790	47.9	
131 4-Chloro-3-methylphenol	107	8.459	8.459	0.0	96	245608	55.4	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	88	526755	52.9	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	96	178880	55.7	
139 2,4,6-Trichlorophenol	196	8.988	8.988	0.0	96	208866	57.5	
140 2,4,5-Trichlorophenol	196	9.057	9.052	0.005	97	207210	56.2	
144 1,1'-Biphenyl	154	9.207	9.217	-0.010	96	704036	48.8	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	95	529390	56.0	
145 2-Nitroaniline	65	9.394	9.394	0.0	68	198911	59.8	
146 1,4-Dinitrobenzene	168	9.575	9.480	0.095	92	99031	0	
50 1,3-Dinitrobenzene	168	9.575	9.480	0.095	80	99031	0	
147 Dimethyl phthalate	163	9.629	9.623	0.006	97	683655	58.2	
148 2,6-Dinitrotoluene	165	9.709	9.703	0.006	68	149179	60.9	
149 Acenaphthylene	152	9.762	9.762	0.0	92	893169	58.9	
150 3-Nitroaniline	138	9.939	9.939	-0.001	62	99224	40.6	
151 Acenaphthene	153	9.987	9.987	0.0	94	560299	55.3	
152 2,4-Dinitrophenol	184	10.067	10.067	0.0	73	75799	52.9	
155 Dibenzofuran	168	10.200	10.200	0.0	86	813461	53.4	
153 4-Nitrophenol	109	10.211	10.211	0.0	56	91796	52.9	
154 2,4-Dinitrotoluene	165	10.216	10.216	0.0	80	204733	58.1	
158 2,3,4,6-Tetrachlorophenol	232	10.377	10.393	-0.016	96	164103	69.2	
160 Diethyl phthalate	149	10.499	10.499	0.0	96	689236	58.5	
161 Fluorene	166	10.612	10.612	0.0	81	767191	50.3	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	81	417560	54.6	
164 4-Nitroaniline	138	10.686	10.681	0.005	73	119652	52.8	
166 4,6-Dinitro-2-methylphenol	198	10.702	10.702	0.0	54	123897	54.0	
167 N-Nitrosodiphenylamine	169	10.767	10.767	0.0	96	465068	54.0	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	95	719012	56.6	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	94	212165	52.2	
177 Hexachlorobenzene	284	11.237	11.237	0.0	94	222644	52.9	
180 Atrazine	200	11.370	11.381	-0.011	89	212724	69.0	
181 Pentachlorophenol	266	11.466	11.466	0.0	87	108593	53.8	
185 Phenanthrene	178	11.675	11.675	0.0	96	1013529	48.7	
188 Anthracene	178	11.728	11.728	0.0	97	1029715	54.1	
189 Carbazole	167	11.910	11.915	-0.005	83	850750	53.2	
192 Di-n-butyl phthalate	149	12.246	12.246	0.0	100	1073208	48.2	
197 Fluoranthene	202	12.855	12.855	0.0	96	1172034	51.0	
198 Benzidine	184	12.989	12.989	0.0	97	255909	27.1	
199 Pyrene	202	13.069	13.069	0.0	97	1150159	55.6	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	99	480282	51.2	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	95	719868	53.2	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	66	275837	30.7	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	77	1146070	55.4	
211 Chrysene	228	14.175	14.175	0.0	90	1034317	55.4	
212 Di-n-octyl phthalate	149	14.682	14.682	0.0	98	1018289	57.8	
213 Benzo[b]fluoranthene	252	15.147	15.147	0.0	90	962729	51.9	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
214 Benzo[k]fluoranthene	252	15.174	15.174	0.0	96	1042109	55.6	
217 Benzo[a]pyrene	252	15.489	15.489	0.0	99	831306	55.2	
219 Indeno[1,2,3-cd]pyrene	276	16.809	16.809	0.0	94	1050997	54.4	
220 Dibenz(a,h)anthracene	278	16.814	16.814	0.0	68	913117	53.5	
221 Benzo[g,h,i]perylene	276	17.172	17.172	0.0	90	749188	60.8	
S 78 3-Methylphenol	1				0		118.6	

QC Flag Legend

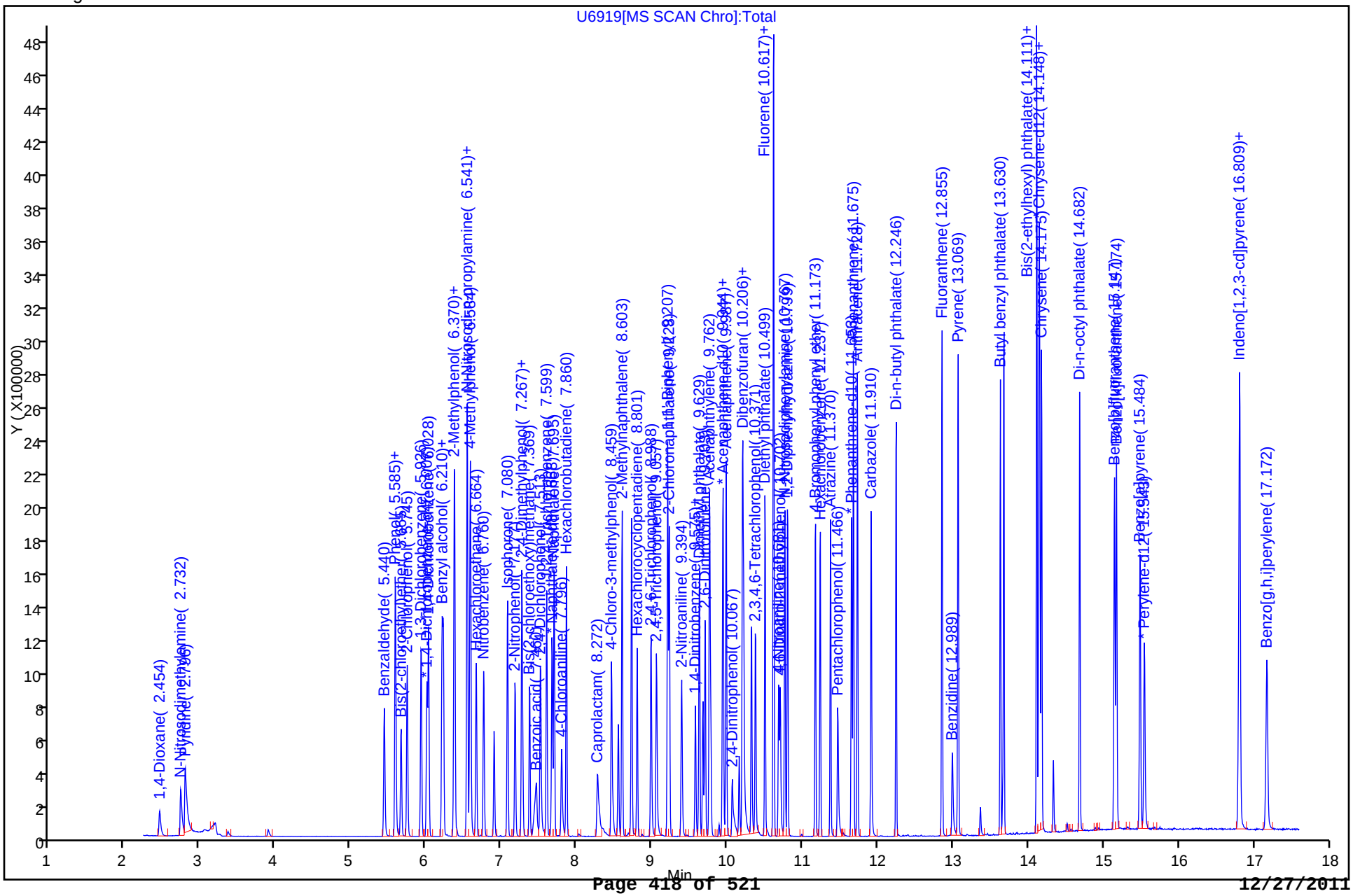
Processing Flags
E - Exceeded Maximum Amount

Report Date: 06-Dec-2011 17:09:04 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6919.D

Injection Date:	06-Dec-2011 15:46:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	8
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-42934/10 Calibration Date: 12/06/2011 16:33

Instrument ID: HP5973U Calib Start Date: 12/06/2011 13:27

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/06/2011 15:23

Lab File ID: U6921.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
N-Nitrosodimethylamine	Ave	1.134	1.108	0.0100	48800	50000	-2.3	25.0
Pyridine	Ave	1.206	1.065	0.0100	44200	50000	-11.7	100.0
Aniline	Ave	2.076	1.809	0.0100	43600	50000	-12.8	100.0
Phenol	Ave	1.839	1.589	0.0100	43200	50000	-13.6	20.0
Bis(2-chloroethyl)ether	Ave	1.253	1.140	0.0100	45500	50000	-9.0	25.0
2-Chlorophenol	Ave	1.249	1.104	0.0100	44200	50000	-11.6	25.0
1,3-Dichlorobenzene	Ave	1.487	1.335	0.0100	44900	50000	-10.2	25.0
1,4-Dichlorobenzene	Ave	1.547	1.369	0.0100	44200	50000	-11.5	20.0
Benzyl alcohol	Lin1		0.8437	0.0100	39100	50000	-21.8	100.0
1,2-Dichlorobenzene	Ave	1.532	1.314	0.0100	42900	50000	-14.3	25.0
2-Methylphenol	Ave	1.265	1.114	0.0100	44000	50000	-11.9	25.0
bis (2-chloroisopropyl) ether	Ave	2.928	2.594	0.0100	44300	50000	-11.4	25.0
N-Nitrosodi-n-propylamine	Ave	1.207	1.116	0.0500	46200	50000	-7.6	25.0
4-Methylphenol	Ave	1.245	1.097	0.0100	44100	50000	-11.8	25.0
Hexachloroethane	Ave	0.6081	0.5513	0.0100	45300	50000	-9.3	25.0
Nitrobenzene	Ave	0.4565	0.4318	0.0100	47300	50000	-5.4	25.0
Isophorone	Ave	0.7627	0.7205	0.0100	47200	50000	-5.5	25.0
2-Nitrophenol	Ave	0.1848	0.1750	0.0100	47400	50000	-5.3	20.0
2,4-Dimethylphenol	Qua		0.3932	0.0100	47300	50000	-5.4	25.0
Tetraethyl lead	Ave	0.2241	0.2062	0.0100	46000	50000	-8.0	40.0
Bis(2-chloroethoxy)methane	Ave	0.3908	0.3593	0.0100	46000	50000	-8.1	25.0
2,4-Dichlorophenol	Ave	0.3157	0.2762	0.0100	43700	50000	-12.5	20.0
Benzoic acid	Ave	0.2971	0.2579	0.0100	130000	150000	-13.2	25.0
1,2,4-Trichlorobenzene	Ave	0.3955	0.3455	0.0100	43700	50000	-12.6	25.0
Naphthalene	Ave	0.9745	0.8753	0.0100	44900	50000	-10.2	25.0
4-Chloroaniline	Ave	0.3705	0.3530	0.0100	47600	50000	-4.7	25.0
Hexachlorobutadiene	Ave	0.2703	0.2522	0.0100	46700	50000	-6.7	20.0
4-Chloro-3-methylphenol	Ave	0.3301	0.3089	0.0100	46800	50000	-6.4	20.0
2-Methylnaphthalene	Ave	0.7424	0.6739	0.0100	45400	50000	-9.2	25.0
Hexachlorocyclopentadiene	Qua		0.2992	0.0500	46900	50000	-6.2	25.0
2,4,6-Trichlorophenol	Ave	0.3752	0.3335	0.0100	44400	50000	-11.1	20.0
2,4,5-Trichlorophenol	Ave	0.3814	0.3414	0.0100	44800	50000	-10.5	25.0
2-Chloronaphthalene	Ave	0.9779	0.8811	0.0100	45100	50000	-9.9	25.0
2-Nitroaniline	Ave	0.3437	0.3402	0.0100	49500	50000	-1.0	25.0
Dimethyl phthalate	Ave	1.215	1.134	0.0100	46700	50000	-6.7	25.0
2,6-Dinitrotoluene	Ave	0.2534	0.2416	0.0100	47700	50000	-4.7	25.0
Acenaphthylene	Ave	1.568	1.437	0.0100	45800	50000	-8.4	25.0
3-Nitroaniline	Ave	0.2526	0.2363	0.0100	46800	50000	-6.5	25.0
Acenaphthene	Ave	1.047	0.9297	0.0100	44400	50000	-11.2	20.0
2,4-Dinitrophenol	Lin1		0.1286	0.0500	44700	50000	-10.6	25.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-42934/10 Calibration Date: 12/06/2011 16:33

Instrument ID: HP5973U Calib Start Date: 12/06/2011 13:27

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/06/2011 15:23

Lab File ID: U6921.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dibenzofuran	Ave	1.574	1.422	0.0100	45200	50000	-9.6	25.0
4-Nitrophenol	Qua		0.1718	0.0500	48800	50000	-2.4	25.0
2,4-Dinitrotoluene	Ave	0.3589	0.3475	0.0100	47700	50000	-3.2	25.0
Diethyl phthalate	Ave	1.217	1.168	0.0100	48000	50000	-4.1	25.0
Fluorene	Lin1		1.269	0.0100	40800	50000	-18.4	25.0
4-Chlorophenyl phenyl ether	Ave	0.7911	0.7137	0.0100	45100	50000	-9.8	25.0
4-Nitroaniline	Ave	0.2342	0.2140	0.0100	45700	50000	-8.6	25.0
4,6-Dinitro-2-methylphenol	Qua		0.1151	0.0100	46900	50000	-6.2	25.0
N-Nitrosodiphenylamine	Qua		0.4105	0.0100	44400	50000	-11.2	20.0
1,2-Diphenylhydrazine	Ave	1.314	1.241	0.0100	47200	50000	-5.5	25.0
4-Bromophenyl phenyl ether	Qua		0.1952	0.0100	44800	50000	-10.4	25.0
Hexachlorobenzene	Qua		0.2085	0.0100	46200	50000	-7.6	25.0
Pentachlorophenol	Qua		0.0982	0.0100	46200	50000	-7.6	20.0
Phenanthrene	Lin1		0.9079	0.0100	40000	50000	-20.0	25.0
Anthracene	Ave	1.050	0.9162	0.0100	43600	50000	-12.8	25.0
Carbazole	Qua		0.7767	0.0100	45100	50000	-9.8	25.0
Di-n-butyl phthalate	Lin1		0.9932	0.0100	40900	50000	-18.2	25.0
Fluoranthene	Qua		1.071	0.0100	43500	50000	-13.0	20.0
Benzidine	Ave	0.5390	0.4875	0.0100	45200	50000	-9.6	25.0
Pyrene	Ave	1.182	1.042	0.0100	44100	50000	-11.8	25.0
Butyl benzyl phthalate	Ave	0.5363	0.4834	0.0100	45100	50000	-9.9	25.0
3,3'-Dimethylbenzidine	Lin1		0.6214	0.0100	40600	50000	-18.8	100.0
Bis(2-ethylhexyl) phthalate	Ave	0.7734	0.7030	0.0100	45400	50000	-9.1	25.0
3,3'-Dichlorobenzidine	Lin1		0.4316	0.0100	41200	50000	-17.6	25.0
Benz(a)anthracene	Ave	1.183	1.059	0.0100	44800	50000	-10.4	25.0
Chrysene	Ave	1.067	0.9611	0.0100	45000	50000	-9.9	25.0
Di-n-octyl phthalate	Ave	1.007	0.9252	0.0100	45900	50000	-8.1	20.0
Benzo(b)fluoranthene	Qua		1.109	0.0100	44000	50000	-12.0	25.0
Benzo(k)fluoranthene	Qua		1.179	0.0100	46000	50000	-8.0	25.0
Benzo(a)pyrene	Qua		0.9209	0.0100	45000	50000	-10.0	20.0
Indeno(1,2,3-c,d)pyrene	Qua		1.198	0.0100	45600	50000	-8.8	25.0
Dibenz(a,h)anthracene	Qua		1.019	0.0100	44200	50000	-11.6	25.0
Benzo(g,h,i)perylene	Qua		0.8236	0.0100	49300	50000	-1.4	25.0
2-Fluorophenol	Ave	1.136	1.053	0.0100	46300	50000	-7.3	25.0
Phenol-d5	Ave	1.580	1.399	0.0100	44300	50000	-11.5	25.0
Nitrobenzene-d5	Ave	0.4441	0.4217	0.0100	47500	50000	-5.1	25.0
2-Fluorobiphenyl	Ave	1.308	1.170	0.0100	44700	50000	-10.6	25.0
2,4,6-Tribromophenol	Qua		0.0804	0.0100	45400	50000	-9.2	25.0
p-Terphenyl-d14	Qua		0.7438	0.0100	43400	50000	-13.2	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6921.D
Lims ID: CCVIS Client ID:
Inject. Date: 06-Dec-2011 16:33:30 Dil. Factor: 1.0000
Sample Type: CCVIS
Sample ID: 480-0007971-002
Misc. Info.:
Operator: RMM Instrument ID: HP5973U
Vol. Injected: 1.0000 ALS Bottle#: 11
Lims Batch ID: 42934 Lims Sample ID: 10
Sublist: chrom-U-8270*sub16
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 07-Dec-2011 10:59:50 Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 07-Dec-2011 10:59:50

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	95	150437	40.0	
* 2 Naphthalene-d8	136	7.668	7.668	0.0	99	568704	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	432519	40.0	
* 4 Phenanthrene-d10	188	11.648	11.648	0.0	98	812786	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	85	836415	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	720971	40.0	
$ 9 2-Fluorophenol	112	4.335	4.335	0.0	92	197983	46.3	
$ 10 Phenol-d5	99	5.569	5.569	0.0	93	263034	44.3	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	91	299745	47.5	
$ 12 2-Fluorobiphenyl	172	9.079	9.079	0.0	92	632558	44.7	
$ 13 2,4,6-Tribromophenol	330	10.900	10.900	0.0	92	81655	45.4	
$ 14 p-Terphenyl-d14	244	13.198	13.198	0.0	99	777700	43.4	
81 N-Nitrosodimethylamine	42	2.748	2.748	0.0	59	208361	48.8	
82 Pyridine	52	2.818	2.818	0.0	70	200249	44.2	
90 Aniline	93	5.585	5.585	0.0	54	340245	43.6	
89 Phenol	94	5.585	5.585	0.0	63	298859	43.2	
91 Bis(2-chloroethyl)ether	93	5.670	5.670	0.0	96	214418	45.5	
93 2-Chlorophenol	128	5.745	5.745	0.0	87	207545	44.2	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	92	251039	44.9	
95 1,4-Dichlorobenzene	146	6.034	6.034	0.0	79	257344	44.2	
96 Benzyl alcohol	108	6.210	6.210	0.0	77	158654	39.1	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	81	247046	42.9	
99 2,2'-oxybis[1-chloropropane]	45	6.370	6.370	0.0	77	487708	44.3	
98 2-Methylphenol	108	6.370	6.370	0.0	81	209560	44.0	
101 N-Nitrosodi-n-propylamine	70	6.546	6.546	0.0	94	209802	46.2	
102 4-Methylphenol	108	6.578	6.578	0.0	87	206367	44.1	
106 Hexachloroethane	117	6.664	6.664	0.0	87	103662	45.3	
107 Nitrobenzene	77	6.765	6.765	0.0	95	306929	47.3	
110 Isophorone	82	7.081	7.081	0.0	94	512208	47.2	
111 2-Nitrophenol	139	7.182	7.182	0.0	87	124402	47.4	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
112 2,4-Dimethylphenol	107	7.268	7.268	0.0	96	279535	47.3	
113 Tetraethyl lead	237	7.284	7.284	0.0	91	146601	46.0	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	93	255386	46.0	
119 Benzoic acid	105	7.513	7.513	0.0	86	549934	130.2	
117 2,4-Dichlorophenol	162	7.513	7.513	0.0	93	196361	43.7	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	91	245600	43.7	
121 Naphthalene	128	7.700	7.700	0.0	96	622204	44.9	
123 4-Chloroaniline	127	7.797	7.797	0.0	79	250903	47.6	
126 Hexachlorobutadiene	225	7.861	7.861	0.0	95	179315	46.7	
131 4-Chloro-3-methylphenol	107	8.454	8.454	0.0	95	219567	46.8	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	82	479076	45.4	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	96	161751	46.9	
139 2,4,6-Trichlorophenol	196	8.982	8.982	0.0	96	180281	44.4	
140 2,4,5-Trichlorophenol	196	9.052	9.052	0.0	97	184583	44.8	
143 2-Chloronaphthalene	162	9.228	9.228	0.0	98	476388	45.1	
145 2-Nitroaniline	65	9.394	9.394	0.0	72	183921	49.5	
147 Dimethyl phthalate	163	9.624	9.624	0.0	96	613135	46.7	
148 2,6-Dinitrotoluene	165	9.704	9.704	0.0	78	130605	47.7	
149 Acenaphthylene	152	9.762	9.762	0.0	92	776976	45.8	
150 3-Nitroaniline	138	9.933	9.933	0.0	82	127735	46.8	
151 Acenaphthene	153	9.987	9.987	0.0	90	502648	44.4	
152 2,4-Dinitrophenol	184	10.067	10.067	0.0	77	69529	44.7	
155 Dibenzofuran	168	10.201	10.201	0.0	86	769000	45.2	
153 4-Nitrophenol	109	10.206	10.206	0.0	49	92871	48.8	
154 2,4-Dinitrotoluene	165	10.217	10.217	0.0	80	187860	47.7	
160 Diethyl phthalate	149	10.500	10.500	0.0	96	631288	48.0	
161 Fluorene	166	10.612	10.612	0.0	81	686116	40.8	
162 4-Chlorophenyl phenyl ether	204	10.617	10.617	0.0	82	385836	45.1	
164 4-Nitroaniline	138	10.681	10.681	0.0	72	115720	45.7	
166 4,6-Dinitro-2-methylphenol	198	10.703	10.703	0.0	55	116938	46.9	
167 N-Nitrosodiphenylamine	169	10.761	10.761	0.0	94	417051	44.4	
168 1,2-Diphenylhydrazine	77	10.799	10.799	0.0	95	671198	47.2	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	95	198331	44.8	
177 Hexachlorobenzene	284	11.237	11.237	0.0	94	211848	46.2	
181 Pentachlorophenol	266	11.467	11.467	0.0	86	99785	46.2	
185 Phenanthrene	178	11.675	11.675	0.0	95	922397	40.0	
188 Anthracene	178	11.728	11.728	0.0	97	930807	43.6	
189 Carbazole	167	11.915	11.915	0.0	83	789155	45.1	
192 Di-n-butyl phthalate	149	12.241	12.241	0.0	99	1009080	40.9	
197 Fluoranthene	202	12.856	12.856	0.0	96	1087869	43.5	
198 Benzidine	184	12.989	12.989	0.0	98	509683	45.2	
199 Pyrene	202	13.069	13.069	0.0	97	1089550	44.1	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	97	505369	45.1	
203 3,3'-Dimethylbenzidine	212	13.636	13.636	0.0	96	631280	40.6	
210 Bis(2-ethylhexyl) phthalate	149	14.111	14.111	0.0	95	735036	45.4	
208 3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	79	451214	41.2	
209 Benzo[a]anthracene	228	14.143	14.143	0.0	66	1107223	44.8	
211 Chrysene	228	14.175	14.175	0.0	90	1004856	45.0	
212 Di-n-octyl phthalate	149	14.683	14.683	0.0	99	967287	45.9	
213 Benzo[b]fluoranthene	252	15.147	15.147	0.0	90	999297	44.0	
214 Benzo[k]fluoranthene	252	15.174	15.174	0.0	97	1062402	46.0	
217 Benzo[a]pyrene	252	15.484	15.484	0.0	99	829963	45.0	

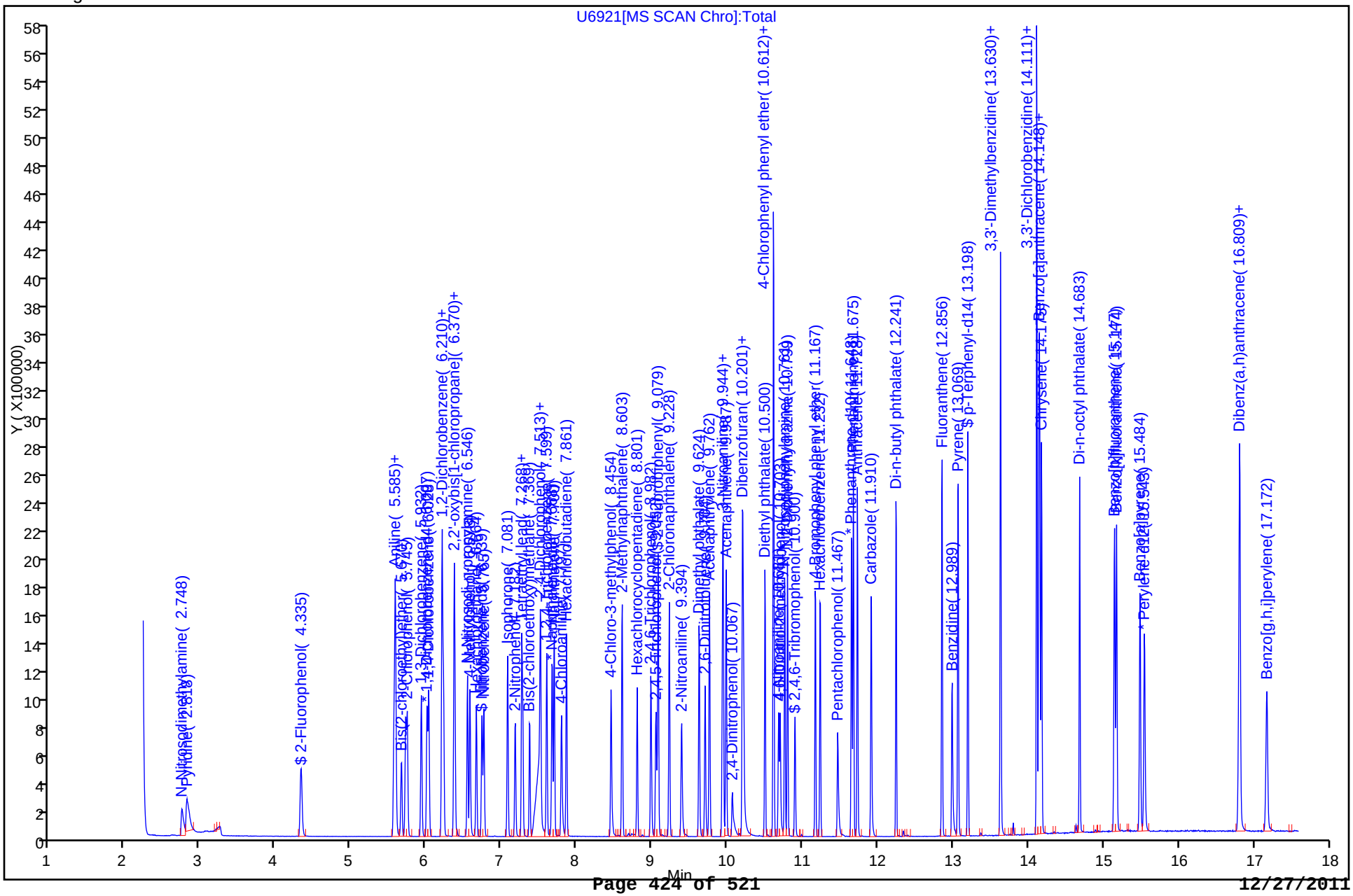
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
219 Indeno[1,2,3-cd]pyrene	276	16.809	16.809	0.0	93	1079676	45.6	
220 Dibenz(a,h)anthracene	278	16.814	16.814	0.0	64	917934	44.2	
221 Benzo[g,h,i]perylene	276	17.172	17.172	0.0	90	742236	49.3	
S 78 3-Methylphenol	1				0		44.1	
S 77 3 & 4 Methylphenol	108				0		44.1	
S 222 Total Cresols	1				0		88.1	

Report Date: 07-Dec-2011 10:59:50 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6921.D

Injection Date:	06-Dec-2011 16:33:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	10
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-43264/2 Calibration Date: 12/07/2011 14:58

Instrument ID: HP5973X Calib Start Date: 11/16/2011 12:25

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 11/16/2011 14:19

Lab File ID: X1547.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
N-Nitrosodimethylamine	Ave	0.8948	0.7108	0.0100	39700	50000	-20.6	25.0
Pyridine	Ave	1.377	0.7694	0.0100	27900	50000	-44.1	100.0
Aniline	Ave	1.924	1.642	0.0100	42700	50000	-14.7	100.0
Phenol	Ave	1.696	1.410	0.0100	41500	50000	-16.9	20.0
Bis(2-chloroethyl)ether	Ave	1.323	1.004	0.0100	38000	50000	-24.1	25.0
2-Chlorophenol	Ave	1.321	1.181	0.0100	44700	50000	-10.6	25.0
1,3-Dichlorobenzene	Ave	1.429	1.303	0.0100	45600	50000	-8.8	25.0
1,4-Dichlorobenzene	Ave	1.458	1.342	0.0100	46000	50000	-8.0	20.0
Benzyl alcohol	Ave	0.8809	0.7870	0.0100	44700	50000	-10.7	100.0
1,2-Dichlorobenzene	Ave	1.342	1.271	0.0100	47300	50000	-5.3	25.0
bis (2-chloroisopropyl) ether	Ave	1.762	1.105	0.0100	31400	50000	-37.3*	25.0
2-Methylphenol	Ave	1.192	1.076	0.0100	45100	50000	-9.8	25.0
N-Nitrosodi-n-propylamine	Ave	0.9308	0.7972	0.0500	42800	50000	-14.4	25.0
4-Methylphenol	Ave	1.219	1.099	0.0100	45100	50000	-9.8	25.0
Hexachloroethane	Ave	0.5372	0.5141	0.0100	47800	50000	-4.3	25.0
Nitrobenzene	Ave	0.4082	0.3376	0.0100	41300	50000	-17.3	25.0
Isophorone	Ave	0.7159	0.5778	0.0100	40400	50000	-19.3	25.0
2-Nitrophenol	Ave	0.1872	0.1727	0.0100	46100	50000	-7.7	20.0
2,4-Dimethylphenol	Ave	0.3768	0.3577	0.0100	47500	50000	-5.1	25.0
Tetraethyl lead	Ave	0.1759	0.1824	0.0100	51800	50000	3.7	40.0
Bis(2-chloroethoxy)methane	Ave	0.3964	0.3120	0.0100	39300	50000	-21.3	25.0
2,4-Dichlorophenol	Ave	0.2868	0.2766	0.0100	48200	50000	-3.5	20.0
Benzoic acid	Ave	0.2864	0.2532	0.0100	133000	150000	-11.6	25.0
1,2,4-Trichlorobenzene	Ave	0.3287	0.3141	0.0100	47800	50000	-4.4	25.0
Naphthalene	Ave	0.9420	0.8674	0.0100	46000	50000	-7.9	25.0
4-Chloroaniline	Ave	0.4129	0.3679	0.0100	44600	50000	-10.9	25.0
Hexachlorobutadiene	Ave	0.2154	0.2268	0.0100	52600	50000	5.2	20.0
4-Chloro-3-methylphenol	Ave	0.3024	0.2983	0.0100	49300	50000	-1.4	20.0
2-Methylnaphthalene	Ave	0.6065	0.5958	0.0100	49100	50000	-1.8	25.0
Hexachlorocyclopentadiene	Ave	0.4432	0.4170	0.0500	47000	50000	-5.9	25.0
2,4,6-Trichlorophenol	Ave	0.3993	0.3693	0.0100	46200	50000	-7.5	20.0
2,4,5-Trichlorophenol	Ave	0.4239	0.3912	0.0100	46100	50000	-7.7	25.0
2-Chloronaphthalene	Ave	1.101	0.9894	0.0100	44900	50000	-10.1	25.0
2-Nitroaniline	Ave	0.3594	0.3030	0.0100	42100	50000	-15.7	25.0
Dimethyl phthalate	Ave	1.311	1.235	0.0100	47100	50000	-5.8	25.0
2,6-Dinitrotoluene	Ave	0.2896	0.2721	0.0100	47000	50000	-6.0	25.0
Acenaphthylene	Ave	1.693	1.580	0.0100	46700	50000	-6.7	25.0
3-Nitroaniline	Ave	0.3098	0.2826	0.0100	45600	50000	-8.8	25.0
Acenaphthene	Ave	1.027	0.9736	0.0100	47400	50000	-5.2	20.0
2,4-Dinitrophenol	Lin1		0.1503	0.0500	46000	50000	-8.0	25.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-43264/2 Calibration Date: 12/07/2011 14:58

Instrument ID: HP5973X Calib Start Date: 11/16/2011 12:25

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 11/16/2011 14:19

Lab File ID: X1547.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
4-Nitrophenol	Ave	0.2135	0.2465	0.0500	57700	50000	15.5	25.0
2,4-Dinitrotoluene	Ave	0.3744	0.3926	0.0100	52400	50000	4.9	25.0
Dibenzofuran	Ave	1.535	1.515	0.0100	49400	50000	-1.3	25.0
Diethyl phthalate	Ave	1.307	1.304	0.0100	49900	50000	-0.3	25.0
4-Chlorophenyl phenyl ether	Ave	0.6522	0.6931	0.0100	53100	50000	6.3	25.0
Fluorene	Ave	1.203	1.215	0.0100	50500	50000	1.0	25.0
4-Nitroaniline	Ave	0.3090	0.2822	0.0100	45700	50000	-8.7	25.0
4,6-Dinitro-2-methylphenol	Ave	0.1281	0.1310	0.0100	51100	50000	2.2	25.0
N-Nitrosodiphenylamine	Ave	0.4779	0.4422	0.0100	46300	50000	-7.5	20.0
1,2-Diphenylhydrazine	Ave	1.264	1.104	0.0100	43700	50000	-12.6	25.0
4-Bromophenyl phenyl ether	Ave	0.2065	0.2076	0.0100	50300	50000	0.6	25.0
Hexachlorobenzene	Ave	0.2225	0.2353	0.0100	52900	50000	5.7	25.0
Pentachlorophenol	Lin1		0.1280	0.0100	47800	50000	-4.4	20.0
Phenanthrene	Ave	0.9471	0.8743	0.0100	46200	50000	-7.7	25.0
Anthracene	Ave	0.9630	0.9144	0.0100	47500	50000	-5.0	25.0
Carbazole	Ave	0.9287	0.8544	0.0100	46000	50000	-8.0	25.0
Di-n-butyl phthalate	Ave	1.165	1.110	0.0100	47700	50000	-4.7	25.0
Fluoranthene	Ave	1.172	1.118	0.0100	47700	50000	-4.6	20.0
Benzidine	Ave	0.5818	0.5008	0.0100	43000	50000	-13.9	25.0
Pyrene	Ave	1.126	1.030	0.0100	45700	50000	-8.5	25.0
3,3'-Dimethylbenzidine	Ave	0.6238	0.5991	0.0100	48000	50000	-4.0	100.0
Butyl benzyl phthalate	Ave	0.5167	0.4778	0.0100	46200	50000	-7.5	25.0
3,3'-Dichlorobenzidine	Ave	0.4737	0.4134	0.0100	43600	50000	-12.7	25.0
Benz(a)anthracene	Ave	1.106	1.034	0.0100	46700	50000	-6.5	25.0
Bis(2-ethylhexyl) phthalate	Ave	0.7216	0.6812	0.0100	47200	50000	-5.6	25.0
Chrysene	Ave	1.130	0.9303	0.0100	41200	50000	-17.7	25.0
Di-n-octyl phthalate	Ave	1.361	1.099	0.0100	40400	50000	-19.2	20.0
Benzo(b)fluoranthene	Ave	1.110	1.062	0.0100	47800	50000	-4.3	25.0
Benzo(k)fluoranthene	Qua		0.9606	0.0100	40700	50000	-18.6	25.0
Benzo(a)pyrene	Ave	0.9464	0.8521	0.0100	45000	50000	-10.0	20.0
Indeno(1,2,3-c,d)pyrene	Ave	1.198	1.116	0.0100	46600	50000	-6.8	25.0
Dibenz(a,h)anthracene	Ave	1.012	0.9554	0.0100	47200	50000	-5.6	25.0
Benzo(g,h,i)perylene	Ave	0.9764	0.8407	0.0100	43000	50000	-13.9	25.0
2-Fluorophenol	Ave	1.442	1.069	0.0100	37100	50000	-25.9*	25.0
Phenol-d5	Ave	1.587	1.330	0.0100	41900	50000	-16.2	25.0
Nitrobenzene-d5	Ave	0.4163	0.3476	0.0100	41800	50000	-16.5	25.0
2-Fluorobiphenyl	Ave	1.361	1.231	0.0100	45200	50000	-9.6	25.0
2,4,6-Tribromophenol	Lin1		0.1157	0.0100	52400	50000	4.8	25.0
p-Terphenyl-d14	Ave	0.7305	0.7131	0.0100	48800	50000	-2.4	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1547.D
Lims ID: CCVIS Client ID:
Inject. Date: 07-Dec-2011 14:58:30 Dil. Factor: 1.0000
Sample Type: CCVIS
Sample ID: 480-0008038-002
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 2
Lims Batch ID: 43264 Lims Sample ID: 2
Sublist: chrom-X-8270*sub28
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X-8270.m
Last Update: 07-Dec-2011 15:36:30 Calib Date: 05-Dec-2011 15:22:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111205-7963.b\X1458.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 07-Dec-2011 15:36:30

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.167	6.167	0.0	95	101407	40.0	
* 2 Naphthalene-d8	136	7.668	7.668	0.0	94	390481	40.0	
* 3 Acenaphthene-d10	164	9.725	9.725	0.0	75	246242	40.0	
* 4 Phenanthrene-d10	188	11.317	11.317	0.0	99	482120	40.0	
* 5 Chrysene-d12	240	13.721	13.721	0.0	97	528086	40.0	
* 6 Perylene-d12	264	14.971	14.971	0.0	99	560230	40.0	
$ 7 2-Fluorophenol	112	4.623	4.623	0.0	97	135540	37.1	
$ 8 Phenol-d5	99	5.783	5.783	0.0	84	168530	41.9	
$ 9 Nitrobenzene-d5	82	6.824	6.824	0.0	96	169682	41.8	
$ 10 2-Fluorobiphenyl	172	8.951	8.951	0.0	98	378822	45.2	
$ 11 2,4,6-Tribromophenol	330	10.617	10.617	0.0	70	69709	52.4	
$ 12 p-Terphenyl-d14	244	12.797	12.797	0.0	99	470741	48.8	
55 N-Nitrosodimethylamine	42	2.887	2.887	0.0	92	90096	39.7	
56 Pyridine	52	2.951	2.951	0.0	90	97524	27.9	
64 Aniline	93	5.783	5.783	0.0	92	208109	42.7	
63 Phenol	94	5.799	5.799	0.0	90	178687	41.5	
66 Bis(2-chloroethyl)ether	93	5.852	5.852	0.0	76	127323	38.0	
67 2-Chlorophenol	128	5.932	5.932	0.0	98	149643	44.7	
69 1,3-Dichlorobenzene	146	6.103	6.103	0.0	98	165201	45.6	
70 1,4-Dichlorobenzene	146	6.183	6.183	0.0	98	170079	46.0	
71 Benzyl alcohol	108	6.349	6.349	0.0	91	99763	44.7	
72 1,2-Dichlorobenzene	146	6.370	6.370	0.0	89	161064	47.3	
74 2,2'-oxybis[1-chloropropane]	45	6.504	6.504	0.0	83	140103	31.4	
73 2-Methylphenol	108	6.509	6.509	0.0	93	136377	45.1	
78 N-Nitrosodi-n-propylamine	70	6.664	6.664	0.0	93	101052	42.8	
79 4-Methylphenol	108	6.702	6.702	0.0	84	139322	45.1	
81 Hexachloroethane	117	6.771	6.771	0.0	94	65160	47.8	
83 Nitrobenzene	77	6.846	6.846	0.0	93	164766	41.3	
86 Isophorone	82	7.145	7.145	0.0	99	282032	40.4	
87 2-Nitrophenol	139	7.225	7.225	0.0	94	84297	46.1	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.321	7.321	0.0	97	174573	47.5	
90 Tetraethyl lead	237	7.348	7.348	0.0	53	89003	51.8	
94 Bis(2-chloroethoxy)methane	93	7.401	7.401	0.0	97	152281	39.3	
97 2,4-Dichlorophenol	162	7.535	7.535	0.0	98	135021	48.2	
95 Benzoic acid	105	7.551	7.551	0.0	72	370724	132.6	
98 1,2,4-Trichlorobenzene	180	7.610	7.610	0.0	93	153329	47.8	
99 Naphthalene	128	7.695	7.695	0.0	98	423362	46.0	
101 4-Chloroaniline	127	7.786	7.786	0.0	99	179577	44.6	
104 Hexachlorobutadiene	225	7.861	7.861	0.0	98	110680	52.6	
110 4-Chloro-3-methylphenol	107	8.384	8.384	0.0	98	145620	49.3	
113 2-Methylnaphthalene	142	8.518	8.518	0.0	98	290794	49.1	
116 Hexachlorocyclopentadiene	237	8.716	8.716	0.0	94	128355	47.0	
118 2,4,6-Trichlorophenol	196	8.865	8.865	0.0	95	113666	46.2	
119 2,4,5-Trichlorophenol	196	8.929	8.929	0.0	97	120403	46.1	
124 2-Chloronaphthalene	162	9.079	9.079	0.0	99	304549	44.9	
125 2-Nitroaniline	65	9.228	9.228	0.0	95	93249	42.1	
128 Dimethyl phthalate	163	9.447	9.447	0.0	99	380259	47.1	
130 2,6-Dinitrotoluene	165	9.501	9.501	0.0	22	83753	47.0	
131 Acenaphthylene	152	9.560	9.560	0.0	99	486188	46.7	
132 3-Nitroaniline	138	9.709	9.709	0.0	99	86980	45.6	
133 Acenaphthene	153	9.768	9.768	0.0	99	299672	47.4	
134 2,4-Dinitrophenol	184	9.821	9.821	0.0	88	46259	46.0	
135 4-Nitrophenol	109	9.960	9.960	0.0	58	75868	57.7	
137 2,4-Dinitrotoluene	165	9.966	9.966	0.0	65	120835	52.4	
138 Dibenzofuran	168	9.971	9.971	0.0	98	466331	49.4	
142 Diethyl phthalate	149	10.254	10.254	0.0	100	401281	49.9	
144 Fluorene	166	10.350	10.350	0.0	97	374124	50.5	
145 4-Chlorophenyl phenyl ether	204	10.350	10.350	0.0	75	213351	53.1	
147 4-Nitroaniline	138	10.409	10.409	0.0	96	86858	45.7	
148 4,6-Dinitro-2-methylphenol	198	10.425	10.425	0.0	98	78942	51.1	
149 N-Nitrosodiphenylamine	169	10.489	10.489	0.0	96	266464	46.3	
152 1,2-Diphenylhydrazine	77	10.521	10.521	0.0	99	339948	43.7	
159 4-Bromophenyl phenyl ether	248	10.868	10.868	0.0	98	125113	50.3	
160 Hexachlorobenzene	284	10.943	10.943	0.0	93	141810	52.9	
165 Pentachlorophenol	266	11.157	11.157	0.0	96	77110	47.8	
171 Phenanthrene	178	11.344	11.344	0.0	99	526901	46.2	
172 Anthracene	178	11.392	11.392	0.0	100	551067	47.5	
173 Carbazole	167	11.563	11.563	0.0	100	514926	46.0	
176 Di-n-butyl phthalate	149	11.900	11.900	0.0	99	669140	47.7	
182 Fluoranthene	202	12.460	12.460	0.0	99	674009	47.7	
183 Benzidine	184	12.589	12.589	0.0	100	330593	43.0	
185 Pyrene	202	12.663	12.663	0.0	99	679761	45.7	
192 Butyl benzyl phthalate	149	13.214	13.214	0.0	93	315368	46.2	
191 3,3'-Dimethylbenzidine	212	13.214	13.214	0.0	98	361030	48.0	
196 3,3'-Dichlorobenzidine	252	13.684	13.684	0.0	56	272907	43.6	
197 Benzo[a]anthracene	228	13.705	13.705	0.0	54	682774	46.7	
198 Bis(2-ethylhexyl) phthalate	149	13.711	13.711	0.0	89	449659	47.2	
199 Chrysene	228	13.743	13.743	0.0	98	614122	41.2	
201 Di-n-octyl phthalate	149	14.239	14.239	0.0	100	725689	40.4	
203 Benzo[b]fluoranthene	252	14.624	14.624	0.0	100	743795	47.8	
204 Benzo[k]fluoranthene	252	14.651	14.651	0.0	97	672671	40.7	
206 Benzo[a]pyrene	252	14.923	14.923	0.0	99	596683	45.0	

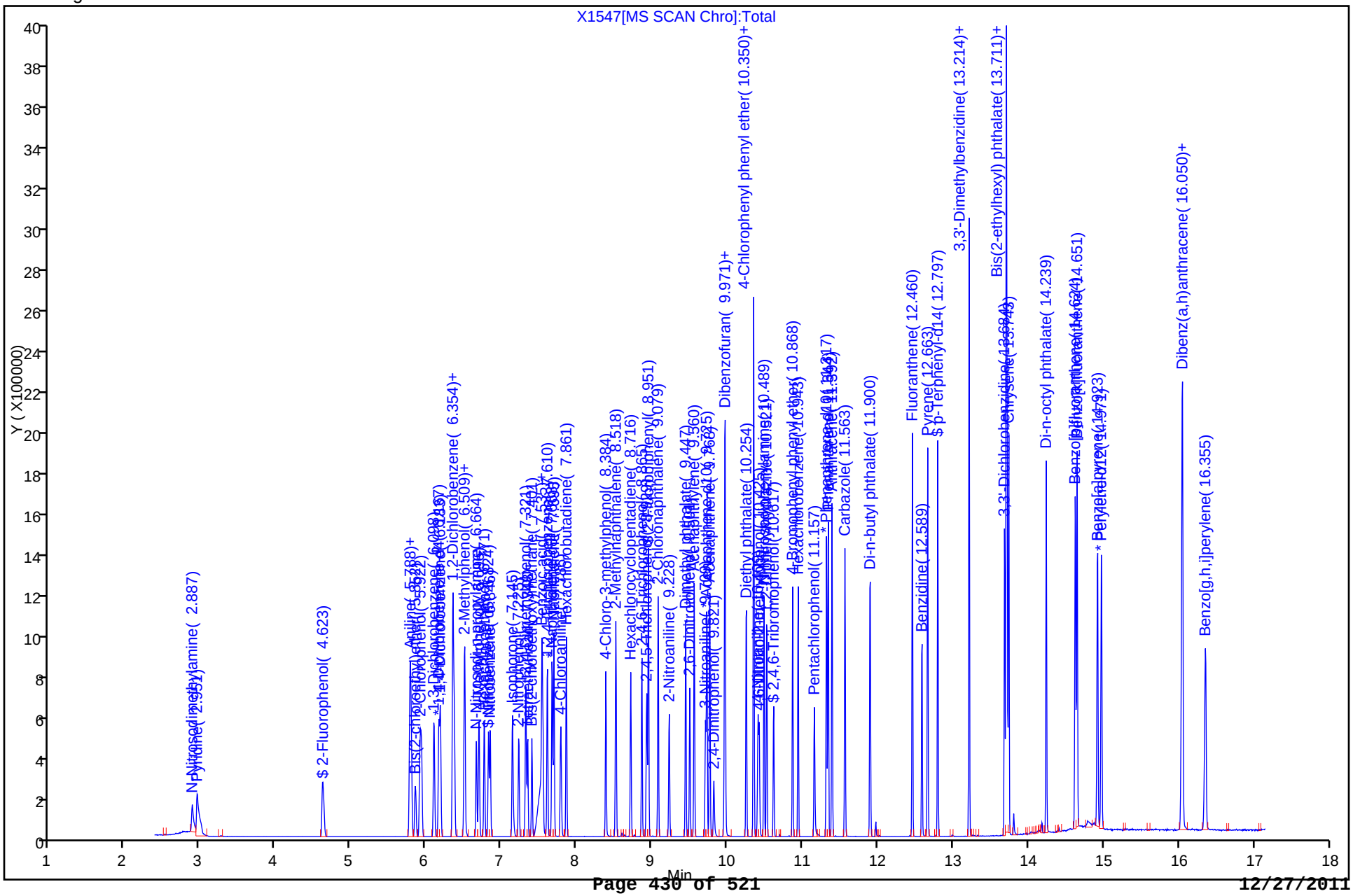
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	16.045	16.045	0.0	85	781596	46.6	
209 Dibenz(a,h)anthracene	278	16.050	16.050	0.0	83	669066	47.2	
210 Benzo[g,h,i]perylene	276	16.355	16.355	0.0	98	588717	43.0	
S 214 3-Methylphenol	1				0		45.1	
S 213 Total Cresols	1				0		90.2	
S 212 3 & 4 Methylphenol	108				0		45.1	

Report Date: 07-Dec-2011 15:36:30 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1547.D

Injection Date:	07-Dec-2011 14:58:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43264	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-44096/2 Calibration Date: 12/12/2011 19:27

Instrument ID: HP5973X Calib Start Date: 12/10/2011 14:13

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/10/2011 16:31

Lab File ID: X1728.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
N-Nitrosodimethylamine	Ave	0.6623	0.6252	0.0100	47200	50000	-5.6	25.0
Pyridine	Ave	0.9731	1.068	0.0100	54900	50000	9.8	100.0
Phenol	Ave	1.696	1.678	0.0100	49500	50000	-1.0	20.0
Aniline	Ave	2.131	2.067	0.0100	48500	50000	-3.0	100.0
Bis(2-chloroethyl)ether	Ave	1.377	1.354	0.0100	49200	50000	-1.7	25.0
2-Chlorophenol	Ave	1.382	1.398	0.0100	50600	50000	1.1	25.0
1,3-Dichlorobenzene	Ave	1.471	1.474	0.0100	50100	50000	0.2	25.0
1,4-Dichlorobenzene	Ave	1.479	1.494	0.0100	50500	50000	1.0	20.0
Benzyl alcohol	Ave	0.8504	0.8475	0.0100	49800	50000	-0.3	100.0
1,2-Dichlorobenzene	Ave	1.405	1.399	0.0100	49800	50000	-0.4	25.0
2-Methylphenol	Ave	1.201	1.172	0.0100	48800	50000	-2.4	25.0
bis (2-chloroisopropyl) ether	Ave	1.718	1.504	0.0100	43800	50000	-12.4	25.0
4-Methylphenol	Ave	1.198	1.153	0.0100	48100	50000	-3.8	25.0
N-Nitrosodi-n-propylamine	Ave	0.9136	0.8275	0.0500	45300	50000	-9.4	25.0
Hexachloroethane	Ave	0.5283	0.5117	0.0100	48400	50000	-3.1	25.0
Nitrobenzene	Ave	0.3310	0.3427	0.0100	51800	50000	3.6	25.0
Isophorone	Ave	0.5885	0.6075	0.0100	51600	50000	3.2	25.0
2-Nitrophenol	Ave	0.1592	0.1889	0.0100	59300	50000	18.7	20.0
2,4-Dimethylphenol	Ave	0.3101	0.3225	0.0100	52000	50000	4.0	25.0
Tetraethyl lead	Ave	0.1303	0.1374	0.0100	52700	50000	5.5	40.0
Bis(2-chloroethoxy)methane	Ave	0.3842	0.3848	0.0100	50100	50000	0.2	25.0
Benzoic acid	Ave	0.2197	0.2498	0.0100	171000	150000	13.7	25.0
2,4-Dichlorophenol	Ave	0.2677	0.2827	0.0100	52800	50000	5.6	20.0
1,2,4-Trichlorobenzene	Ave	0.3054	0.3184	0.0100	52100	50000	4.3	25.0
Naphthalene	Qua		0.9200	0.0100	47800	50000	-4.4	25.0
4-Chloroaniline	Ave	0.4064	0.4153	0.0100	51100	50000	2.2	25.0
Hexachlorobutadiene	Ave	0.1641	0.1753	0.0100	53400	50000	6.8	20.0
4-Chloro-3-methylphenol	Ave	0.2577	0.2682	0.0100	52000	50000	4.1	20.0
2-Methylnaphthalene	Qua		0.5973	0.0100	47100	50000	-5.8	25.0
Hexachlorocyclopentadiene	Ave	0.3320	0.3943	0.0500	59400	50000	18.8	25.0
2,4,6-Trichlorophenol	Ave	0.3507	0.3872	0.0100	55200	50000	10.4	20.0
2,4,5-Trichlorophenol	Ave	0.3807	0.4221	0.0100	55400	50000	10.9	25.0
2-Chloronaphthalene	Ave	1.024	1.083	0.0100	52900	50000	5.8	25.0
2-Nitroaniline	Ave	0.2747	0.2867	0.0100	52200	50000	4.4	25.0
Dimethyl phthalate	Ave	1.160	1.248	0.0100	53800	50000	7.6	25.0
2,6-Dinitrotoluene	Ave	0.2572	0.2928	0.0100	56900	50000	13.8	25.0
Acenaphthylene	Ave	1.554	1.654	0.0100	53200	50000	6.5	25.0
3-Nitroaniline	Ave	0.3011	0.3270	0.0100	54300	50000	8.6	25.0
Acenaphthene	Qua		1.004	0.0100	49400	50000	-1.2	20.0
2,4-Dinitrophenol	Qua		0.1318	0.0500	71500	50000	43.0*	25.0

FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-44096/2 Calibration Date: 12/12/2011 19:27

Instrument ID: HP5973X Calib Start Date: 12/10/2011 14:13

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/10/2011 16:31

Lab File ID: X1728.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
4-Nitrophenol	Ave	0.1422	0.1637	0.0500	57600	50000	15.1	25.0
Dibenzofuran	Qua		1.359	0.0100	48500	50000	-3.0	25.0
2,4-Dinitrotoluene	Ave	0.3211	0.3627	0.0100	56500	50000	12.9	25.0
Diethyl phthalate	Ave	1.083	1.168	0.0100	54000	50000	7.9	25.0
Fluorene	Qua		1.115	0.0100	48700	50000	-2.6	25.0
4-Chlorophenyl phenyl ether	Qua		0.6001	0.0100	50700	50000	1.4	25.0
4-Nitroaniline	Ave	0.3065	0.3285	0.0100	53600	50000	7.2	25.0
4,6-Dinitro-2-methylphenol	Lin1		0.1337	0.0100	59800	50000	19.6	25.0
N-Nitrosodiphenylamine	Ave	0.4668	0.4861	0.0100	52100	50000	4.1	20.0
1,2-Diphenylhydrazine	Qua		1.036	0.0100	45500	50000	-9.0	25.0
4-Bromophenyl phenyl ether	Ave	0.2011	0.2161	0.0100	53700	50000	7.4	25.0
Hexachlorobenzene	Ave	0.2225	0.2355	0.0100	52900	50000	5.8	25.0
Pentachlorophenol	Ave	0.1301	0.1499	0.0100	57600	50000	15.2	20.0
Phenanthrene	Qua		1.016	0.0100	49500	50000	-1.0	25.0
Anthracene	Qua		1.031	0.0100	49500	50000	-1.0	25.0
Carbazole	Qua		0.9214	0.0100	48500	50000	-3.0	25.0
Di-n-butyl phthalate	Ave	1.024	1.081	0.0100	52800	50000	5.6	25.0
Fluoranthene	Qua		1.109	0.0100	50200	50000	0.4	20.0
Pyrene	Ave	1.071	1.141	0.0100	53300	50000	6.5	25.0
Butyl benzyl phthalate	Ave	0.4441	0.5063	0.0100	57000	50000	14.0	25.0
Benz(a)anthracene	Qua		1.139	0.0100	50800	50000	1.6	25.0
Bis(2-ethylhexyl) phthalate	Ave	0.5948	0.6618	0.0100	55600	50000	11.3	25.0
Chrysene	Ave	1.079	1.169	0.0100	54200	50000	8.3	25.0
Di-n-octyl phthalate	Qua		1.292	0.0100	52500	50000	5.0	20.0
Benzo(b)fluoranthene	Ave	0.9354	1.037	0.0100	55400	50000	10.9	25.0
Benzo(k)fluoranthene	Qua		1.093	0.0100	47600	50000	-4.8	25.0
Benzo(a)pyrene	Ave	0.8372	0.9164	0.0100	54700	50000	9.5	20.0
Indeno(1,2,3-cd)pyrene	Ave	1.031	1.100	0.0100	53300	50000	6.6	25.0
Dibenz(a,h)anthracene	Ave	0.9083	0.9850	0.0100	54200	50000	8.4	25.0
Benzo(ghi)perylene	Ave	0.8832	0.9469	0.0100	53600	50000	7.2	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1728.D
Lims ID: CCVIS Client ID:
Inject. Date: 12-Dec-2011 19:27:30 Dil. Factor: 1.0000
Sample Type: CCVIS
Sample ID: 480-0008169-002
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 2
Lims Batch ID: 44096 Lims Sample ID: 2
Sublist: chrom-X-8270*sub28
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X-8270.m
Last Update: 13-Dec-2011 09:33:10 Calib Date: 12-Dec-2011 17:29:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 13-Dec-2011 08:58:53

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.098	6.098	0.0	92	364715	40.0	
* 2 Naphthalene-d8	136	7.588	7.588	0.0	93	1335264	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	24	696947	40.0	
* 4 Phenanthrene-d10	188	11.242	11.242	0.0	99	1196492	40.0	
* 5 Chrysene-d12	240	13.646	13.646	0.0	93	1196046	40.0	
* 6 Perylene-d12	264	14.891	14.891	0.0	99	1576338	40.0	
$ 7 2-Fluorophenol	112	4.538	4.538	0.0	92	639077	50.6	
$ 8 Phenol-d5	99	5.665	5.665	0.0	84	768028	51.5	
$ 9 Nitrobenzene-d5	82	6.750	6.750	0.0	91	585270	53.6	
$ 10 2-Fluorobiphenyl	172	8.865	8.865	0.0	99	1086671	49.4	
$ 11 2,4,6-Tribromophenol	330	10.532	10.532	0.0	63	164584	61.2	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	99	1288853	57.9	
55 N-Nitrosodimethylamine	42	2.946	2.946	0.0	71	285003	47.2	
56 Pyridine	52	3.005	3.005	0.0	83	487092	54.9	
63 Phenol	94	5.681	5.681	0.0	74	765121	49.5	
64 Aniline	93	5.713	5.713	0.0	76	942359	48.5	
66 Bis(2-chloroethyl)ether	93	5.793	5.793	0.0	80	617224	49.2	
67 2-Chlorophenol	128	5.847	5.847	0.0	97	637118	50.6	
69 1,3-Dichlorobenzene	146	6.028	6.028	0.0	93	672003	50.1	
70 1,4-Dichlorobenzene	146	6.119	6.119	0.0	93	680967	50.5	
71 Benzyl alcohol	108	6.263	6.263	0.0	91	386352	49.8	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	81	637995	49.8	
73 2-Methylphenol	108	6.392	6.392	0.0	94	534319	48.8	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	63	685622	43.8	
79 4-Methylphenol	108	6.579	6.579	0.0	93	525834	48.1	
78 N-Nitrosodi-n-propylamine	70	6.579	6.579	0.0	62	377244	45.3	
81 Hexachloroethane	117	6.685	6.685	0.0	93	233290	48.4	
83 Nitrobenzene	77	6.771	6.771	0.0	90	572057	51.8	
86 Isophorone	82	7.059	7.059	0.0	96	1013889	51.6	
87 2-Nitrophenol	139	7.145	7.145	0.0	77	315354	59.3	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.204	7.204	0.0	92	538291	52.0	
90 Tetraethyl lead	237	7.241	7.241	0.0	51	229312	52.7	
94 Bis(2-chloroethoxy)methane	93	7.321	7.321	0.0	94	642261	50.1	
95 Benzoic acid	105	7.401	7.401	0.0	56	1250726	170.5	
97 2,4-Dichlorophenol	162	7.423	7.423	0.0	79	471795	52.8	
98 1,2,4-Trichlorobenzene	180	7.524	7.524	0.0	93	531449	52.1	
99 Naphthalene	128	7.615	7.615	0.0	94	1535624	47.8	
101 4-Chloroaniline	127	7.690	7.690	0.0	96	693238	51.1	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	292512	53.4	
110 4-Chloro-3-methylphenol	107	8.256	8.256	0.0	91	447707	52.0	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	95	996928	47.1	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	343509	59.4	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	92	337339	55.2	
119 2,4,5-Trichlorophenol	196	8.796	8.796	0.0	94	367704	55.4	
124 2-Chloronaphthalene	162	8.993	8.993	0.0	98	943849	52.9	
125 2-Nitroaniline	65	9.127	9.127	0.0	87	249779	52.2	
128 Dimethyl phthalate	163	9.362	9.362	0.0	96	1087127	53.8	
130 2,6-Dinitrotoluene	165	9.426	9.426	0.0	41	255037	56.9	
131 Acenaphthylene	152	9.479	9.479	0.0	97	1441083	53.2	
132 3-Nitroaniline	138	9.624	9.624	0.0	90	284916	54.3	
133 Acenaphthene	153	9.682	9.682	0.0	99	874799	49.4	
134 2,4-Dinitrophenol	184	9.741	9.741	0.0	79	114849	71.5	
135 4-Nitrophenol	109	9.827	9.827	0.0	80	142599	57.6	
138 Dibenzofuran	168	9.885	9.885	0.0	97	1183624	48.5	
137 2,4-Dinitrotoluene	165	9.891	9.891	0.0	65	315999	56.5	
142 Diethyl phthalate	149	10.174	10.174	0.0	99	1017763	54.0	
144 Fluorene	166	10.270	10.270	0.0	100	971518	48.7	
145 4-Chlorophenyl phenyl ether	204	10.281	10.281	0.0	97	522798	50.7	
147 4-Nitroaniline	138	10.318	10.318	0.0	84	286161	53.6	
148 4,6-Dinitro-2-methylphenol	198	10.340	10.340	0.0	92	199998	59.8	
149 N-Nitrosodiphenylamine	169	10.409	10.409	0.0	96	727065	52.1	
152 1,2-Diphenylhydrazine	77	10.452	10.452	0.0	96	902168	45.5	
159 4-Bromophenyl phenyl ether	248	10.799	10.799	0.0	93	323217	53.7	
160 Hexachlorobenzene	284	10.847	10.847	0.0	97	352199	52.9	
165 Pentachlorophenol	266	11.055	11.055	0.0	96	224160	57.6	
171 Phenanthrene	178	11.269	11.269	0.0	99	1519374	49.5	
172 Anthracene	178	11.317	11.317	0.0	100	1542004	49.5	
173 Carbazole	167	11.483	11.483	0.0	100	1378115	48.5	
176 Di-n-butyl phthalate	149	11.825	11.825	0.0	99	1616654	52.8	
182 Fluoranthene	202	12.386	12.386	0.0	99	1658973	50.2	
183 Benzidine	184	12.514	12.514	0.0	100	951891	53.8	
185 Pyrene	202	12.589	12.589	0.0	99	1706219	53.3	
191 3,3'-Dimethylbenzidine	212	13.144	13.144	0.0	99	879940	43.0	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	96	756963	57.0	
196 3,3'-Dichlorobenzidine	252	13.614	13.614	0.0	66	716316	55.7	
197 Benzo[a]anthracene	228	13.630	13.630	0.0	56	1703589	50.8	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	90	989412	55.6	
199 Chrysene	228	13.668	13.668	0.0	98	1747563	54.2	
201 Di-n-octyl phthalate	149	14.175	14.175	0.0	100	1932246	52.5	
203 Benzo[b]fluoranthene	252	14.544	14.544	0.0	98	2043647	55.4	
204 Benzo[k]fluoranthene	252	14.565	14.565	0.0	97	2154422	47.6	
206 Benzo[a]pyrene	252	14.838	14.838	0.0	98	1805714	54.7	

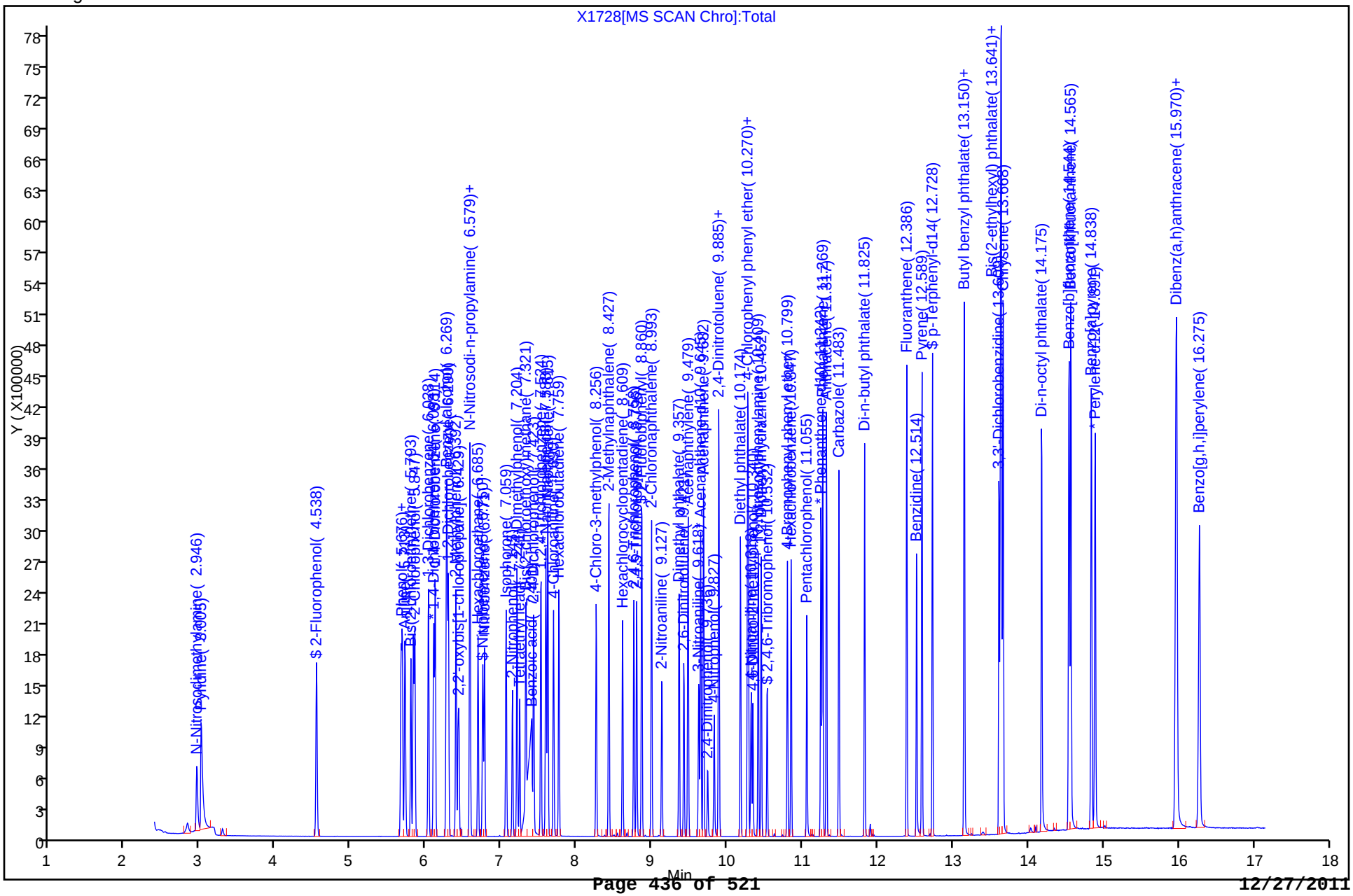
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	15.965	15.965	0.0	89	2167177	53.3	
209 Dibenz(a,h)anthracene	278	15.976	15.976	0.0	95	1940952	54.2	
210 Benzo[g,h,i]perylene	276	16.275	16.275	0.0	98	1865762	53.6	
S 214 3-Methylphenol	1				0		48.1	
S 213 Total Cresols	1				0		96.9	
S 212 3 & 4 Methylphenol	108				0		48.1	

Report Date: 13-Dec-2011 09:33:10 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1728.D

Injection Date:	12-Dec-2011 19:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44096	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-44096/2 Calibration Date: 12/12/2011 19:27

Instrument ID: HP5973X Calib Start Date: 12/12/2011 12:55

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/12/2011 14:49

Lab File ID: X1728.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Benzidine	Ave	0.5918	0.6367	0.0100	53800	50000	7.6	25.0
3,3'-Dimethylbenzidine	Ave	0.6848	0.5884	0.0100	43000	50000	-14.1	100.0
3,3'-Dichlorobenzidine	Ave	0.4301	0.4791	0.0100	55700	50000	11.4	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1728.D
Lims ID: CCVIS Client ID:
Inject. Date: 12-Dec-2011 19:27:30 Dil. Factor: 1.0000
Sample Type: CCVIS
Sample ID: 480-0008169-002
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 2
Lims Batch ID: 44096 Lims Sample ID: 2
Sublist: chrom-X-8270*sub28
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X-8270.m
Last Update: 13-Dec-2011 09:33:10 Calib Date: 12-Dec-2011 17:29:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 13-Dec-2011 08:58:53

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.098	6.098	0.0	92	364715	40.0	
* 2 Naphthalene-d8	136	7.588	7.588	0.0	93	1335264	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	24	696947	40.0	
* 4 Phenanthrene-d10	188	11.242	11.242	0.0	99	1196492	40.0	
* 5 Chrysene-d12	240	13.646	13.646	0.0	93	1196046	40.0	
* 6 Perylene-d12	264	14.891	14.891	0.0	99	1576338	40.0	
$ 7 2-Fluorophenol	112	4.538	4.538	0.0	92	639077	50.6	
$ 8 Phenol-d5	99	5.665	5.665	0.0	84	768028	51.5	
$ 9 Nitrobenzene-d5	82	6.750	6.750	0.0	91	585270	53.6	
$ 10 2-Fluorobiphenyl	172	8.865	8.865	0.0	99	1086671	49.4	
$ 11 2,4,6-Tribromophenol	330	10.532	10.532	0.0	63	164584	61.2	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	99	1288853	57.9	
55 N-Nitrosodimethylamine	42	2.946	2.946	0.0	71	285003	47.2	
56 Pyridine	52	3.005	3.005	0.0	83	487092	54.9	
63 Phenol	94	5.681	5.681	0.0	74	765121	49.5	
64 Aniline	93	5.713	5.713	0.0	76	942359	48.5	
66 Bis(2-chloroethyl)ether	93	5.793	5.793	0.0	80	617224	49.2	
67 2-Chlorophenol	128	5.847	5.847	0.0	97	637118	50.6	
69 1,3-Dichlorobenzene	146	6.028	6.028	0.0	93	672003	50.1	
70 1,4-Dichlorobenzene	146	6.119	6.119	0.0	93	680967	50.5	
71 Benzyl alcohol	108	6.263	6.263	0.0	91	386352	49.8	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	81	637995	49.8	
73 2-Methylphenol	108	6.392	6.392	0.0	94	534319	48.8	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	63	685622	43.8	
79 4-Methylphenol	108	6.579	6.579	0.0	93	525834	48.1	
78 N-Nitrosodi-n-propylamine	70	6.579	6.579	0.0	62	377244	45.3	
81 Hexachloroethane	117	6.685	6.685	0.0	93	233290	48.4	
83 Nitrobenzene	77	6.771	6.771	0.0	90	572057	51.8	
86 Isophorone	82	7.059	7.059	0.0	96	1013889	51.6	
87 2-Nitrophenol	139	7.145	7.145	0.0	77	315354	59.3	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.204	7.204	0.0	92	538291	52.0	
90 Tetraethyl lead	237	7.241	7.241	0.0	51	229312	52.7	
94 Bis(2-chloroethoxy)methane	93	7.321	7.321	0.0	94	642261	50.1	
95 Benzoic acid	105	7.401	7.401	0.0	56	1250726	170.5	
97 2,4-Dichlorophenol	162	7.423	7.423	0.0	79	471795	52.8	
98 1,2,4-Trichlorobenzene	180	7.524	7.524	0.0	93	531449	52.1	
99 Naphthalene	128	7.615	7.615	0.0	94	1535624	47.8	
101 4-Chloroaniline	127	7.690	7.690	0.0	96	693238	51.1	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	292512	53.4	
110 4-Chloro-3-methylphenol	107	8.256	8.256	0.0	91	447707	52.0	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	95	996928	47.1	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	343509	59.4	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	92	337339	55.2	
119 2,4,5-Trichlorophenol	196	8.796	8.796	0.0	94	367704	55.4	
124 2-Chloronaphthalene	162	8.993	8.993	0.0	98	943849	52.9	
125 2-Nitroaniline	65	9.127	9.127	0.0	87	249779	52.2	
128 Dimethyl phthalate	163	9.362	9.362	0.0	96	1087127	53.8	
130 2,6-Dinitrotoluene	165	9.426	9.426	0.0	41	255037	56.9	
131 Acenaphthylene	152	9.479	9.479	0.0	97	1441083	53.2	
132 3-Nitroaniline	138	9.624	9.624	0.0	90	284916	54.3	
133 Acenaphthene	153	9.682	9.682	0.0	99	874799	49.4	
134 2,4-Dinitrophenol	184	9.741	9.741	0.0	79	114849	71.5	
135 4-Nitrophenol	109	9.827	9.827	0.0	80	142599	57.6	
138 Dibenzofuran	168	9.885	9.885	0.0	97	1183624	48.5	
137 2,4-Dinitrotoluene	165	9.891	9.891	0.0	65	315999	56.5	
142 Diethyl phthalate	149	10.174	10.174	0.0	99	1017763	54.0	
144 Fluorene	166	10.270	10.270	0.0	100	971518	48.7	
145 4-Chlorophenyl phenyl ether	204	10.281	10.281	0.0	97	522798	50.7	
147 4-Nitroaniline	138	10.318	10.318	0.0	84	286161	53.6	
148 4,6-Dinitro-2-methylphenol	198	10.340	10.340	0.0	92	199998	59.8	
149 N-Nitrosodiphenylamine	169	10.409	10.409	0.0	96	727065	52.1	
152 1,2-Diphenylhydrazine	77	10.452	10.452	0.0	96	902168	45.5	
159 4-Bromophenyl phenyl ether	248	10.799	10.799	0.0	93	323217	53.7	
160 Hexachlorobenzene	284	10.847	10.847	0.0	97	352199	52.9	
165 Pentachlorophenol	266	11.055	11.055	0.0	96	224160	57.6	
171 Phenanthrene	178	11.269	11.269	0.0	99	1519374	49.5	
172 Anthracene	178	11.317	11.317	0.0	100	1542004	49.5	
173 Carbazole	167	11.483	11.483	0.0	100	1378115	48.5	
176 Di-n-butyl phthalate	149	11.825	11.825	0.0	99	1616654	52.8	
182 Fluoranthene	202	12.386	12.386	0.0	99	1658973	50.2	
183 Benzidine	184	12.514	12.514	0.0	100	951891	53.8	
185 Pyrene	202	12.589	12.589	0.0	99	1706219	53.3	
191 3,3'-Dimethylbenzidine	212	13.144	13.144	0.0	99	879940	43.0	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	96	756963	57.0	
196 3,3'-Dichlorobenzidine	252	13.614	13.614	0.0	66	716316	55.7	
197 Benzo[a]anthracene	228	13.630	13.630	0.0	56	1703589	50.8	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	90	989412	55.6	
199 Chrysene	228	13.668	13.668	0.0	98	1747563	54.2	
201 Di-n-octyl phthalate	149	14.175	14.175	0.0	100	1932246	52.5	
203 Benzo[b]fluoranthene	252	14.544	14.544	0.0	98	2043647	55.4	
204 Benzo[k]fluoranthene	252	14.565	14.565	0.0	97	2154422	47.6	
206 Benzo[a]pyrene	252	14.838	14.838	0.0	98	1805714	54.7	

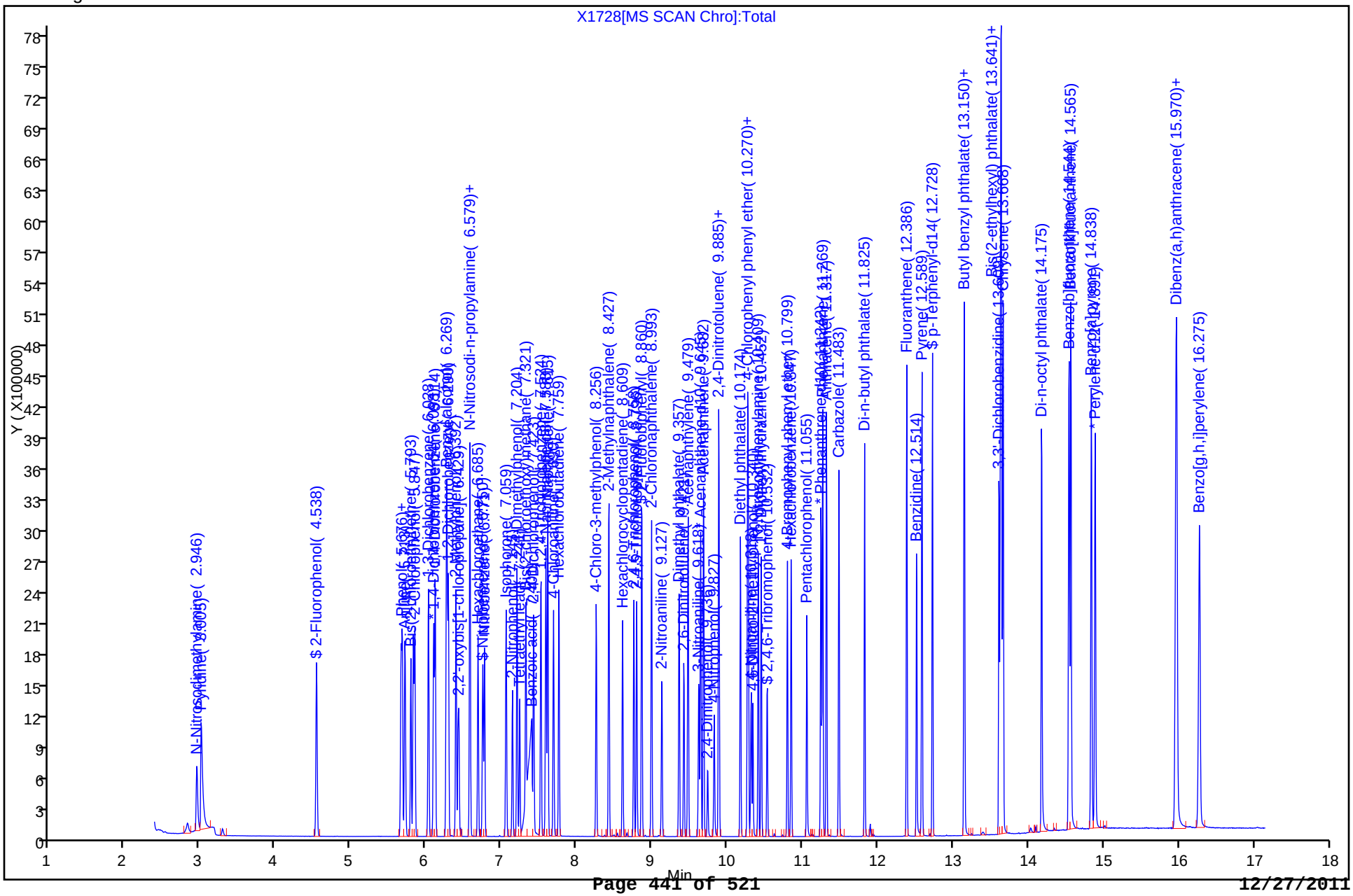
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	15.965	15.965	0.0	89	2167177	53.3	
209 Dibenz(a,h)anthracene	278	15.976	15.976	0.0	95	1940952	54.2	
210 Benzo[g,h,i]perylene	276	16.275	16.275	0.0	98	1865762	53.6	
S 214 3-Methylphenol	1				0		48.1	
S 213 Total Cresols	1				0		96.9	
S 212 3 & 4 Methylphenol	108				0		48.1	

Report Date: 13-Dec-2011 09:33:10 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1728.D

Injection Date:	12-Dec-2011 19:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44096	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Lab Sample ID: CCVIS 480-44096/2 Calibration Date: 12/12/2011 19:27

Instrument ID: HP5973X Calib Start Date: 12/12/2011 15:35

GC Column: RXI-5Sil MS ID: 0.25(mm) Calib End Date: 12/12/2011 17:29

Lab File ID: X1728.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
2-Fluorophenol	Ave	1.384	1.402	0.0100	50600	50000	1.3	25.0
Phenol-d5	Ave	1.635	1.685	0.0100	51500	50000	3.1	25.0
Nitrobenzene-d5	Ave	0.3274	0.3507	0.0100	53600	50000	7.1	25.0
2-Fluorobiphenyl	Qua		1.247	0.0100	49400	50000	-1.2	25.0
2,4,6-Tribromophenol	Ave	0.0898	0.1100	0.0100	61200	50000	22.5	25.0
p-Terphenyl-d14	Ave	0.7448	0.8621	0.0100	57900	50000	15.7	25.0

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1728.D
Lims ID: CCVIS Client ID:
Inject. Date: 12-Dec-2011 19:27:30 Dil. Factor: 1.0000
Sample Type: CCVIS
Sample ID: 480-0008169-002
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 2
Lims Batch ID: 44096 Lims Sample ID: 2
Sublist: chrom-X-8270*sub28
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X-8270.m
Last Update: 13-Dec-2011 09:33:10 Calib Date: 12-Dec-2011 17:29:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 13-Dec-2011 08:58:53

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.098	6.098	0.0	92	364715	40.0	
* 2 Naphthalene-d8	136	7.588	7.588	0.0	93	1335264	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	24	696947	40.0	
* 4 Phenanthrene-d10	188	11.242	11.242	0.0	99	1196492	40.0	
* 5 Chrysene-d12	240	13.646	13.646	0.0	93	1196046	40.0	
* 6 Perylene-d12	264	14.891	14.891	0.0	99	1576338	40.0	
$ 7 2-Fluorophenol	112	4.538	4.538	0.0	92	639077	50.6	
$ 8 Phenol-d5	99	5.665	5.665	0.0	84	768028	51.5	
$ 9 Nitrobenzene-d5	82	6.750	6.750	0.0	91	585270	53.6	
$ 10 2-Fluorobiphenyl	172	8.865	8.865	0.0	99	1086671	49.4	
$ 11 2,4,6-Tribromophenol	330	10.532	10.532	0.0	63	164584	61.2	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	99	1288853	57.9	
55 N-Nitrosodimethylamine	42	2.946	2.946	0.0	71	285003	47.2	
56 Pyridine	52	3.005	3.005	0.0	83	487092	54.9	
63 Phenol	94	5.681	5.681	0.0	74	765121	49.5	
64 Aniline	93	5.713	5.713	0.0	76	942359	48.5	
66 Bis(2-chloroethyl)ether	93	5.793	5.793	0.0	80	617224	49.2	
67 2-Chlorophenol	128	5.847	5.847	0.0	97	637118	50.6	
69 1,3-Dichlorobenzene	146	6.028	6.028	0.0	93	672003	50.1	
70 1,4-Dichlorobenzene	146	6.119	6.119	0.0	93	680967	50.5	
71 Benzyl alcohol	108	6.263	6.263	0.0	91	386352	49.8	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	81	637995	49.8	
73 2-Methylphenol	108	6.392	6.392	0.0	94	534319	48.8	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	63	685622	43.8	
79 4-Methylphenol	108	6.579	6.579	0.0	93	525834	48.1	
78 N-Nitrosodi-n-propylamine	70	6.579	6.579	0.0	62	377244	45.3	
81 Hexachloroethane	117	6.685	6.685	0.0	93	233290	48.4	
83 Nitrobenzene	77	6.771	6.771	0.0	90	572057	51.8	
86 Isophorone	82	7.059	7.059	0.0	96	1013889	51.6	
87 2-Nitrophenol	139	7.145	7.145	0.0	77	315354	59.3	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
89 2,4-Dimethylphenol	107	7.204	7.204	0.0	92	538291	52.0	
90 Tetraethyl lead	237	7.241	7.241	0.0	51	229312	52.7	
94 Bis(2-chloroethoxy)methane	93	7.321	7.321	0.0	94	642261	50.1	
95 Benzoic acid	105	7.401	7.401	0.0	56	1250726	170.5	
97 2,4-Dichlorophenol	162	7.423	7.423	0.0	79	471795	52.8	
98 1,2,4-Trichlorobenzene	180	7.524	7.524	0.0	93	531449	52.1	
99 Naphthalene	128	7.615	7.615	0.0	94	1535624	47.8	
101 4-Chloroaniline	127	7.690	7.690	0.0	96	693238	51.1	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	292512	53.4	
110 4-Chloro-3-methylphenol	107	8.256	8.256	0.0	91	447707	52.0	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	95	996928	47.1	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	88	343509	59.4	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	92	337339	55.2	
119 2,4,5-Trichlorophenol	196	8.796	8.796	0.0	94	367704	55.4	
124 2-Chloronaphthalene	162	8.993	8.993	0.0	98	943849	52.9	
125 2-Nitroaniline	65	9.127	9.127	0.0	87	249779	52.2	
128 Dimethyl phthalate	163	9.362	9.362	0.0	96	1087127	53.8	
130 2,6-Dinitrotoluene	165	9.426	9.426	0.0	41	255037	56.9	
131 Acenaphthylene	152	9.479	9.479	0.0	97	1441083	53.2	
132 3-Nitroaniline	138	9.624	9.624	0.0	90	284916	54.3	
133 Acenaphthene	153	9.682	9.682	0.0	99	874799	49.4	
134 2,4-Dinitrophenol	184	9.741	9.741	0.0	79	114849	71.5	
135 4-Nitrophenol	109	9.827	9.827	0.0	80	142599	57.6	
138 Dibenzofuran	168	9.885	9.885	0.0	97	1183624	48.5	
137 2,4-Dinitrotoluene	165	9.891	9.891	0.0	65	315999	56.5	
142 Diethyl phthalate	149	10.174	10.174	0.0	99	1017763	54.0	
144 Fluorene	166	10.270	10.270	0.0	100	971518	48.7	
145 4-Chlorophenyl phenyl ether	204	10.281	10.281	0.0	97	522798	50.7	
147 4-Nitroaniline	138	10.318	10.318	0.0	84	286161	53.6	
148 4,6-Dinitro-2-methylphenol	198	10.340	10.340	0.0	92	199998	59.8	
149 N-Nitrosodiphenylamine	169	10.409	10.409	0.0	96	727065	52.1	
152 1,2-Diphenylhydrazine	77	10.452	10.452	0.0	96	902168	45.5	
159 4-Bromophenyl phenyl ether	248	10.799	10.799	0.0	93	323217	53.7	
160 Hexachlorobenzene	284	10.847	10.847	0.0	97	352199	52.9	
165 Pentachlorophenol	266	11.055	11.055	0.0	96	224160	57.6	
171 Phenanthrene	178	11.269	11.269	0.0	99	1519374	49.5	
172 Anthracene	178	11.317	11.317	0.0	100	1542004	49.5	
173 Carbazole	167	11.483	11.483	0.0	100	1378115	48.5	
176 Di-n-butyl phthalate	149	11.825	11.825	0.0	99	1616654	52.8	
182 Fluoranthene	202	12.386	12.386	0.0	99	1658973	50.2	
183 Benzidine	184	12.514	12.514	0.0	100	951891	53.8	
185 Pyrene	202	12.589	12.589	0.0	99	1706219	53.3	
191 3,3'-Dimethylbenzidine	212	13.144	13.144	0.0	99	879940	43.0	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	96	756963	57.0	
196 3,3'-Dichlorobenzidine	252	13.614	13.614	0.0	66	716316	55.7	
197 Benzo[a]anthracene	228	13.630	13.630	0.0	56	1703589	50.8	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	90	989412	55.6	
199 Chrysene	228	13.668	13.668	0.0	98	1747563	54.2	
201 Di-n-octyl phthalate	149	14.175	14.175	0.0	100	1932246	52.5	
203 Benzo[b]fluoranthene	252	14.544	14.544	0.0	98	2043647	55.4	
204 Benzo[k]fluoranthene	252	14.565	14.565	0.0	97	2154422	47.6	
206 Benzo[a]pyrene	252	14.838	14.838	0.0	98	1805714	54.7	

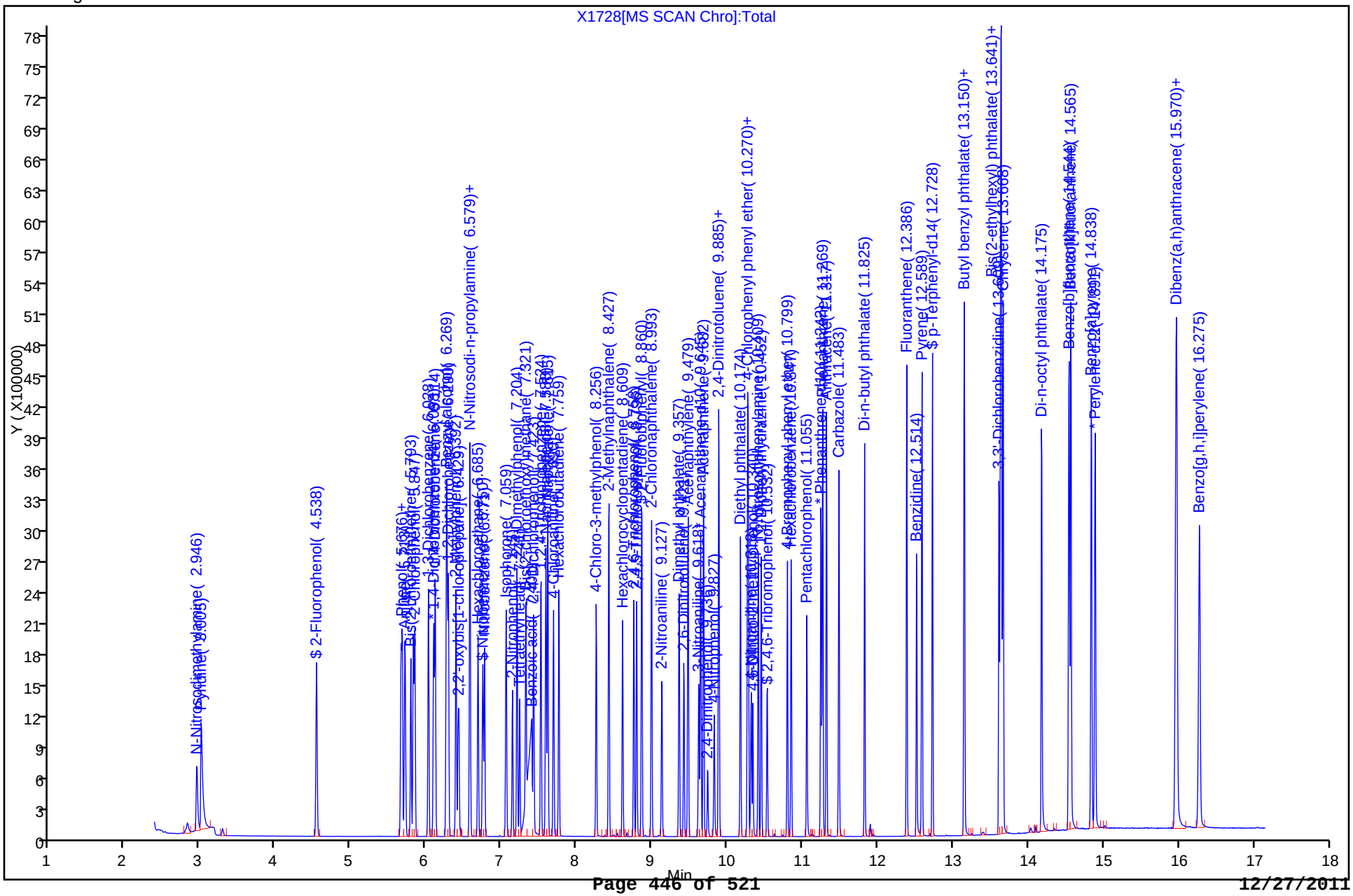
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208 Indeno[1,2,3-cd]pyrene	276	15.965	15.965	0.0	89	2167177	53.3	
209 Dibenz(a,h)anthracene	278	15.976	15.976	0.0	95	1940952	54.2	
210 Benzo[g,h,i]perylene	276	16.275	16.275	0.0	98	1865762	53.6	
S 214 3-Methylphenol	1				0		48.1	
S 213 Total Cresols	1				0		96.9	
S 212 3 & 4 Methylphenol	108				0		48.1	

Report Date: 13-Dec-2011 09:33:10 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1728.D

Injection Date:	12-Dec-2011 19:27:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44096	Lims Sample ID:	2
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



TestAmerica Laboratories
Target Compound Quantitation Report

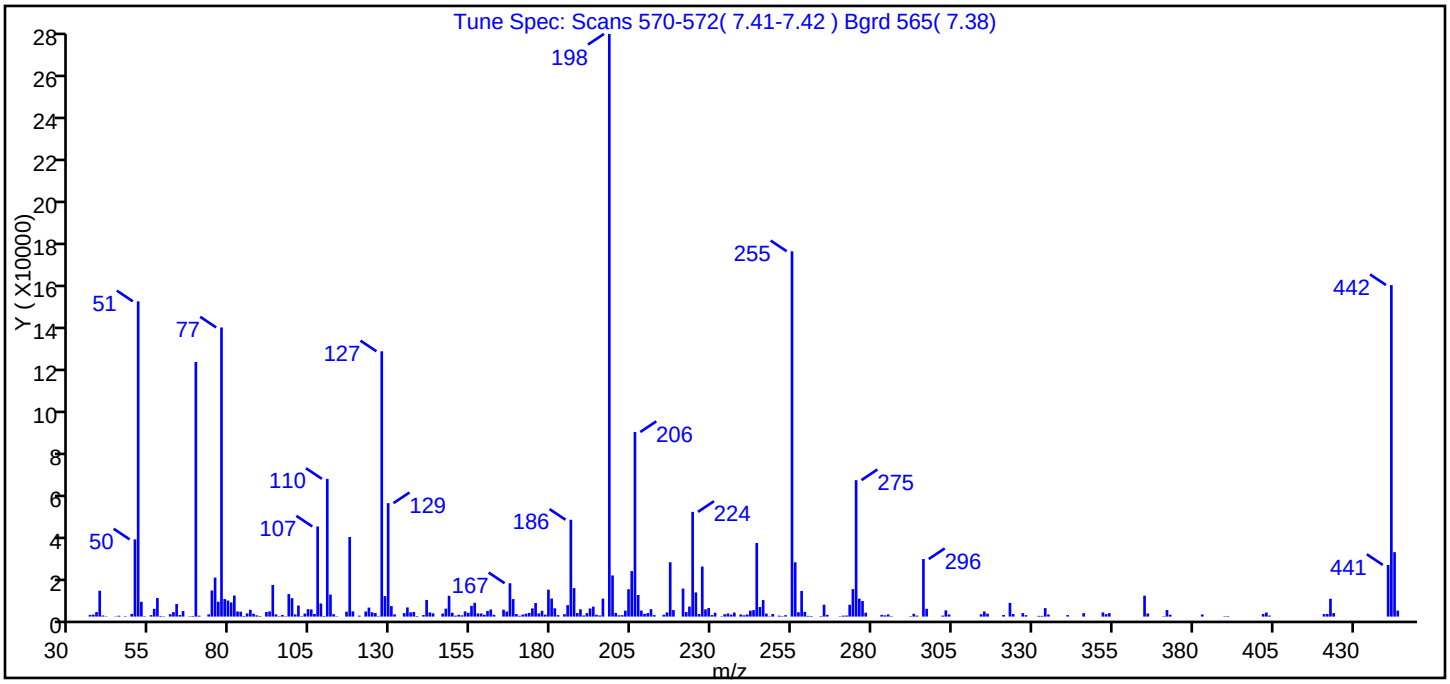
Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6912.D		
Lims ID:	DFTPP	Client ID:	
Inject. Date:	06-Dec-2011 13:11:30	Dil. Factor:	1.0000
Sample Type:	DFTPP		
Sample ID:	480-0007971-001		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973U
Vol. Injected:	1.0000	ALS Bottle#:	2
Lims Batch ID:	42934	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m		
Last Update:	06-Dec-2011 16:28:07	Calib Date:	06-Dec-2011 15:23:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-16		
First Level Reviewer: mckernar		Date:	06-Dec-2011 16:28:07

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
108 Pentachlorophenol_T	266	7.007	7.007	0.0	86	190004	0	
114 DFTPP								
130 Benzidine_T	184	8.445	8.445	0.0	99	1471205	0	
134 4,4'-DDE	246		8.589					
137 4,4'-DDD	235	8.888	8.888	0.0	25	7455	0	
141 4,4'-DDT	235	9.144	9.144	0.0	96	645431	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6912.D		
Injection Date:	06-Dec-2011 13:11:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	1
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm
Tune Method:	DFTPP Method 8270		

114 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	54.11
68	Less than 2.00% of mass 69	0.11 (0.25)
69	Present	43.70
70	Less than 2.00% of mass 69	0.16 (0.36)
127	40.00 - 60.00% of mass 198	45.53
197	Less than 1.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	7.06
275	10.00 - 30.00% of mass 198	23.42
365	Greater than 1.00% of mass 198	3.59
441	Present, but less than mass 443%	8.87 (80.16)
442	Greater than 40.00% of mass 198	56.90
443	17.00 - 23.00% of mass 442	11.06 (19.44)

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6912.D\U-8270.rslt\spectra.d
Injection Date: 06-Dec-2011 13:11:30
Spectrum: Tune Spec: Scans 570-572(7.41-7.42) Bgrd 565(7.38)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 255

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	808	110.00	64448	186.00	45312	259.00	2244
37.00	936	111.00	10298	187.00	13306	260.00	349
38.00	2106	112.00	1120	188.00	1647	261.00	265
39.00	12110	113.00	179	189.00	3419	264.00	245
40.00	526	116.00	2275	190.00	512	265.00	5554
41.00	160	117.00	37232	191.00	1631	266.00	838
44.00	154	118.00	2451	192.00	3805	270.00	181
45.00	410	120.00	441	193.00	4671	271.00	452
47.00	221	122.00	2392	194.00	882	272.00	503
49.00	1262	123.00	4209	195.00	513	273.00	5541
50.00	36120	124.00	2028	196.00	8419	274.00	12871
51.00	147520	125.00	1661	198.00	272640	275.00	63856
52.00	6928	126.00	202	199.00	19256	276.00	8396
53.00	203	127.00	124144	200.00	1724	277.00	7317
55.00	670	128.00	9602	201.00	624	278.00	1797
56.00	3640	129.00	53096	202.00	683	283.00	828
57.00	8681	130.00	4914	203.00	2808	284.00	569
58.00	305	131.00	1047	204.00	12806	285.00	1049
59.00	179	134.00	1614	205.00	21320	286.00	208
61.00	1136	135.00	4291	206.00	86368	292.00	222
62.00	2111	136.00	1981	207.00	10107	293.00	1326
63.00	5898	137.00	2176	208.00	2808	294.00	452
64.00	712	138.00	268	209.00	1286	296.00	26928
65.00	2577	140.00	708	210.00	1668	297.00	3656
67.00	169	141.00	7793	211.00	3465	302.00	464
68.00	300	142.00	1959	212.00	698	303.00	2936
69.00	119136	143.00	1523	215.00	878	304.00	977
70.00	425	146.00	1401	216.00	1959	314.00	1093
73.00	1049	147.00	3727	217.00	25424	315.00	2393
74.00	12212	148.00	9729	218.00	3062	316.00	1367
75.00	18224	149.00	1804	221.00	13109	321.00	756
76.00	6956	150.00	430	222.00	2124	323.00	6427
77.00	135296	151.00	858	223.00	4709	324.00	1219

Report Date: 06-Dec-2011 16:28:07 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6912.D\U-8270.rslt\spectra.d
Injection Date: 06-Dec-2011 13:11:30
Spectrum: Tune Spec: Scans 570-572(7.41-7.42) Bgrd 565(7.38)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 255

m/z	Y	m/z	Y	m/z	Y	m/z	Y
78.00	8207	152.00	586	224.00	49008	327.00	1632
79.00	7529	153.00	2444	225.00	11338	328.00	654
80.00	6630	154.00	1758	226.00	1192	332.00	347
81.00	9856	155.00	5018	227.00	23424	333.00	315
82.00	2397	156.00	6463	228.00	3387	334.00	3982
83.00	2294	157.00	1469	229.00	4030	335.00	972
84.00	275	158.00	1500	230.00	694	341.00	704
85.00	1493	159.00	882	231.00	1796	346.00	1619
86.00	3176	160.00	2608	233.00	173	352.00	1957
87.00	1341	161.00	3323	234.00	1089	353.00	1127
88.00	579	162.00	860	235.00	1462	354.00	1603
89.00	300	165.00	3234	236.00	930	365.00	9800
91.00	2108	166.00	2346	237.00	1899	366.00	1464
92.00	2427	167.00	15613	239.00	1003	371.00	219
93.00	14791	168.00	8184	240.00	620	372.00	3104
94.00	1048	169.00	1210	241.00	991	373.00	857
95.00	198	170.00	389	242.00	2777	383.00	991
96.00	744	171.00	945	243.00	3040	390.00	194
97.00	172	172.00	1363	244.00	34448	391.00	234
98.00	10538	173.00	1762	245.00	4490	402.00	1235
99.00	8629	174.00	3849	246.00	7739	403.00	1917
100.00	979	175.00	6346	247.00	1393	404.00	493
101.00	5176	176.00	1485	248.00	177	421.00	1167
102.00	212	177.00	2739	249.00	1225	422.00	1261
103.00	1410	178.00	905	251.00	448	423.00	8336
104.00	3471	179.00	12594	252.00	205	424.00	1633
105.00	3334	180.00	8440	253.00	655	441.00	24176
106.00	1229	181.00	3901	255.00	170944	442.00	155136
107.00	42152	182.00	698	256.00	25400	443.00	30160
108.00	6143	184.00	1128	257.00	2026	444.00	2807
109.00	289	185.00	5348	258.00	12020		

TestAmerica Laboratories
Target Compound Quantitation Report

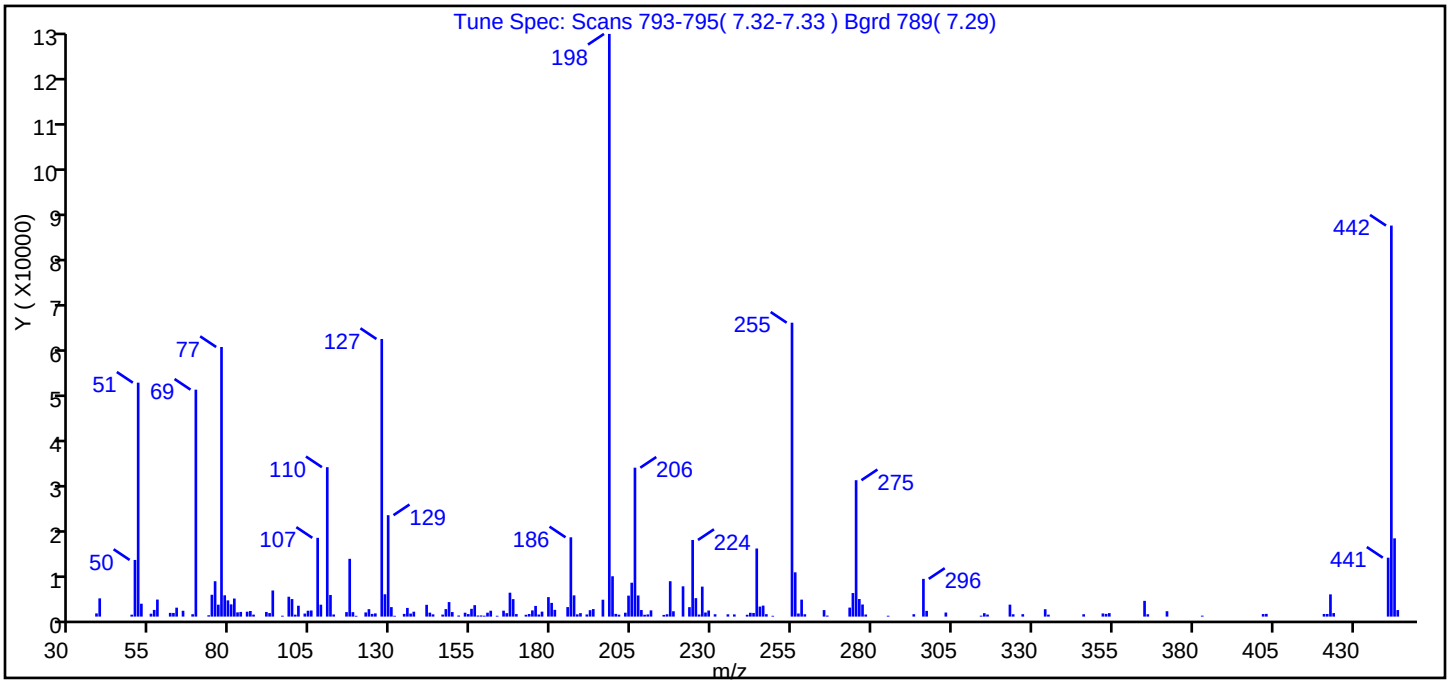
Data File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0978.D		
Lims ID:	DFTPP	Client ID:	
Inject. Date:	16-Nov-2011 12:09:30	Dil. Factor:	1.0000
Sample Type:	DFTPP		
Sample ID:	480-0007579-001		
Misc. Info.:	DFTPP		
Operator:	RJF	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	1
Lims Batch ID:	40664	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X-8270.m		
Last Update:	02-Dec-2011 12:55:45	Calib Date:	16-Nov-2011 14:19:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0984.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: pfenderk		Date:	02-Dec-2011 12:55:44

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
84 Pentachlorophenol_T	266	6.921	6.921	0.0	95	100371	0	
93 DFTPP								
109 Benzidine_T	184	8.262	8.262	0.0	99	828684	0	
111 4,4'-DDE	246	8.422	8.422	0.0	1	756	0	
115 4,4'-DDD	235	8.700	8.700	0.0	0	7601	0	
120 4,4'-DDT	235	8.951	8.951	0.0	96	345744	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0978.D		
Injection Date:	16-Nov-2011 12:09:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	40664	Lims Sample ID:	1
Operator ID:	RJF	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm
Tune Method:	DFTPP Method 8270		

93 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	40.15
68	Less than 2.00% of mass 69	0.41 (1.05)
69	Present	38.95
70	Less than 2.00% of mass 69	0.00 (0.00)
127	40.00 - 60.00% of mass 198	47.65
197	Less than 1.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.92
275	10.00 - 30.00% of mass 198	23.41
365	Greater than 1.00% of mass 198	2.70
441	Present, but less than mass 443%	10.11 (75.29)
442	Greater than 40.00% of mass 198	67.11
443	17.00 - 23.00% of mass 442	13.43 (20.01)

Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0978.D\X-8270.rslt\spectra.d
Injection Date: 16-Nov-2011 12:09:30
Spectrum: Tune Spec: Scans 793-795(7.32-7.33) Bgrd 789(7.29)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 183

m/z	Y	m/z	Y	m/z	Y	m/z	Y
38.00	665	117.00	12038	180.00	2853	249.00	168
39.00	3797	118.00	927	181.00	1407	255.00	61232
49.00	398	119.00	167	185.00	1980	256.00	9222
50.00	11802	122.00	868	186.00	16520	257.00	645
51.00	48736	123.00	1546	187.00	4421	258.00	3535
52.00	2682	124.00	561	188.00	467	259.00	490
55.00	607	125.00	668	189.00	724	265.00	1355
56.00	1394	127.00	57840	191.00	449	266.00	211
57.00	3549	128.00	4652	192.00	1335	273.00	1876
61.00	774	129.00	21128	193.00	1571	274.00	4910
62.00	762	130.00	1975	196.00	3517	275.00	28416
63.00	1861	131.00	171	198.00	121392	276.00	3661
65.00	1217	134.00	563	199.00	8405	277.00	2521
68.00	495	135.00	1806	200.00	564	278.00	432
69.00	47280	136.00	628	201.00	397	285.00	181
73.00	277	137.00	1022	203.00	809	293.00	500
74.00	4547	141.00	2454	204.00	4368	296.00	7861
75.00	7370	142.00	824	205.00	7058	297.00	1189
76.00	2485	143.00	471	206.00	31024	303.00	847
77.00	56168	146.00	418	207.00	4405	314.00	189
78.00	4437	147.00	1558	208.00	1363	315.00	712
79.00	3381	148.00	3025	209.00	384	316.00	425
80.00	2552	149.00	948	210.00	450	323.00	2493
81.00	3762	151.00	224	211.00	1300	324.00	487
82.00	881	153.00	811	215.00	351	327.00	505
83.00	974	154.00	523	216.00	489	334.00	1537
85.00	1022	155.00	1619	217.00	7371	335.00	405
86.00	1168	156.00	2384	218.00	1112	346.00	489
87.00	407	157.00	226	221.00	6311	352.00	654
91.00	963	158.00	240	223.00	1967	353.00	564
92.00	733	159.00	185	224.00	15964	354.00	724
93.00	5438	160.00	813	225.00	3844	365.00	3281
96.00	183	161.00	1224	226.00	433	366.00	491

Report Date: 02-Dec-2011 12:55:45 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973X\20111116-7579.b\X0978.D\X-8270.rslt\spectra.d
Injection Date: 16-Nov-2011 12:09:30
Spectrum: Tune Spec: Scans 793-795(7.32-7.33) Bgrd 789(7.29)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 183

m/z	Y	m/z	Y	m/z	Y	m/z	Y
98.00	4138	163.00	175	227.00	6246	372.00	1122
99.00	3653	165.00	1235	228.00	851	383.00	195
100.00	403	166.00	716	229.00	1265	402.00	534
101.00	2264	167.00	4979	231.00	487	403.00	570
103.00	627	168.00	3641	235.00	475	421.00	551
104.00	1226	169.00	529	237.00	455	422.00	546
105.00	1277	172.00	379	241.00	380	423.00	4631
107.00	16408	173.00	541	242.00	794	424.00	733
108.00	2481	174.00	1291	243.00	757	441.00	12274
110.00	31128	175.00	2226	244.00	14186	442.00	81464
111.00	4503	176.00	430	245.00	2089	443.00	16303
112.00	440	177.00	1037	246.00	2290	444.00	1361
116.00	936	179.00	4059	247.00	507		

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1546.D
Lims ID: DFTPP Client ID:
Inject. Date: 07-Dec-2011 14:43:30 Dil. Factor: 1.0000
Sample Type: DFTPP
Sample ID: 480-0008038-001
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 1
Lims Batch ID: 43264 Lims Sample ID: 1
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X-8270.m
Last Update: 07-Dec-2011 15:37:12 Calib Date: 05-Dec-2011 15:22:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111205-7963.b\X1458.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

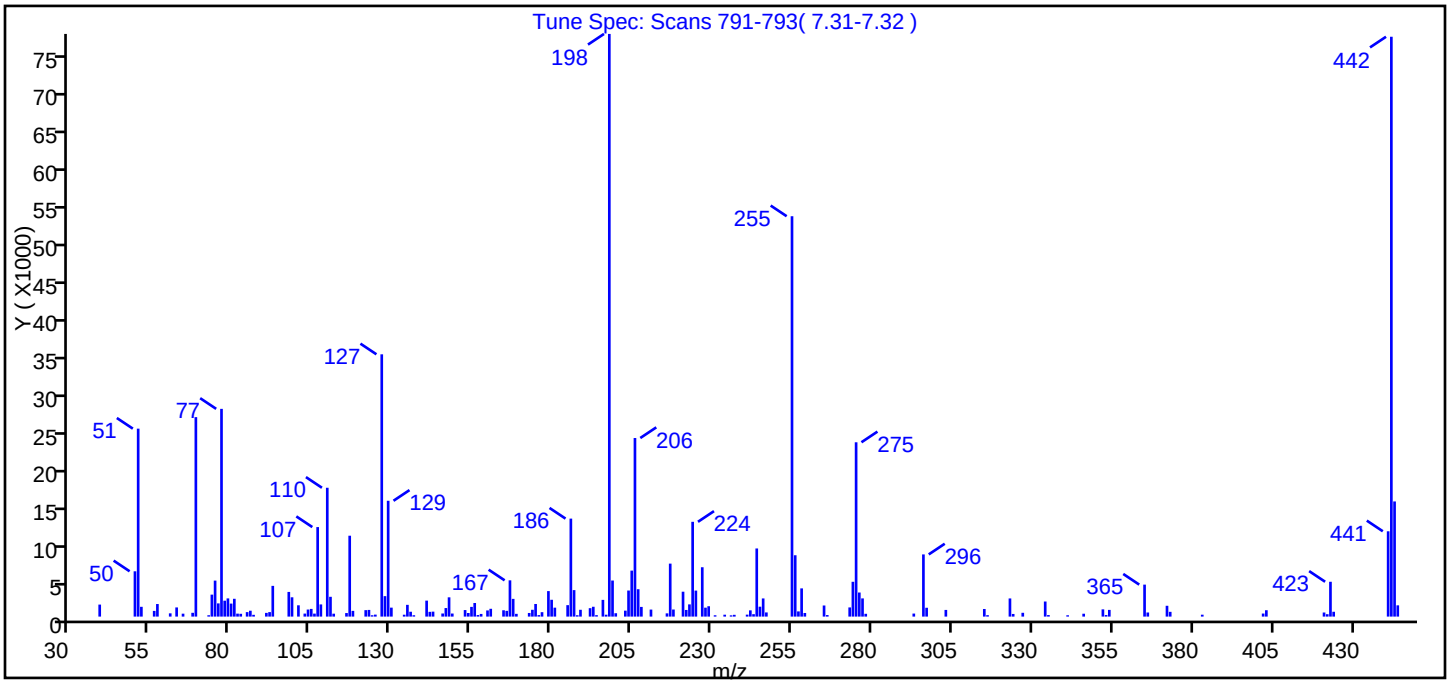
First Level Reviewer: mckernar Date: 07-Dec-2011 15:37:12

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
84 Pentachlorophenol_T	266	6.915	6.915	0.0	93	48785	0	
93 DFTPP								
109 Benzidine_T	184	8.246	8.246	0.0	100	437600	0	
111 4,4'-DDE	246		8.411					
115 4,4'-DDD	235	8.678	8.678	0.0	1	1135	0	
120 4,4'-DDT	235	8.924	8.924	0.0	99	229536	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1546.D		
Injection Date:	07-Dec-2011 14:43:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43264	Lims Sample ID:	1
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm
Tune Method:	DFTPP Method 8270		

93 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	32.26
68	Less than 2.00% of mass 69	0.65 (1.90)
69	Present	34.23
70	Less than 2.00% of mass 69	0.00 (0.00)
127	40.00 - 60.00% of mass 198	45.02
197	Less than 1.00% of mass 198	0.32
199	5.00 - 9.00% of mass 198	6.19
275	10.00 - 30.00% of mass 198	29.92
365	Greater than 1.00% of mass 198	5.49
441	Present, but less than mass 443%	14.64 (74.09)
442	Greater than 40.00% of mass 198	99.52
443	17.00 - 23.00% of mass 442	19.76 (19.86)

Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1546.D\X-8270.rslt\spectra.d
Injection Date: 07-Dec-2011 14:43:30
Spectrum: Tune Spec: Scans 791-793(7.31-7.32)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 169

m/z	Y	m/z	Y	m/z	Y	m/z	Y
39.00	1601	122.00	860	188.00	181	259.00	481
50.00	6040	123.00	890	189.00	909	265.00	1480
51.00	25056	124.00	182	192.00	1123	266.00	204
52.00	1304	125.00	264	193.00	1311	273.00	1223
56.00	759	127.00	34968	194.00	193	274.00	4641
57.00	1675	128.00	2726	196.00	2230	275.00	23240
61.00	435	129.00	15442	197.00	252	276.00	3210
63.00	1222	130.00	1195	198.00	77680	277.00	2427
65.00	390	134.00	251	199.00	4809	278.00	372
68.00	506	135.00	1567	200.00	450	293.00	404
69.00	26592	136.00	648	203.00	793	296.00	8290
73.00	181	137.00	181	204.00	3475	297.00	1178
74.00	2928	141.00	2129	205.00	6131	303.00	889
75.00	4798	142.00	634	206.00	23808	315.00	1014
76.00	1760	143.00	661	207.00	3651	316.00	189
77.00	27696	146.00	414	208.00	1291	323.00	2420
78.00	2120	147.00	1139	211.00	937	324.00	352
79.00	2426	148.00	2569	216.00	432	327.00	507
80.00	1734	149.00	409	217.00	7063	334.00	2011
81.00	2374	153.00	871	218.00	944	335.00	204
82.00	395	154.00	480	221.00	3319	341.00	178
83.00	373	155.00	1294	222.00	885	346.00	383
85.00	596	156.00	1812	223.00	1628	352.00	965
86.00	784	157.00	207	224.00	12637	353.00	207
87.00	237	158.00	355	225.00	3468	354.00	893
91.00	494	160.00	823	227.00	6580	365.00	4263
92.00	598	161.00	1041	228.00	1190	366.00	546
93.00	4096	165.00	844	229.00	1382	372.00	1442
98.00	3289	166.00	765	231.00	177	373.00	635
99.00	2573	167.00	4834	234.00	251	383.00	254
101.00	1506	168.00	2363	236.00	167	402.00	408
103.00	400	169.00	367	237.00	237	403.00	849
104.00	940	173.00	483	241.00	261	421.00	545

Report Date: 07-Dec-2011 15:37:12 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973X\20111207-8038.b\X1546.D\X-8270.rslt\spectra.d
Injection Date: 07-Dec-2011 14:43:30
Spectrum: Tune Spec: Scans 791-793(7.31-7.32)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 169

m/z	Y	m/z	Y	m/z	Y	m/z	Y
105.00	1025	174.00	909	242.00	832	422.00	318
106.00	397	175.00	1681	243.00	324	423.00	4644
107.00	11935	176.00	200	244.00	9083	424.00	644
108.00	1623	177.00	589	245.00	1320	441.00	11375
110.00	17176	179.00	3399	246.00	2421	442.00	77304
111.00	2639	180.00	2242	247.00	555	443.00	15352
112.00	388	181.00	1191	255.00	53376	444.00	1501
116.00	473	185.00	1525	256.00	8178		
117.00	10783	186.00	13063	257.00	692		
118.00	763	187.00	3530	258.00	3762		

TestAmerica Laboratories
Target Compound Quantitation Report

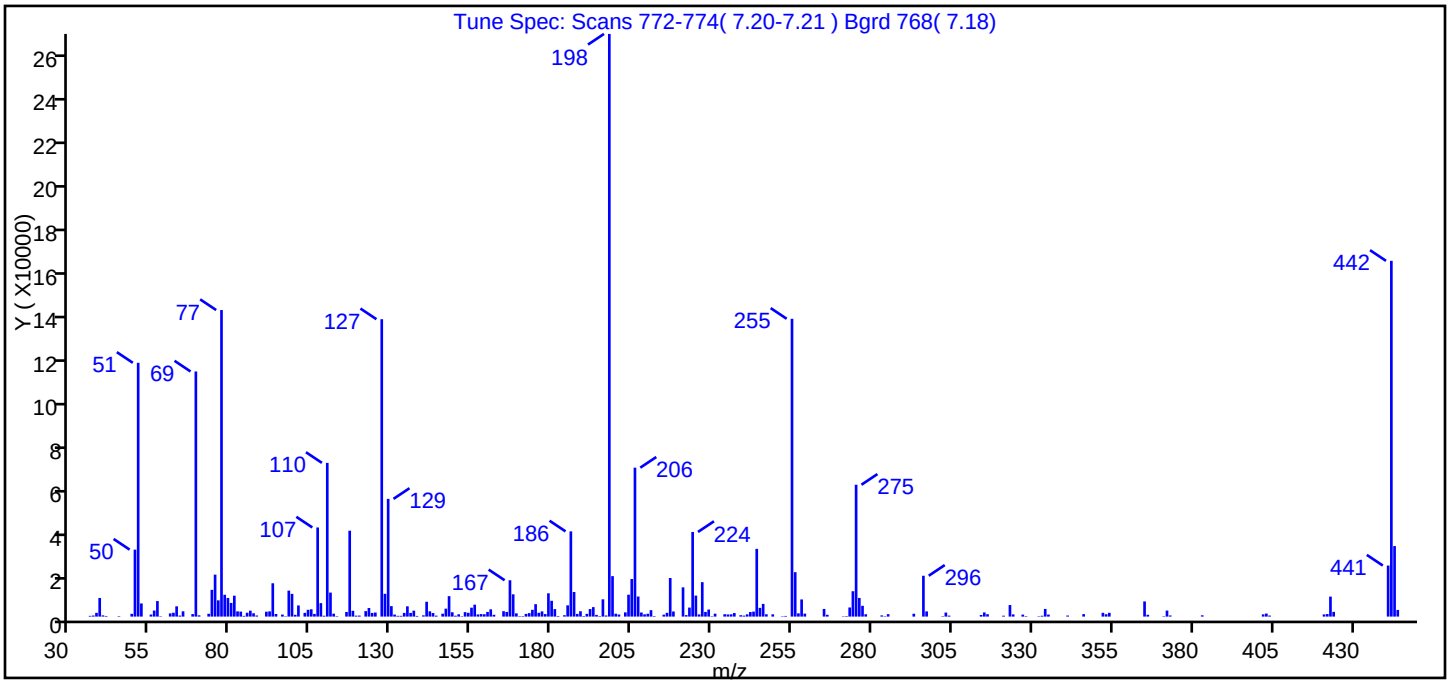
Data File:	\\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1679.D		
Lims ID:	DFTPP	Client ID:	
Inject. Date:	10-Dec-2011 13:58:30	Dil. Factor:	1.0000
Sample Type:	DFTPP		
Sample ID:	480-0008136-001		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	1
Lims Batch ID:	43924	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111210-8136.b\X-8270.m		
Last Update:	12-Dec-2011 10:20:53	Calib Date:	11-Dec-2011 00:07:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1706.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	12-Dec-2011 10:20:53

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
84 Pentachlorophenol_T	266	6.803	6.803	0.0	97	227329	0	
93 DFTPP								
109 Benzidine_T	184	8.171	8.171	0.0	100	1636947	0	
111 4,4'-DDE	246		8.411					
115 4,4'-DDD	235	8.598	8.598	0.0	1	897	0	
120 4,4'-DDT	235	8.849	8.849	0.0	98	679702	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1679.D		
Injection Date:	10-Dec-2011 13:58:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	43924	Lims Sample ID:	1
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm
Tune Method:	DFTPP Method 8270		

93 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	43.56
68	Less than 2.00% of mass 69	0.43 (1.02)
69	Present	42.07
70	Less than 2.00% of mass 69	0.22 (0.52)
127	40.00 - 60.00% of mass 198	51.04
197	Less than 1.00% of mass 198	0.19
199	5.00 - 9.00% of mass 198	6.95
275	10.00 - 30.00% of mass 198	22.63
365	Greater than 1.00% of mass 198	2.60
441	Present, but less than mass 443%	8.76 (72.37)
442	Greater than 40.00% of mass 198	61.05
443	17.00 - 23.00% of mass 442	12.10 (19.82)

Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1679.D\X-8270.rslt\spectra.d
Injection Date: 10-Dec-2011 13:58:30
Spectrum: Tune Spec: Scans 772-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 238

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	341	116.00	2100	182.00	276	255.00	135232
37.00	483	117.00	39000	184.00	629	256.00	20168
38.00	1710	118.00	2634	185.00	5105	257.00	1476
39.00	8455	119.00	429	186.00	38696	258.00	7793
40.00	558	120.00	460	187.00	11157	259.00	1349
41.00	284	122.00	2478	188.00	1217	265.00	3482
45.00	224	123.00	3894	189.00	2436	266.00	830
49.00	1265	124.00	1672	190.00	249	271.00	169
50.00	30408	125.00	1844	191.00	1245	272.00	234
51.00	115240	127.00	135040	192.00	3425	273.00	4141
52.00	5972	128.00	10341	193.00	4304	274.00	11516
55.00	948	129.00	53456	194.00	770	275.00	59872
56.00	2747	130.00	4753	195.00	235	276.00	8468
57.00	7052	131.00	916	196.00	7847	277.00	4901
58.00	188	132.00	352	197.00	505	278.00	1064
61.00	1449	133.00	358	198.00	264576	283.00	540
62.00	1747	134.00	1674	199.00	18376	284.00	184
63.00	4670	135.00	4676	200.00	1306	285.00	1104
64.00	463	136.00	1683	201.00	937	293.00	1304
65.00	2402	137.00	2702	203.00	1918	296.00	18552
68.00	1132	138.00	307	204.00	9945	297.00	2359
69.00	111304	140.00	574	205.00	17064	302.00	197
70.00	577	141.00	6746	206.00	67624	303.00	1834
73.00	1281	142.00	2398	207.00	9109	304.00	446
74.00	12139	143.00	1620	208.00	1861	314.00	728
75.00	19056	144.00	431	209.00	1030	315.00	1891
76.00	7387	146.00	1331	210.00	1300	316.00	1086
77.00	139200	147.00	3604	211.00	2917	321.00	416
78.00	9912	148.00	9286	212.00	248	323.00	5239
79.00	8469	149.00	1969	215.00	877	324.00	1004
80.00	6211	150.00	406	216.00	1715	327.00	899
81.00	9502	151.00	1043	217.00	17528	328.00	232
82.00	2370	152.00	184	218.00	2325	332.00	178

Report Date: 12-Dec-2011 10:20:54 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973X\20111210-8136.b\X1679.D\X-8270.rslt\spectra.d
Injection Date: 10-Dec-2011 13:58:30
Spectrum: Tune Spec: Scans 772-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 238

m/z	Y	m/z	Y	m/z	Y	m/z	Y
83.00	2262	153.00	2030	221.00	13277	333.00	386
84.00	329	154.00	1718	222.00	670	334.00	3477
85.00	1751	155.00	4048	223.00	4099	335.00	922
86.00	2695	156.00	5408	224.00	38440	341.00	482
87.00	1515	157.00	975	225.00	9539	346.00	1130
88.00	493	158.00	1148	226.00	991	352.00	1731
91.00	2222	159.00	1073	227.00	15639	353.00	1078
92.00	2379	160.00	2115	228.00	2124	354.00	1719
93.00	15131	161.00	3302	229.00	3211	365.00	6892
94.00	1184	162.00	822	230.00	193	366.00	825
96.00	914	165.00	2457	231.00	1320	371.00	197
97.00	174	166.00	2124	234.00	1089	372.00	2734
98.00	11796	167.00	16504	235.00	971	373.00	513
99.00	10328	168.00	10118	236.00	1034	383.00	580
100.00	804	169.00	1478	237.00	1618	402.00	1008
101.00	5066	170.00	210	239.00	629	403.00	1386
103.00	1701	171.00	226	240.00	434	404.00	471
104.00	3079	172.00	1227	241.00	1022	421.00	994
105.00	3320	173.00	1580	242.00	2067	422.00	1156
106.00	1211	174.00	3085	243.00	2267	423.00	9075
107.00	40472	175.00	5638	244.00	30752	424.00	2152
108.00	6120	176.00	1733	245.00	3967	441.00	23176
109.00	388	177.00	2367	246.00	5762	442.00	161536
110.00	69800	178.00	1155	247.00	1055	443.00	32024
111.00	10900	179.00	10572	249.00	1033	444.00	3022
112.00	1323	180.00	7179	252.00	178		
113.00	214	181.00	3406	253.00	304		

TestAmerica Laboratories
Target Compound Quantitation Report

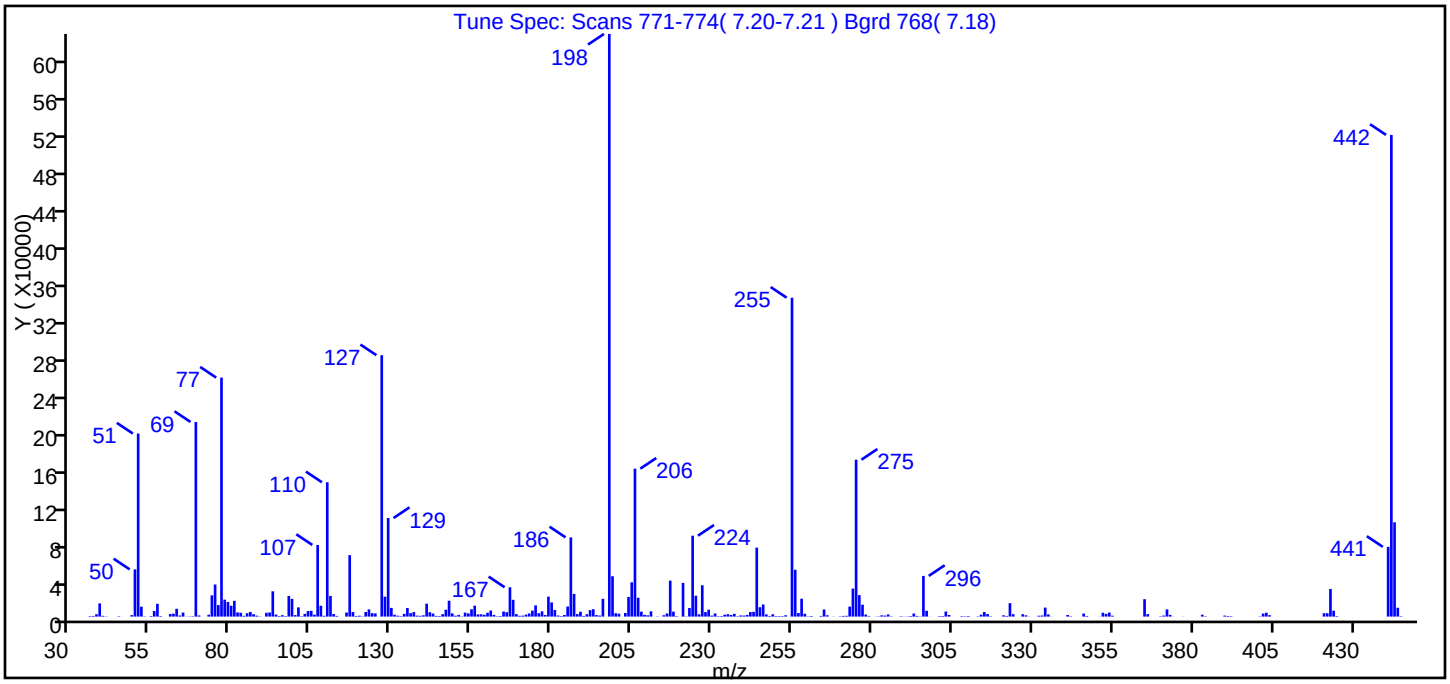
Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1709.D		
Lims ID:	DFTPP	Client ID:	
Inject. Date:	12-Dec-2011 12:40:30	Dil. Factor:	1.0000
Sample Type:	DFTPP		
Sample ID:	480-0008158-001		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	2
Lims Batch ID:	44019	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X-8270.m		
Last Update:	12-Dec-2011 15:35:18	Calib Date:	12-Dec-2011 14:49:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1715.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	12-Dec-2011 15:35:18

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
84 Pentachlorophenol_T	266	6.803	6.803	0.0	94	871063	0	
93 DFTPP								
109 Benzidine_T	184	8.176	8.176	0.0	99	3941144	0	
111 4,4'-DDE	246		8.411					
115 4,4'-DDD	235	8.598	8.598	0.0	1	1660	0	
120 4,4'-DDT	235	8.849	8.849	0.0	96	2071987	0	

MS Tune Report

Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1709.D		
Injection Date:	12-Dec-2011 12:40:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44019	Lims Sample ID:	1
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm
Tune Method:	DFTPP Method 8270		

93 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	31.42
68	Less than 2.00% of mass 69	0.07 (0.22)
69	Present	33.40
70	Less than 2.00% of mass 69	0.20 (0.60)
127	40.00 - 60.00% of mass 198	44.86
197	Less than 1.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.93
275	10.00 - 30.00% of mass 198	26.93
365	Greater than 1.00% of mass 198	2.99
441	Present, but less than mass 443%	11.97 (73.98)
442	Greater than 40.00% of mass 198	82.67
443	17.00 - 23.00% of mass 442	16.18 (19.57)

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1709.D\X-8270.rslt\spectra.d
Injection Date: 12-Dec-2011 12:40:30
Spectrum: Tune Spec: Scans 771-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 295

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	587	124.00	3714	200.00	3584	284.00	1076
37.00	705	125.00	3380	201.00	3126	285.00	2328
38.00	2518	127.00	280832	203.00	3923	286.00	335
39.00	14155	128.00	21392	204.00	21144	289.00	429
40.00	797	129.00	105896	205.00	36832	290.00	173
41.00	254	130.00	9371	206.00	158912	291.00	282
45.00	456	131.00	1999	207.00	20288	292.00	618
49.00	1586	132.00	976	208.00	5312	293.00	3285
50.00	50736	133.00	509	209.00	1890	294.00	741
51.00	196672	134.00	2924	210.00	1386	295.00	206
52.00	10633	135.00	9263	211.00	5729	296.00	43712
53.00	292	136.00	3730	213.00	273	297.00	6226
55.00	690	137.00	4879	215.00	1485	298.00	129
56.00	6041	138.00	1061	216.00	3352	301.00	551
57.00	13763	139.00	895	217.00	38624	302.00	650
58.00	611	140.00	1401	218.00	5349	303.00	5443
61.00	2798	141.00	13922	219.00	522	304.00	1722
62.00	3146	142.00	4703	221.00	36216	308.00	589
63.00	8394	143.00	3238	222.00	325	309.00	404
64.00	1178	144.00	768	223.00	9242	310.00	682
65.00	4326	145.00	704	224.00	86920	313.00	356
66.00	152	146.00	2626	225.00	22440	314.00	2050
67.00	287	147.00	7409	226.00	2446	315.00	4893
68.00	451	148.00	17048	227.00	33704	316.00	2754
69.00	209088	149.00	3461	228.00	4877	317.00	381
70.00	1246	150.00	964	229.00	7406	321.00	1402
73.00	1979	151.00	1788	230.00	1068	322.00	715
74.00	22816	152.00	346	231.00	3362	323.00	14454
75.00	34480	153.00	4284	232.00	449	324.00	2626
76.00	12373	154.00	3437	233.00	613	327.00	2569
77.00	256768	155.00	7876	234.00	2047	328.00	1368
78.00	18208	156.00	11711	235.00	2618	329.00	160
79.00	15714	157.00	2323	236.00	1735	332.00	941

Report Date: 12-Dec-2011 15:35:19 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1709.D\X-8270.rslt\spectra.d
Injection Date: 12-Dec-2011 12:40:30
Spectrum: Tune Spec: Scans 771-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 295

m/z	Y	m/z	Y	m/z	Y	m/z	Y
80.00	11656	158.00	2495	237.00	2959	333.00	1173
81.00	16936	159.00	1919	238.00	392	334.00	9678
82.00	4509	160.00	4188	239.00	1244	335.00	2325
83.00	4129	161.00	6527	240.00	1142	336.00	147
84.00	804	162.00	1783	241.00	1777	341.00	1756
85.00	3628	163.00	411	242.00	4905	342.00	404
86.00	4943	164.00	606	243.00	5126	346.00	3235
87.00	2550	165.00	5448	244.00	74096	347.00	703
88.00	1011	166.00	4723	245.00	10081	351.00	141
89.00	294	167.00	31536	246.00	13054	352.00	4123
91.00	4068	168.00	18032	247.00	2342	353.00	2899
92.00	4428	169.00	2695	248.00	716	354.00	4313
93.00	27184	170.00	859	249.00	2517	355.00	932
94.00	2196	171.00	1017	250.00	535	365.00	18712
95.00	663	172.00	2124	251.00	558	366.00	2658
96.00	1530	173.00	3358	252.00	543	370.00	432
97.00	528	174.00	6403	253.00	1416	371.00	1142
98.00	22240	175.00	12011	255.00	342592	372.00	7742
99.00	19056	176.00	3587	256.00	50312	373.00	1847
100.00	1629	177.00	5655	257.00	3753	374.00	133
101.00	9910	178.00	1742	258.00	19208	377.00	137
102.00	432	179.00	21448	259.00	3035	383.00	2008
103.00	2972	180.00	15236	260.00	319	384.00	436
104.00	5959	181.00	7106	261.00	687	390.00	1078
105.00	6206	182.00	1190	264.00	712	391.00	690
106.00	2068	183.00	601	265.00	7664	392.00	498
107.00	76976	184.00	1728	266.00	1441	401.00	340
108.00	11688	185.00	10845	268.00	156	402.00	3237
109.00	851	186.00	85144	270.00	352	403.00	4182
110.00	144320	187.00	24400	271.00	747	404.00	1533
111.00	22192	188.00	2698	272.00	866	421.00	3630
112.00	2727	189.00	5212	273.00	10757	422.00	3663
113.00	739	190.00	734	274.00	30120	423.00	29664
116.00	4369	191.00	2537	275.00	168576	424.00	6294

Report Date: 12-Dec-2011 15:35:19 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1709.D\X-8270.rslt\spectra.d
Injection Date: 12-Dec-2011 12:40:30
Spectrum: Tune Spec: Scans 771-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 295

m/z	Y	m/z	Y	m/z	Y	m/z	Y
117.00	66024	192.00	6991	276.00	23080	425.00	576
118.00	4891	193.00	7927	277.00	12786	441.00	74928
119.00	673	194.00	1614	278.00	2204	442.00	517504
120.00	985	195.00	1121	279.00	532	443.00	101288
121.00	259	196.00	19128	281.00	151	444.00	9513
122.00	4975	198.00	625984	282.00	318	445.00	452
123.00	7707	199.00	43384	283.00	1399		

TestAmerica Laboratories
Target Compound Quantitation Report

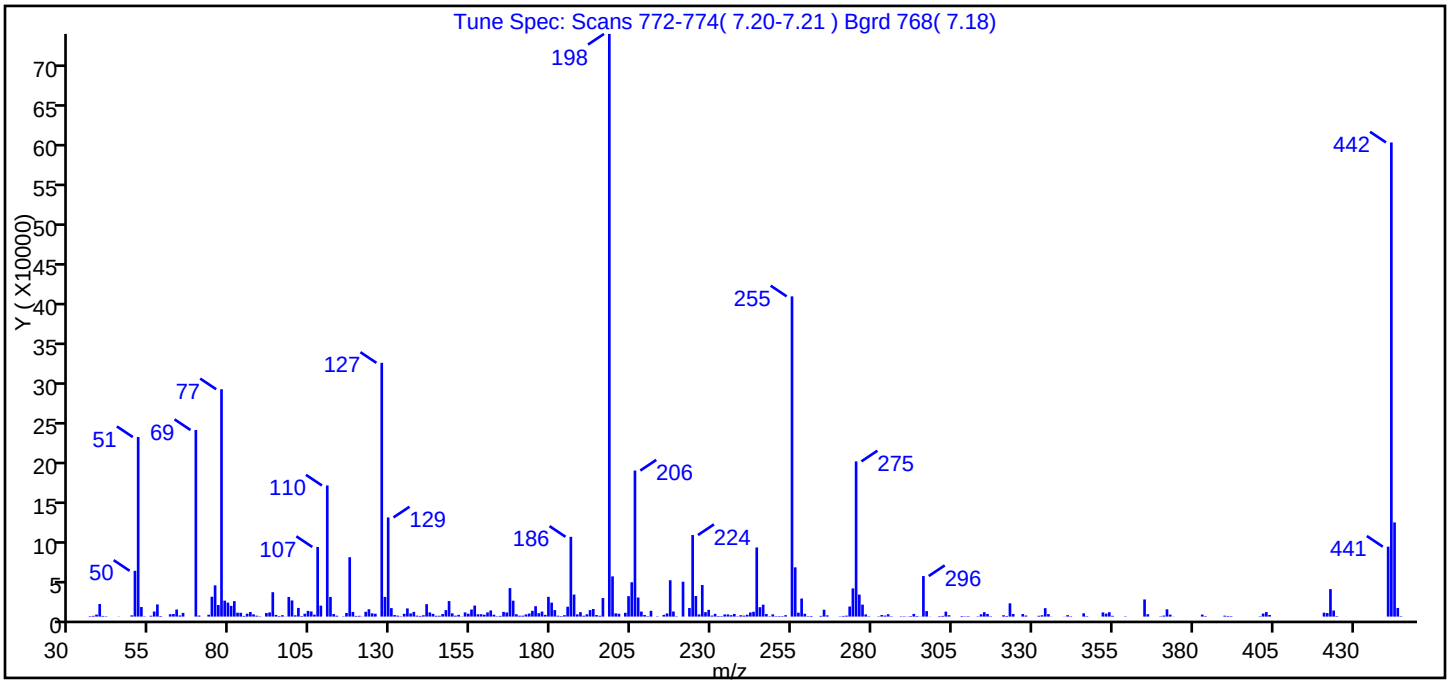
Data File:	\\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1727.D		
Lims ID:	DFTPP	Client ID:	
Inject. Date:	12-Dec-2011 19:12:30	Dil. Factor:	1.0000
Sample Type:	DFTPP		
Sample ID:	480-0008169-001		
Misc. Info.:			
Operator:	RMM	Instrument ID:	HP5973X
Vol. Injected:	1.0000	ALS Bottle#:	1
Lims Batch ID:	44096	Lims Sample ID:	1
Detector:	MS SCAN		
Method:	\\Bufchrom\ChromData\HP5973X\20111212-8169.b\X-8270.m		
Last Update:	13-Dec-2011 09:32:41	Calib Date:	12-Dec-2011 17:29:30
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D		
Limit Group:	MB - 8270C ICAL		
Integrator:	RTE	ID Type:	RT Order ID
Process Host:	CORP-CTX-19		
First Level Reviewer: mckernar		Date:	13-Dec-2011 09:32:41

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
84 Pentachlorophenol_T	266	6.803	6.803	0.0	94	823474	0	
93 DFTPP								
109 Benzidine_T	184	8.176	8.176	0.0	99	3531246	0	
111 4,4'-DDE	246		8.411					
115 4,4'-DDD	235	8.598	8.598	0.0	1	2009	0	
120 4,4'-DDT	235	8.849	8.849	0.0	96	1961075	0	

MS Tune Report

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1727.D
Injection Date: 12-Dec-2011 19:12:30 Limit Group: MB - 8270C ICAL
Client ID: Instrument ID: HP5973X
Lims Batch ID: 44096 Lims Sample ID: 1
Operator ID: RMM Injection Vol: 1.00 ul
Column Type: RXI-5Sil MS Column Dia: 0.25 mm
Tune Method: DFTPP Method 8270

93 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	Base Peak, 100% relative abundance	100.00
51	30.00 - 60.00% of mass 198	30.81
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Present	32.02
70	Less than 2.00% of mass 69	0.18 (0.56)
127	40.00 - 60.00% of mass 198	43.55
197	Less than 1.00% of mass 198	0.00
199	5.00 - 9.00% of mass 198	6.90
275	10.00 - 30.00% of mass 198	26.64
365	Greater than 1.00% of mass 198	2.94
441	Present, but less than mass 443%	12.00 (74.26)
442	Greater than 40.00% of mass 198	81.37
443	17.00 - 23.00% of mass 442	16.16 (19.86)

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1727.D\X-8270.rslt\spectra.d
Injection Date: 12-Dec-2011 19:12:30
Spectrum: Tune Spec: Scans 772-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 288

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	657	125.00	3566	199.00	50696	284.00	1271
37.00	967	127.00	319936	200.00	4082	285.00	2997
38.00	2521	128.00	24816	201.00	3580	286.00	468
39.00	15861	129.00	125040	203.00	4813	289.00	459
40.00	839	130.00	10709	204.00	25800	290.00	470
41.00	473	131.00	1932	205.00	43280	291.00	199
45.00	226	132.00	1205	206.00	184128	292.00	683
49.00	1559	133.00	411	207.00	24040	293.00	3398
50.00	57720	134.00	3514	208.00	6364	294.00	758
51.00	226368	135.00	10328	209.00	2021	295.00	200
52.00	12066	136.00	3998	210.00	590	296.00	51112
53.00	371	137.00	5942	211.00	7276	297.00	6953
55.00	1084	138.00	1199	213.00	430	298.00	197
56.00	6399	139.00	857	215.00	2163	301.00	650
57.00	15341	140.00	1709	216.00	4007	302.00	905
58.00	743	141.00	15679	217.00	45848	303.00	6243
61.00	2984	142.00	5237	218.00	6411	304.00	1720
62.00	3277	143.00	3459	219.00	428	308.00	751
63.00	8953	144.00	1029	221.00	43936	309.00	437
64.00	1413	145.00	1062	223.00	10863	310.00	575
65.00	4661	146.00	3246	224.00	102848	313.00	450
69.00	235264	147.00	8184	225.00	25952	314.00	2934
70.00	1315	148.00	19600	226.00	2745	315.00	5584
73.00	2337	149.00	4110	227.00	39856	316.00	3317
74.00	25024	150.00	1172	228.00	5587	317.00	508
75.00	39416	151.00	2177	229.00	8495	321.00	1684
76.00	14641	152.00	292	230.00	1243	322.00	830
77.00	286656	153.00	5277	231.00	3452	323.00	16720
78.00	20096	154.00	3607	232.00	725	324.00	3324
79.00	17616	155.00	8952	233.00	598	327.00	3239
80.00	13557	156.00	13910	234.00	2674	328.00	1342
81.00	19496	157.00	2916	235.00	2723	332.00	1024
82.00	4919	158.00	3021	236.00	1753	333.00	1674

Report Date: 13-Dec-2011 09:32:41 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1727.D\X-8270.rslt\spectra.d
Injection Date: 12-Dec-2011 19:12:30
Spectrum: Tune Spec: Scans 772-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 288

m/z	Y	m/z	Y	m/z	Y	m/z	Y
83.00	4773	159.00	2361	237.00	3375	334.00	10625
84.00	875	160.00	5266	238.00	426	335.00	3119
85.00	3662	161.00	7734	239.00	1740	336.00	191
86.00	5774	162.00	2370	240.00	1197	340.00	184
87.00	2839	163.00	509	241.00	2329	341.00	1816
88.00	1135	164.00	941	242.00	5230	342.00	526
89.00	430	165.00	5934	243.00	6104	346.00	4149
91.00	4508	166.00	5197	244.00	87168	347.00	589
92.00	5252	167.00	35920	245.00	11862	352.00	5277
93.00	30776	168.00	20048	246.00	15055	353.00	3781
94.00	2178	169.00	2954	247.00	3238	354.00	5536
95.00	843	170.00	1138	248.00	441	355.00	978
96.00	1781	171.00	1201	249.00	2813	359.00	431
97.00	187	172.00	2739	250.00	560	365.00	21632
98.00	24744	173.00	3863	251.00	663	366.00	3033
99.00	20384	174.00	7269	252.00	613	370.00	463
100.00	1645	175.00	13097	253.00	1771	371.00	1283
101.00	10954	176.00	4277	255.00	403776	372.00	9206
102.00	707	177.00	6338	256.00	62104	373.00	2471
103.00	3606	178.00	2163	257.00	4883	374.00	173
104.00	7185	179.00	24904	258.00	22784	383.00	2500
105.00	6464	180.00	17600	259.00	3551	384.00	638
106.00	2374	181.00	8214	260.00	592	390.00	1154
107.00	87760	182.00	1163	261.00	736	391.00	805
108.00	13849	183.00	688	264.00	886	392.00	611
110.00	165312	184.00	1804	265.00	8656	401.00	523
111.00	24816	185.00	12461	266.00	1527	402.00	3799
112.00	3180	186.00	100600	270.00	385	403.00	5700
113.00	1130	187.00	27816	271.00	840	404.00	2028
115.00	405	188.00	2801	272.00	1204	421.00	4909
116.00	4606	189.00	5610	273.00	12707	422.00	4477
117.00	74872	190.00	1058	274.00	35584	423.00	34664
118.00	5881	191.00	2887	275.00	195712	424.00	7652
119.00	814	192.00	8204	276.00	27744	425.00	629

Report Date: 13-Dec-2011 09:32:41 Chrom Revision: 2.0 01-Sep-2011 14:10:00
Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1727.D\X-8270.rslt\spectra.d
Injection Date: 12-Dec-2011 19:12:30
Spectrum: Tune Spec: Scans 772-774(7.20-7.21) Bgrd 768(7.18)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 288

m/z	Y	m/z	Y	m/z	Y	m/z	Y
120.00	1000	193.00	9592	277.00	15088	441.00	88152
121.00	179	194.00	1961	278.00	2723	442.00	597824
122.00	6089	195.00	1066	279.00	488	443.00	118704
123.00	9248	196.00	23416	282.00	417	444.00	10903
124.00	4131	198.00	734656	283.00	1990	445.00	544

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 480-42575/1-A

Matrix: Water | Lab File ID: U6923.D

Analysis Method: 8270C | Date Collected:

Extract. Method: 3510C | Date Extracted: 12/02/2011 06:38

Sample wt/vol: 1000(mL) | Date Analyzed: 12/06/2011 17:19

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 42934 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	ND		5.0	0.41
208-96-8	Acenaphthylene	ND		5.0	0.38
120-12-7	Anthracene	ND		5.0	0.28
56-55-3	Benz(a)anthracene	ND		5.0	0.36
50-32-8	Benzo(a)pyrene	ND		5.0	0.47
205-99-2	Benzo(b)fluoranthene	ND		5.0	0.34
191-24-2	Benzo(g,h,i)perylene	ND		5.0	0.35
207-08-9	Benzo(k)fluoranthene	ND		5.0	0.73
218-01-9	Chrysene	ND		5.0	0.33
53-70-3	Dibenz(a,h)anthracene	ND		5.0	0.42
206-44-0	Fluoranthene	ND		5.0	0.40
86-73-7	Fluorene	ND		5.0	0.36
193-39-5	Indeno(1,2,3-c,d)pyrene	ND		5.0	0.47
91-20-3	Naphthalene	ND		5.0	0.76
85-01-8	Phenanthrene	ND		5.0	0.44
129-00-0	Pyrene	ND		5.0	0.34
91-57-6	2-Methylnaphthalene	ND		5.0	0.60

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	74		46-120
321-60-8	2-Fluorobiphenyl	77		48-120
1718-51-0	p-Terphenyl-d14	130		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6923.D
Lims ID: MB 480-42575/1-A Client ID:
Inject. Date: 06-Dec-2011 17:19:30 Dil. Factor: 1.0000
Sample Type: MB
Sample ID: 480-0007971-004
Misc. Info.:
Operator: RMM Instrument ID: HP5973U
Vol. Injected: 1.0000 ALS Bottle#: 13
Lims Batch ID: 42934 Lims Sample ID: 12
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 07-Dec-2011 11:01:26 Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 07-Dec-2011 11:01:26

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.012	6.007	0.005	93	136062	40.0	
* 2 Naphthalene-d8	136	7.668	7.673	-0.005	98	536716	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	98	374958	40.0	
* 4 Phenanthrene-d10	188	11.648	11.648	0.0	98	712817	40.0	
* 5 Chrysene-d12	240	14.154	14.154	0.0	97	649133	40.0	
* 6 Perylene-d12	264	15.543	15.543	0.0	99	616639	40.0	
$ 9 2-Fluorophenol	112	4.335	4.335	0.0	90	244691	63.3	
$ 10 Phenol-d5	99	5.569	5.569	0.0	78	229887	42.8	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	91	440378	73.9	
$ 12 2-Fluorobiphenyl	172	9.079	9.079	0.0	99	941459	76.8	
$ 13 2,4,6-Tribromophenol	330	10.900	10.900	0.0	97	283627	136.0	
$ 14 p-Terphenyl-d14	244	13.203	13.198	0.005	96	1918982	130.1	
62 Anthraquinone	1		0.000					
53 1,3,5-Trichlorobenzene	180		0.000					
63 5-Ethyl-5-phenyl barbituric acid	1		0.000					
70 Phenylacetic Acid	1		0.000					
226 Tris(2,3-dibromopropyl)phosphate TIC	1		0.000					
59 Tricresyl phosphate	1		0.000					
74 3-Chlorotoluene	1		0.000					
64 9-Octadecenamide	1		0.000					
15 Lidocaine	1		0.000					
225 CBF-400	1		0.000					
19 NVF-400	1		0.000					
21 2-Chlorobenzotrifluoride	1		0.000					
32 Quinoline	129		0.000					
22 N-Methylaniline	1		0.000					
46 2,4-Dichlorotoluene	1		0.000					
24 Dibenzo[a,e]pyrene	1		0.000					
23 n,n'-Dimethylacetamide	1		0.000					
230 2,4-Xylidine TIC	1		0.000					
76 3-Chlorobenzotrifluoride	1		0.000					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
71 Chlorotoluene N.O.S	1		0.000					
51 2-Chloroaniline	1		0.000					
68 4-Chloropyridine	1		0.000					
73 4-Methylbenzenamine	1		0.000					
41 2-Chlorotoluene	91		0.000					
40 1-Methylcyclopentanol	1		0.000					
232 4,4'-Methylene bis(2-chloroaniline) T	1		0.000					
56 Benzeneacetic acid (TIC)	1		0.000					
17 CN-500	1		0.000					
58 Chlorobenzotrifluoride N.O.S	1		0.000					
49 2,6-Dichloropyridine	1		0.000					
57 5-Methyl-o-Anisidine	1		0.000					
61 CAG-800	1		0.000					
37 1-Hydroxyanthraquinone	1		0.000					
72 4-Chlorobenzotrifluoride	1		0.000					
224 5-Methyl-o-Anisidine TIC	1		0.000					
36 2,3-Dichlorophenol	1		0.000					
228 o-Anisidine TIC	1		0.000					
69 4,4'-Methylene bis(2-chloroaniline)	1		0.000					
33 o-Anisidine	1		0.000					
27 Pendimethalin	1		0.000					
30 Dicyclohexlamine	1		0.000					
18 CU-600	1		0.000					
45 2-Aminopyridine	1		0.000					
229 1,3-phenylenediamine TIC	1		0.000					
227 CBF-500	1		0.000					
34 1,4-Dihydroxyanthraquinone	1		0.000					
31 Dimethylformamide	1		0.000					
48 2-Chloropyridine	1		0.000					
52 2,6-Dichlorotoluene	1		0.000					
60 Benzeneacetonitrile	1		0.000					
75 3-Chloropyridine	1		0.000					
67 4-Chlorotoluene	91		0.000					
54 p-Fluoroaniline	1		0.000					
80 1,4-Dioxane	88		2.518					
81 N-Nitrosodimethylamine	42		2.748					
82 Pyridine	52		2.818					
83 2-Picoline	93		2.978					
84 N-Nitrosomethylethylamine	88		3.112					
85 Methyl methanesulfonate	80		3.582					
86 N-Nitrosodiethylamine	102		4.186					
87 Ethyl methanesulfonate	79		4.640					
92 Pentachloroethane	167		5.356					
88 Benzaldehyde	77		5.440					
20 n-Decane	57		5.575					
90 Aniline	93		5.585					
89 Phenol	94		5.585					
91 Bis(2-chloroethyl)ether	93		5.670					
93 2-Chlorophenol	128		5.745					
94 1,3-Dichlorobenzene	146		5.932					
95 1,4-Dichlorobenzene	146		6.034					
96 Benzyl alcohol	108		6.210					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
97 1,2-Dichlorobenzene	146		6.226					
100 N-Nitrosopyrrolidine	100		6.264					
103 N-Nitrosomorpholine	56		6.323					
99 2,2'-oxybis[1-chloropropane]	45		6.370					
98 2-Methylphenol	108		6.370					
105 2-Toluidine	106		6.371					
104 Acetophenone	105		6.541					
101 N-Nitrosodi-n-propylamine	70		6.546					
102 4-Methylphenol	108		6.578					
106 Hexachloroethane	117		6.664					
109 N-Nitrosopiperidine	114		6.734					
107 Nitrobenzene	77		6.765					
108 Pentachlorophenol_T	266		7.007					
110 Isophorone	82		7.081					
116 o,o',o''-Triethylphosphorothioate	198		7.156					
111 2-Nitrophenol	139		7.182					
112 2,4-Dimethylphenol	107		7.268					
113 Tetraethyl lead	237		7.284					
118 alpha,alpha-Dimethyl phenethylamine	58		7.295					
115 Bis(2-chloroethoxy)methane	93		7.374					
119 Benzoic acid	105		7.513					
117 2,4-Dichlorophenol	162		7.513					
66 4-Chlorophenol	128		7.535					
122 Alpha-Terpineol	59		7.541					
120 1,2,4-Trichlorobenzene	180		7.599					
124 2,6-Dichlorophenol	162		7.616					
125 Hexachloropropene	213		7.642					
121 Naphthalene	128		7.700					
123 4-Chloroaniline	127		7.797					
126 Hexachlorobutadiene	225		7.861					
129 N-Nitrosodi-n-butylamine	84		8.017					
128 p-Phenylene diamine	108		8.054					
127 Caprolactam	113		8.245					
132 Safrole, Total	162		8.321					
43 2,4,5-Trichlorotoluene	159		8.379					
130 Benzidine_T	184		8.445					
131 4-Chloro-3-methylphenol	107		8.454					
135 Phthalic anhydride	104		8.486					
134 4,4'-DDE	246		8.589					
133 2-Methylnaphthalene	142		8.603					
42 1,4-Naphthoquinone	158		8.666					
223 2,3-Dichlorobenzenamine	161		8.796					
136 Hexachlorocyclopentadiene	237		8.801					
138 1,2,4,5-Tetrachlorobenzene	216		8.817					
137 4,4'-DDD	235		8.888					
139 2,4,6-Trichlorophenol	196		8.982					
142 Isosafrole	162		8.994					
35 1,2,3,4 -Tetrachlorobenzene	216		9.010					
140 2,4,5-Trichlorophenol	196		9.052					
141 4,4'-DDT	235		9.144					
144 1,1'-Biphenyl	154		9.207					
143 2-Chloronaphthalene	162		9.228					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
145 2-Nitroaniline	65		9.394					
146 1,4-Dinitrobenzene	168		9.480					
50 1,3-Dinitrobenzene	168		9.480					
147 Dimethyl phthalate	163		9.624					
148 2,6-Dinitrotoluene	165		9.704					
149 Acenaphthylene	152		9.762					
150 3-Nitroaniline	138		9.933					
156 Pentachlorobenzene	250		9.982					
151 Acenaphthene	153		9.987					
152 2,4-Dinitrophenol	184		10.067					
157 1-Naphthylamine	143		10.116					
155 Dibenzofuran	168		10.201					
153 4-Nitrophenol	109		10.206					
159 2-Naphthylamine	143		10.212					
154 2,4-Dinitrotoluene	165		10.217					
158 2,3,4,6-Tetrachlorophenol	232		10.377					
163 Thionazin	97		10.415					
165 N-Nitro-o-toluidine	152		10.452					
160 Diethyl phthalate	149		10.500					
169 Diphenylamine	169		10.580					
29 Tributyl phosphate	99		10.586					
161 Fluorene	166		10.612					
162 4-Chlorophenyl phenyl ether	204		10.617					
164 4-Nitroaniline	138		10.681					
166 4,6-Dinitro-2-methylphenol	198		10.703					
167 N-Nitrosodiphenylamine	169		10.761					
170 Azobenzene	77		10.773					
171 Sulfotepp	322		10.783					
168 1,2-Diphenylhydrazine	77		10.799					
172 1,3,5-Trinitrobenzene	213		10.880					
173 Diallate	43		10.922					
174 Phorate	75		10.922					
175 Phenacetin	108		10.949					
178 Dimethoate	87		11.104					
179 Simazine	201		11.157					
176 4-Bromophenyl phenyl ether	248		11.173					
177 Hexachlorobenzene	284		11.237					
182 4-Aminobiphenyl	169		11.280					
183 Pentachloronitrobenzene	237		11.302					
184 Pronamide	173		11.366					
180 Atrazine	200		11.370					
16 n-Octadecane	57		11.398					
181 Pentachlorophenol	266		11.467					
186 Dinoseb	211		11.489					
187 Disulfoton	88		11.489					
185 Phenanthrene	178		11.675					
188 Anthracene	178		11.728					
190 Methyl parathion	109		11.868					
191 Alachlor	160		11.879					
189 Carbazole	167		11.915					
79 2-Methylanthracene	192		12.060					
192 Di-n-butyl phthalate	149		12.241					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
193 Ethyl Parathion	97		12.253					
194 4-Nitroquinoline-1-oxide	190		12.269					
195 Methapyrilene	58		12.397					
196 Isodrin	193		12.536					
197 Fluoranthene	202		12.856					
198 Benzidine	184		12.989					
200 Aramite, Total	185		13.065					
199 Pyrene	202		13.069					
201 p-Dimethylamino azobenzene	120		13.145					
202 Chlorobenzilate	139		13.187					
204 Famphur	218		13.401					
206 Kepone	272		13.497					
205 Butyl benzyl phthalate	149		13.630					
203 3,3'-Dimethylbenzidine	212		13.636					
207 2-Acetylaminofluorene	181		13.668					
210 Bis(2-ethylhexyl) phthalate	149		14.111					
208 3,3'-Dichlorobenzidine	252		14.116					
209 Benzo[a]anthracene	228		14.143					
211 Chrysene	228		14.175					
212 Di-n-octyl phthalate	149		14.683					
215 7,12-Dimethylbenz(a)anthracene	256		14.854					
216 Hexachlorophene	196		15.020					
39 Benzo[e]pyrene	252		15.121					
213 Benzo[b]fluoranthene	252		15.147					
214 Benzo[k]fluoranthene	252		15.174					
217 Benzo[a]pyrene	252		15.484					
218 3-Methylcholanthrene	252		15.501					
219 Indeno[1,2,3-cd]pyrene	276		16.809					
220 Dibenz(a,h)anthracene	278		16.814					
221 Benzo[g,h,i]perylene	276		17.172					
S 78 3-Methylphenol	1		0.000					
S 77 3 & 4 Methylphenol	108		0.000					
S 222 Total Cresols	1		0.000					
T 38 1-Methylnaphthalene (TIC)	142		0.000					1
T 28 Pendimethalin (TIC)	1		0.000					1
T 26 trans Azobenzene (TIC)	77		0.000					1
T 65 Benefin (TIC)	1		0.000					1
T 25 Prometryn (TIC)	1		0.000					1
T 231 2,3,7,8-TCDD	1		0.000					1

QC Flag Legend

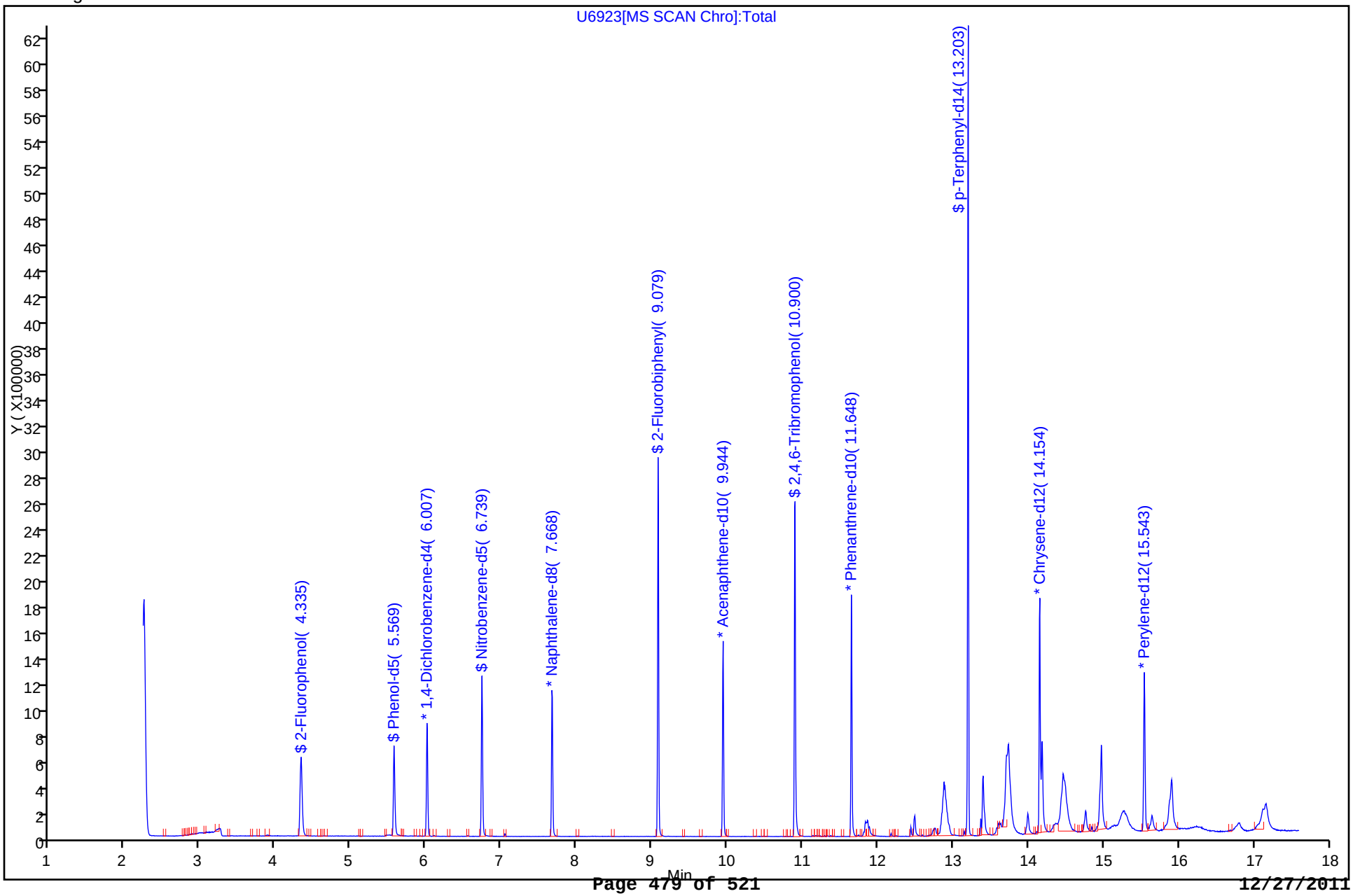
Processing Flags
1 - Missing Peaks

Report Date: 07-Dec-2011 11:01:26 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6923.D

Injection Date:	06-Dec-2011 17:19:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	12
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 480-42840/1-A

Matrix: Water | Lab File ID: X1733.D

Analysis Method: 8270C | Date Collected:

Extract. Method: 3510C | Date Extracted: 12/05/2011 09:05

Sample wt/vol: 1000(mL) | Date Analyzed: 12/12/2011 21:21

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 44096 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	ND		5.0	0.41
208-96-8	Acenaphthylene	ND		5.0	0.38
120-12-7	Anthracene	ND		5.0	0.28
56-55-3	Benz(a)anthracene	ND		5.0	0.36
50-32-8	Benzo(a)pyrene	ND		5.0	0.47
205-99-2	Benzo(b)fluoranthene	ND		5.0	0.34
191-24-2	Benzo(g,h,i)perylene	ND		5.0	0.35
207-08-9	Benzo(k)fluoranthene	ND		5.0	0.73
218-01-9	Chrysene	ND		5.0	0.33
53-70-3	Dibenz(a,h)anthracene	ND		5.0	0.42
206-44-0	Fluoranthene	ND		5.0	0.40
86-73-7	Fluorene	ND		5.0	0.36
193-39-5	Indeno(1,2,3-c,d)pyrene	ND		5.0	0.47
91-20-3	Naphthalene	ND		5.0	0.76
85-01-8	Phenanthrene	ND		5.0	0.44
129-00-0	Pyrene	ND		5.0	0.34
91-57-6	2-Methylnaphthalene	ND		5.0	0.60

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	77		46-120
321-60-8	2-Fluorobiphenyl	76		48-120
1718-51-0	p-Terphenyl-d14	105		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1733.D
Lims ID: MB 480-42840/1-A Client ID:
Inject. Date: 12-Dec-2011 21:21:30 Dil. Factor: 1.0000
Sample Type: MB
Sample ID: 480-0008169-007
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 7
Lims Batch ID: 44096 Lims Sample ID: 7
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X-8270.m
Last Update: 13-Dec-2011 09:38:38 Calib Date: 12-Dec-2011 17:29:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 13-Dec-2011 09:38:38

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.0	92	375792	40.0	
* 2 Naphthalene-d8	136	7.583	7.583	0.0	93	1359986	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	57	705080	40.0	
* 4 Phenanthrene-d10	188	11.243	11.243	0.0	99	1227068	40.0	
* 5 Chrysene-d12	240	13.641	13.641	0.0	99	1379454	40.0	
* 6 Perylene-d12	264	14.886	14.886	0.0	98	1700452	40.0	
$ 7 2-Fluorophenol	112	4.538	4.538	0.0	91	872447	67.1	
$ 8 Phenol-d5	99	5.660	5.665	-0.005	81	785615	51.2	
$ 9 Nitrobenzene-d5	82	6.744	6.750	-0.006	91	851151	76.5	
$ 10 2-Fluorobiphenyl	172	8.860	8.865	-0.005	100	1574077	75.8	
$ 11 2,4,6-Tribromophenol	330	10.532	10.532	0.0	62	520059	188.7	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	97	2695722	104.9	
231 2,4-Xylidine TIC	1		0.000					
46 2-Chlorotoluene	91		0.000					
30 Benzeneacetonitrile	1		0.000					
226 CBF-400	1		0.000					
25 2,3-Dichlorophenol	1		0.000					
50 CAG-800	1		0.000					
31 5-Ethyl-5-phenyl barbituric acid	1		0.000					
232 4,4'-Methylene bis(2-chloroaniline) T	1		0.000					
22 CN-500	1		0.000					
38 2,4-Dichlorotoluene	1		0.000					
16 1,2,3,4 -Tetrachlorobenzene	216		0.000					
37 4-Chlorotoluene	91		0.000					
228 CBF-500	1		0.000					
32 Pendimethalin	1		0.000					
229 o-Anisidine TIC	1		0.000					
40 2-Chlorobenzotrifluoride	1		0.000					
36 4-Chlorobenzotrifluoride	1		0.000					
34 N-Methylaniline	1		0.000					
47 Chlorobenzotrifluoride N.O.S	1		0.000					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
17 2,4,5-Trichlorotoluene	1		0.000					
51 Phenylacetic Acid	1		0.000					
53 3-Chlorobenzotrifluoride	1		0.000					
45 n,n'-Dimethylacetamide	1		0.000					
27 2,6-Dichlorotoluene	1		0.000					
26 NVF-400	1		0.000					
39 2-Aminopyridine	1		0.000					
24 2-Methylanthracene	1		0.000					
20 Lidocaine	1		0.000					
14 Benzo[e]pyrene	1		0.000					
15 4,4'-Methylene bis(2-chloroaniline)	1		0.000					
225 5-Methyl-o-Anisidine TIC	1		0.000					
43 CU-600	1		0.000					
230 1,3-phenylenediamine TIC	1		0.000					
33 1,3,5-Trichlorobenzene	180		0.000					
52 4-Chlorophenol	1		0.000					
13 Dimethylformamide	1		0.000					
42 3-Chlorotoluene	1		0.000					
49 Benzeneacetic acid (TIC)	1		0.000					
19 Chlorotoluene N.O.S	1		0.000					
18 1-Methylcyclopentanol	1		0.000					
54 1,4-Dioxane	88		2.631					
55 N-Nitrosodimethylamine	42		2.946					
56 Pyridine	52		3.005					
57 2-Picoline	93		3.854					
58 N-Nitrosomethylethylamine	88		3.966					
59 Methyl methanesulfonate	80		4.351					
44 4-Chloropyridine	78		4.741					
41 3-Chloropyridine	78		4.826					
60 N-Nitrosodiethylamine	102		4.826					
61 Ethyl methanesulfonate	79		5.195					
21 2-Chloropyridine	78		5.318					
62 Benzaldehyde	77		5.585					
63 Phenol	94		5.681					
64 Aniline	93		5.713					
65 Pentachloroethane	167		5.767					
66 Bis(2-chloroethyl)ether	93		5.793					
67 2-Chlorophenol	128		5.847					
69 1,3-Dichlorobenzene	146		6.028					
23 p-Fluoroaniline	111		6.050					
68 n-Decane	57		6.060					
70 1,4-Dichlorobenzene	146		6.119					
71 Benzyl alcohol	108		6.263					
72 1,2-Dichlorobenzene	146		6.290					
82 4-Methylbenzenamine	106		6.335					
73 2-Methylphenol	108		6.392					
74 2,2'-oxybis[1-chloropropane]	45		6.429					
75 N-Nitrosopyrrolidine	100		6.557					
76 Acetophenone	105	6.568	6.573	-0.005	62	5649	0.3666	
79 4-Methylphenol	108		6.579					
78 N-Nitrosodi-n-propylamine	70		6.579					
77 N-Nitrosomorpholine	56		6.600					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
80 2-Toluidine	106		6.616					
92 o-Anisidine	108		6.662					
81 Hexachloroethane	117		6.685					
83 Nitrobenzene	77		6.771					
84 Pentachlorophenol_T	266		6.803					
88 2-Chloroaniline	127		6.826					
29 2,6-Dichloropyridine	112		6.947					
85 N-Nitrosopiperidine	114		6.953					
86 Isophorone	82		7.059					
87 2-Nitrophenol	139		7.145					
89 2,4-Dimethylphenol	107		7.204					
90 Tetraethyl lead	237		7.241					
91 o,o',o''-Triethylphosphorothioate	198		7.289					
94 Bis(2-chloroethoxy)methane	93		7.321					
95 Benzoic acid	105		7.401					
108 5-Methyl-o-Anisidine	122		7.416					
96 alpha,alpha-Dimethyl phenethylamine	58		7.417					
97 2,4-Dichlorophenol	162		7.423					
98 1,2,4-Trichlorobenzene	180		7.524					
99 Naphthalene	128		7.615					
100 Alpha-Terpineol	59		7.631					
35 Quinoline	129		7.659					
102 2,6-Dichlorophenol	162		7.690					
101 4-Chloroaniline	127		7.690					
103 Hexachloropropene	213		7.716					
104 Hexachlorobutadiene	225		7.759					
106 N-Nitrosodi-n-butylamine	84		8.090					
105 Caprolactam	113		8.101					
107 p-Phenylene diamine	108		8.117					
109 Benzidine_T	184		8.176					
110 4-Chloro-3-methylphenol	107		8.256					
112 Safrole, Total	162		8.331					
111 4,4'-DDE	246		8.411					
113 2-Methylnaphthalene	142		8.427					
114 Phthalic anhydride	104		8.502					
115 4,4'-DDD	235		8.598					
116 Hexachlorocyclopentadiene	237		8.609					
117 1,2,4,5-Tetrachlorobenzene	216		8.619					
122 Isosafrole	162		8.673					
118 2,4,6-Trichlorophenol	196		8.758					
119 2,4,5-Trichlorophenol	196		8.796					
120 4,4'-DDT	235		8.849					
121 2,3-Dichlorobenzenamine	161		8.886					
123 1,1'-Biphenyl	154		8.977					
124 2-Chloronaphthalene	162		8.993					
125 2-Nitroaniline	65		9.127					
126 1,4-Naphthoquinone	158		9.212					
127 1,4-Dinitrobenzene	168		9.298					
28 Dicyclohexlamine	138		9.335					
128 Dimethyl phthalate	163		9.362					
129 1,3-Dinitrobenzene	168		9.383					
130 2,6-Dinitrotoluene	165		9.426					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
131 Acenaphthylene	152		9.479					
132 3-Nitroaniline	138		9.624					
133 Acenaphthene	153		9.682					
134 2,4-Dinitrophenol	184		9.741					
135 4-Nitrophenol	109		9.827					
136 Pentachlorobenzene	250		9.837					
138 Dibenzofuran	168		9.885					
137 2,4-Dinitrotoluene	165		9.891					
139 1-Naphthylamine	143		9.982					
140 2,3,4,6-Tetrachlorophenol	232		10.030					
141 2-Naphthylamine	143		10.072					
142 Diethyl phthalate	149		10.174					
143 Thionazin	97		10.259					
144 Fluorene	166		10.270					
145 4-Chlorophenyl phenyl ether	204		10.281					
146 N-Nitro-o-toluidine	152		10.302					
147 4-Nitroaniline	138		10.318					
148 4,6-Dinitro-2-methylphenol	198		10.340					
150 Diphenylamine	169		10.409					
149 N-Nitrosodiphenylamine	169		10.409					
151 Tributyl phosphate	99		10.415					
152 1,2-Diphenylhydrazine	77		10.452					
153 Azobenzene	77		10.476					
154 Sulfotepp	322		10.601					
155 1,3,5-Trinitrobenzene	213		10.708					
156 Diallate	43		10.719					
157 Phorate	75		10.735					
158 Phenacetin	108		10.767					
159 4-Bromophenyl phenyl ether	248		10.799					
160 Hexachlorobenzene	284		10.847					
161 Dimethoate	87		10.916					
162 Simazine	201		10.959					
163 Atrazine	200		10.986					
165 Pentachlorophenol	266		11.055					
166 Pentachloronitrobenzene	237		11.066					
164 4-Aminobiphenyl	169		11.071					
167 Pronamide	173		11.136					
170 Dinoseb	211		11.253					
169 Disulfoton	88		11.264					
171 Phenanthrene	178		11.269					
168 n-Octadecane	57		11.290					
172 Anthracene	178		11.317					
173 Carbazole	167		11.483					
175 Alachlor	160		11.617					
174 Methyl parathion	109		11.622					
179 Anthraquinone	180		11.789					
176 Di-n-butyl phthalate	149	11.820	11.825	-0.005	59	15469	0.4925	
177 Ethyl Parathion	97		11.985					
178 4-Nitroquinoline-1-oxide	190		12.022					
180 Methapyrilene	58		12.086					
184 1-Hydroxyanthraquinone	224		12.179					
181 Isodrin	193		12.247					

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
182 Fluoranthene	202	12.380	12.386	-0.006	54	3534	-0.6494	
183 Benzidine	184		12.519					
185 Pyrene	202	12.583	12.589	-0.006	65	3939	0.1066	
189 1,4-Dihydroxyanthraquinone	240		12.590					
186 Aramite, Total	185		12.776					
187 p-Dimethylamino azobenzene	120		12.850					
188 Chlorobenzilate	139		12.888					
194 9-Octadecenamide	72		12.932					
190 Famphur	218		13.107					
191 3,3'-Dimethylbenzidine	212		13.144					
192 Butyl benzyl phthalate	149	13.150	13.155	-0.005	96	44200	2.89	
193 Kepone	272		13.176					
195 2-Acetylaminofluorene	181		13.374					
196 3,3'-Dichlorobenzidine	252		13.609					
197 Benzo[a]anthracene	228	13.636	13.630	0.006	1	6251	0.0963	
198 Bis(2-ethylhexyl) phthalate	149	13.636	13.641	-0.005	35	15491	0.7552	
199 Chrysene	228	13.663	13.668	-0.005	1	1918	0.0515	
200 Tricresyl phosphate	368		14.147					
201 Di-n-octyl phthalate	149		14.175					
202 7,12-Dimethylbenz(a)anthracene	256		14.533					
203 Benzo[b]fluoranthene	252	14.533	14.544	-0.011	45	2542	0.0639	
204 Benzo[k]fluoranthene	252	14.560	14.565	-0.005	1	2454	0.2992	
205 Hexachlorophene	196		14.693					
206 Benzo[a]pyrene	252	14.827	14.838	-0.011	1	1819	0.0511	
207 3-Methylcholanthrene	252		15.158					
208 Indeno[1,2,3-cd]pyrene	276		15.965					
209 Dibenz(a,h)anthracene	278		15.976					
210 Benzo[g,h,i]perylene	276		16.275					
211 Dibenzo[a,e]pyrene	302		16.497					
S 214 3-Methylphenol	1		0.000					
S 213 Total Cresols	1		0.000					
S 212 3 & 4 Methylphenol	108		0.000					
T 218 Prometryn (TIC)	1		0.000					1
T 219 1-Methylnaphthalene (TIC)	1		0.000					1
T 220 2,3,7,8-TCDD	322		0.000					1
T 215 Pendimethalin (TIC)	1		0.000					1
T 216 trans Azobenzene (TIC)	1		0.000					1
T 217 Benefin (TIC)	1		0.000					1
T 227 Tris(2,3-dibromopropyl)phosphate TIC	1		0.000					1

QC Flag Legend

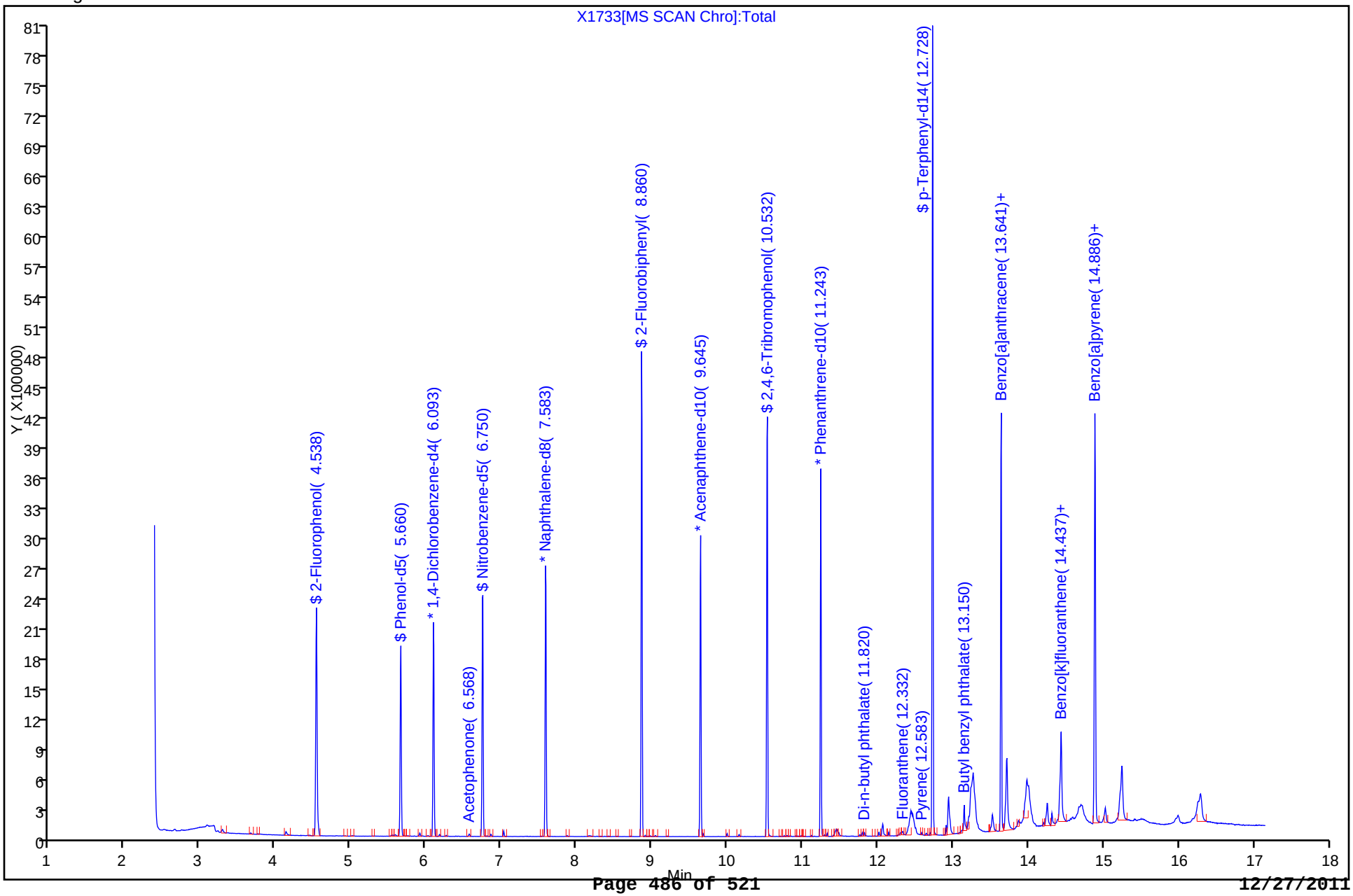
Processing Flags
1 - Missing Peaks

Report Date: 13-Dec-2011 09:38:38 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1733.D

Injection Date:	12-Dec-2011 21:21:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44096	Lims Sample ID:	7
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 480-42575/2-A

Matrix: Water | Lab File ID: U6924.D

Analysis Method: 8270C | Date Collected:

Extract. Method: 3510C | Date Extracted: 12/02/2011 06:38

Sample wt/vol: 1000(mL) | Date Analyzed: 12/06/2011 17:42

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 42934 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	103		5.0	0.41
208-96-8	Acenaphthylene	108		5.0	0.38
120-12-7	Anthracene	120		5.0	0.28
56-55-3	Benz(a)anthracene	117		5.0	0.36
50-32-8	Benzo(a)pyrene	108		5.0	0.47
205-99-2	Benzo(b)fluoranthene	98.7		5.0	0.34
191-24-2	Benzo(g,h,i)perylene	106		5.0	0.35
207-08-9	Benzo(k)fluoranthene	106		5.0	0.73
218-01-9	Chrysene	119		5.0	0.33
53-70-3	Dibenz(a,h)anthracene	111		5.0	0.42
206-44-0	Fluoranthene	109		5.0	0.40
86-73-7	Fluorene	110		5.0	0.36
193-39-5	Indeno(1,2,3-c,d)pyrene	108		5.0	0.47
91-20-3	Naphthalene	80.8		5.0	0.76
85-01-8	Phenanthrene	107		5.0	0.44
129-00-0	Pyrene	125		5.0	0.34
91-57-6	2-Methylnaphthalene	82.6		5.0	0.60

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	95		46-120
321-60-8	2-Fluorobiphenyl	94		48-120
1718-51-0	p-Terphenyl-d14	133		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6924.D
Lims ID: LCS 480-42575/2-A Client ID:
Inject. Date: 06-Dec-2011 17:42:30 Dil. Factor: 1.0000
Sample Type: LCS
Sample ID: 480-0007971-005
Misc. Info.:
Operator: RMM Instrument ID: HP5973U
Vol. Injected: 1.0000 ALS Bottle#: 14
Lims Batch ID: 42934 Lims Sample ID: 13
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 07-Dec-2011 11:02:29 Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 07-Dec-2011 11:02:29

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	93	132114	40.0	
* 2 Naphthalene-d8	136	7.673	7.673	0.0	99	509552	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	91	394152	40.0	
* 4 Phenanthrene-d10	188	11.653	11.648	0.005	98	688051	40.0	
* 5 Chrysene-d12	240	14.159	14.154	0.005	96	729027	40.0	
* 6 Perylene-d12	264	15.548	15.543	0.005	98	570675	40.0	
$ 9 2-Fluorophenol	112	4.335	4.335	0.0	90	302238	80.6	
$ 10 Phenol-d5	99	5.574	5.569	0.005	90	283610	54.4	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	91	536145	94.8	
$ 12 2-Fluorobiphenyl	172	9.084	9.079	0.005	85	1216335	94.3	
$ 13 2,4,6-Tribromophenol	330	10.906	10.900	0.006	98	335439	158.0	
$ 14 p-Terphenyl-d14	244	13.203	13.198	0.005	97	2211768	133.4	
80 1,4-Dioxane	88	2.475	2.518	-0.043	80	46230	25.5	E
81 N-Nitrosodimethylamine	42	2.748	2.748	0.0	56	207562	55.4	
82 Pyridine	52	2.817	2.818	-0.001	68	196982	49.5	
88 Benzaldehyde	77	5.446	5.440	0.006	80	327432	84.8	
90 Aniline	93	5.590	5.585	0.005	69	487237	71.1	
89 Phenol	94	5.590	5.585	0.005	63	255825	42.1	
91 Bis(2-chloroethyl)ether	93	5.670	5.670	0.0	93	354755	85.7	
93 2-Chlorophenol	128	5.745	5.745	0.0	87	348649	84.5	
94 1,3-Dichlorobenzene	146	5.932	5.932	0.0	89	266994	54.4	
95 1,4-Dichlorobenzene	146	6.033	6.034	-0.001	78	282105	55.2	
96 Benzyl alcohol	108	6.210	6.210	0.0	82	251456	68.0	
97 1,2-Dichlorobenzene	146	6.226	6.226	0.0	88	285344	56.4	
99 2,2'-oxybis[1-chloropropane]	45	6.375	6.370	0.005	77	838300	86.7	
98 2-Methylphenol	108	6.375	6.370	0.005	80	358459	85.8	
104 Acetophenone	105	6.546	6.541	0.005	78	658139	96.3	
101 N-Nitrosodi-n-propylamine	70	6.552	6.546	0.006	94	418478	105.0	
102 4-Methylphenol	108	6.589	6.578	0.011	65	712460	173.3	E
106 Hexachloroethane	117	6.664	6.664	0.0	86	105859	52.7	
107 Nitrobenzene	77	6.765	6.765	0.0	95	565326	97.2	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
110 Isophorone	82	7.086	7.081	0.005	94	1005348	103.5	
111 2-Nitrophenol	139	7.182	7.182	0.0	81	227563	96.7	
112 2,4-Dimethylphenol	107	7.273	7.268	0.005	97	540869	90.5	
113 Tetraethyl lead	237	7.284	7.284	0.0	72	54370	19.0	
115 Bis(2-chloroethoxy)methane	93	7.374	7.374	0.0	92	490691	98.6	
119 Benzoic acid	105	7.428	7.513	-0.085	68	29083	7.69	
117 2,4-Dichlorophenol	162	7.513	7.513	0.0	93	419193	104.2	
120 1,2,4-Trichlorobenzene	180	7.599	7.599	0.0	92	329009	65.3	
121 Naphthalene	128	7.700	7.700	0.0	97	1002697	80.8	
123 4-Chloroaniline	127	7.796	7.797	0.0	78	457769	97.0	
126 Hexachlorobutadiene	225	7.860	7.861	-0.001	95	200439	58.2	
127 Caprolactam	113	8.320	8.245	0.075	57	36127	29.8	
131 4-Chloro-3-methylphenol	107	8.459	8.454	0.005	97	493058	117.2	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	84	781270	82.6	
136 Hexachlorocyclopentadiene	237	8.801	8.801	0.0	97	225728	66.3	
139 2,4,6-Trichlorophenol	196	8.988	8.982	0.006	96	418370	113.2	
140 2,4,5-Trichlorophenol	196	9.052	9.052	0.0	97	422732	112.5	
144 1,1'-Biphenyl	154	9.212	9.207	0.005	96	1223645	83.3	
143 2-Chloronaphthalene	162	9.233	9.228	0.005	97	881306	91.5	
145 2-Nitroaniline	65	9.394	9.394	0.0	72	414159	122.3	
146 1,4-Dinitrobenzene	168	9.581	9.480	0.101	93	198645	0	
50 1,3-Dinitrobenzene	168	9.581	9.480	0.101	79	198645	0	
147 Dimethyl phthalate	163	9.639	9.624	0.015	98	1373218	114.7	
148 2,6-Dinitrotoluene	165	9.714	9.704	0.010	71	299909	120.1	
149 Acenaphthylene	152	9.768	9.762	0.006	93	1668058	107.9	
150 3-Nitroaniline	138	9.944	9.933	0.011	83	253051	101.7	
151 Acenaphthene	153	9.987	9.987	0.0	93	1065671	103.3	
152 2,4-Dinitrophenol	184	10.072	10.067	0.005	77	171456	109.3	
155 Dibenzofuran	168	10.206	10.201	0.005	87	1615023	104.2	
153 4-Nitrophenol	109	10.222	10.206	0.016	50	118294	64.3	
154 2,4-Dinitrotoluene	165	10.227	10.217	0.010	84	416174	116.0	
158 2,3,4,6-Tetrachlorophenol	232	10.377	10.377	0.0	96	386168	132.1	
160 Diethyl phthalate	149	10.510	10.500	0.010	97	1416429	118.1	
161 Fluorene	166	10.617	10.612	0.005	82	1752474	109.7	
162 4-Chlorophenyl phenyl ether	204	10.622	10.617	0.005	81	940291	120.6	
164 4-Nitroaniline	138	10.697	10.681	0.016	70	264621	114.7	
166 4,6-Dinitro-2-methylphenol	198	10.708	10.703	0.005	76	279405	108.9	
167 N-Nitrosodiphenylamine	169	10.772	10.761	0.011	95	994894	108.3	
168 1,2-Diphenylhydrazine	77	10.804	10.799	0.005	97	1463421	113.0	
176 4-Bromophenyl phenyl ether	248	11.173	11.173	0.0	95	476270	105.3	
177 Hexachlorobenzene	284	11.237	11.237	0.0	92	511723	106.5	
180 Atrazine	200	11.381	11.370	0.011	93	492306	153.3	
181 Pentachlorophenol	266	11.472	11.467	0.005	89	262298	105.8	
185 Phenanthrene	178	11.680	11.675	0.005	96	2169942	106.6	
188 Anthracene	178	11.734	11.728	0.006	97	2163833	119.8	
189 Carbazole	167	11.915	11.915	0.0	83	1921023	110.2	
192 Di-n-butyl phthalate	149	12.246	12.241	0.005	99	2397779	110.2	
197 Fluoranthene	202	12.855	12.856	-0.001	96	2745338	109.0	
198 Benzidine	184	12.989	12.989	0.0	97	873771	88.9	
199 Pyrene	202	13.069	13.069	0.0	97	2683834	124.6	
205 Butyl benzyl phthalate	149	13.630	13.630	0.0	97	1056246	108.1	
210 Bis(2-ethylhexyl) phthalate	149	14.116	14.111	0.005	95	1633264	115.9	

	Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
208	3,3'-Dichlorobenzidine	252	14.116	14.116	0.0	68	728645	74.4	
209	Benzo[a]anthracene	228	14.148	14.143	0.005	65	2530254	117.4	
211	Chrysene	228	14.180	14.175	0.005	93	2314900	119.0	
212	Di-n-octyl phthalate	149	14.688	14.683	0.005	99	2123239	115.7	
213	Benzo[b]fluoranthene	252	15.153	15.147	0.006	91	2155736	98.7	
214	Benzo[k]fluoranthene	252	15.185	15.174	0.011	96	2228195	105.7	
217	Benzo[a]pyrene	252	15.495	15.484	0.011	99	1902981	108.3	
219	Indeno[1,2,3-cd]pyrene	276	16.830	16.809	0.021	82	2463367	108.2	
220	Dibenz(a,h)anthracene	278	16.830	16.814	0.016	74	2255741	111.0	
221	Benzo[g,h,i]perylene	276	17.193	17.172	0.021	89	1524351	105.5	
S 78	3-Methylphenol	1				0		173.3	

QC Flag Legend

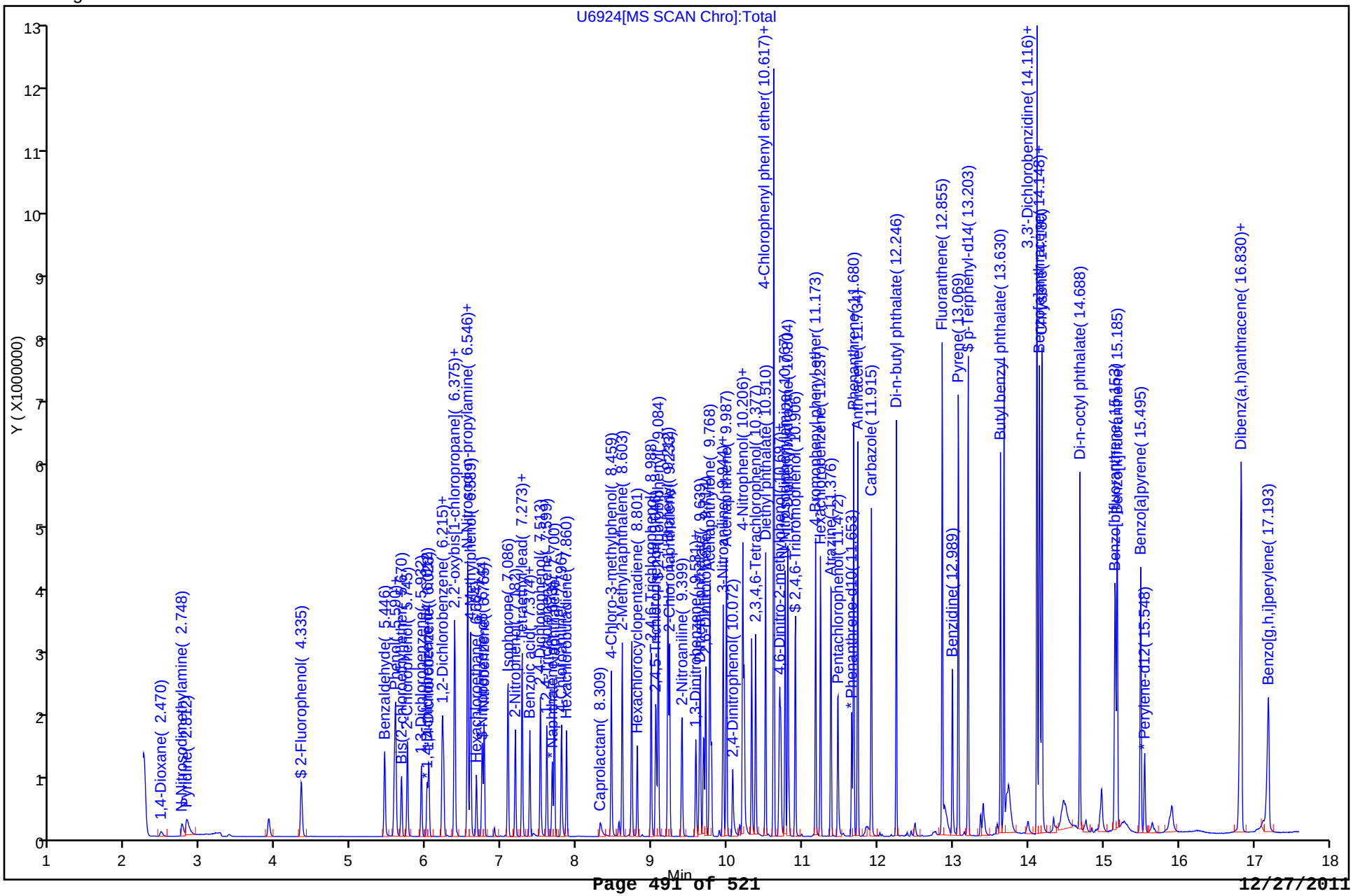
Processing Flags
E - Exceeded Maximum Amount

Report Date: 07-Dec-2011 11:02:29 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6924.D

Injection Date:	06-Dec-2011 17:42:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	13
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 480-42840/2-A

Matrix: Water | Lab File ID: X1734.D

Analysis Method: 8270C | Date Collected:

Extract. Method: 3510C | Date Extracted: 12/05/2011 09:05

Sample wt/vol: 1000(mL) | Date Analyzed: 12/12/2011 21:44

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 44096 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	90.3		5.0	0.41
208-96-8	Acenaphthylene	84.8		5.0	0.38
120-12-7	Anthracene	102		5.0	0.28
56-55-3	Benz(a)anthracene	108		5.0	0.36
50-32-8	Benzo(a)pyrene	101		5.0	0.47
205-99-2	Benzo(b)fluoranthene	98.5		5.0	0.34
191-24-2	Benzo(g,h,i)perylene	112		5.0	0.35
207-08-9	Benzo(k)fluoranthene	98.4		5.0	0.73
218-01-9	Chrysene	100		5.0	0.33
53-70-3	Dibenz(a,h)anthracene	99.0		5.0	0.42
206-44-0	Fluoranthene	106		5.0	0.40
86-73-7	Fluorene	98.9		5.0	0.36
193-39-5	Indeno(1,2,3-c,d)pyrene	106		5.0	0.47
91-20-3	Naphthalene	53.9		5.0	0.76
85-01-8	Phenanthrene	102		5.0	0.44
129-00-0	Pyrene	98.4		5.0	0.34
91-57-6	2-Methylnaphthalene	61.0		5.0	0.60

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	66		46-120
321-60-8	2-Fluorobiphenyl	80		48-120
1718-51-0	p-Terphenyl-d14	117		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1734.D
Lims ID: LCS 480-42840/2-A Client ID:
Inject. Date: 12-Dec-2011 21:44:30 Dil. Factor: 1.0000
Sample Type: LCS
Sample ID: 480-0008169-008
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 8
Lims Batch ID: 44096 Lims Sample ID: 8
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X-8270.m
Last Update: 13-Dec-2011 09:39:34 Calib Date: 12-Dec-2011 17:29:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 13-Dec-2011 09:39:34

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.093	6.093	0.0	93	374917	40.0	
* 2 Naphthalene-d8	136	7.588	7.583	0.005	98	1375679	40.0	
* 3 Acenaphthene-d10	164	9.645	9.645	0.0	34	716532	40.0	
* 4 Phenanthrene-d10	188	11.248	11.243	0.005	99	1281334	40.0	
* 5 Chrysene-d12	240	13.647	13.641	0.006	98	1186677	40.0	
* 6 Perylene-d12	264	14.891	14.886	0.005	99	1711661	40.0	
$ 7 2-Fluorophenol	112	4.538	4.538	0.0	92	735610	56.7	
$ 8 Phenol-d5	99	5.665	5.665	0.0	86	740445	48.3	
$ 9 Nitrobenzene-d5	82	6.750	6.750	0.0	91	747066	66.4	
$ 10 2-Fluorobiphenyl	172	8.865	8.865	0.0	100	1674882	80.3	
$ 11 2,4,6-Tribromophenol	330	10.537	10.532	0.005	63	500001	173.8	
$ 12 p-Terphenyl-d14	244	12.728	12.728	0.0	97	2590978	117.3	
54 1,4-Dioxane	88	2.626	2.631	-0.005	95	180917	28.5	
55 N-Nitrosodimethylamine	42	2.941	2.946	-0.005	69	216579	34.9	
56 Pyridine	52	2.999	3.005	-0.006	82	405922	44.5	
62 Benzaldehyde	77	5.585	5.585	0.0	83	508104	55.9	
63 Phenol	94	5.681	5.681	0.0	75	540524	34.0	
64 Aniline	93	5.713	5.713	0.0	75	1159696	58.1	
66 Bis(2-chloroethyl)ether	93	5.793	5.793	0.0	80	729759	56.5	
67 2-Chlorophenol	128	5.847	5.847	0.0	97	775181	59.9	
69 1,3-Dichlorobenzene	146	6.023	6.028	-0.005	94	502372	36.4	
70 1,4-Dichlorobenzene	146	6.114	6.119	-0.005	89	522022	37.6	
71 Benzyl alcohol	108	6.269	6.263	0.006	91	548170	68.8	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	77	513375	39.0	
73 2-Methylphenol	108	6.397	6.392	0.005	93	718943	63.8	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	89	777416	48.3	
76 Acetophenone	105	6.573	6.573	0.0	93	943625	61.4	
79 4-Methylphenol	108	6.589	6.579	0.010	93	1274646	113.5	
78 N-Nitrosodi-n-propylamine	70	6.584	6.579	0.005	47	504273	58.9	
81 Hexachloroethane	117	6.686	6.685	0.001	93	155430	31.4	
83 Nitrobenzene	77	6.771	6.771	0.0	87	739467	65.0	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
86 Isophorone	82	7.065	7.059	0.006	95	1588437	78.5	
87 2-Nitrophenol	139	7.145	7.145	0.0	78	452899	82.7	
89 2,4-Dimethylphenol	107	7.209	7.204	0.005	91	848372	79.6	
90 Tetraethyl lead	237	7.236	7.241	-0.005	51	38191	8.52	
94 Bis(2-chloroethoxy)methane	93	7.321	7.321	0.0	94	922044	69.8	
95 Benzoic acid	105	7.300	7.401	-0.101	57	137906	18.3	
97 2,4-Dichlorophenol	162	7.428	7.423	0.005	92	780834	84.8	
98 1,2,4-Trichlorobenzene	180	7.519	7.524	-0.005	94	499504	47.6	
99 Naphthalene	128	7.615	7.615	0.0	97	1752637	53.9	
101 4-Chloroaniline	127	7.690	7.690	0.0	96	1146048	82.0	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	228741	40.5	
105 Caprolactam	113	8.165	8.101	0.064	87	121415	36.5	
110 4-Chloro-3-methylphenol	107	8.262	8.256	0.006	92	832071	93.9	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	93	1279357	61.0	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	87	335591	56.4	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	93	636135	101.3	
119 2,4,5-Trichlorophenol	196	8.801	8.796	0.005	93	706249	103.6	
123 1,1'-Biphenyl	154	8.977	8.977	0.0	99	1805634	78.5	
124 2-Chloronaphthalene	162	8.993	8.993	0.0	99	1366056	74.4	
125 2-Nitroaniline	65	9.132	9.127	0.005	86	497965	101.2	
127 1,4-Dinitrobenzene	168	9.303	9.298	0.005	87	377560	97.6	
128 Dimethyl phthalate	163	9.373	9.362	0.011	97	2058411	99.1	
129 1,3-Dinitrobenzene	168	9.399	9.383	0.016	72	428431	105.2	
130 2,6-Dinitrotoluene	165	9.432	9.426	0.006	17	543579	118.0	
131 Acenaphthylene	152	9.480	9.479	0.001	98	2359804	84.8	
132 3-Nitroaniline	138	9.635	9.624	0.011	91	557588	103.4	
133 Acenaphthene	153	9.688	9.682	0.006	100	1480604	90.3	
134 2,4-Dinitrophenol	184	9.752	9.741	0.011	78	323213	144.3	
135 4-Nitrophenol	109	9.843	9.827	0.016	79	171789	67.5	
138 Dibenzofuran	168	9.891	9.885	0.006	98	2036973	93.2	
137 2,4-Dinitrotoluene	165	9.902	9.891	0.011	96	669796	116.4	
140 2,3,4,6-Tetrachlorophenol	232	10.035	10.030	0.005	96	566749	126.9	
142 Diethyl phthalate	149	10.179	10.174	0.005	99	1945381	100.3	
144 Fluorene	166	10.276	10.270	0.006	100	1714823	98.9	
145 4-Chlorophenyl phenyl ether	204	10.281	10.281	0.0	98	919556	99.8	
147 4-Nitroaniline	138	10.334	10.318	0.016	85	595082	108.4	
148 4,6-Dinitro-2-methylphenol	198	10.350	10.340	0.010	93	472014	123.0	
149 N-Nitrosodiphenylamine	169	10.420	10.409	0.011	95	1456536	97.4	
152 1,2-Diphenylhydrazine	77	10.452	10.452	0.0	96	1644163	93.7	
159 4-Bromophenyl phenyl ether	248	10.804	10.799	0.005	89	626291	97.2	
160 Hexachlorobenzene	284	10.853	10.847	0.006	95	698636	98.0	
163 Atrazine	200	10.997	10.986	0.011	87	665440	117.6	
165 Pentachlorophenol	266	11.061	11.055	0.006	96	497100	119.3	
171 Phenanthrene	178	11.275	11.269	0.006	99	2762973	101.6	
172 Anthracene	178	11.323	11.317	0.006	100	2814631	101.6	
173 Carbazole	167	11.488	11.483	0.005	99	2641375	103.1	
176 Di-n-butyl phthalate	149	11.830	11.825	0.005	99	3041466	92.7	
182 Fluoranthene	202	12.391	12.386	0.005	99	3065089	105.7	
183 Benzidine	184	12.519	12.519	0.0	99	1280902	73.0	
185 Pyrene	202	12.594	12.589	0.005	100	3127863	98.4	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	96	1563922	118.7	
196 3,3'-Dichlorobenzidine	252	13.614	13.609	0.005	71	964720	75.6	

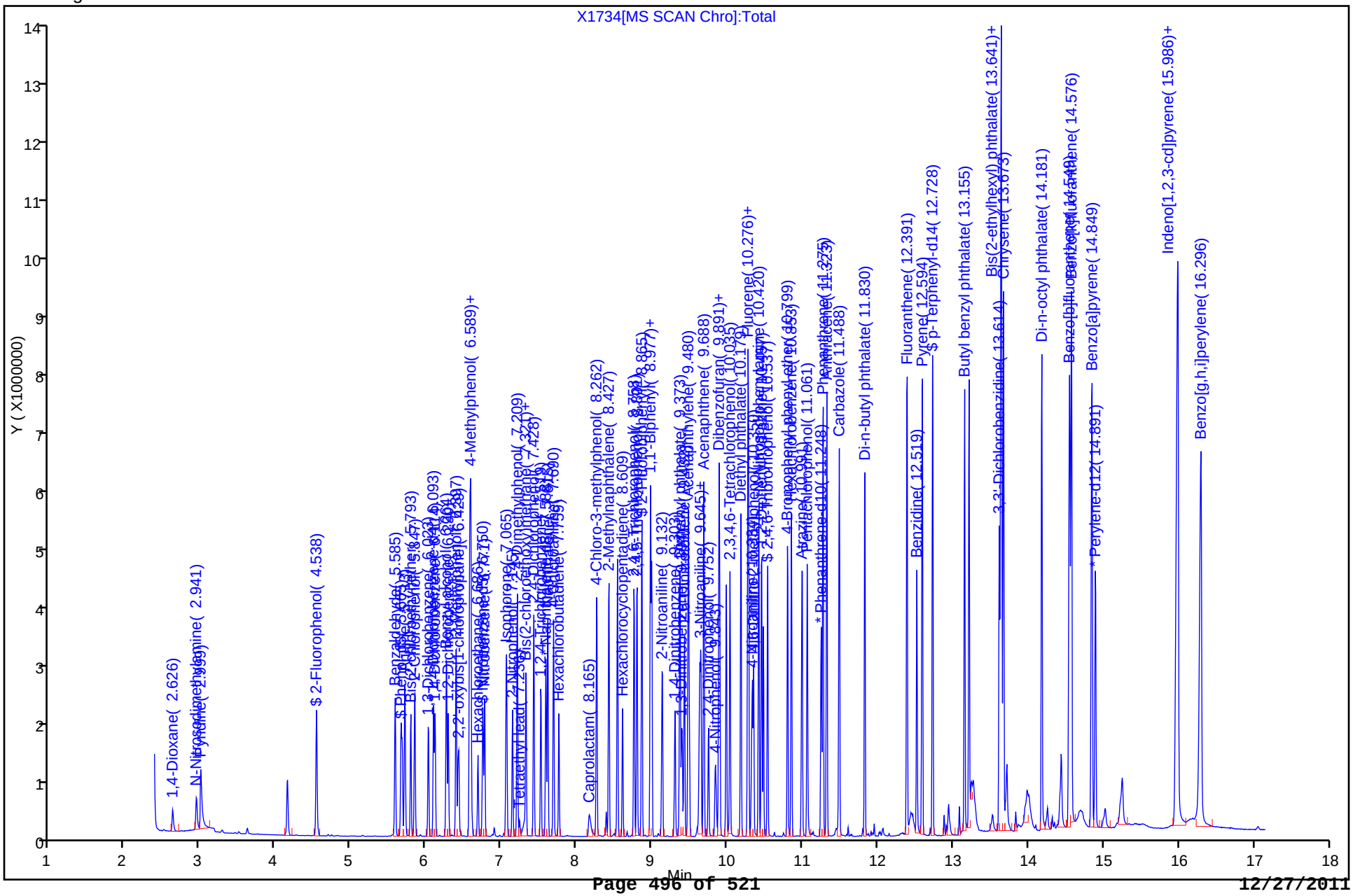
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
197 Benzo[a]anthracene	228	13.636	13.630	0.006	59	3052214	107.9	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	91	1761896	99.8	
199 Chrysene	228	13.673	13.668	0.005	96	3199709	100.0	
201 Di-n-octyl phthalate	149	14.181	14.175	0.006	99	3657373	112.6	
203 Benzo[b]fluoranthene	252	14.549	14.544	0.005	98	3941901	98.5	
204 Benzo[k]fluoranthene	252	14.576	14.565	0.011	96	4142802	98.4	
206 Benzo[a]pyrene	252	14.849	14.838	0.011	98	3612851	100.8	
208 Indeno[1,2,3-cd]pyrene	276	15.981	15.965	0.016	81	4675482	105.9	
209 Dibenz(a,h)anthracene	278	15.992	15.976	0.016	94	3849634	99.0	
210 Benzo[g,h,i]perylene	276	16.296	16.275	0.021	98	4233505	112.0	
S 214 3-Methylphenol	1				0		113.5	

Report Date: 13-Dec-2011 09:39:34 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1734.D

Injection Date:	12-Dec-2011 21:44:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44096	Lims Sample ID:	8
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 480-42840/3-A

Matrix: Water | Lab File ID: X1735.D

Analysis Method: 8270C | Date Collected:

Extract. Method: 3510C | Date Extracted: 12/05/2011 09:05

Sample wt/vol: 1000(mL) | Date Analyzed: 12/12/2011 22:06

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 44096 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	87.7		5.0	0.41
208-96-8	Acenaphthylene	83.5		5.0	0.38
120-12-7	Anthracene	105		5.0	0.28
56-55-3	Benz(a)anthracene	110		5.0	0.36
50-32-8	Benzo(a)pyrene	104		5.0	0.47
205-99-2	Benzo(b)fluoranthene	100		5.0	0.34
191-24-2	Benzo(g,h,i)perylene	116		5.0	0.35
207-08-9	Benzo(k)fluoranthene	103		5.0	0.73
218-01-9	Chrysene	102		5.0	0.33
53-70-3	Dibenz(a,h)anthracene	102		5.0	0.42
206-44-0	Fluoranthene	106		5.0	0.40
86-73-7	Fluorene	100		5.0	0.36
193-39-5	Indeno(1,2,3-c,d)pyrene	110		5.0	0.47
91-20-3	Naphthalene	48.3		5.0	0.76
85-01-8	Phenanthrene	104		5.0	0.44
129-00-0	Pyrene	101		5.0	0.34
91-57-6	2-Methylnaphthalene	55.6		5.0	0.60

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	61		46-120
321-60-8	2-Fluorobiphenyl	75		48-120
1718-51-0	p-Terphenyl-d14	118		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1735.D
Lims ID: LCSD 480-42840/3-A Client ID:
Inject. Date: 12-Dec-2011 22:06:30 Dil. Factor: 1.0000
Sample Type: LCSD
Sample ID: 480-0008169-009
Misc. Info.:
Operator: RMM Instrument ID: HP5973X
Vol. Injected: 1.0000 ALS Bottle#: 9
Lims Batch ID: 44096 Lims Sample ID: 9
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X-8270.m
Last Update: 13-Dec-2011 09:41:43 Calib Date: 12-Dec-2011 17:29:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973X\20111212-8158.b\X1722.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 13-Dec-2011 09:42:00

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.098	6.093	0.005	92	380257	40.0	
* 2 Naphthalene-d8	136	7.588	7.583	0.005	98	1390802	40.0	
* 3 Acenaphthene-d10	164	9.650	9.645	0.005	34	729160	40.0	
* 4 Phenanthrene-d10	188	11.248	11.243	0.005	99	1311008	40.0	
* 5 Chrysene-d12	240	13.646	13.641	0.005	98	1198922	40.0	
* 6 Perylene-d12	264	14.896	14.886	0.010	99	1729265	40.0	
$ 7 2-Fluorophenol	112	4.538	4.538	0.0	92	666374	50.6	
$ 8 Phenol-d5	99	5.665	5.665	0.0	86	675379	43.5	
$ 9 Nitrobenzene-d5	82	6.750	6.750	0.0	90	697310	61.3	
$ 10 2-Fluorobiphenyl	172	8.865	8.865	0.0	100	1610963	74.8	
$ 11 2,4,6-Tribromophenol	330	10.537	10.532	0.005	63	518730	176.2	
$ 12 p-Terphenyl-d14	244	12.727	12.728	-0.001	97	2627260	117.7	
54 1,4-Dioxane	88	2.631	2.631	0.0	93	163037	25.3	
55 N-Nitrosodimethylamine	42	2.946	2.946	0.0	68	186005	29.5	
56 Pyridine	52	3.005	3.005	0.0	81	336825	36.4	
62 Benzaldehyde	77	5.585	5.585	0.0	83	502383	54.5	
63 Phenol	94	5.681	5.681	0.0	77	493954	30.6	
64 Aniline	93	5.713	5.713	0.0	73	1063988	52.5	
66 Bis(2-chloroethyl)ether	93	5.793	5.793	0.0	79	695407	53.1	
67 2-Chlorophenol	128	5.847	5.847	0.0	97	720574	54.9	
69 1,3-Dichlorobenzene	146	6.028	6.028	0.0	93	470876	33.7	
70 1,4-Dichlorobenzene	146	6.114	6.119	-0.005	86	486894	34.6	
71 Benzyl alcohol	108	6.269	6.263	0.006	91	511281	63.2	
72 1,2-Dichlorobenzene	146	6.290	6.290	0.0	80	474594	35.5	
73 2-Methylphenol	108	6.397	6.392	0.005	93	678973	59.5	
74 2,2'-oxybis[1-chloropropane]	45	6.429	6.429	0.0	89	721257	44.2	
76 Acetophenone	105	6.573	6.573	0.0	93	913759	58.6	
79 4-Methylphenol	108	6.589	6.579	0.010	93	1235920	108.5	
78 N-Nitrosodi-n-propylamine	70	6.584	6.579	0.005	46	483243	55.6	
81 Hexachloroethane	117	6.685	6.685	0.0	92	145711	29.0	
83 Nitrobenzene	77	6.771	6.771	0.0	87	706430	61.4	

Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
86 Isophorone	82	7.065	7.059	0.006	95	1545283	75.5	
87 2-Nitrophenol	139	7.145	7.145	0.0	77	439135	79.3	
89 2,4-Dimethylphenol	107	7.209	7.204	0.005	91	843082	78.2	
90 Tetraethyl lead	237	7.241	7.241	0.0	49	30199	6.67	
94 Bis(2-chloroethoxy)methane	93	7.321	7.321	0.0	93	886547	66.4	
95 Benzoic acid	105	7.300	7.401	-0.101	55	136632	17.9	
97 2,4-Dichlorophenol	162	7.428	7.423	0.005	92	771136	82.9	
98 1,2,4-Trichlorobenzene	180	7.524	7.524	0.0	93	451817	42.6	
99 Naphthalene	128	7.615	7.615	0.0	97	1616661	48.3	
101 4-Chloroaniline	127	7.690	7.690	0.0	95	1092715	77.3	
104 Hexachlorobutadiene	225	7.759	7.759	0.0	97	208540	36.5	
105 Caprolactam	113	8.165	8.101	0.064	86	112911	33.8	
110 4-Chloro-3-methylphenol	107	8.261	8.256	0.005	91	859329	95.9	
113 2-Methylnaphthalene	142	8.427	8.427	0.0	93	1196310	55.6	
116 Hexachlorocyclopentadiene	237	8.609	8.609	0.0	87	293934	48.6	
118 2,4,6-Trichlorophenol	196	8.758	8.758	0.0	93	651235	101.9	
119 2,4,5-Trichlorophenol	196	8.801	8.796	0.005	93	738398	106.4	
123 1,1'-Biphenyl	154	8.977	8.977	0.0	99	1761778	74.3	
124 2-Chloronaphthalene	162	8.993	8.993	0.0	99	1315287	70.4	
125 2-Nitroaniline	65	9.138	9.127	0.011	84	521450	104.1	
127 1,4-Dinitrobenzene	168	9.303	9.298	0.005	86	403037	102.7	
128 Dimethyl phthalate	163	9.373	9.362	0.011	97	2137763	101.1	
129 1,3-Dinitrobenzene	168	9.399	9.383	0.016	73	452292	109.8	
130 2,6-Dinitrotoluene	165	9.431	9.426	0.005	15	565414	120.6	
131 Acenaphthylene	152	9.479	9.479	0.0	99	2363858	83.5	
132 3-Nitroaniline	138	9.634	9.624	0.010	91	564101	102.8	
133 Acenaphthene	153	9.688	9.682	0.006	100	1473833	87.7	
134 2,4-Dinitrophenol	184	9.752	9.741	0.011	79	350333	150.6	
135 4-Nitrophenol	109	9.843	9.827	0.016	77	172032	66.4	
138 Dibenzofuran	168	9.891	9.885	0.006	98	2067682	92.9	
137 2,4-Dinitrotoluene	165	9.901	9.891	0.010	96	703861	120.2	
140 2,3,4,6-Tetrachlorophenol	232	10.035	10.030	0.005	95	589349	129.6	
142 Diethyl phthalate	149	10.179	10.174	0.005	99	2020374	102.4	
144 Fluorene	166	10.275	10.270	0.005	100	1760837	100.3	
145 4-Chlorophenyl phenyl ether	204	10.281	10.281	0.0	98	932533	99.3	
147 4-Nitroaniline	138	10.334	10.318	0.016	84	613067	109.7	
148 4,6-Dinitro-2-methylphenol	198	10.350	10.340	0.010	94	499695	127.0	
149 N-Nitrosodiphenylamine	169	10.420	10.409	0.011	95	1519549	99.3	
152 1,2-Diphenylhydrazine	77	10.457	10.452	0.005	93	1678441	94.1	
159 4-Bromophenyl phenyl ether	248	10.804	10.799	0.005	90	650208	98.6	
160 Hexachlorobenzene	284	10.852	10.847	0.005	95	724206	99.3	
163 Atrazine	200	10.997	10.986	0.011	87	680036	118.1	
165 Pentachlorophenol	266	11.061	11.055	0.006	95	520493	122.1	
171 Phenanthrene	178	11.274	11.269	0.005	99	2867442	104.0	
172 Anthracene	178	11.322	11.317	0.005	99	2929774	104.5	
173 Carbazole	167	11.488	11.483	0.005	99	2704545	103.2	
176 Di-n-butyl phthalate	149	11.830	11.825	0.005	99	3097445	92.3	
182 Fluoranthene	202	12.391	12.386	0.005	99	3148148	106.4	
183 Benzidine	184	12.519	12.519	0.0	99	1316701	74.2	
185 Pyrene	202	12.594	12.589	0.005	99	3241046	100.9	
192 Butyl benzyl phthalate	149	13.155	13.155	0.0	96	1606794	120.7	
196 3,3'-Dichlorobenzidine	252	13.614	13.609	0.005	70	962023	74.6	

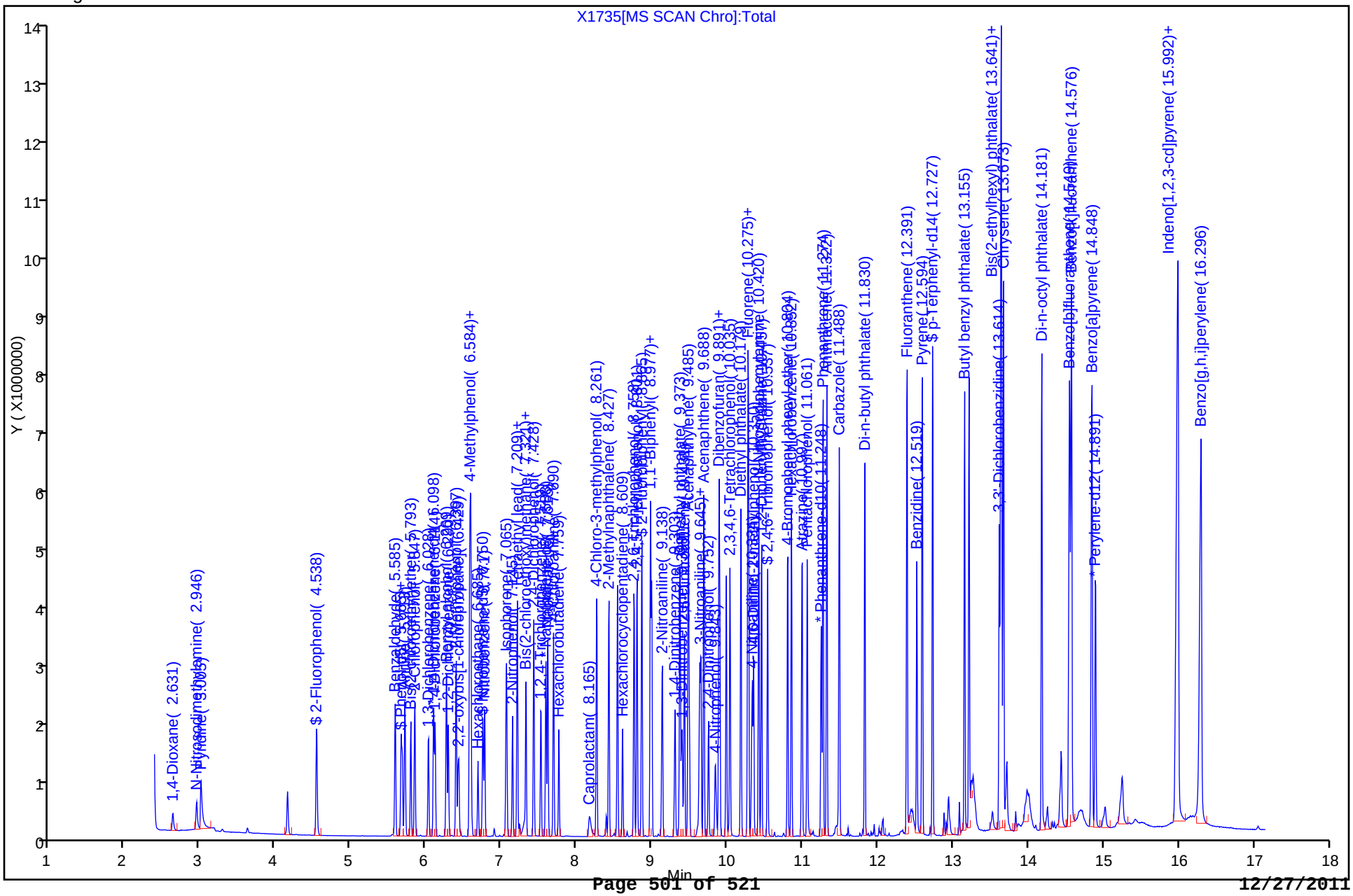
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
197 Benzo[a]anthracene	228	13.636	13.630	0.006	60	3122831	110.0	
198 Bis(2-ethylhexyl) phthalate	149	13.641	13.641	0.0	91	1812480	101.7	
199 Chrysene	228	13.673	13.668	0.005	96	3305089	102.2	
201 Di-n-octyl phthalate	149	14.181	14.175	0.006	99	3782692	116.4	
203 Benzo[b]fluoranthene	252	14.549	14.544	0.005	97	4052527	100.2	
204 Benzo[k]fluoranthene	252	14.576	14.565	0.011	96	4325257	103.4	
206 Benzo[a]pyrene	252	14.848	14.838	0.010	97	3756373	103.8	
208 Indeno[1,2,3-cd]pyrene	276	15.976	15.965	0.011	92	4910904	110.1	
209 Dibenz(a,h)anthracene	278	15.992	15.976	0.016	94	4010503	102.1	
210 Benzo[g,h,i]perylene	276	16.296	16.275	0.021	97	4423112	115.8	
S 214 3-Methylphenol	1				0		108.5	

Report Date: 13-Dec-2011 09:42:00 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973X\20111212-8169.b\X1735.D

Injection Date:	12-Dec-2011 22:06:30	Limit Group:	MB - 8270C ICAL
Client ID:		Instrument ID:	HP5973X
Lims Batch ID:	44096	Lims Sample ID:	9
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-17 MS | Lab Sample ID: 480-13366-1 MS

Matrix: Water | Lab File ID: U6925.D

Analysis Method: 8270C | Date Collected: 11/30/2011 11:55

Extract. Method: 3510C | Date Extracted: 12/02/2011 06:38

Sample wt/vol: 950(mL) | Date Analyzed: 12/06/2011 18:06

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 42934 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	112		5.3	0.43
208-96-8	Acenaphthylene	115		5.3	0.40
120-12-7	Anthracene	134		5.3	0.29
56-55-3	Benz(a)anthracene	128		5.3	0.38
50-32-8	Benzo(a)pyrene	115		5.3	0.49
205-99-2	Benzo(b)fluoranthene	104		5.3	0.36
191-24-2	Benzo(g,h,i)perylene	114		5.3	0.37
207-08-9	Benzo(k)fluoranthene	114		5.3	0.77
218-01-9	Chrysene	131		5.3	0.35
53-70-3	Dibenz(a,h)anthracene	119		5.3	0.44
206-44-0	Fluoranthene	122		5.3	0.42
86-73-7	Fluorene	117		5.3	0.38
193-39-5	Indeno(1,2,3-c,d)pyrene	117		5.3	0.49
91-20-3	Naphthalene	90.5		5.3	0.80
85-01-8	Phenanthrene	117		5.3	0.46
129-00-0	Pyrene	140		5.3	0.36
91-57-6	2-Methylnaphthalene	93.2		5.3	0.63

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	95		46-120
321-60-8	2-Fluorobiphenyl	97		48-120
1718-51-0	p-Terphenyl-d14	110		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6925.D
Lims ID: 480-13366-A-1-A MS
Client ID: MW-17
Inject. Date: 06-Dec-2011 18:06:30
Dil. Factor: 1.0000
Sample Type: MS
Sample ID: 480-0007971-006
Misc. Info.:
Operator: RMM
Instrument ID: HP5973U
Vol. Injected: 1.0000
ALS Bottle#: 15
Lims Batch ID: 42934
Lims Sample ID: 14
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 07-Dec-2011 11:02:29
Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard
Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE
ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar
Date: 07-Dec-2011 11:02:48

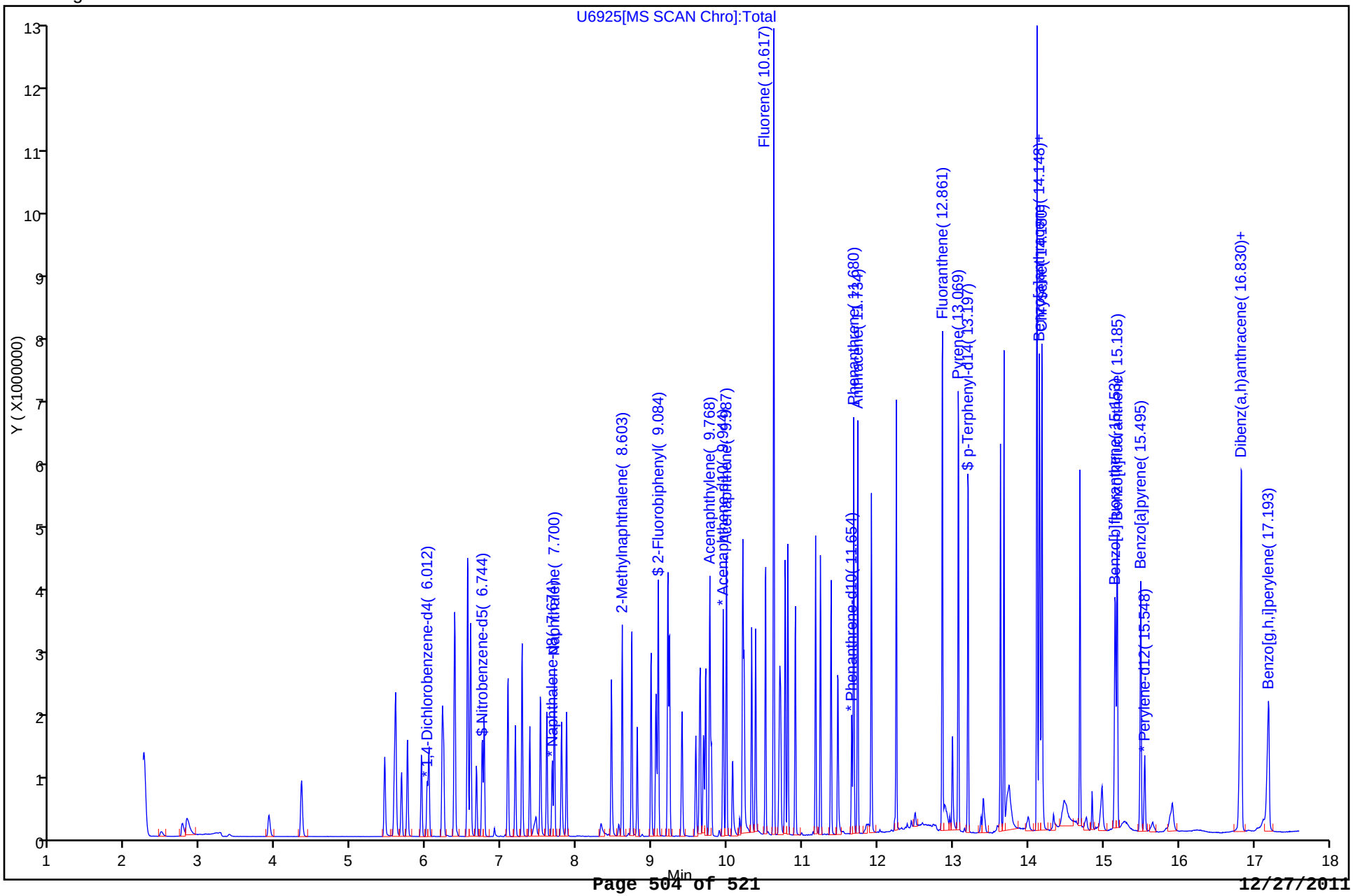
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	93	136674	40.0	
* 2 Naphthalene-d8	136	7.674	7.673	0.001	99	522347	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	92	394503	40.0	
* 4 Phenanthrene-d10	188	11.654	11.648	0.006	98	668420	40.0	
* 5 Chrysene-d12	240	14.159	14.154	0.005	95	686021	40.0	
* 6 Perylene-d12	264	15.548	15.543	0.005	98	535774	40.0	
$ 11 Nitrobenzene-d5	82	6.744	6.739	0.005	93	550747	95.0	
$ 12 2-Fluorobiphenyl	172	9.084	9.079	0.005	83	1248215	96.7	
$ 14 p-Terphenyl-d14	244	13.203	13.198	0.005	97	1713051	110.5	
121 Naphthalene	128	7.700	7.700	0.0	98	1094927	86.0	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	86	858269	88.5	
149 Acenaphthylene	152	9.768	9.762	0.006	93	1694957	109.6	
151 Acenaphthene	153	9.987	9.987	0.0	94	1097106	106.3	
161 Fluorene	166	10.617	10.612	0.005	81	1772913	110.8	
185 Phenanthrene	178	11.680	11.675	0.005	96	2195129	110.9	
188 Anthracene	178	11.734	11.728	0.006	96	2226951	126.9	
197 Fluoranthene	202	12.861	12.856	0.005	96	2873156	115.9	
199 Pyrene	202	13.069	13.069	0.0	97	2701485	133.3	
209 Benzo[a]anthracene	228	14.148	14.143	0.005	96	2458268	121.2	
211 Chrysene	228	14.180	14.175	0.005	93	2284698	124.8	
213 Benzo[b]fluoranthene	252	15.158	15.147	0.011	91	2026253	98.8	
214 Benzo[k]fluoranthene	252	15.185	15.174	0.011	95	2149438	108.1	
217 Benzo[a]pyrene	252	15.495	15.484	0.011	99	1799340	108.9	
219 Indeno[1,2,3-cd]pyrene	276	16.836	16.809	0.027	82	2388034	110.9	
220 Dibenz(a,h)anthracene	278	16.836	16.814	0.022	77	2162457	112.8	
221 Benzo[g,h,i]perylene	276	17.193	17.172	0.021	90	1489797	108.7	

Report Date: 07-Dec-2011 11:02:48 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6925.D

Injection Date:	06-Dec-2011 18:06:30	Limit Group:	MB - 8270C ICAL
Client ID:	MW-17	Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	14
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-13366-1

SDG No.:

Client Sample ID: MW-17 MSD | Lab Sample ID: 480-13366-1 MSD

Matrix: Water | Lab File ID: U6926.D

Analysis Method: 8270C | Date Collected: 11/30/2011 11:55

Extract. Method: 3510C | Date Extracted: 12/02/2011 06:38

Sample wt/vol: 970(mL) | Date Analyzed: 12/06/2011 18:29

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 42934 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
83-32-9	Acenaphthene	110		5.2	0.42
208-96-8	Acenaphthylene	114		5.2	0.39
120-12-7	Anthracene	123		5.2	0.29
56-55-3	Benz(a)anthracene	122		5.2	0.37
50-32-8	Benzo(a)pyrene	109		5.2	0.48
205-99-2	Benzo(b)fluoranthene	102		5.2	0.35
191-24-2	Benzo(g,h,i)perylene	110		5.2	0.36
207-08-9	Benzo(k)fluoranthene	107		5.2	0.75
218-01-9	Chrysene	125		5.2	0.34
53-70-3	Dibenz(a,h)anthracene	113		5.2	0.43
206-44-0	Fluoranthene	114		5.2	0.41
86-73-7	Fluorene	115		5.2	0.37
193-39-5	Indeno(1,2,3-c,d)pyrene	111		5.2	0.48
91-20-3	Naphthalene	89.0		5.2	0.78
85-01-8	Phenanthrene	109		5.2	0.45
129-00-0	Pyrene	137		5.2	0.35
91-57-6	2-Methylnaphthalene	93.3		5.2	0.62

CAS NO.	SURROGATE	%REC	Q	LIMITS
4165-60-0	Nitrobenzene-d5	93		46-120
321-60-8	2-Fluorobiphenyl	100		48-120
1718-51-0	p-Terphenyl-d14	114		24-136

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6926.D
Lims ID: 480-13366-A-1-B MSD Client ID: MW-17
Inject. Date: 06-Dec-2011 18:29:30 Dil. Factor: 1.0000
Sample Type: MSD
Sample ID: 480-0007971-007
Misc. Info.:
Operator: RMM Instrument ID: HP5973U
Vol. Injected: 1.0000 ALS Bottle#: 16
Lims Batch ID: 42934 Lims Sample ID: 15
Detector: MS SCAN

Method: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U-8270.m
Last Update: 07-Dec-2011 11:02:29 Calib Date: 06-Dec-2011 15:23:30
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6918.D
Limit Group: MB - 8270C ICAL
Integrator: RTE ID Type: RT Order ID
Process Host: CORP-CTX-19

First Level Reviewer: mckernar Date: 07-Dec-2011 11:03:09

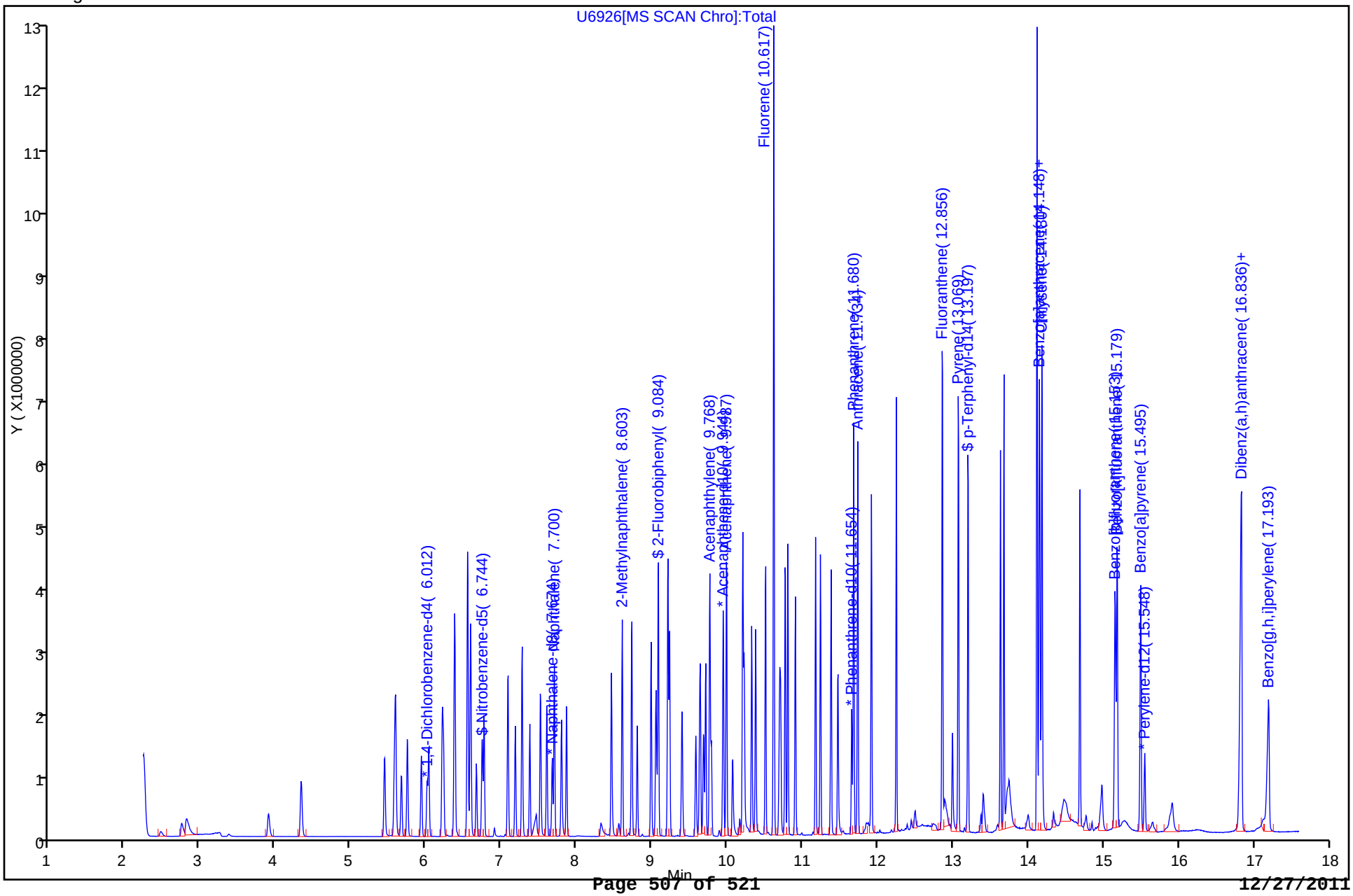
Compound	Sig	RT	ADJ RT	DLT RT	Q	Response	On-Col Amt ng/uL	Flags
* 1 1,4-Dichlorobenzene-d4	152	6.007	6.007	0.0	95	138617	40.0	
* 2 Naphthalene-d8	136	7.674	7.673	0.001	99	545861	40.0	
* 3 Acenaphthene-d10	164	9.944	9.944	0.0	93	405810	40.0	
* 4 Phenanthrene-d10	188	11.654	11.648	0.006	98	708820	40.0	
* 5 Chrysene-d12	240	14.159	14.154	0.005	96	697607	40.0	
* 6 Perylene-d12	264	15.548	15.543	0.005	98	554502	40.0	
$ 11 Nitrobenzene-d5	82	6.739	6.739	0.0	92	561945	92.7	
$ 12 2-Fluorobiphenyl	172	9.084	9.079	0.005	86	1325699	99.9	
$ 14 p-Terphenyl-d14	244	13.203	13.198	0.005	97	1791017	113.5	
121 Naphthalene	128	7.700	7.700	0.0	98	1147544	86.3	
133 2-Methylnaphthalene	142	8.603	8.603	0.0	84	917135	90.5	
149 Acenaphthylene	152	9.768	9.762	0.006	93	1753188	110.2	
151 Acenaphthene	153	9.992	9.987	0.005	88	1132059	106.6	
161 Fluorene	166	10.617	10.612	0.005	81	1844460	112.0	
185 Phenanthrene	178	11.680	11.675	0.005	96	2212056	105.5	
188 Anthracene	178	11.734	11.728	0.006	97	2216292	119.1	
197 Fluoranthene	202	12.856	12.856	0.0	97	2879998	110.7	
199 Pyrene	202	13.069	13.069	0.0	97	2734328	132.6	
209 Benzo[a]anthracene	228	14.148	14.143	0.005	96	2443878	118.5	
211 Chrysene	228	14.180	14.175	0.005	92	2257288	121.3	
213 Benzo[b]fluoranthene	252	15.153	15.147	0.006	91	2105644	99.1	
214 Benzo[k]fluoranthene	252	15.179	15.174	0.005	96	2125511	104.1	
217 Benzo[a]pyrene	252	15.495	15.484	0.011	99	1799140	106.0	
219 Indeno[1,2,3-cd]pyrene	276	16.836	16.809	0.027	82	2371612	107.4	
220 Dibenz(a,h)anthracene	278	16.836	16.814	0.022	71	2166330	109.9	
221 Benzo[g,h,i]perylene	276	17.193	17.172	0.021	89	1503251	106.6	

Report Date: 07-Dec-2011 11:03:09 Chrom Revision: 2.0 01-Sep-2011 14:10:00

Data File: \\Bufchrom\ChromData\HP5973U\20111205-7971.b\U6926.D

Injection Date:	06-Dec-2011 18:29:30	Limit Group:	MB - 8270C ICAL
Client ID:	MW-17	Instrument ID:	HP5973U
Lims Batch ID:	42934	Lims Sample ID:	15
Operator ID:	RMM	Injection Vol:	1.00 ul
Column Type:	RXI-5Sil MS	Column Dia:	0.25 mm

Y Scaling:



GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973U Start Date: 12/06/2011 13:11

Analysis Batch Number: 42934 End Date: 12/06/2011 23:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-42934/1		12/06/2011 13:11	1	U6912.D	RXI-5Sil MS 0.25(mm)
IC 480-42934/2		12/06/2011 13:27	1	U6913.D	RXI-5Sil MS 0.25(mm)
IC 480-42934/3		12/06/2011 13:50	1	U6914.D	RXI-5Sil MS 0.25(mm)
ICIS 480-42934/4		12/06/2011 14:13	1	U6915.D	RXI-5Sil MS 0.25(mm)
IC 480-42934/5		12/06/2011 14:36	1	U6916.D	RXI-5Sil MS 0.25(mm)
IC 480-42934/6		12/06/2011 15:00	1	U6917.D	RXI-5Sil MS 0.25(mm)
IC 480-42934/7		12/06/2011 15:23	1	U6918.D	RXI-5Sil MS 0.25(mm)
ICV 480-42934/8		12/06/2011 15:46	1	U6919.D	RXI-5Sil MS 0.25(mm)
ICVL 480-42934/9		12/06/2011 16:09	1		RXI-5Sil MS 0.25(mm)
CCVIS 480-42934/10		12/06/2011 16:33	1	U6921.D	RXI-5Sil MS 0.25(mm)
CCV 480-42934/11		12/06/2011 16:56	1		RXI-5Sil MS 0.25(mm)
MB 480-42575/1-A		12/06/2011 17:19	1	U6923.D	RXI-5Sil MS 0.25(mm)
LCS 480-42575/2-A		12/06/2011 17:42	1	U6924.D	RXI-5Sil MS 0.25(mm)
480-13366-1 MS	MW-17 MS	12/06/2011 18:06	1	U6925.D	RXI-5Sil MS 0.25(mm)
480-13366-1 MSD	MW-17 MSD	12/06/2011 18:29	1	U6926.D	RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 18:52	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 19:15	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 19:38	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 20:02	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 20:25	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 20:48	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 21:12	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 21:35	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 21:58	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 22:21	1		RXI-5Sil MS 0.25(mm)
480-13366-1	MW-17	12/06/2011 22:45	1	U6937.D	RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 23:08	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 23:31	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/06/2011 23:54	1		RXI-5Sil MS 0.25(mm)

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973X Start Date: 11/16/2011 12:09

Analysis Batch Number: 40664 End Date: 11/16/2011 15:04

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-40664/1		11/16/2011 12:09	1	X0978.D	RXI-5Sil MS 0.25(mm)
IC 480-40664/2		11/16/2011 12:25	1	X0979.D	RXI-5Sil MS 0.25(mm)
IC 480-40664/3		11/16/2011 12:47	1	X0980.D	RXI-5Sil MS 0.25(mm)
ICIS 480-40664/4		11/16/2011 13:10	1	X0981.D	RXI-5Sil MS 0.25(mm)
IC 480-40664/5		11/16/2011 13:33	1	X0982.D	RXI-5Sil MS 0.25(mm)
IC 480-40664/6		11/16/2011 13:56	1	X0983.D	RXI-5Sil MS 0.25(mm)
IC 480-40664/7		11/16/2011 14:19	1	X0984.D	RXI-5Sil MS 0.25(mm)
ICV 480-40664/8		11/16/2011 14:42	1		RXI-5Sil MS 0.25(mm)
ICVL 480-40664/9		11/16/2011 15:04	1		RXI-5Sil MS 0.25(mm)

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973X Start Date: 12/07/2011 14:43

Analysis Batch Number: 43264 End Date: 12/08/2011 00:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-43264/1		12/07/2011 14:43	1	X1546.D	RXI-5Sil MS 0.25(mm)
CCVIS 480-43264/2		12/07/2011 14:58	1	X1547.D	RXI-5Sil MS 0.25(mm)
CCV 480-43264/3		12/07/2011 15:21	1		RXI-5Sil MS 0.25(mm)
CCV 480-43264/4		12/07/2011 15:44	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 16:07	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 16:30	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 16:53	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 17:16	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 17:39	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 18:02	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 18:25	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 18:48	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 19:11	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 19:33	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 19:56	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 20:19	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 20:42	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 21:05	1		RXI-5Sil MS 0.25(mm)
480-13430-1	MW-14	12/07/2011 21:28	1	X1564.D	RXI-5Sil MS 0.25(mm)
480-13430-2	MW-15	12/07/2011 21:51	1	X1565.D	RXI-5Sil MS 0.25(mm)
480-13430-3	MW-16	12/07/2011 22:14	1	X1566.D	RXI-5Sil MS 0.25(mm)
480-13430-4	BD-120111	12/07/2011 22:37	1	X1567.D	RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 23:00	5		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 23:23	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/07/2011 23:46	10		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/08/2011 00:09	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/08/2011 00:32	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/08/2011 00:54	20		RXI-5Sil MS 0.25(mm)

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973X Start Date: 12/10/2011 13:58

Analysis Batch Number: 43924 End Date: 12/11/2011 00:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-43924/1		12/10/2011 13:58	1	X1679.D	RXI-5Sil MS 0.25(mm)
IC 480-43924/2		12/10/2011 14:13	1	X1680.D	RXI-5Sil MS 0.25(mm)
IC 480-43924/3		12/10/2011 14:36	1	X1681.D	RXI-5Sil MS 0.25(mm)
ICIS 480-43924/4		12/10/2011 14:59	1	X1682.D	RXI-5Sil MS 0.25(mm)
IC 480-43924/5		12/10/2011 15:22	1	X1683.D	RXI-5Sil MS 0.25(mm)
IC 480-43924/7		12/10/2011 16:08	1	X1685.D	RXI-5Sil MS 0.25(mm)
IC 480-43924/6		12/10/2011 16:31	1	X1686.D	RXI-5Sil MS 0.25(mm)
IC 480-43924/8		12/10/2011 16:53	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/9		12/10/2011 17:16	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/10		12/10/2011 17:39	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/11		12/10/2011 18:02	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/12		12/10/2011 18:25	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/13		12/10/2011 18:48	1		RXI-5Sil MS 0.25(mm)
ICV 480-43924/14		12/10/2011 19:11	1		RXI-5Sil MS 0.25(mm)
ICVL 480-43924/15		12/10/2011 19:33	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/22		12/10/2011 22:13	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/23		12/10/2011 22:36	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/24		12/10/2011 22:59	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/25		12/10/2011 23:21	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/26		12/10/2011 23:44	1		RXI-5Sil MS 0.25(mm)
IC 480-43924/27		12/11/2011 00:07	1		RXI-5Sil MS 0.25(mm)
ICV 480-43924/28		12/11/2011 00:30	1		RXI-5Sil MS 0.25(mm)

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973X Start Date: 12/12/2011 12:40

Analysis Batch Number: 44019 End Date: 12/12/2011 17:29

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-44019/1		12/12/2011 12:40	1	X1709.D	RXI-5Sil MS 0.25(mm)
IC 480-44019/2		12/12/2011 12:55	1		RXI-5Sil MS 0.25(mm)
IC 480-44019/3		12/12/2011 13:18	1		RXI-5Sil MS 0.25(mm)
IC 480-44019/4		12/12/2011 13:41	1		RXI-5Sil MS 0.25(mm)
IC 480-44019/5		12/12/2011 14:04	1		RXI-5Sil MS 0.25(mm)
IC 480-44019/6		12/12/2011 14:27	1		RXI-5Sil MS 0.25(mm)
IC 480-44019/7		12/12/2011 14:49	1		RXI-5Sil MS 0.25(mm)
ICV 480-44019/8		12/12/2011 15:12	1		RXI-5Sil MS 0.25(mm)
IC 480-44019/9		12/12/2011 15:35	1	X1717.D	RXI-5Sil MS 0.25(mm)
IC 480-44019/10		12/12/2011 15:57	1	X1718.D	RXI-5Sil MS 0.25(mm)
IC 480-44019/11		12/12/2011 16:20	1	X1719.D	RXI-5Sil MS 0.25(mm)
IC 480-44019/12		12/12/2011 16:43	1	X1720.D	RXI-5Sil MS 0.25(mm)
IC 480-44019/13		12/12/2011 17:06	1	X1721.D	RXI-5Sil MS 0.25(mm)
IC 480-44019/14		12/12/2011 17:29	1	X1722.D	RXI-5Sil MS 0.25(mm)

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Instrument ID: HP5973X Start Date: 12/12/2011 19:12

Analysis Batch Number: 44096 End Date: 12/13/2011 03:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-44096/1		12/12/2011 19:12	1	X1727.D	RXI-5Sil MS 0.25(mm)
CCVIS 480-44096/2		12/12/2011 19:27	1	X1728.D	RXI-5Sil MS 0.25(mm)
CCV 480-44096/3		12/12/2011 19:50	1		RXI-5Sil MS 0.25(mm)
CCV 480-44096/4		12/12/2011 20:13	1		RXI-5Sil MS 0.25(mm)
CCV 480-44096/5		12/12/2011 20:35	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/12/2011 20:58	10		RXI-5Sil MS 0.25(mm)
MB 480-42840/1-A		12/12/2011 21:21	1	X1733.D	RXI-5Sil MS 0.25(mm)
LCS 480-42840/2-A		12/12/2011 21:44	1	X1734.D	RXI-5Sil MS 0.25(mm)
LCSD 480-42840/3-A		12/12/2011 22:06	1	X1735.D	RXI-5Sil MS 0.25(mm)
ZZZZZ		12/12/2011 22:29	50		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/12/2011 23:15	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 00:23	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 00:46	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 01:09	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 01:32	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 01:55	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 02:18	10		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 02:41	1		RXI-5Sil MS 0.25(mm)
ZZZZZ		12/13/2011 03:03	1		RXI-5Sil MS 0.25(mm)

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Batch Number: 42575 Batch Start Date: 12/02/11 06:37 Batch Analyst: Viscuso, Kim

Batch Method: 3510C Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	ReceivedpH	InitialAmount	FinalAmount	FirstAdjustpH	SecondAdjustpH	O_8270625surr 00002
MB 480-42575/1		3510C, 8270C		5	1000 mL	1 mL	<2	>11	1 mL
LCS 480-42575/2		3510C, 8270C		5	1000 mL	1 mL	<2	>11	1 mL
480-13366-A-1 MS	MW-17	3510C, 8270C	T	6	950 mL	1 mL	<2	>11	1 mL
480-13366-A-1 MSD	MW-17	3510C, 8270C	T	6	970 mL	1 mL	<2	>11	1 mL
480-13366-B-1	MW-17	3510C, 8270C	T	6	1040 mL	1 mL	<2	>11	1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	O_8270full#1 00015	O_8270full#2 00012				
MB 480-42575/1		3510C, 8270C							
LCS 480-42575/2		3510C, 8270C		1 mL	1 mL				
480-13366-A-1 MS	MW-17	3510C, 8270C	T	1 mL	1 mL				
480-13366-A-1 MSD	MW-17	3510C, 8270C	T	1 mL	1 mL				
480-13366-B-1	MW-17	3510C, 8270C	T						

Batch Notes	
Acid used for pH adjustment	1:1 Sulfuric
Acid used for pH adjust Lot #	1080840
Base used for pH adjustment	Sodium Hydroxide
Base used for pH adjust Lot #	HC090126
Final Concentrator Volume	1 mL
Na2SO4 Lot Number	27861005
Prep Solvent Lot #	K35E22
Prep Solvent Name	MeCl2
Prep Solvent Volume Used	360 mL
Person's name who did the prep	KXV
Person's name who witnessed reagent drop	TCR
Sufficient volume for MS/MSD?	Yes.

Basis	Basis Description
T	Total/NA

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Batch Number: 42840 Batch Start Date: 12/05/11 09:05 Batch Analyst: Viscuso, Kim

Batch Method: 3510C Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	ReceivedpH	InitialAmount	FinalAmount	FirstAdjustpH	SecondAdjustpH	O_8270625surr 00003
MB 480-42840/1		3510C, 8270C		5	1000 mL	1 mL	<2	>11	1 mL
LCS 480-42840/2		3510C, 8270C		5	1000 mL	1 mL	<2	>11	1 mL
LCSD 480-42840/3		3510C, 8270C		5	1000 mL	1 mL	<2	>11	1 mL
480-13430-A-1	MW-14	3510C, 8270C	T	6	750 mL	1 mL	<2	>11	1 mL
480-13430-B-2	MW-15	3510C, 8270C	T	6	1055 mL	1 mL	<2	>11	1 mL
480-13430-A-3	MW-16	3510C, 8270C	T	6	1060 mL	1 mL	<2	>11	1 mL
480-13430-A-4	BD-120111	3510C, 8270C	T	6	1050 mL	1 mL	<2	>11	1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	O_8270full#1 00015	O_8270full#2 00012				
MB 480-42840/1		3510C, 8270C							
LCS 480-42840/2		3510C, 8270C		1 mL	1 mL				
LCSD 480-42840/3		3510C, 8270C		1 mL	1 mL				
480-13430-A-1	MW-14	3510C, 8270C	T						
480-13430-B-2	MW-15	3510C, 8270C	T						
480-13430-A-3	MW-16	3510C, 8270C	T						
480-13430-A-4	BD-120111	3510C, 8270C	T						

Batch Notes	
Acid used for pH adjustment	1:1 Sulfuric
Acid used for pH adjust Lot #	1080840
Base used for pH adjustment	Sodium Hydroxide
Base used for pH adjust Lot #	HC090126
Na2SO4 Lot Number	27861005
Prep Solvent Lot #	K35E22
Prep Solvent Name	MeCl2
Prep Solvent Volume Used	360 mL
Person's name who did the prep	KXV
Person's name who witnessed reagent drop	TCR
Sufficient volume for MS/MSD?	No.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica Buffalo Job No.: 480-13366-1

SDG No.:

Batch Number: 42840 Batch Start Date: 12/05/11 09:05 Batch Analyst: Viscuso, Kim

Batch Method: 3510C Batch End Date:

Basis	Basis Description
T	Total/NA

Shipping and Receiving Documents

Chain of Custody Record

Temperature on Receipt 1

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
ARCADIS	ANDREW CORSON	11-30-11	207851
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of**
6723 TOWPATH RD	315 446 9120		
City	**State**	**Zip Code**	**Site Contact**	**Lab Contact**
SYRACUSE	NY	13214	LEVIA TORRELLI	CANDACE FOX
Project Name and Location (State)	**Carrier/Waybill Number**
NE ILION NY	
Contract/Purchase Order/Quote No.
B00 36713.0000.00002

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres	HCl	HNO3	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PARTS 8270C	SIM 8260B	Special Instructions/ Conditions of Receipt
MW-17	11-30-11	1135		X			6			9			X	X	
TRIP BLANK	11-30-11	-		X						2				X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other STANDARD

QC Requirements (Specify)

	Relinquished By	Date	Time	Received By	Date	Time
1	[signature]	11-30-11	14:05	[signature]	11-30-11	14:05
2	[signature] R English	11-30-11	16:30	[signature] TAL	12.1.11	1430
3						

Comments

2.9

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
ARCADIS	ANDREW LEFEN	12-01-11	207852
Address: 6723 TOWPATH RD	Telephone Number (Area Code)/Fax Number: 315 446 9120	Lab Number	Page 1 of 1
City: SYRACUSE	State: NY	Zip Code: 13214	Site Contact: LEVIA TEDDELL	Lab Contact: CANDY FOX	Analysis (Attach list if more space is needed)
Project Name and Location (State): NG ILION NY	Carrier/Waybill Number	
Contract/Purchase Order/Quote No.: B003671 3.0000.00002		

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each unique entry may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	8260 BTEX STARCS
MW-14	12-1-11	0930		X			2			3			X
MW-15		0940		X			2			3			X
MW-16		1045		X			2			3			X
BD-120111		-		X			2			3			X
TRIP BLANK				X						2			X

Possible Hazard Identification: Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ___ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other STANDARD

QC Requirements (Specify)

Relinquished By	Date	Time	Received By	Date	Time
1.	12-01-11	13:05	1.	12-01-11	13:05
2.	12-01-11	16:30	2.	12-2-11	1130
3.			3.		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

2.7

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Login Number: 13366

List Source: TestAmerica Buffalo

List Number: 1

Creator: Wienke, Robert

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	False	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Login Number: 13430

List Source: TestAmerica Buffalo

List Number: 1

Creator: Wienke, Robert

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	False	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Attachment D

DUSR for 2011 Groundwater Data

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

National Grid – Ilion

Data Usability Summary Report (DUSR)

ILION, NEW YORK

Volatile and Semivolatile Organic Compound
(VOC & SVOC) Analyses

SDG #480-13366

Analyses Performed By:
TestAmerica,
Amherst, New York

Report #15340R
Review Level: Tier III
Project: B0036713.0000.00002

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #480-13366 for samples collected in association with the National Grid Ilion site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	PCB	MET	MISC
MW-17	480-13366-1	Water	11/30/2011		X	X			
TRIP BLANK	480-13366-2	Water	11/30/2011		X				
MW-14	480-13430-1	Water	12/1/2011		X	X			
MW-15	480-13430-2	Water	12/1/2011		X	X			
MW-16	480-13430-3	Water	12/1/2011		X	X			
BD-120111	480-13430-4	Water	12/1/2011	MW-15	X	X			
TRIP BLANK	480-13430-5	Water	12/1/2011		X				

Note:

1. Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on sample location MW-17.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260B and 8270C as referenced in NYSDEC-ASP. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999 and USEPA Region II SOPs associated with USEPA SW-846: Validating Volatile Organic Compounds by GC/MS SW-846 Method 8260B (SOP HW-24 Revision 2, October 2006), Validating Semivolatile Organic Compounds by GC/MS SW-846 Method 8270D (SOP HW-22 Revision 3, October 2006).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260B	Water	14 days from collection to analysis	Cool to 4°C±2°C; preserved to a pH of less than 2 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks, trip blanks, and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure sample storage contamination. Rinse blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration (CCV) verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (15%) or a correlation coefficient greater than 0.99, and a RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 40% or less than 40% of the area counts of the associated continuing calibration standard.

All internal standard area counts were within the control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
MW-17	Benzene	>UL	AC
	Ethylbenzene		

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Sample Analysis

Field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied for water matrices.

Results (in µg/L) for the field duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-15/ BD-120111	All compounds	U	U	AC

AC Acceptable
U Not-detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: EPA 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS) Accuracy (%R)		X		X	
Laboratory Control Sample Duplicate (LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision RPD		X		X	
Field/Laboratory Duplicate Sample RPD		X		X	
Surrogate Spike %R		X		X	
Dilution Factor		X		X	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted for sample dilutions		X		X	

%RSD Relative standard deviation
%R Percent recovery
RPD Relative percent difference
%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270C	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to 4±2 °C

All samples were extracted and analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution are acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration Verification (ICV)

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (15%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration Verification (CCV)

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the SVOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within the control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD exhibited acceptable recoveries and RPDs between the MS and MSD.

8. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit recoveries and relative percent differences (RPDs) between the LCS and LCSD results within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries and RPDs within the control limits.

9. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for water matrices and 100% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for the field duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compounds	Sample Result	Duplicate Result	RPD
MW-15/ BD-120111	All compounds	U	U	AC

AC Acceptable
U Not-detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270C	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding Times		X		X	
Reporting Limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks					X
Laboratory Control Sample (LCS) Accuracy (%R)		X		X	
Laboratory Control Sample Duplicate (LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD RPD		X		X	
Field/Laboratory Duplicate Sample RPD		X		X	
Surrogate Spike %R		X		X	
Dilution Factor		X		X	
Tier III Validation					
System Performance and Column Resolution		X		X	
Initial Calibration %RSDs		X		X	
Continuing Calibration RRFs		X		X	
Continuing Calibration %Ds		X		X	
Instrument Tune and Performance Check		X		X	
Ion Abundance Criteria for Each Instrument Used		X		X	
Internal Standards		X		X	
Compound Identification and Quantitation					
A. Reconstructed Ion Chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of Sample Compounds Within the Established RT Windows		X		X	
D. Quantitation transcriptions/calculations		X		X	
E. Reporting Limits Adjusted for Sample Dilutions		X		X	

%R Percent Recovery
RPD Relative Percent Difference
%RSD Relative Standard Deviation
%D Percent Difference

SAMPLE COMPLIANCE REPORT

Sample Delivery Group (SDG)	Sampling Date	Protocol	Sample ID	Matrix	Compliancy[1]					Noncompliance
					VOC	SVOC	PCB	MET	MISC	
480-13366	11/30/2011	SW846	MW-17	Water	Yes	Yes	--	--	--	
	11/30/2011	SW846	TRIP BLANK	Water	Yes	Yes	--	--	--	
	12/1/2011	SW846	MW-14	Water	Yes	Yes	--	--	--	
	12/1/2011	SW846	MW-15	Water	Yes	Yes	--	--	--	
	12/1/2011	SW846	MW-16	Water	Yes	Yes	--	--	--	
	12/1/2011	SW846	BD-120111	Water	Yes	Yes	--	--	--	
	12/1/2011	SW846	TRIP BLANK	Water	Yes	Yes	--	--	--	

1 Samples which are compliant with no added validation qualifiers are listed as "yes". Samples which are non-compliant or which have added qualifiers are listed as "no". A "no" designation does not necessarily indicate that the data have been rejected or are otherwise unusable

Validation Performed By: Todd Church

Signature: 

Date: January 10, 2011

Peer Review: Joseph C. Houser

Date: January 19, 2012

CHAIN OF CUSTODY /
CORRECTED SAMPLE ANALYSIS DATA SHEETS

Chain of Custody Record

Temperature on Receipt 1

Drinking Water? Yes ☐ No ☒

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TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
ARCADIS	ANDREW CORSON	11-30-11	207851
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of**
6723 TOWPATH RD	315 446 9120		
City	**State**	**Zip Code**	**Site Contact**	**Lab Contact**
SYRACUSE	NY	13214	LEVIA TORRELLI	CANDACE FOX
Project Name and Location (State)	**Carrier/Waybill Number**
NE ILION NY	
Contract/Purchase Order/Quote No.
B00 36713.0000.00002

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres	HCl	HNO3	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): PARTS 8270C	SIM 8260B	Special Instructions/ Conditions of Receipt
MW-17	11-30-11	1135		X			6			9			X	X	
TRIP BLANK	11-30-11	-		X						2				X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other STANDARD

QC Requirements (Specify)

	Relinquished By	Date	Time	Received By	Date	Time
1	[signature]	11-30-11	14:05	[signature]	11-30-11	14:05
2	[signature] R English	11-30-11	16:30	[signature] TAL	12.1.11	1430
3						

Comments

2.9

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
ARCADIS	ANDREW LEFEN	12-01-11	207852
Address: 6723 TOWPATH RD	Telephone Number (Area Code)/Fax Number: 315 446 9120	Lab Number	Page 1 of 1
City: SYRACUSE	State: NY	Zip Code: 13214	Site Contact: LEVIA TEDDELL	Lab Contact: CANDY FOX	Analysis (Attach list if more space is needed)
Project Name and Location (State): NG ILION NY	Carrier/Waybill Number	
Contract/Purchase Order/Quote No.: B003671 3.0000.00002		

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each unique entry may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed	Soil	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	8260 BTEX STARCS
MW-14	12-1-11	0930		X			2			3			X
MW-15		0940		X			2			3			X
MW-16		1045		X			2			3			X
BD-120111		-		X			2			3			X
TRIP BLANK				X						2			X

Possible Hazard Identification: Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ___ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other STANDARD

QC Requirements (Specify)

Relinquished By	Date	Time	Received By	Date	Time
1.	12-01-11	13:05	1.	12-01-11	13:05
2.	12-01-11	16:30	2.	12-2-11	1130
3.			3.		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

2.7

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-17**

Lab Sample ID: 480-13366-1

Client Matrix: Water

Date Sampled: 11/30/2011 1155

Date Received: 12/01/2011 1430

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9502.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1510			Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1510				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	104		66 - 137
Toluene-d8 (Surr)	98		71 - 126
4-Bromofluorobenzene (Surr)	87		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **TRIP BLANK**

Lab Sample ID: 480-13366-2TB
Client Matrix: Water

Date Sampled: 11/30/2011 0000
Date Received: 12/01/2011 1430

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43413	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9505.D
Dilution:	1.0			Initial Weight/Volume:	5 mL
Analysis Date:	12/08/2011 1617			Final Weight/Volume:	5 mL
Prep Date:	12/08/2011 1617				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-14**

Lab Sample ID: 480-13430-1

Client Matrix: Water

Date Sampled: 12/01/2011 0930

Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9522.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1306			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1306				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	96		66 - 137
Toluene-d8 (Surr)	99		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-15**

Lab Sample ID: 480-13430-2
Client Matrix: Water

Date Sampled: 12/01/2011 0940
Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9523.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1328			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1328				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	97		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	92		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-16**

Lab Sample ID: 480-13430-3
Client Matrix: Water

Date Sampled: 12/01/2011 1045
Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9524.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1350			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1350				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	98		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	91		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **BD-120111**

Lab Sample ID: 480-13430-4FD
Client Matrix: Water

Date Sampled: 12/01/2011 0000
Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9525.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1412			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1412				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	100		66 - 137
Toluene-d8 (Surr)	99		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **TRIP BLANK**

Lab Sample ID: 480-13430-5TB
Client Matrix: Water

Date Sampled: 12/01/2011 0000
Date Received: 12/02/2011 1130

8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	480-43660	Instrument ID:	HP5973S
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	S9526.D
Dilution:	1.0			Initial Weight/Volume:	1 uL
Analysis Date:	12/09/2011 1434			Final Weight/Volume:	1 uL
Prep Date:	12/09/2011 1434				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	ND		0.41	1.0
Toluene	ND		0.51	1.0
Ethylbenzene	ND		0.74	1.0
m-Xylene & p-Xylene	ND		0.66	2.0
o-Xylene	ND		0.76	1.0
Xylenes, Total	ND		0.66	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	99		66 - 137
Toluene-d8 (Surr)	100		71 - 126
4-Bromofluorobenzene (Surr)	90		73 - 120

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-17**

Lab Sample ID: 480-13366-1
Client Matrix: Water

Date Sampled: 11/30/2011 1155
Date Received: 12/01/2011 1430

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-42934	Instrument ID:	HP5973U
Prep Method:	3510C	Prep Batch:	480-42575	Lab File ID:	U6937.D
Dilution:	1.0			Initial Weight/Volume:	1040 mL
Analysis Date:	12/06/2011 2245			Final Weight/Volume:	1 mL
Prep Date:	12/02/2011 0638			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.8
Acenaphthylene	ND		0.37	4.8
Anthracene	ND		0.27	4.8
Benz(a)anthracene	ND		0.35	4.8
Benzo(a)pyrene	ND		0.45	4.8
Benzo(b)fluoranthene	ND		0.33	4.8
Benzo(g,h,i)perylene	ND		0.34	4.8
Benzo(k)fluoranthene	ND		0.70	4.8
Chrysene	ND		0.32	4.8
Dibenz(a,h)anthracene	ND		0.40	4.8
Fluoranthene	ND		0.38	4.8
Fluorene	ND		0.35	4.8
Indeno(1,2,3-c,d)pyrene	ND		0.45	4.8
Naphthalene	ND		0.73	4.8
Phenanthrene	ND		0.42	4.8
Pyrene	ND		0.33	4.8
2-Methylnaphthalene	ND		0.58	4.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	80		46 - 120
2-Fluorobiphenyl	87		48 - 120
p-Terphenyl-d14	49		24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-14**

Lab Sample ID: 480-13430-1

Client Matrix: Water

Date Sampled: 12/01/2011 0930

Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1564.D
Dilution:	1.0			Initial Weight/Volume:	750 mL
Analysis Date:	12/07/2011 2128			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.55	6.7
Acenaphthylene	ND		0.51	6.7
Anthracene	ND		0.37	6.7
Benz(a)anthracene	ND		0.48	6.7
Benzo(a)pyrene	ND		0.63	6.7
Benzo(b)fluoranthene	ND		0.45	6.7
Benzo(g,h,i)perylene	ND		0.47	6.7
Benzo(k)fluoranthene	ND		0.97	6.7
Chrysene	ND		0.44	6.7
Dibenz(a,h)anthracene	ND		0.56	6.7
Fluoranthene	ND		0.53	6.7
Fluorene	ND		0.48	6.7
Indeno(1,2,3-c,d)pyrene	ND		0.63	6.7
Naphthalene	ND		1.0	6.7
Phenanthrene	ND		0.59	6.7
Pyrene	ND		0.45	6.7
2-Methylnaphthalene	ND		0.80	6.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	49		46 - 120
2-Fluorobiphenyl	65		48 - 120
p-Terphenyl-d14	132		24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-15**

Lab Sample ID: 480-13430-2
Client Matrix: Water

Date Sampled: 12/01/2011 0940
Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1565.D
Dilution:	1.0			Initial Weight/Volume:	1055 mL
Analysis Date:	12/07/2011 2151			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.7
Acenaphthylene	ND		0.36	4.7
Anthracene	ND		0.27	4.7
Benz(a)anthracene	ND		0.34	4.7
Benzo(a)pyrene	ND		0.45	4.7
Benzo(b)fluoranthene	ND		0.32	4.7
Benzo(g,h,i)perylene	ND		0.33	4.7
Benzo(k)fluoranthene	ND		0.69	4.7
Chrysene	ND		0.31	4.7
Dibenz(a,h)anthracene	ND		0.40	4.7
Fluoranthene	ND		0.38	4.7
Fluorene	ND		0.34	4.7
Indeno(1,2,3-c,d)pyrene	ND		0.45	4.7
Naphthalene	ND		0.72	4.7
Phenanthrene	ND		0.42	4.7
Pyrene	ND		0.32	4.7
2-Methylnaphthalene	ND		0.57	4.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	64		46 - 120
2-Fluorobiphenyl	76		48 - 120
p-Terphenyl-d14	116		24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **MW-16**

Lab Sample ID: 480-13430-3
Client Matrix: Water

Date Sampled: 12/01/2011 1045
Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1566.D
Dilution:	1.0			Initial Weight/Volume:	1060 mL
Analysis Date:	12/07/2011 2214			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.7
Acenaphthylene	ND		0.36	4.7
Anthracene	ND		0.26	4.7
Benz(a)anthracene	ND		0.34	4.7
Benzo(a)pyrene	ND		0.44	4.7
Benzo(b)fluoranthene	ND		0.32	4.7
Benzo(g,h,i)perylene	ND		0.33	4.7
Benzo(k)fluoranthene	ND		0.69	4.7
Chrysene	ND		0.31	4.7
Dibenz(a,h)anthracene	ND		0.40	4.7
Fluoranthene	ND		0.38	4.7
Fluorene	ND		0.34	4.7
Indeno(1,2,3-c,d)pyrene	ND		0.44	4.7
Naphthalene	ND		0.72	4.7
Phenanthrene	ND		0.42	4.7
Pyrene	ND		0.32	4.7
2-Methylnaphthalene	ND		0.57	4.7

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	46		46 - 120
2-Fluorobiphenyl	63		48 - 120
p-Terphenyl-d14	91		24 - 136

Client: ARCADIS U.S. Inc

Job Number: 480-13366-1

Client Sample ID: **BD-120111**

Lab Sample ID: 480-13430-4FD
Client Matrix: Water

Date Sampled: 12/01/2011 0000
Date Received: 12/02/2011 1130

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	480-43264	Instrument ID:	HP5973X
Prep Method:	3510C	Prep Batch:	480-42840	Lab File ID:	X1567.D
Dilution:	1.0			Initial Weight/Volume:	1050 mL
Analysis Date:	12/07/2011 2237			Final Weight/Volume:	1 mL
Prep Date:	12/05/2011 0905			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acenaphthene	ND		0.39	4.8
Acenaphthylene	ND		0.36	4.8
Anthracene	ND		0.27	4.8
Benz(a)anthracene	ND		0.34	4.8
Benzo(a)pyrene	ND		0.45	4.8
Benzo(b)fluoranthene	ND		0.32	4.8
Benzo(g,h,i)perylene	ND		0.33	4.8
Benzo(k)fluoranthene	ND		0.70	4.8
Chrysene	ND		0.31	4.8
Dibenz(a,h)anthracene	ND		0.40	4.8
Fluoranthene	ND		0.38	4.8
Fluorene	ND		0.34	4.8
Indeno(1,2,3-c,d)pyrene	ND		0.45	4.8
Naphthalene	ND		0.72	4.8
Phenanthrene	ND		0.42	4.8
Pyrene	ND		0.32	4.8
2-Methylnaphthalene	ND		0.57	4.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Nitrobenzene-d5	51		46 - 120
2-Fluorobiphenyl	72		48 - 120
p-Terphenyl-d14	115		24 - 136

Attachment E

ARCADIS Health and Safety Plan

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Environmental Health and Safety Plan

Ilion Former MGP Site
Ilion, New York
Site No. 6-22-019

August 2011

ARCADIS

Environmental Health and Safety Plan

Ilion Former MGP Site
Ilion, New York
Site No. 6-22-019

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Our Ref.:
B0036713

Date:
August 2011

ARCADIS

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Emergency Action Plan

In the event of an injury, over-exposure, or spill, this Emergency Action Plan (EAP) will be implemented. All ARCADIS employees and ARCADIS subcontractors (if any) working on this project must be shown the location and proper use of all emergency equipment prior to beginning work on the project.

Emergency Contact Information and Procedures

Local Police	911 and 315.894.9911
Local Ambulance	911 and 315.894.6048
Local Fire Department	911 and 315.894.6048
Local Hospital – Little Falls Hospital	315.823.1000
Local Weather Data	Weather.com
Poison Control	800.332.3073
National Response Center (spills to water and all spills in reportable quantities)	800.424.8802
NYSDEC Spill Hotline	800.457.7362
ARCADIS Project Manager – Andrew Corbin	315.671.9275 (Office) 315.857.8697 (Mobile)
ARCADIS Assistant Project Manager – Mike Benoit	315.671.9298 (Office) 315.569.4400 (Mobile)
ARCADIS H&S Manager – Tony Tremblay	781.356.7300 ext. 269 (Office)
Client Contact – Steve Stucker	315.428.5652 (Office)
WorkCare	800.455.6155

Emergency Notification Procedure:

Step 1: Dial 911 (if necessary) and/or WorkCare at 800.455.6155
Step 2: Contact Project Manager (Andrew Corbin) or Assistant Project Manager (Mike Benoit)
Step 3: Contact H&S Manager (Tony Tremblay)
Step 4: Contact Client (Steve Stucker)

Directions to Hospital

Medical Facility: Little Falls Hospital
Address: 140 Burwell Street
Little Falls, New York 13365
Phone Number: 315.823.1000

Start: 1 East Street, Ilion, New York 13357

1.	Head **northeast** on **East Street** toward **E. North Street**	go 350 feet
2.	Take the 1st left onto **E. North Street** About 2 mins	go 0.5 mi
3.	Take the 2nd right onto **NY-51 N/Central Avenue** About 1 min	go 0.4 mi
4.	Keep right at the fork, follow signs for **NY-5 E/Herkimer** and merge onto **NY-5 E** About 13 mins	go 10 mi
5.	Turn left onto **E. Main Street/River Road** About 1 min	go 230 ft
6.	Take the 1st right onto **Hancock Street/Ward Street** Continue to follow Ward Street	go 0.1 mi
7.	Take the 2nd right onto **Burwell Street** Destination will be on the left	go 190 ft

Finish: 140 Burwell Street, Little Falls, New York 13365 — 11.1 mi total

Emergency Supplies and Equipment

Emergency Supplies and Equipment (check all that apply)	Location on Project Site
☒ First Aid Kit (ANSI/ISEA Z308.1)	Vehicle/Field Kit
☒ Fire Extinguisher	Vehicle
☒ Mobile Phone ☐ Satellite Phone	Vehicle/Field Kit
☒ Traffic Cones	Vehicle
☐ Walkie Talkies	
☒ Water or Other Fluid Replenishment	Vehicle/Field Kit
☐ Eye Wash/Quick Drench Station	
☒ Eye Wash Bottle	Vehicle/Field Kit
☒ Wash and Dry Towelettes	Vehicle/Field Kit
☒ Sunscreen (SPF 15 or higher)	Vehicle/Field Kit
☒ Insect Repellant	Vehicle/Field Kit
☐ Chemical Spill Kit	
☐ *Other (specify):*	

1. Introduction

This Health and Safety Plan (HASP) conforms to the requirements of the ARCADIS Health and Safety (H&S) HASP Standard (ARCHSFS010) and contains project-specific health and safety information for ARCADIS employees and subcontractors. All work on this project by ARCADIS employees and subcontractors will be carried out in compliance with ARCADIS' H&S Standards and the Occupational Safety and Health Administration's (OSHA's) Hazardous Waste Operations and Emergency Response (HAZWOPER) regulation (29 CFR 1910.120). All ARCADIS employees and subcontractors working on hazardous operations or in the area of hazardous operations shall read and be familiar with this HASP before doing any work, and shall sign the appropriate signature form (provided in Appendix A for ARCADIS employees and Appendix B for ARCADIS subcontractors) acknowledging that they have read and understand this HASP. Site visitors will sign in and out using the Visitor Acknowledgement and Acceptance of HASP Signature Form (Appendix C).

Changes in the scope of the project or introduction of new hazards to the project shall require revision of the HASP by the HASP writer and reviewer, and approval by the Project Manager. The HASP Addendum Page and Log Table are included as Appendix D.

2. Project Site History and Requirements

2.1 Site Description

Site Type: (Check as many as applicable)

	Active	X	Secure		Industrial		Landfill	X	Service station
X	Inactive	X	Unsecured	X	Commercial		Well field		Water work
			Uncontrolled		Residential		Railroad	X	Undeveloped

The Ilion (East Street) former manufactured gas plant (MGP) site is a 1.3-acre property owned by National Grid in a mixed commercial/residential area of the Village of Ilion, Herkimer County, New York (Figure 1). The site is generally bounded by East Clark Street and residential properties to the north, State Street (formerly Canal Street) to the south, East Street to the east, and a commercial property and several residences to the west (Figure 2). State Street overlies the location of the former Erie Canal. The site is surrounded by an eight-foot chain-link fence topped with barbed wire. Access gates are located on East Street and East Canal Street. A gas regulator station in a small building near the facility gate off East Street was recently taken out of service.

The off-site area (shown on Figure 3) comprises approximately four acres and begins to the east of the site at the intersection of East and State Streets. From that intersection, the off-site area continues approximately 2,200 feet north-northeast of the site along the alignment of a storm sewer and open drainage swale to the Mohawk River.

2.2 Site History

The National Grid property originally consisted of two separate parcels. The first parcel (approximately 1.0 acre in size) was purchased in 1874 by the Ilion Mohawk Gas Light Company at the corner of East Street and the north towpath for the Erie Canal. By 1881, the site contained an octagonal gas holder at the corner of East and East State Streets and a gashouse with a coal shed to the west of the gas holder. The second parcel (approximately 0.3 acre in size) was purchased in 1890 to allow for further expansion of the MGP. An electric light station was added to the north side of the gas works building around 1891. By 1897, an 80,000 cubic foot gas holder was constructed north of the gas plant, adjacent to East Street, and the octagonal gas holder located on the first parcel was taken out of service. The MGP ceased operations in 1912.

In 1917, a 200,000 cubic foot above-ground gas holder was constructed adjacent to the former gas plant to store manufactured gas from the Harbor Point MGP in Utica, New York. The Erie Canal was filled in 1921, and East Canal Street (now State Street) was realigned to the south. In 1940, an outdoor substation was constructed at the corner of East and East State Streets, covering the foundation of the former octagonal gas holder. By 1940, the 80,000 cubic foot gas holder had been removed. In the early 1950s, an auto repair shop, gasoline station, auto dealers, and a junkyard were located south and west of the site, and natural gas replaced manufactured gas in Ilion. In 1956, the 200,000 cubic foot above-ground gas holder and most of the remaining gas equipment were removed from the site. The substation was decommissioned and removed in 1997. The last of the buildings associated with former MGP operations was demolished in September 2000.

2.3 Primary Contaminants of Concern

The *Record of Decision* (ROD; NYSDEC 2011) identifies four main categories of contaminants of concern (COCs):

- Coal tar, a reddish-brown oily liquid by-product of the manufactured gas process;
- Volatile organic compounds (VOCs), specifically benzene, toluene, ethylbenzene, and xylenes (collectively referred to as “BTEX”);
- Semi-volatile organic compounds (SVOCs), specifically polycyclic aromatic hydrocarbons (PAHs); and
- Cyanides (soluble cyanide salts).

Exhibit A of the ROD (included herein as Appendix E) summarizes the nature and extent of contamination in environmental media at the site.

2.4 List of Project Tasks and Scope of Work

ARCADIS personnel or subcontractors may perform the following tasks during the project:

- Site and utility surveys;
- Drilling and soil sampling;

- Test pitting;
- Groundwater and non-aqueous phase liquid (NAPL) gauging; and
- Groundwater sampling.

Each of these tasks is described in greater detail below.

2.4.1 Task 1 – Site and Utility Surveys

Site survey activities will include the mapping and/or verification of existing site features (e.g., buildings, fence lines, roadways/sidewalks, monitoring wells, etc.) and topography. The utility survey will be performed by a private utility locator service (ARCADIS subcontractor) and other parties (as appropriate) to determine the presence and location of subsurface utilities within and around the on-site and off-site areas. Current known utilities at the site include overhead electrical transmission lines, subsurface natural gas distribution lines, various municipal utilities (e.g., water, sanitary sewer, etc.), and telecommunication lines. All identified subsurface utilities will be marked at the ground surface and surveyed for location.

2.4.2 Task 2 – Drilling and Soil Sampling

Soil borings will be drilled by an ARCADIS subcontractor using hollow-stem auger (HSA) or rotosonic methods. Soil samples will be collected continuously at each drilling location. At certain locations, a hand auger may be used by the ARCADIS field geologist to collect surface soil samples. The ARCADIS field geologist will visually characterize samples for soil type and the presence of NAPL, and will screen samples for the presence of VOC vapors using a photoionization detector (PID). Representative soil samples from certain drilling locations and depth increments will be submitted for laboratory analysis.

Soil cuttings will be transferred into 55-gallon drums (or other appropriate containers) and stored on a temporary basis within the limits of the National Grid property. Soil cuttings (and other investigation-derived waste [IDW]) will be characterized and transported off-site for disposal in accordance with applicable rules and regulations.

2.4.3 Task 3 – Test Pitting

Test pitting may be performed to identify and/or delineate shallow obstructions, foundations, and other subsurface structures. Test pits will be excavated to depths ranging from approximately 4 to 6 feet below ground surface (as conditions allow) by an ARCADIS subcontractor using a rubber-tired backhoe or small excavator. Excavated materials will be visually examined and logged by the ARCADIS field geologist and temporarily staged on polyethylene sheeting adjacent to the test pits. The excavations will be sketched and photographed, as appropriate, to record significant subsurface features. Once complete, excavated materials will be placed back into the test pits at approximately the same depth and location from which they were removed.

In the event that free-phase NAPL and/or NAPL-saturated materials are encountered, those materials will be transferred into 55-gallon drums (or other appropriate containers) and stored on a temporary basis within the limits of the National Grid property. NAPL and/or NAPL-saturated materials will be characterized and transported off-site for disposal in accordance with applicable rules and regulations.

2.4.4 Task 4 – Groundwater and NAPL Gauging

Gauging activities will be performed by ARCADIS field staff using an oil-water interface probe or weighted, calibrated tape. At each well, groundwater level, total well depth, and NAPL thickness (if present) will be measured and recorded.

2.4.5 Task 5 – Groundwater Sampling

Groundwater samples will be collected by ARCADIS field staff using low-flow sampling procedures (e.g., a submersible pump). Once collected, groundwater samples will be submitted for laboratory analysis. Excess groundwater generated during the sampling activities will be transferred into 55-gallon drums (or other appropriate containers) and stored on a temporary basis within the limits of the National Grid property. Groundwater will be characterized and transported off-site for disposal in accordance with applicable rules and regulations.

3. ARCADIS Organization and Responsibilities

3.1 All Personnel

Each person is responsible for completing tasks safely, and reporting any unsafe acts or conditions to their supervisor. No person may work in a manner that conflicts with these procedures. Prior to initiating site activities, all ARCADIS and subcontractor personnel will receive training in accordance with applicable regulations, and be familiar with the requirements and standards referenced in this HASP. In addition, all personnel will attend daily safety meetings (tailgate meetings) to discuss site-specific hazards prior to beginning each day's work. Every ARCADIS employee, subcontractor, and client representative at the site has the responsibility to stop the work of a coworker or subcontractor if the working conditions or behaviors are considered unsafe.

3.2 Project Manager

The Project Manager is responsible for verifying that project activities are completed in accordance with the requirements of this HASP. The Project Manager is responsible for confirming that 1) the project has the equipment, materials, and qualified personnel to fully implement the safety requirements of this HASP, and/or 2) subcontractors assigned to this project meet the requirements established by ARCADIS. It is also the responsibility of the Project Manager to:

- Review all applicable H&S Standards and ensure that project activities conform to all requirements.
- Obtain client-specific H&S information and communicate with the client on H&S issues.
- Communicate with the Site Safety Officer (SSO) on H&S issues.
- Allocate resources for correction of identified unsafe work conditions.
- Ensure ARCADIS site workers have all training necessary for the project.
- Report all injuries, illnesses, and near-misses to the client representative, lead incident investigations, and ensure that any recommendations made are implemented.

3.3 Site Safety Officer

The SSO has overall responsibility for the technical H&S aspects of the project. Inquiries regarding ARCADIS H&S Standards, project procedures, and other technical or regulatory issues should be addressed to this individual. It is also the responsibility of the SSO to:

- Review and work in accordance with the components of this HASP.
- Ensure that this HASP is available to and reviewed by all site personnel including ARCADIS subcontractors.
- Ensure that necessary site-specific training is performed (both initial and "tailgate" safety briefings).
- Ensure that site visitors have been informed of the hazards related to ARCADIS work.
- Ensure that work is performed in a safe manner.
- Coordinate activities during emergency situations.
- Ensure that all necessary permits and safety information provided by the client is disseminated to other site personnel and is maintained in an organized manner.
- Communicate with the Project Manager on H&S issues.
- Report all injuries, illnesses, and near-misses to the Project Manager.
- Ensure that the necessary safety equipment is maintained and used at the site.
- Contact an H&S professional for assistance in establishing respiratory cartridge change-out schedules (where required).

4. Project Hazards and Control Measures

4.1 Hazard Analysis

Rank the hazards in the table below using HIGH (H), MEDIUM (M) or LOW (L) based on current site knowledge. For hazards that are not applicable, leave blank. Use the results of this analysis to verify that controls specified in Job Loss Analyses (JLAs) or other supporting documents are adequate to mitigate task hazards. When in the field, use the Tailgate Health & Safety Meeting Form (Appendix F) for task-specific evaluation of task hazards.

Table 1. Hazard Ranking Chart

Severity	Consequence		Probability				
	Property Damage	Injury	Frequent	Likely	Occasional	Seldom	Unlikely
	> $100,000	Fatality	H	H	H	H	M
	> $10,000	Injury Requiring Hospitalization	H	H	H	M	L
	> $1000	Injury Requiring Medical Treatment Beyond First Aid	H	M	M	L	L
	< $1000	Injury Requiring First Aid	M	L	L	L	L

☒ Hazards are ranked using the ARCADIS Hazard Assessment and Risk Control (HARC) Process (ARCADIS H&S Standard ARCHSMS002)

Biological		***Mechanical***		***Chemical/Radiation***	
L	Biting/stinging insects	L	Cuts on equipment/tools		Not applicable
L	Biting animals	L	Pinch points on equipment		General
L	Poisonous plants	L	Burns from equipment		Dusts, toxic
	Phys. damaging plants	L	Struck by equipment	L	Dusts, nuisance
				L	Chemicals, ARCADIS use
Driving		***Motion***			Chemicals, corrosive
	Night driving	L	Lifting/awkward body positions		Chemicals, explosive
L	Off-road driving	L	Struck by vehicle/traffic		Chemicals, flammable
	Urban driving				Chemicals, oxidizing
	All terrain vehicle	***Personal Safety***			Chemicals, toxic
	Boat		Working late/night		Chemicals, reactive
			Working alone		Radiation, ionizing
			High crime area		Radiation, non-ionizing

Electrical		***Pressure***		***Compound Specific***	
L	Wet environments	L	Utilities (gas, water, etc)		Asbestos
	Electrical panels	L	Compressed gas cylinders	L	Benzene
	Electric utilities		Compressed air/aerosols		Cadmium
L	Electric power tools		Hydraulic systems		Hydrogen sulfide
					Lead
Environment		***Sound***			Silica
L	Heat	L	Equipment noise		
L	Cold	L	Tool noise	***Gravity***	
	Lightning		Traffic noise (vehicle/train/etc)	L	Slip, trip, fall
L	Inclement weather				Fall from height
	High wind				Ladders or scaffolds
					Struck by falling object

4.2 Job Loss Analyses, H&S Standards, and PPE

JLAs have been completed for the safety-critical tasks to be performed under this HASP (Appendix G). The JLAs outline the control methods to protect employees, subcontractors, and property from the task-specific hazards identified through the ARCADIS HARC process. The ARCADIS Field H&S Handbook (discussed below in Section 4.3) provides additional information regarding hazard controls and H&S best practices.

The JLAs also list the required and/or recommended personal protective equipment (PPE) for each safety-critical task. A detailed checklist of PPE for the project is provided in Appendix H.

ARCADIS H&S Standards applicable to this project are listed below and are also provided in Appendix G. These standards should be reviewed by the Project Manager and site personnel. The Client H&S Resource should be contacted with any questions concerning the standards.

- ARCDOT301 – Public Roadway Work Zone Safety
- ARCDOT302 – Private Roadway Work Zone Safety
- ARCHSCS005 – Excavation and Trenching
- ARCHSFS019 – Utility Clearance

- ARCHSGE001 – Tailgate Health and Safety Meetings
- ARCHSGE004 – First Aid/CPR
- ARCHSGE007 – Hazard Communication
- ARCHSGE009 – Stop Work Authority
- ARCHSGE015 – Personal Protective Equipment
- ARCHSGE017 – Respiratory Protection
- ARCHSGE024 – Motor Vehicle Safety
- ARCHSIH003 – Benzene
- ARCHSIS008 – Hearing Conservation
- ARCHSMS010 – Incident Reporting and Investigation

4.3 Field H&S Handbook

The Field H&S Handbook is an ARCADIS document containing information about topic-specific health and safety requirements for the field. This handbook contains relevant general topics and is used as part of the overall HASP process. To aid in the consistency of the HASP process, the handbook will be used as an informational source in conjunction with this HASP. The following handbook sections are required reading for this project:

- Sections II-A through II-P. H&S Administration
- Section III-A. Daily Safety Meetings/Tailgates
- Section III-B. DOT – Hazardous Materials Transportation/Dangerous Goods
- Section III-C. First Aid/Cardiopulmonary Resuscitation
- Section III-D. Blood-borne Pathogens
- Section III-E. General H&S Rules and Safe Work Permits

- Section III-F. General Housekeeping, Personal Hygiene and Field Sanitation
- Section III-G. Site Security, Work Zones and Decontamination for HAZWOPER Sites
- Section III-H. Personal Safety and Other Unique Site Conditions
- Section III-I. Severe Weather
- Section III-K. Hazard Communication
- Section III-L. Noise
- Section III-M. Heat and Cold Stress
- Section III-N. Biological Hazards
- Section III-P. Medical Surveillance
- Section III-R. Personal Protective Equipment
- Section III-S. Travel Safety – Domestic and International
- Section III-T. Vehicle Safety Inspection
- Section III-U. Driving
- Section III-DD. Vegetation Management
- Section III-FF. Site Storage of Hazardous Chemicals, Gases and Solvents
- Section III-GG. HAZWOPER and HAZMAT Response
- Section III-II. Drums and Other Material Handling
- Section III-KK. Signs, Signals and Barricades
- Section III-LL. Traffic Control
- Section III-MM. Utility Location

- Section IV-D. Excavation/Trenching
- Section IV-E. Heavy Equipment
- Section IV-F. Hoisting and Rigging, Cranes and Derricks
- Section V-F. Roadway
- Section V-I. Industrial Hygiene and Monitoring Equipment

5. Hazard Communication

5.1 Master Chemical List

All project-required chemicals must be handled in accordance with the ARCADIS Hazard Communication (HazCom) Standard (ARCHSGE007) and the requirements outlined in the Field H&S Handbook. Table 2 lists chemicals that may be brought, used, and/or stored on the site by ARCADIS personnel or subcontractors. Material Safety Data Sheets (MSDSs) for these chemicals and the site COCs are included in Appendix I.

Table 2. Master Chemical List

Chemical Name	Purpose	Estimated Quantity
Alconox	Cleaning Fluid for Equipment Decon	≤ 5 lbs
Gasoline	Fuel Source for Generator	≤ 5 gal
Hexane	Potential Cleaning Fluid for Sampling Equipment	≤ 1 gal
Hydrochloric Acid (HCl)	Sample Preservative	≤ 50 mL
Isobutylene/Air	Calibration Gas for PID	1 cyl
Methanol	Potential Cleaning Fluid for Sampling Equipment	≤ 1 gal
Nitric Acid (HNO_3)	Sample Preservative	≤ 50 mL
Propane	Fuel Source for Heating Water for Equipment Decon	1 cyl
Survey Marking Paint	Marking Out Identified Subsurface Utilities and Soil Boring Locations	≤ 6 cans

5.2 Chemical Hazards

Table 3 summarizes the chemical hazard information for the site COCs. Work zone air monitoring will be conducted as outlined in Section 7 to collect exposure data for certain of these site COCs.

Table 3. Chemical Hazard Information for Site COCs

Chemical Name	IP	Odor Threshold	Routes of Entry/ Exposure Symptoms	8-hr TWA[1]	NIOSH IDLH	STEL[1]
Coal Tar	NA	NA	Inhalation, skin absorption, and contact with skin/eyes. Irritation to the eyes, skin, nose, respiratory system.	NA	NA	NA
Benzene	9.24 eV	1.5 ppm	Inhalation, skin absorption, ingestion, and contact with skin/eyes. Irritation to the eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; potential occupational carcinogen.	0.5 ppm	500 ppm	2.5 ppm
Ethylbenzene	8.76 eV	2.3 ppm	Inhalation, ingestion, and contact with skin/eyes. Irritation to the eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma.	100 ppm	800 ppm	125 ppm
Toluene	8.82 eV	2.9 ppm	Irritation to the eyes and nose; lassitude (weakness, exhaustion) confusion, euphoria, dizziness, headache, dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage.	20 ppm	500 ppm	300 ppm
Xylenes	8.44 eV	1 ppm	Inhalation, absorption, ingestion, and contact with skin/eyes. Irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait, corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis.	100 ppm	900 ppm	150 ppm
Naphthalene	8.12 eV	0.84 ppm	Inhalation, ingestion, absorption, and contact with skin/eyes. Irritation to the eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritated bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage.	10 ppm	250 ppm	15 ppm

Chemical Name	IP	Odor Threshold	Routes of Entry/ Exposure Symptoms	8-hr TWA[1]	NIOSH IDLH	STEL[1]
PAHs	NA	NA	Inhalation, ingestion, absorption, and contact with skin/eyes. Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.	0.2 mg/m^3	NA	NA
Cyanide	NA	NA	Inhalation, ingestion, and contact with skin/eyes. Asphyxia and death can occur, preceded by seizures, coma with abolished deep reflexes and dilated pupils, weakness; paralysis; dizziness; numbness; anxiety; chest tightness; irregular heartbeat; shortness of breath; confusion; headache; sore throat; nausea, vomiting; eye irritation; rash, chemical burns on skin; enlargement of thyroid gland.	5 mg/m^3	25 mg/m^3	NA

[1] The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) is listed unless the OSHA Permissible Exposure Limit (PEL) is lower.

6. Tailgate Meetings

Tailgate safety briefings must be conducted at least once daily and should be conducted twice daily (at the start of the job and after mid-day meal break), or as tasks/hazards change. Each tailgate safety briefing must be documented on the Tailgate Health & Safety Meeting Form (Appendix F) and/or a task-specific/dedicated field book. Completed forms will be maintained with the project files. The tailgate safety briefing will serve as a final review for hazard identification and controls to be utilized. The project JLAs (Appendix G) and ARCADIS Field H&S Handbook should be reviewed as part of the briefing to ensure that hazard controls are adequate for planned work activities.

7. Personal Exposure Monitoring and Respiratory Protection

Personal and area exposure monitoring will be documented on the Real Time Exposure Monitoring Data Collection Form (Appendix J) or a task-specific/dedicated field book. All monitoring equipment will be maintained and calibrated in accordance with manufacturer's recommendations. All pertinent monitoring data will be logged on the form or in the field book and maintained on-site, or at the primary ARCADIS office, for the duration of project activities. Calibration of all monitoring equipment will be conducted at the beginning of each day's use, and/or as conditions change and logged on the same form or field book.

Table 4 lists exposure monitoring requirements and associated action levels for site exposure hazards (e.g., chemical, noise, radiation, etc).

Table 4. Exposure Monitoring Requirements

Task 1 – Is exposure monitoring required for the completion of this task? ☐ YES ☒ NO If yes, complete the following:				
Exposure Hazard	**Monitoring Equipment**	**Monitoring Frequency**	**Action Level**	**Required Action**
NA	NA	NA	NA	NA
Tasks 2, 3, 4, and 5 – Is exposure monitoring required for the completion of these tasks? ☒ YES ☐ NO If yes, complete the following:				
Exposure Hazard	**Monitoring Equipment**	**Monitoring Frequency**	**Action Level**	**Required Action**
Total Hydrocarbons	PID (10.6 eV lamp or greater)	Continuous in breathing zone/work zone perimeter	≤ 0.5 ppm > 0.5 ppm > 0.5 ppm, ≤ 20 ppm > 20 ppm ≥ 200 ppm	Normal operations Begin monitoring for benzene with colorimetric tubes Normal operations Upgrade to level C PPE Stop work and investigate cause of reading; contact SSO/PM

Exposure Hazard	Monitoring Equipment	Monitoring Frequency	Action Level	Required Action
Benzene	Colorimetric Tube	As dictated by total hydrocarbons action level above	≤ 0.5 ppm > 0.5 ppm, ≤ 1.0 ppm > 5.0 ppm	Normal operations Upgrade to level C PPE Stop work and investigate cause of reading; contact SSO/PM
Particulates (Tasks 2 and 3 only)	MIE PDR 1000 Data RAM	Continuous in breathing zone/work zone perimeter	0.5 mg/m^3 (sustained for 5 minutes)	Institute wetting procedures. If wetting techniques fail to keep below action level, stop work and contact SSO/PM. If exceedances continue, reassess hazards/implement engineering controls.
Oxygen	Multi-Gas Meter	Continuous in breathing zone; Prior to and during excavation entry	$\leq$ 19.5% > 19.5% < 23.5% $\geq$ 23.5%	Stop work, evacuate confined spaces/work area, investigate cause of reading, and ventilate area Normal operations Stop work, evacuate confined spaces/work area, investigate cause of reading, and ventilate area
Carbon Monoxide	Multi-Gas Meter	Continuous in breathing zone; Prior to and during excavation entry	0 ppm to $\leq$ 10 ppm > 10 ppm	Normal operations Stop work, evacuate confined spaces/work area, investigate cause of reading, and ventilate area
Hydrogen Sulfide	Multi-Gas Meter	Continuous in breathing zone; Prior to and during excavation entry	0 ppm to $\leq$ 5 ppm > 5 ppm	Normal operations Stop work, evacuate confined spaces/work area, investigate cause of reading, and ventilate area

Exposure Hazard	Monitoring Equipment	Monitoring Frequency	Action Level	Required Action
Flammable Vapors (LEL)	Multi-Gas Meter	Continuous in breathing zone; Prior to and during excavation entry	< 10% LEL ≥ 10% LEL	Normal operations Stop work, ventilate area, investigate source of vapors

With the exception of protection against particulates*, if the action plan outlined above calls for an upgrade to an air-purifying respirator (for protection against organic vapors and other gaseous chemicals), the following will apply:

- The respirator cartridge will be equipped with an end-of-service-life indicator (ESLI) certified by the National Institute for Occupational Safety and Health (NIOSH) for the contaminant; or

- If there is no ESLI appropriate for a contaminant, the project will implement a change schedule for cartridges to ensure that they are changed before the end of their service life.

In general, air-purifying respirator cartridges must be replaced at the expiration of its service life or at the end of each shift, whichever comes first. If an exposure to any one of the organic vapors and other gaseous chemicals is in excess of their respective PEL and the cartridge is not equipped with an ESLI, then a Cartridge Change Schedule must be developed. The project's SSO must contact the Client H&S Resource to develop the schedule.

**Note – A Cartridge Change Schedule is not necessary for cartridges used in the protection against particulates provided that the cartridges are changed out when there is a perceived resistance in breathing experienced by the user.*

8. Medical Surveillance

Medical surveillance requirements for ARCADIS personnel and subcontractors are provided in the ARCADIS Medical Monitoring Program Standard (ARCHSGE010). All medical surveillance requirements specified in the H&S Standard must be completed and site personnel medically cleared before being permitted on the project site.

9. General Site Access and Control

The SSO will coordinate access for ARCADIS personnel at the work site. As the work dictates, the SSO will establish a work area perimeter. The size of the perimeter will be based on the daily task activities and will be discussed with all project personnel during the tailgate meeting and then documented on the Tailgate Health & Safety Meeting Form (Appendix F) or field book. Control zones for Level C or above (if necessary) will be demarcated by either visual or physical devices and will be monitored for effectiveness by the SSO.

Only authorized personnel will be allowed beyond the perimeter. Other site workers and visitors to the site should be kept out of the work site. If visitors need access to the site, the SSO will escort the visitor at all times. All visitors will log in and out with the SSO using the Visitor Acknowledgement and Acceptance of HASP Signature Form (Appendix C).

10. Sanitation at Temporary Workplaces

10.1 Potable Water

An adequate supply of potable water must be provided on the site. Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from containers. Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose. Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

10.2 Toilet Facilities

Under temporary field conditions, the SSO will make provisions so that no less than one toilet facility is available. Use of a nearby toilet facility is an acceptable arrangement for mobile crews having transportation readily available.

11. Decontamination Control Zones and Procedures

The decontamination procedures outlined in Section III-G of the ARCADIS Field H&S Handbook are provided for typical Level D and Level C ensembles.

The zones for Level C and above (if necessary) will be designated by traffic cones, barricades, signs, caution tape, or other means effective in identifying the different areas. The SSO will establish control boundaries for the exclusion zone, contamination reduction zone, and support zone. The zones will be identified by the SSO during tailgate meetings and documented in the meeting form or field book. Entrance and exit to the exclusion zone will only be through controlled access points established for each work area.

12. Ground or Air Shipments of Hazardous Materials (HazMat)

All samples, electronic equipment with batteries, powders, gases, liquids, magnetized materials or radioactive materials being shipped by air or ground transport will be evaluated using the ARCADIS Shipping Determination process to determine if the material or equipment being shipped is hazardous for transport. The results of the evaluation will be documented on the Shipping Determination Form (Appendix K). All materials identified as HazMat will be shipped according to applicable DOT and IATA regulations and requirements as prescribed by the ARCADIS DOT Program.

All employees collecting samples, preparing HazMat packages, or offering HazMat to a 3rd party carrier such as FedEx will have current HazMat training as prescribed by the ARCADIS DOT Program.

13. Loss Prevention System™ and Loss Prevention Observations

As part of any project, no matter how simple or complex, Loss Prevention Observations (LPOs) should be conducted when practical and when able to integrate into normal business activities. LPOs should be scheduled based on the risk of the tasks being performed, and should be conducted for different tasks and at different times. Completion of LPOs should be documented on the Tailgate Health & Safety Meeting Form (Appendix F). The following table outlines the LPO plan for the project:

Identified Task for LPO	Schedule Date	Observer Name	Observee Name	Feedback Supervisor Name

14. Subcontractors

A copy of this HASP is to be provided to all subcontractors prior to the start of work so that the subcontractor is informed of the hazards at the site. While the ARCADIS HASP will be the minimum H&S requirements for the work completed by ARCADIS and its subcontractors, each subcontractor, in coordination with ARCADIS H&S personnel, is expected to perform its operations in accordance with its own HASP, policies, and procedures unique to the subcontractor's work to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to ARCADIS for review prior to the start of site activities.

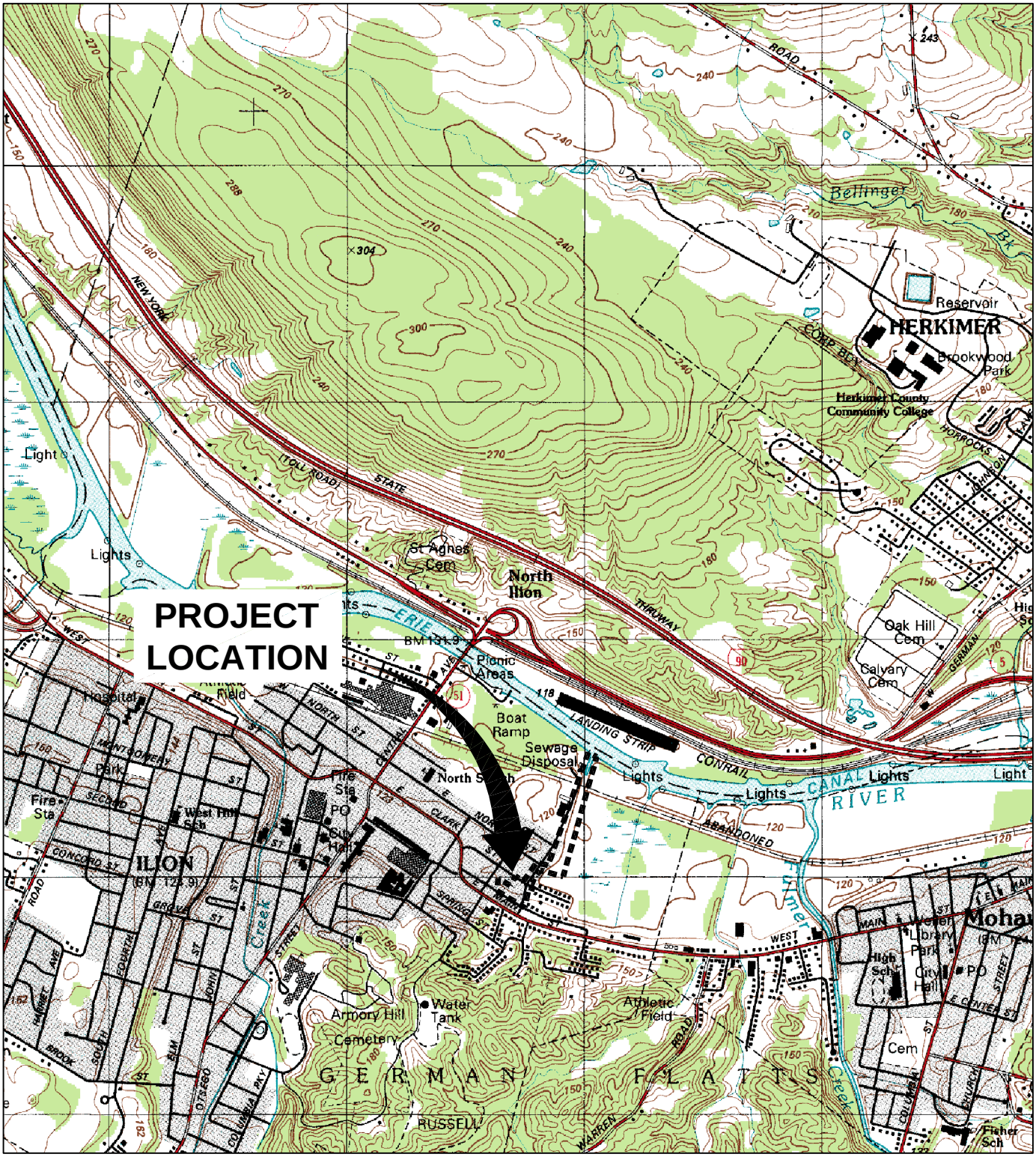
In the event that the subcontractor's procedures/requirements conflict with requirements specified in this HASP, the more stringent guidance will be adopted after discussion and agreement between the subcontractor and ARCADIS project H&S personnel. Hazards not listed in this HASP, but known to the subcontractor or known to be associated with the subcontractor's services, must be identified and addressed to the ARCADIS Project Manager and SSO prior to beginning work activities.

If the subcontractor prefers to adopt this HASP, the **Subcontractor Memorandum of Acknowledgement (Appendix L) must be signed and dated by the subcontractor's management and placed in the project file.** Once the signed memo is received by the Project Manager, an electronic version of this HASP can be submitted to the subcontractor to use as their own. Subcontractors working at the site will need to have this HASP with them, and will also need to sign the Subcontractor HASP receipt signature page of the ARCADIS HASP (Appendix B). Subcontractors are responsible for the H&S of their employees at all times, and have the authority to halt work if unsafe conditions arise.

The Project Manager and SSO (or authorized representative) has the authority to halt the subcontractor's operations and to remove the subcontractor or subcontractor's employee(s) from the site for failure to comply with established H&S procedures, or for operating in an unsafe manner.

ARCADIS

Figures



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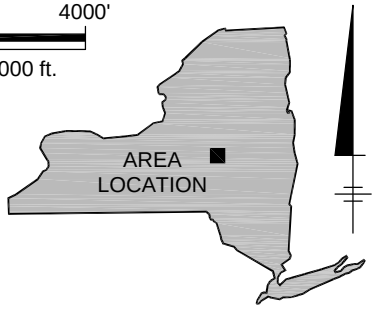

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK

SITE LOCATION MAP

ARCADIS

FIGURE
1

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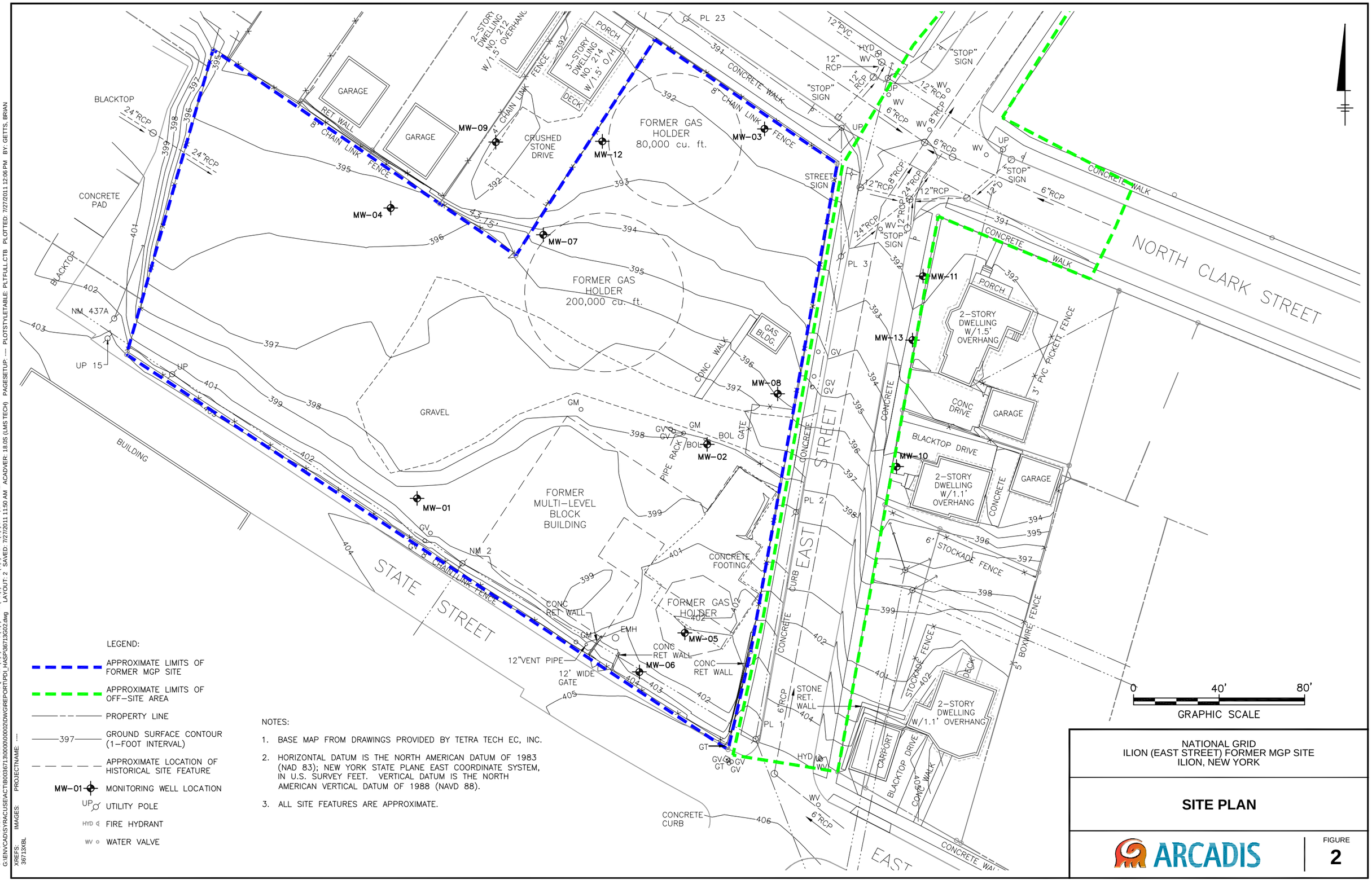

LEGEND:

- APPROXIMATE LIMITS OF FORMER MGP SITE
- APPROXIMATE LIMITS OF OFF-SITE AREA
- PROPERTY LINE
- 397 GROUND SURFACE CONTOUR (1-FOOT INTERVAL)
- APPROXIMATE LOCATION OF HISTORICAL SITE FEATURE
- MW-01 MONITORING WELL LOCATION
- UP UTILITY POLE
- HYD FIRE HYDRANT
- WV WATER VALVE

NOTES:

1. BASE MAP FROM DRAWINGS PROVIDED BY TETRA TECH EC, INC.
2. HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD 83); NEW YORK STATE PLANE EAST COORDINATE SYSTEM, IN U.S. SURVEY FEET. VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. ALL SITE FEATURES ARE APPROXIMATE.

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK

SITE PLAN

ARCADIS

FIGURE 2

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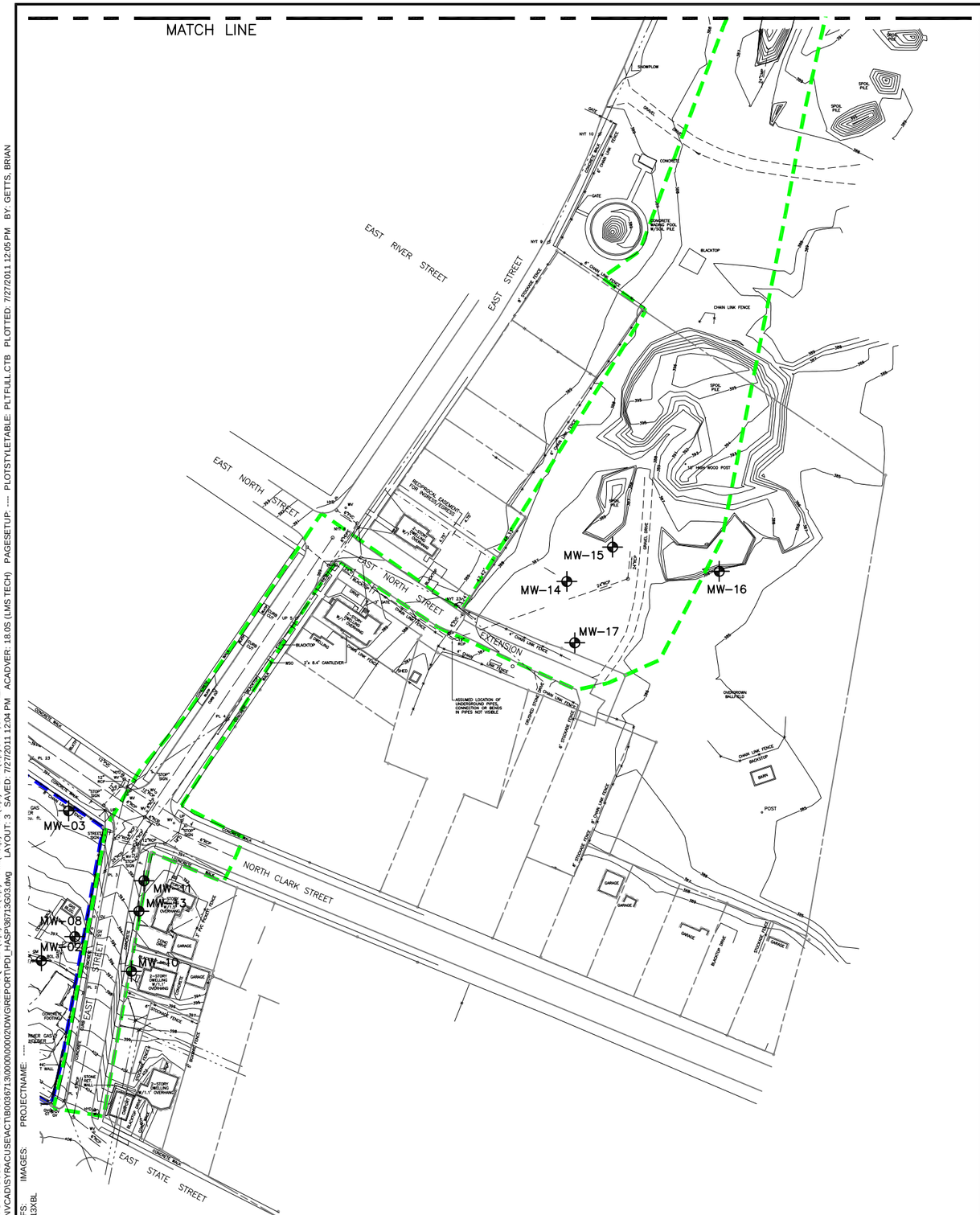

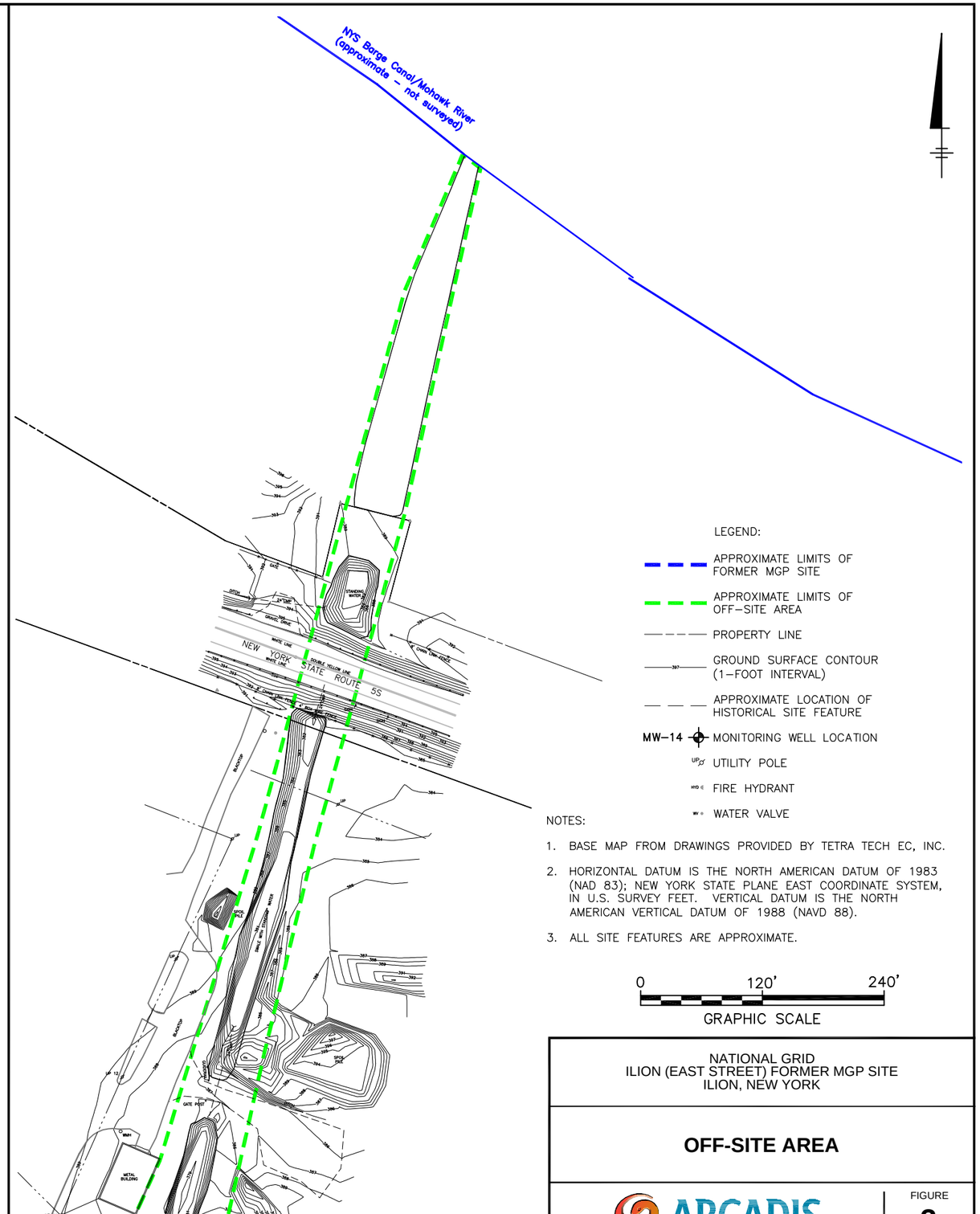

LEGEND:

- APPROXIMATE LIMITS OF FORMER MGP SITE
- APPROXIMATE LIMITS OF OFF-SITE AREA
- PROPERTY LINE
- 387 GROUND SURFACE CONTOUR (1-FOOT INTERVAL)
- APPROXIMATE LOCATION OF HISTORICAL SITE FEATURE
- MW-14 MONITORING WELL LOCATION
- UP UTILITY POLE
- HYD FIRE HYDRANT
- WV WATER VALVE

NOTES:

1. BASE MAP FROM DRAWINGS PROVIDED BY TETRA TECH EC, INC.
2. HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD 83); NEW YORK STATE PLANE EAST COORDINATE SYSTEM, IN U.S. SURVEY FEET. VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. ALL SITE FEATURES ARE APPROXIMATE.

0 120' 240'

GRAPHIC SCALE

NATIONAL GRID
ILION (EAST STREET) FORMER MGP SITE
ILION, NEW YORK

OFF-SITE AREA

ARCADIS

FIGURE 3

CITY: SYRACUSE-NY DIV/GROUP: 14/ENV DB: B.DECLERCQ LD:(Opt) PIC:(Opt) PM:(Reid) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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XREFS: 36713XBL IMAGES: PROJECTNAME: ----

ARCADIS

Appendices

Appendix A

Employee Signature Form

ARCADIS

Employee Signature Form

I certify that I have read, understand, and will abide by the safety requirements outlined in this HASP.

Printed Name	Signature	Date

Appendix B

Subcontractor Acknowledgement:
Receipt of HASP Signature Form

ARCADIS

Subcontractor Acknowledgement: Receipt of HASP Signature Form

ARCADIS claims no responsibility for the use of this HASP by others although subcontractors working at the site may use this HASP as a guidance document. In any event, ARCADIS does not guarantee the health and/or safety of any person entering this site. Strict adherence to the health and safety guidelines provided herein will reduce, but not eliminate, the potential for injury at this site. To this end, health and safety becomes the inherent responsibility of personnel working at the site.

Printed Name	Company	Signature	Date

Appendix C

Visitor Acknowledgement and Acceptance of HASP Signature Form

ARCADIS

Visitor Acknowledgement and Acceptance of HASP Signature Form

By signing below, I waive, release and discharge the owner of the site and ARCADIS and their employees from any future claims for bodily and personal injuries which may result from my presence at, entering, or leaving the site and in any way arising from or related to any and all known and unknown conditions on the site.

Name	Company or Affiliation	Reason for Visit	Date	Time On-Site	Time Off-Site

Appendix D

HASP Addendum Page and Log Table

ARCADIS

HASP Addendum Page

This form should be completed for new tasks associated with the project. The project manager and/or task manager should revise the Project Hazard Analysis Worksheet with the new task information and attach to this addendum sheet. JLAs should be developed for any new tasks and attached as well.

Review the addendum with all site staff, including subcontractors, during the daily tailgate H&S briefing, and complete the Tailgate Health & Safety Meeting Form as required. Attach a copy of the addendum to all copies of the HASP, including the site copy, and log the addendum in the table on the next page.

Addendum Number: _____ Project Number: _____

Date of Changed Conditions: _____ Date of Addendum: _____

Description of Change that Results in Modifications to HASP:

Signed: _____ Signed: _____

Project Manager Site Safety Officer

Signed: _____ Signed: _____

HASP Writer HASP Reviewer

ARCADIS

Addendum Log Table

Addendums are to be added to every copy of the HASP, and logged on the following table to verify that all copies of the HASP are current.

Addendum Number	Date of Addendum	Reason for Addendum	Person Completing Addendum
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

ARCADIS

Appendix E

Nature and Extent of Contamination in Environmental Media (Exhibit A of the ROD)

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation (RI). As described in the RI report, waste/ source materials were identified at the site and are impacting groundwater, soil, soil in off-site swale, and soil vapor.

This section describes the findings for all environmental media that were evaluated. As described in Section 5.1.2, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into three categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 5.1.1 are also presented.

Waste/Source Areas

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium.

Manufactured gas was cooled and purified prior to distribution. Two principal waste materials including coal tar and purifier waste were produced in this process. Coal tar is a reddish brown oily liquid by-product which formed as a condensate as the gas cooled. Purifier waste is a mixture of iron filings and wood chips which was used to remove cyanide and sulfur gases from the gas prior to distribution.

Coal tar does not readily dissolve in water. Materials such as this are commonly referred to as non-aqueous phase liquids, or NAPLs. The terms NAPL and coal tar are used interchangeably in this document. Although most coal tars are slightly denser than water, the difference in density is slight. Consequently, they can either float or sink when in contact with water.

Unlike NAPL, purifier waste is a solid waste of oatmeal consistency. Purifier waste has the potential to leach cyanide and create acidic conditions in nearby surface water and/or groundwater. It contains high concentrations of sulfur and cyanide and has a characteristic blue color from complexed ferrocyanides.

Specific volatile organic compounds (VOCs) of concern are benzene, toluene, ethylbenzene and xylenes. These are referred to collectively as BTEX in this document. Specific semivolatile organic compounds of concern are the polycyclic aromatic hydrocarbons (PAHs):

acenaphthene
acenaphthylene
anthracene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(g,h,i)perylene
benzo(k)fluoranthene
pyrene
chrysene
fluoranthene
fluorene
indeno(1,2,3-cd)pyrene
2-methylnaphthalene
naphthalene
phenanthrene
dibenzo(a,h)anthracene

Total PAH concentrations as referred to in this plan are the sum of the individual PAHs listed above. The italicized PAHs are probable human carcinogens.

The extent of coal tar that was found both on and off the site is shown in Figure 2. On-site, the tar is present in two limited areas of the former MGP, in the vicinity of two of the former gas holders. Off-site, tar appears to have been discharged or migrated to a portion of the off-site study area outlined on Figure 1. A lens of tar and tar-stained soil is present between approximately six and nine feet below ground surface in an area measuring 30 by 110 feet.

The waste/source areas and MGP related structures and piping identified will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from overburden monitoring wells to assess groundwater conditions both on and off the site. The results indicate that contamination in shallow groundwater at the site exceeds the SCGs for BTEX, PAHs and cyanide. Figure 3 shows the extent of groundwater that exceeds the SCGs for cyanide.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	ND - 43	1	3/17
Ethyl benzene	ND - 15	5	1/17
Toluene	ND – 2.7	5	0/17
Xylenes	ND - 17	5	1/17
SVOCs			
Acenapthene	ND - 6	20	0/17
Flourene	ND - 13	50	0/17
Naphthalene	ND - 100	10	2/17

Inorganics			
Cyanide	ND - 3600	200	3/17

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Based on the findings of the RI, the disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are BTEX, PAHs and cyanide.

Soil

Surface and subsurface soil samples were collected at the site during the RI. A total of 32 surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Fourteen surface soil samples were collected from the site, and 18 were collected from off-site areas near the site. Surface soil samples were also collected from 14 locations that are unaffected by the site to evaluate the degree of contamination attributable to background conditions. Surface soil samples were analyzed for volatile and semi-volatile compounds.

Surface soil across the eastern portion of the site exceeds the SCOs for both unrestricted and restricted residential use. This is consistent with the use of this portion of the site for gas production activities. Surface soil contaminant concentrations across the western portion of the site are consistent with those measured in background samples. This portion of the site was not used for gas production activities.

Surface soil in two off-site areas adjacent to the site contained MGP-related PAHs above background levels. One is a small area on a parcel immediately to the west of the site (sample SS-16 on Figure 4), and one is the strip of land along the eastern boundary of the site between the fence line and East Street (samples SS-10, SS-11, SS-12, SS-13 and SS-22 on Figure 4). Together, these account for the 5 sample locations where background levels of PAHs were persistently and significantly exceeded. The remaining exceedances of individual and total PAHs were slight exceedances that did not follow a pattern.

Table 2 - On-site Surface Soils

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Residential Use SCO[c] (ppm)	Frequency Exceeding Restricted SCG
SVOCs					
Benzo(a)anthracene	0.63-17	1	12/14	1	12/14
Benzo(a)pyrene	0.66-17	1	12/14	1	12/14
Benzo(b)fluoranthene	0.46-14	1	12/14	1	12/14
Benzo(k)fluoranthene	0.6-14	0.8	13/14	3.9	3/14
Chrysene	0.77-17	1	12/14	3.9	4/14

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Residential Use SCO[c] (ppm)	Frequency Exceeding Restricted SCG
Dibenz(a,h)anthracene	0.07-6.5	0.33	6/14	0.33	6/14
Indeno(1,2,3-cd)pyrene	0.39-16	0.5	12/14	0.5	12/14

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil.
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Residential Soil Cleanup Objectives.

Table 3 – Near-Site Surface Soils

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Unrestricted SCG
SVOCs			
Benzo(a)anthracene	0.31-17	1	14/18
Benzo(a)pyrene	0.36-18	1	15/18
Benzo(b)fluoranthene	0.5-20	1	16/18
Benzo(k)fluoranthene	0.2-7.7	0.8	14/18
Chrysene	0.42-15	1	15/18
Dibenz(a,h)anthracene	0.07-2	0.33	8/18
Indeno(1,2,3-cd)pyrene	0.28-9.6	0.5	16/18
Total PAHs	4.2 - 183	N/A	N/A

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil.
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

Subsurface soil samples were collected from a depth of 2 - 20 feet to assess soil contamination impacts to groundwater. The results indicate that soils at the site exceed the unrestricted SCO for BTEX, PAHs and cyanide.

Table 4 – On-Site Subsurface Soils

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Residential SCO[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Benzene	ND-210	0.06	5/74	0.06	5/74
Ethyl benzene	ND-38	1	3/74	1	3/74
Toluene	ND-310	0.7	3/74	0.7	3/74
Xylenes	ND-570	0.26	7/74	0.26	7/74
SVOCs					
Acenapthene	ND-310	20	3/76	100	3/76
Acenaphthylene	ND-780	100	2/76	100	2/76
Anthracene	ND-1200	100	2/76	100	2/76
Benzo(a)anthracene	ND-980	1	27/76	1	27/76
Benzo(a)pyrene	ND-680	1	28/76	1	28/76
Benzo(b)fluoranthene	ND-440	1	24/76	1	24/76
Benzo(g,h,i)perylene	ND-400	100	2/76	100	2/76
Benzo(k)fluoranthene	ND-670	0.8	27/76	3.9	18/76
Chrysene	ND-780	1	27/76	3.9	20/76
Dibenz(a,h)anthracene	ND-150	0.33	16/76	0.33	16/76
Fluoranthene	ND-1600	100	5/76	100	5/76
Fluorene	ND-1100	30	5/76	100	3/76
Indeno(1,2,3-cd)pyrene	ND-460	0.5	28/76	0.5	28/76
Naphthalene	ND-2800	12	10/76	12	10/76
Phenanthrene	ND-2600	100	5/76	100	5/76
Pyrene	ND-1600	100	3/76	100	3/76
Inorganics					
Cyanide	ND-266	27	4/72	27	4/72

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil.
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Residential Soil Cleanup Objectives.

The primary soil contaminants are BTEX, PAHs and cyanide associated with residues from the operation of the former MGP. Soil contamination is prevalent in the areas near the former MGP structures, including the gas holders.

Soils in the off-site area also exceeded the SCOs for unrestricted use. Chemical fingerprinting analysis of these soils revealed that some of this contamination is related to the former MGP, but other samples have a fuel oil fingerprint, which is not related to the former MGP. Other potential sources of contamination in this area include the Ilion DPW garages, the DPW debris disposal area, the former Ilion Landfill and illegal dumping.

Based on the findings of the Remedial Investigation, the disposal of MGP related hazardous waste has resulted in the contamination of soil on and off the site. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, BTEX, PAHs and cyanide.

Surface Water

No site-related surface water contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for surface water.

Swale Soil

Soil samples were collected during the RI from the off-site drainage swale leading to the Mohawk River. The samples were collected to assess the potential for MGP-related impacts from the site. The results indicate that soil in the off-site drainage swale exceed the background for soil PAHs. Figure 5 shows the extent of MGP-related contamination in the off-site drainage swale.

The site contaminants identified in swale soils which are considered to be the primary contaminants of concern to be addressed by the remedy selection process are total PAHs.

Table 5 – Swale Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)	Frequency Exceeding SCG
VOCs			
Benzene	ND-2.2	0.28	3/51
Ethyl benzene	ND-0.42	0.24	2/51
Toluene	ND-0.74	0.4	1/51
Xylenes	ND-3.1	0.92	2/51
SVOCs	N/A	N/A	N/A
Total cPAHs	ND-9390	43	8/55

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil.
b - SCG[b] (ppm) = Site surface soil background for total cPAH.

Soil Vapor Intrusion

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor. At this site no buildings were present in impacted areas, so only soil vapor was evaluated. There is currently no established technical guidance (SCGs) for soil vapor.

Table 6 – Soil Vapor

Detected Constituents	Concentration Range Detected (ug/m3)[a]
1,1,1-Trichloroethane	ND – 8.7
1,2,4-Trimethylbenzene	ND – 18
1,2-Dimethylbenzene	ND – 13
1,3,5-Trimethylbenzene	ND – 35
1,2-Butadiene	ND – 5.8
1,4-Dichlorobenzene	ND – 5.8
2,2,4-Trimethylpentane	ND – 15
2-Butanone	ND – 3.8
Acetone	ND – 40
Benzene	ND – 22
Carbon disulfide	ND – 9
Chloroform	ND – 2.8
Chloromethane	ND – 2.9
Cyclohexane	ND – 22
Dichlorodifluoromethane	ND – 4.1
Ethylbenzene	ND – 11
Styrene	ND – 3
Tetrachloroethene (PCE)	ND – 18.4
Toluene	4.9-94
Trichlorofluoromethane	ND – 3.5
Vinyl chloride	ND – 1
N-Heptane	ND – 78

Detected Constituents	Concentration Range Detected (ug/m3)[a]
N-Hexane	ND – 120
P-Ethyltoluene	ND – 13

a – ug/m3: micrograms per cubic meter.
b – SCGs are not available for soil vapor.

Soil vapor samples were collected from the perimeter of the site to assess the potential for soil vapor intrusion to off-site buildings. Outdoor air samples were also collected for comparison. Elevated soil vapor levels were found in the southern corner of the site, in the immediate vicinity of the former octagonal gas holder during the initial soil vapor sampling event. Chemicals detected included both MGP related and non-MGP related contaminants. A second phase of soil vapor sampling was then conducted to further determine the potential for soil vapor to be migrating toward off- site properties. Based on the soil vapor sampling results (see Table 6), the groundwater and soil sampling results (Tables 2, 3 and 4), and our experience at other MGP sites in New York State, the agencies determined that no further investigation of soil vapor or soil vapor intrusion beyond the site boundary was necessary.

However, due to the presence of MGP source areas beneath the site, there is potential for on-site soil vapor contamination. There is also a potential for people to come into contact with this contamination due to soil vapor intrusion if new buildings are constructed on-site. Therefore, the potential for on-site soil vapor intrusion will be addressed by the remedy selection process.

Appendix F

Tailgate H&S Meeting Form

ARCADIS

Document Control Number: TGM - B0036713.0000.00002 - _____

Date (dd/mm/year)

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name: Ilion (East Street) Former MGP Site			**Project Location:** Ilion, New York
Date:	**Time:**	**Conducted by:**	**Signature/Title:**
Client: National Grid		**Client Contact:** Steve Stucker	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 _____ 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Any Stop Work Interventions yesterday?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ If deviations, notify PM & client
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ All equipment checked & OK?
☐ Staff has appropriate PPE?	☐ Staff knows Emergency Plan (EAP)?	☐ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e., ladder, scaffold, trips) (L M H)	☐ Motion (i.e., traffic, moving water) (L M H)	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☐ Environment (i.e., heat, cold, ice) (L M H)
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☐ Biological (i.e., ticks, poison ivy) (L M H)	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☐ Driving (i.e. car, ATV, boat, dozer) (L M H)

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

☒	**STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - (*See statements below*)				
☐	Elimination	☐	Substitution	☐	Isolation
☐	Engineering controls	☐	Administrative controls	☐	Monitoring
☐	General PPE Usage	☐	Hearing Conservation	☐	Respiratory Protection
☐	Personal Hygiene	☐	Exposure Guidelines	☐	Decon Procedures
☐	Emergency Action Plan (EAP)	☐	Fall Protection	☐	Work Zones/Site Control
☐	JLA to be developed/used ***(specify)***	☐	LPO conducted ***(specify job/JLA)***	☐	Traffic Control
☐		☐		☐	Other ***(specify)***
☐		☐		☐	

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the HASP

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at 1.720.344.3500

Visitor Name/Co - not involved in work

	In	Out
	In	Out
	In	Out
	In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB,** I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- ☐ Lessons learned and best practices learned today: _____
- ☐ Incidents that occurred today: _____
- ☐ Any Stop Work interventions today? _____
- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155
Near Loss Hotline - 1.866.242.4304

Appendix G

JLAs and ARCADIS H&S Standards

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5584
Job Name	Environmental-Drilling, soil sampling, well installation
Task Description	Drilling, Soil Sampling, and Well Installation
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(2) Review
Creation Date	7/22/2011 10:31:33 AM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Benoit, Michael	8/12/2011	7/28/2011		Corbin, Andrew	True
Developer (Primary Contact)	Benoit, Michael	8/12/2011	7/28/2011		Corbin, Andrew	True
HASP Reviewer	Ertel, Gregory	8/11/2011			Molina III, Joseph	True
Reviewer	Corbin, Andrew	8/11/2011			Nuss, James	True

Reviewer Comments

Role	Employee	Approval Status	Completed Date	Comments
Reviewer	Corbin, Andrew			
HASP Reviewer	Ertel, Gregory			

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Traffic/Access Control	1	Struck by vehicle due to improper traffic controls	Use a buddy system for placing site control cones and/or signage. Position vehicle so that you are protected from moving traffic. Wear Class II traffic vest.	ARCADIS H&S Standards ARCDOT301 and ARCDOT302
2	Utility Clearance	1	Potential to encounter underground or aboveground utilities while drilling	Complete utility clearance in accordance with the ARCADIS H&S Standard.	ARCADIS H&S Standard ARCHSFS019
3	General Drill Rig Operation	1	Excessive noise is generated by rig operation.	Use hearing protection when the engine is used at high RPMs or soil samples are being collected.	
		2	During drill rig operation, surfaces will become hot and cause burns if touched, and COCs in the soils more readily vaporize generating airborne contaminates.	Due to friction and lack of a drilling fluid, heat will be produced during this method. Mainly drill augers. Be careful handling split spoons. Wear proper work gloves. When soils and parts become heated, the COC could volatilize. Air monitoring should always be performed in accordance with the HASP.	

3	General Drill Rig Operation	3	Moving parts of the drilling rig can pull you in, causing injury. Pinch points on the rig and auger connections can cause pinching or crushing of body parts.	Stay at least 5 feet away from moving parts of the drill rig. Know where the kill switch is, and have the drillers test it to verify that it is working. Ensure that all members of the drilling crew are present when the drill rig is in operation and that each member of the crew performs their own assignments. When operating the drill rig, the driller should always have two hands on the controls. The driller should not try to help the assistant(s) or assume the tasks of the assistant(s) while also operating the drill rig. Do not wear loose clothing, and tie long hair back. Avoid wearing jewelry while drilling. Cone off the work area to keep general public away from the drill rig.	
		4	Dust and debris can cause eye injury and soil cuttings and/or water could contain COCs.	Wear safety glasses and stay as far away from actual drilling operation as practicable. Wear appropriate gloves to protect from COCs.	
		5	Drilling equipment laying on the ground (e.g., augers, split spoons, decon equipment, coolers, etc.) create a tripping hazard. Water from decon buckets generate mud and cause a slipping hazard.	Keep equipment and trash picked up, and store away from the primary work area.	
		6	The raised derrick can strike overhead utilities, tree limbs, or other elevated items.	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. Refer to ARCADIS Utility Clearance H&S Standard for guidance.	
4	Mudd Rotary Drilling	1	The raised derrick can strike overhead utilities, tree limbs, or other elevated items.	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. Refer to ARCADIS Utility Clearance H&S Standard for guidance.	
		2	This drilling method uses fluid, which collects with sediments in a large basin. Fluid can splash out and cause slipping/mud hazard. Liquid mixture can splash into your eyes.	Wear rubber boots if needed, and keep clear of muddy/wet area as much as practicable. If area becomes excessively muddy, consider mud spikes or covering the area with a material that improves traction. Wear safety glasses.	
5	Hollow Stem Auger Drilling	1	All hazards in step 3 apply. Additionally,The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
6	Air Rotary Drilling	1	This drilling method works with high air pressure and can generate flying debris that can strike your body or get debris in your eyes.	The flaps behind the drill rig should stay closed whenever possible to reduce the risk of flying debris. Safety glasses and hard hat should always be worn when operating the drill rig. When drilling through asphalt, protect surrounding cars that may be present to avoid debris damage to paint or windshields.	

6	Air Rotary Drilling	2	The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
		3	Dust can be produced when drilling through bedrock above the groundwater table. Inhalation of dusts/powder can occur.	Supplemental water should be used to suppress dust creation. Dust monitoring should be performed in accordance with the HASP. Dust masks should be used (if necessary) to minimize the inhalation of dust.	
7	Reverse Rotary Drilling	1	This drilling method uses fresh water to pump out drill cuttings through the center of the casing. A water/sediment mixture is generated and could cause contact with impacted soils or groundwater.	Ensure the pit construction can hold the amount of cuttings that are anticipated. Air monitoring should be performed in accordance with the HASP.	
		2	Fire hydrants are often used for water source. Hydrants deliver water at high pressure. Pressurized water can cause flying parts/debris and excessive slipping hazards.	Water usage from fire hydrants should be cleared with local muncipalities prior to use. Only persons that know how to use the hydrant should be performing this task. Ensure all connections are tight, and hose line is not run over or cut by traffic. Any leaks from the hydrant should be reported and repaired immediately.	
		3	Settling pit construction can cause tripping hazard from excavated soils, and plastic sheeting can cause slipping.	Cone off the area to keep the general public/visitors away from the settling pit. Ensure proper sloping of excavation.	
		4	The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	
8	Rotosonic Drilling	1	Fire hydrants are often used for water source. Hydrants deliver water at high pressure. Pressurized water can cause flying parts/debris and excessive slipping hazards.	Water usage from fire hydrants should be cleared with local muncipalities prior to use. Only persons that know how to use the hydrant should be performing this task. Ensure all connections are tight, and hose line is not run over or cut by traffic. Any leaks from the hydrant should be reported and repaired immediately.	
		2	This method requires a lot of clearance. The drill head can turn 90 degrees to attach to the next drill flight or casing. This usually requires a large support truck to park directly behind the rig. As the drill head raises the new casing flight is angled down at the same time until it can be turned completely vertical.	Ensure sufficient overhead clearance.	
		3	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	

8	Rotosonic Drilling	4	The rotosonic drill head can move very quickly up and down while working on a borehole. Moving parts can strike someone or catch body parts.	The operator and helper must communicate and stay clear of the path of the drill head. The drill utilizes two large hydrualic clamps to continuously hold casings while loading/unloading previous casings. Ensure that all members of the drilling crew are present when the drill rig is in operation and that each member of the crew performs their own assignments. When operating the drill rig, the driller should always have two hands on the controls. The driller should not try to help the assistant(s) or assume the tasks of the assistant(s) while also operating the drill rig. Do not wear loose clothing.	
9	Direct Push Drilling	1	The drill rods will be handled by workers most of the time rather than the rig doing it, therefore pinch points can cause lacerations and crushing of fingers/body parts.	Keep a minimum of 5 feet away from drill rig operation and moving parts.	
		2	The direct push rigs are usually meant to fit in spaces where a larger rig cannot. Tight spaces can pin workers.	Do not put yourself between the rig and a fixed object. Use spotters or a tape measure to ensure adequate clearances in tight areas. Pre-plan equipment movement from one location to the next.	
		3	Some direct push equipment is controlled by wireless devices. These controls can fail and equipment can strike workers or cause damage to property.	The drill rig should be used in a large open area to test wireless controls prior to moving to boring locations. The operator of the rig will test the kill switch with wireless remote prior to use. Operator will stay in range of rig while moving so that wireless signal will not be too weak and cause errors to the controls.	
		4	Sampling sleeves must be cut to obtain access to soil. Cutting can cause lacerations.	Preferably let the driller cut the sleeves open. Many drillers have holders for the sleeve to allow for stability when cutting. If we cut the sleeves, use a hook blade, change blade regularly, and cut away from the body.	
10	Rock Coring	1	Flying debris can hit workers or cause debris to get in eyes.	Rock chips or overburden may become airborne from drilling method. Wear safety glasses and hard hat and remain at a safe distance from back of drill rig.	
		2	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	
11	Sample Collection and Processing	1	Injuries can result from pinch points on sampling equipment, and from breakage of sample containers.	Care should be taken when opening sampling equipment. Look at empty containers before picking them up, and do not over-tighten container caps. Use dividers to store containers in the cooler so they do not break.	
		2	Lifting heavy coolers can cause back injuries.	Use two people to move heavy coolers. Use proper lifting techniques.	JLA for Sample Cooler Handling
12	Monitoring Well Installation	1	Same hazards as in Step 3 with general drill rig operation.	See step 3	

12	Monitoring Well Installation	2	Monitoring well construction materials can clutter the work area causing tripping hazards.	Well construction materials should be picked up during the well installation process.	
		3	Heavy lifting can cause muscle strains, and cutting open bags can cause lacerations.	Well construction materials are usually 50 lbs or greater. Team lift or use drill rig to hoist bags. Always use work gloves while cutting open bags.	
		4	Well pack material (e.g., sand, grout, bentonite) can become airborne and get in your eyes.	Wear safety glasses for protection from airborne sand and dust.	
		5	Cutting the top of the well to size can cause jagged/sharp edges on the top of the well casing.	Wear gloves when working with the top of the well casing, and file any sharp jagged edges that resulted from cutting to size.	
13	Soil Cutting and Purge Water Management	1	Moving full drums can cause back injury, or pinching/crushing injury.	Preferably have the drilling contractor move full drums with their equipment. If this is not practicable, use lift assist devices such as drum dollys, lift gates, etc. Employ proper lifting techniques, and perfrom TRACK to identify pinch/crush points. Wear leather work gloves, and clear all walking and work areas of debris prior to moving a drum.	JLA for Drum Sampling and Handling

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)		Required
Hand Protection	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III		Required
Respiratory Protection	dust mask		Recommended

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)		Required
Miscellaneous	fire extinguisher		Required
Miscellaneous	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
Traffic Control	traffic cones		Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5432
Job Name	Environmental-Air Monitoring
Task Description	Air Monitoring
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 12:29:13 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Mobilization/Demobilization	1	Heavy lifting		
		2	Abrassions	Use work gloves when handling equipment and supplies.	
		3	Motor vehicle accident	Use Smith System defensive driving techniques.	
2	Tailgate Safety Meeting	1	N/A		ARCHSGE001
3	General Environmental Conditions	1	Heat Stress		

3	General Environmental Conditions	2	Severe weather		
		3	Bites/Stings - Insects/Spiders/Snakes		
		4	Heavy equipment operation in vicinity		
		5	Uneven terrain		
4	Equipment/Site Set Up	1	Materials handling/heavy lifting		
		2	Falls from height		
		3	Scissor lift operation		
		4	Electricity		
5	Monitoring/Data Collection	1	Laser		
		2	Heat stress/Sunburn	Utilize a canopy over the monitoring area.	
		3	Cryogen exposure		

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	coveralls	Fire resistant (on refinery site)	Required
Dermal Protection	long sleeve shirt/pants		Recommended
Eye Protection	faceshield	For cryogens	Required
Eye Protection	safety glasses	For cryogens	Required
Foot Protection	steel-toe boots		Required
Hand Protection	insulated gloves	Cryogen gloves	Required
Hand Protection	work gloves (specify type)	leather or cotton	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	first aid kit		Required
Miscellaneous	Other	Safety/Traffic Vest	Required
Miscellaneous	Other	Cones/Traffic control	Required
Personal	insect repellant		Required
Personal	sunscreen		Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5434
Job Name	Environmental-Drum sampling/handling
Task Description	Drum sampling/handling
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 12:45:41 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1		1	Exposure to chemicals stored in drum or container.	Read drum labels for information about contents. Review all relevant MSDSs about chemical contents. If labels are not attached, call PM or Local H&S Representative.	None
		2	Contents of the drum can cause fire/explosion hazard.	Use air monitoring meters to screen drums. % LEL and VOCs (PPM). If either of the values are above the action levels described in the HASP or MSDS then Stop Work, move away from the area, and reassess the situation. Call PM and H&S staff for support.	None
2	Remove lids or bungs from Drums	1	Hand Injuries can occur from sharp edges, pinch points, and from use of hand tools.	Wear appropriate work gloves. When removing ring from drum, fingers can get pinched between ring and drum. Keep fingers clear of this space. Select proper tool for task. If large amount of drums will be encountered, use a speed or drum wrench.	Employee H&S Field book, Section III Subpart II, page 104. Also Section III Subpart L, page 38.
		2	Rapid depressurization from empty or partially full drums can cause flying parts or volatile COCs releasing on staff.	Do not handle or open bulging drums (contact Corp H&S for assistance). Bleed any built up pressure by carefully loosening bung prior to removing ring. Keep face and arms away from bung opening when loosening. Slightly lift lid, insert end of air monitoring device to monitor air inside drum.	Employee H&S Field book, Section III Subpart II, page 104. Also Section III Subpart L, page 38.
		3	Use of mechanical tools to remove bolts from drum lids causes excessive noise.	Wear hearing protection.	Employee H&S Field book, Section III Subpart II, page 104. Also Section III Subpart L, page 38.

2	Remove lids or bungs from Drums	4	Splashing can occur if filling drum, or collecting samples.	Wear eye and face protection. Pour liquids into drum slowly to minimize splashing.	Employee H&S Field book, Section III Subpart II, page 104. Also Section III Subpart L, page 38.
		5	When working with COCs that have fire/explosive properties, sparking or heat could cause fire/explosion.	Use brass or non Spark Hand Tools if such a hazard exists or is suspected.	Employee H&S Field book, Section III Subpart II, page 104. Also Section III Subpart L, page 38.
3	Sample Contents from Drums	1	Exposure to COCs can occur by contacting impacted contents.	Select proper dermal protection for task, at a minimum nitrile gloves should be worn. Wear appropriate eye face and body protection as outlined in the HASP.	
		2	Staff can be exposed to chemical vapors/fumes when sampling.	Conduct air monitoring as outlined in the HASP, and if required, select appropriate respiratory protection for the task.	
		3	Sharp edges and broken sample containers can cause lacerations.	Discard any broken sample ware or glass properly. Do not over tighten sample containers.	
		4	Chemical burns or skin irritation can occur from contact with sample preservatives.	Wear chemical protective gloves when collecting samples, or when handling damaged sample containers.	
4	Replace drum lids	1	Hand Injuries can occur from sharp edges, pinch points, and from use of hand tools.	see step 2 above	
5	Moving and Storing Drums	1	Drum storage areas can be accessed by the general public, or may not be secure.	Calculate how many drums will be stored in new location. Ensure that drums are not easily accessed by the general public. Do not store such that drums impede pedestrian or vehicular traffic.	
		2	Muscle strain can occur when lifting/pulling/pushing drums.	Drums that are full can weigh as much as 800 lbs. Use a lift assist device whenever possible, and use a team lift approach. When moving soil drum generated by drilling, have drillers use their equipment to move the drums. Using dolly, slightly lift drum away from dolly to install forks under drum. Slowly let drum come back down and rest on dolly. Using hook on top of dolly, ensure it latches on top of drum bung.	
		3	Body parts can be pinched between lift device, or drum and the ground.	Be aware of hand and foot placement during drum staging. Do not hurry through task.	
		4	When moving, the drum can tip or the dolly could become unstable from uneven ground surface.		

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	chemical protective suit (specify type)		Required
Eye Protection	faceshield		Required
Eye Protection	safety goggles		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
Hand Protection	work gloves (specify type)		Required
Hearing Protection	ear plugs		Required

Supplies

Type	Supply	Description	Required
Miscellaneous	Other	dolly	Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5435
Job Name	Environmental-Geophysical survey
Task Description	Geophysical survey
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 12:57:25 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Mobilization of equipment to survey area	1	Lifting hazards (heavy or bulky equipment)	Use TRACK to plan lifts and routes to work location. Use proper lifting techniques	
		2	Awkward body postions and twisiting	Plan activity to avoid twisting of body or awkward body positions. Use buddy system or job roatation to reduce exposure to conditions that can not be avoided	
		3	Trip and fall hazards from uneven ground or restricted view when carrying equipment	Break loads down to manageable size that does not obstruct view of ground. Plan route and use TRACK, wear footwear with good tread and ankle support, Use buddy system for large or bulky items when carrying.	
2	Set up survey grid and control	1	Slip trip and fall hazards from wet, uneven ground or over vegetation.	See step one controls.	
		2	Crush hazard or contact stress to hands/fingers from inserting pins or stakes.	Wear leather gloves when inseting pins, flaggng, or stakes into the ground. Do not hurry task if hammering.	
		3	Struck by hazards by vehicles if working in traffic area	Establish traffic control and wear a Class II traffic vest if in traffic area. Use vehicles to block work area when practical.	
		4	Repetitive stress from repeated bending or squatting during grid construction	Use job rotation whn hazard exists, stretch before perfroming work activity. Use paint device that allows employee to stand up while spraying.	
		5	Chemical expsoure from using spray paint	Stand up wind of paint spraying activities	
3	Performing survey	1	Slips trips and falls on wet, uneven or steep sloped surfaces	See step one controls.	

3	Performing survey	2	Scrapes or cuts to hands, arms or legs from equipment or vegetation in area.	Wear leather or other suitabler gloves when perofroming survey, wear long pants, wear heavy long sleeve shirt if arm hazard exists.	
		3	Noise hazards from survey equipment using percussion devices	Wear hearing protection, keep uneccessary workers away from devices when activitated.	
		4	Ergonomic injury form improper or prolonged use of carried devices that are long or bulky.	Use job rotation to reduce potential for injury.	
4	Demobilization and clean up	1	Muscle strain from removing pins or stakes	Use devices that maintain neutral body positions to remove pins when practical. Do not bend at waist wen removing.	
		2	Pinch hazards to fingers from equipment cases	Identify hazard and avoid, pack equipment properly where not wires or cables protrude from case requiring fingers to push into case when closing.	
		3	Lifting hazards from demobilizing equipment from work area	See step one controls.	
		4	Slip, trip and falls carrying equipment that obstructs view or on wet or uneven surfaces.	See step one controls.	
5	Preparation and return shipment of equipment	1	Cuts to hands and forearms from cutting strapping tape	Do not hurry during package preparation, Use TRACK, Use the right cuttting tool for the task activity, use cutting tools with self retracting blades	
		2	Pinch hazards to fingers from equipment cases and placement of equipment in boxes	See step 4 controls.	
		3	Lifting hazards from completed shipping packages	See step 1 controls	
		4	Fire hazard form imporperly packed spare batteries	Cover battery terminals or keep in original packaging when shipping, protect batteries from other metal objects in packages, perform shipping determination for number of spare batteries permitted to be shipped in package or consignment.	

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	boots	supportive with good tread	Required
Hand Protection	work gloves (specify type)	leather	Required
Head Protection	hard hat		Recommended

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	first aid kit		Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5436
Job Name	Environmental-Groundwater Sampling and free product recovery
Task Description	Groundwater Sampling and free product recovery
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 1:00:25 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1		1	personnel could be hit by vehicluar traffic.	Set-up cones and establish work area. Position vehicle so that field crew is protected from site traffic. Unload as close to work area as safely possible.	
		2	Sampling equipment, tools and monitoring well covers can cause tripping hazard	Keep equipment picked up and use TRACK to assess and changes	
2	Open wells to equilibrate and gauge wells	1	When squatting down, personnel can be difficult to see by vehicular traffic.	Wear Class II traffic vest if wells are located proximal to vehicular traffic. Use tall cones and the buddy system if practicable.	
		2	pinchpoints on well vault can pinch or lacerate fingers	Use correct tools to open well vault/cap. Wear leather gloves when removing well vault lids, and chemical protective gloves while guaging. Wear proper PPE including safety boots, knee pads and safety glasses.	
		3	Lifting sampling equipment can cause muscle strain	Unload as close to work area as safely possible; use proper lifting and reaching techniques and body positioning; don't carry more than you can handle, and get help moving heavy or awkward objects.	
		4	Pressure can build up inside well causing cap to release under pressure	Keep head away from well cap when removing. If pressure relief valves are on well use prior to opening well	
3		1	Electrical shock can occur when connecting/disconnecting pump from the battery.	Make sure equipment is turned off when connecting/disconnecting. Wear leather gloves. Use GFCIs when using powered tools and pumps. Do not use in the rain or run electrical cords through wet areas.	

3		2	purge water can spill or leak from equipment	Stop purging activities immediately, stop leakage and block any drainage grate with sorbent pads. Call PM to notify them of any reportable spill.	
		3	Water spilling on the ground can cause muddy/slippery conditions	Be careful walking in work area when using plastic around well to protect from spillage	
		4	lacerations can occur when cutting materials such as plastic tubing	When cutting tubing, use tubing cutter. No open fixed blades should ever be used. When possible wear work gloves, leather type.	
		5	purge water can splash into eyes	Pour water slowly into buckets/drums to minimize splashing. Wear safety glasses	
4	Collect GW or Free Product Sample	1	Working with bailer rope can cause rope burns on hands.	Slowly raise and lower the rope or string for the bailer. Wear appropriate gloves for the task.	
		2	sample containers could break or leak preservative	Discard any broken sampleware or glass properly. Do not overtighten sample containers. Wear chemical protective gloves	
5	Recovery of Free Product from well	1	exposure to free product	Additional chemical protection may be necessary based on the type of product. Additionally, safety goggles, a faceshield, or respiratory protection may be required. Verify in the HASP.	
6	Staging of Well Purge water and/or Free Product	1	Muscle strains can occur when moving purge water or drums	If using buckets, do not fill buckets up to the top. Always keep lid on buckets when traveling or moving them to another location. Only half fill buckets so when dumping the buckets weigh less. See drum handling JLA for movement of drums.	Drum handling JLA

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)		Required
Hand Protection	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Miscellaneous PPE	other	Knee pads	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)		Required
Miscellaneous	fire extinguisher		Required
Miscellaneous	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
Traffic Control	traffic cones		Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5437
Job Name	Environmental-Sample cooler handling
Task Description	Sample cooler handling
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 1:02:26 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Transfer field samples to sample packing area	1	Lifting heavy coolers may result in muscle strain especially to lower back.	Use proper lifting techniques and keep back straight. Use buddy system for large coolers, Use mechanical aids like hand trucks if readily available to move coolers. Do not over fill coolers with full sample containers for temporary movement to the sample prep area. Ensure an adequate supply of sample coolers are in field	
		2	Hazards to hands from broken glass caused by over tightening lids or improper placement in cooler	Inspect all bottles and bottle caps for cracks/leaks before and after filling container. Do not over tighten sample lids. Clean up any broken bottles immediately, avoid contact with sample preservatives. Wear leather gloves when handling broken glass.	
		3	Exposure to chemicals (acid preservatives or site contaminants) on the exterior of sample bottles after filling.	Wear protective gloves for acid preservatives and safety glasses with side shields during all sample container handling activities (before and after filling), Once filled follow project specific HASP PPE requirements for skin and eye protection.	
		4	Samples containing hazardous materials may violate DOT/IATA HazMat shipping regulations	All persons filling a sample bottle or preparing a cooler for shipment must have complete ARCADIS DOT HazMat shipping training. Compare the samples collected to the materials described in the Shipping Determination for the Project and ensure consistent. Re perform all Shipping determinations if free product is collected and not anticipated during planning.	

2	Sample cooler selection	1	Sample coolers with defective handles, lid hinges, lid hasps cracked or otherwise damaged may result in injury (cuts to hands, crushing of feet if handle breaks etc)	Only use coolers that are new or in like new condition, No rope handled coolers unless part of the manufacturer's handle design.	ARCADIS Shipping Guide US-001
		2	Selection of excessively large coolers introduces lifting hazards once the cooler is filled.	Select coolers and instruct lab to only provide coolers of a size appropriate for the material being shipped. For ordinary sample shipping sample coolers should be 48 quart capacity or smaller to reduce lifting hazards.	ARCADIS Shipping Guide US-001
3	Pack Samples	1	Pinch points and abrasions to hands from cooler lid closing unexpectedly	Beware that lid could slam shut; block/brace if needed; be wary of packing in strong winds. New coolers may be more prone to self closing, tilt cooler back slightly to facilitate keeping lid open.	
		2	Awkward body positions and contact stress to legs and knees when preparing coolers on irregular or hard ground surfaces.	Plan cooler prep activities. Situate cooler where neutral body positions can be maintained if practical, like truck tailgate. Avoid cooler prep on gravel rough surfaces unless knees and legs protected during kneeling.	
		3	Frostbite or potential for oxygen deficiency when packing with dry ice. Contact cold stress to fingers handling blue ice or wet ice	Dry ice temperature is -109.30F. Wear thermal protective gloves. DO NOT TOUCH with bare skin! Dry ice sublimates at room temp and could create oxygen deficiency in closed environment. Maintain adequate ventilation! Do not keep dry ice in cab of truck. Wear gloves when handling blue ice or gaging wet ice. Dry Ice is DOT regulated for air shipping, follow procedures in Shipping Determination.	
4	Sealing, labeling and Marking Cooler	1	Cuts to hands and forearms from strapping tape placement or removing old tape and labels	Do not use a fixed, open-blade knife to remove old tags/labels, USE SCISSORS or other safety style cutting device. Only use devices designed for cutting. Do not hurry through task.	
		2	Lifting and awkward body position hazards from taping heavy coolers, dropping coolers on feet during taping.	Do not hurry through the taping tasks, ensure samples in cooler are evenly distributed in cooler to reduce potential for overhanging cooler falling off edge of tailgate/table when taping.	
		3	Improper labeling and marking may result in violation of DOT/IATA Hama shipping regulations delaying shipment or resulting in regulatory penalty	Do not deviate from ARCADIS Shipping Guide or Shipping Determination marking or labeling requirements.	
5	Offering sample cooler to a carrer or lab couriour for shipment.	1	Lifting heavy coolers may result in muscle strain especially to lower back.	See lifting hazard controls above.	
		2	Carrier refusal to accept cooler may cause shipping delay and/or result in violation of DOT HazMat shipping regulations.	Promptly report all rejected and refused shipments to the ARCADIS DOT Program Manager. Do Not re-offer shipment if carrier requires additional labels markings or paperwork inconsistent with your training or Shipping Determination without contacting the ARCADIS DOT Compliance Manager.	

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Hand Protection	chemical resistant gloves (specify type)	nitrile	Required
Hand Protection	work gloves (specify type)	leather	Required

Supplies

Type	Supply	Description	Required
Miscellaneous	Other	Scissors	Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5438
Job Name	Environmental-Soil sampling/well installation - manual
Task Description	Soil sampling/well installation - manual
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 1:05:34 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Sampling set-up	1	Underground utilities could be encountered during hand augering	Follow the Utility Clearance HS Standard.	Utility Clearance HS Standard ARCHSF019
		2	Muscle strains can occur from lifting heavy equipment in and out of vehicle	Park as close as possible to the sampling locations. Use lifting techniques as outlined in the Field H&S Handbook.	Utility Clearance HS Standard ARCHSF019
		3	slips/trips/falls could occur from uneven walking and working surfaces	Remove any gravel or debris from sample location. Gravel will get stuck in auger or will continue to fall back down in hole. A five gallon bucket with the bottom cut out will retain gravel from falling back down in the hole.	Utility Clearance HS Standard ARCHSF019
2	Installation of hand auger boring	1	Muscle Strains from pulling/pushing could occur when installing the boring, and when removing the auger from the hole	Stretch out Arms/Back/Shoulder Muscles prior to beginning. Using firm grip on handle, slowly turn auger and progress downward in 6" increments.Slowly pull auger from hole, use legs to pull auger out of hole. If water is encountered, a suction will be created when trying to remove the auger. Ask for assistance from another worker if you can't remove safely on your own.	
		2	Hand strain and blisters could develop from prolonged hand augering	Select proper gloves for task, usually leather type work gloves or mechanics style gloves. If hot spots develop on hands (Hot Spots are where blisters start to form) readjust gloves or change to better padded glove. If blisters begin to form, stop work so as not to worsen blistering.	

2	Installation of hand auger boring	3	Over-exertion could occur when trying to force an auger forward if there is refusal.	If refusal occurs, Stop Work. Remove Auger from hole and check hole with flashlight if possible. DO NOT overexert by using excessive force	
		4	Fatigue can occur due to strenuous nature of hand augering activities	Take rest breaks as needed or switch out task with another employee.	
3	Collect Sample Soil Sample	1	Staff can come into contact with impacted soils	Wear chemical protective gloves as outlined in the HASP, and wear safety glasses.	
		2	Sharp edges and broken glassware can cause lacerations	Discard any broken sample containers or glass. Do not overtighten sample containers.	
		3	Containerizing and moving soil cuttings can cause muscle strains	Dispose of left over soil cuttings in a drum or bucket and dispose properly. Only fill buckets half full due to weight and strength of bucket. Wear leather work gloves and use good lifting techniques when handling buckets.	
4	Decon Hand Auger	1	Exposure to COCs while deconing equipment.	Wear chemical protective gloves as outlined in the HASP, and wear safety glasses.	
		2	Cleaning solutions can splash while deconing equipment	Use PPE as outlined in the HASP, and try to minimize splashing.	
		3	The end of the hand auger has sharp edges, and lacerations can occur	Use brush to scrub off soils and not hands. Do not reach into the nose (the end with teeth) of the auger with hand.	
5	Fill in Sample Location	1	Open boreholes are a trip hazard	Fill in hole with sand or bentonite. Pack down chips as best as possible. Add a bit of DI Water to make chips swell and fill hole completely.	
		2	Muscle strain can occur from lifting bags of sand and/or bentonite.	Use proper lifting techniques as detailed in the Field H&S handbook	
6	Installation of Temporary Piezometer/Well	1	Excessive noise can occur form driving well casing with hammer or macrocore sampler.	Wear hearing protection device.	see Concrete work JLA
		2	Body parts or onlookers can be struck when using hand tools	Check swing radius above and around before driving well casing in bore hole. Wear leather gloves and safety glasses.	see Concrete work JLA
		3	Muscle strains can occur when pulling/pushing well materials into place	Stretch out Arms/Back/Shoulder Muscles prior to beginning. Take frequent breaks as fatigue sets in and if muscle cramps occur.	see Concrete work JLA
		4	Edges of PVC well casings have sharp edges especially when they have been cut, which can cause lacerations.	File the tops of well casings after they have been cut. Wear leather work gloves.	see Concrete work JLA
		5	Debris in the eyes can occur when working with soil, grout, and bentonite	Use disposable dust mask if excessive dust is created.	see Concrete work JLA

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)		Required
Hand Protection	work gloves (specify type)		Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III		Required
Respiratory Protection	dust mask		Recommended

Supplies

Type	Supply	Description	Required
Decontamination	Decon supplies (specify type)		Required
Miscellaneous	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
Traffic Control	traffic cones		Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5439
Job Name	General Industry-Driving - passenger vehicles
Task Description	Driving - passenger vehicles
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 1:08:33 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Preforming Pre-trip inspections	1	Cuts scrapes to hands and fingers checking engine fluids	Use TRACK to plan inspection activity in the engine compartment. Wear protective gloves if reaching in poorly illuminated areas of the engine.	
		2	Pinch crush hazards to hands and fingers checking engine fluids or closing doors.	Identify and keep hands fingers away from pinch hazards from doors and vehicle hood or tailgate (if present).	
		3	Awkward body positions checking tires, spare tire, undercarriage, or engine compartment.	Maintain neutral body positions and avoid awkward reaches under the vehicle or in engine compartment.	
		4	Failure to inspect vehicle emergency equipment may result in extensive vehicle damage or delay treatment in the event of injury	Conduct equipment inspections by visibly inspecting fire extinguisher and first aid kit for cleanliness, in date items/tags, readiness for use.	
2	Vehicle loading and unloading	1	Object placement obstructing rear, side or blindspot view	Avoid placing objects in a manner that obstructs your view, brake equipment down to a smaller more manageable size to keep low profile in vehicle. If hanging clothes in vehicle, place in manner that does not obstruct blind spots.	
		2	Unsecure objects causing pedal, steering or gear shift obstruction or injury during vehicle operation.	Secure all loads in vehicle (both in the bed of trucks and in passenger cabin) to prevent unanticipated movement or shifting that could injure driver, passenger, or affect safe operation of vehicle.	
		3	Obstuction of vehicle safety equipment caused by object placment in vehicle.	Keep emergency equipment clear and unobstructed to ensure ready availablity.	

3	Vehicle operation	1	Failure to use Smith System "5-Keys" increases risk of accident and injruy.	Use Smith System "5-Keys", maintain space cushion around vehicle, maintain 4 second rule and add (second for each addtional hazard (wet roads, snow, etc). Brake gradual, keep eyes moving, check mirrors every 6-8 seconds, use turn signals, focus on relavent objects, use early lane positioning when approaching turns.	
		2	Injury or death from failure to wear seatbelt	Always wear seatbelts even if driving short distances off of a public roadway.	
		3	Cell phone use increases risk of accidnt and injury	Avoid using cell phones in any capacity when operating a vehicle, check client for cell use on project sites and follow requirements. Follow all local laws.	
		4	Use of radar detectors encourages speeding resulting in increased risk for accident or injury	Use of radar detectors and similar devices is prohibited.	
		5	Intruders attempting to enter vehicle while stopped at intersections and/or while it is vacant. Doors opening during an accident.	Lock doors before driving vehicle and always after leaving vehcile when it is stopped unless client requires vehicles to remain unlocked while onsite.	
4	Routine maintenance	1	Pinch crush hazards to hands and fingers replacing engine fluids or closing doors/hood.	Inspect and indetify pinch and crush hazards and keep hands/fingers clear when closing hood, tailgates, or doors.	
		2	Burn hazards to hand form checking/replacing fluids in engine compartment	When practical allow engine to cool prior to servicing or adding fluids. Use protective gloves.	
		3	Vehicle damage from improper fuse replacement	Never replace a fuse with a higher amperage than the one being replaced. Only replace fuses of type being replaced.	
		4	Failing to use Wright Express for vehicles equipped with fuel card impairs maintenace tracking that could affect vehicle safety	If vehicle is assigned a Wright Express Card, use the card so accurate maintenance tracking can be performed by LeasePlan.	

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	fire extinguisher		Required
Miscellaneous	first aid kit		Required
Traffic Control	Other	Roadway emergency kit	Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5440
Job Name	General Industry-Roadway work
Task Description	Roadway work
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 1:10:44 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Deployment and removal of traffic control devices	1	Lifting hazards and awkward body positions from moving warning signs and control devices	Avoid excessive force pushing or pulling devices from vehicle; use the buddy system for heavier items; lift with legs and not back; avoid lifting and twisting motions.	ARCADIS H&S Handbook section III LL
		2	Struck by vehicle during placement	Wear high visibility clothing and Class II (minimum) traffic vest. Choose lime green color to avoid motorist confusion with traffic barrels. Always face oncoming traffic, use spotter if performing work that keeps focus off traffic. Ensure vehicle equipped with light bars and/or other warning devices and ensure they are activated, including vehicle flashers.	ARCADIS H&S Handbook section III LL
		3	Increased risk of injury (ergonomic from reacted moving or impact from increased vehicle exposure) from poor traffic control planning and implementation	Develop traffic control plan consistent with Manual of Uniform Traffic Control Devices, ensure lane closure tapers are computed properly, place devices in a manner that offers protection as other devices are deployed, place early warning devices first to warn drivers of pending work zone.	ARCADIS H&S Handbook section III LL
2	Flagger activities	1	Struck by vehicle while performing activity	Always face oncoming traffic, wear high visibility clothing described in step 1 above. Flaggers to be properly trained in proper flagging technique, if using paddles, ensure correct paddle warning displayed.	Certain states require flagger training: www.flagger.com
		2	Fatigue form standing in one position for extended periods of time.	Use job rotation when practical, shift weight form one leg to the other periodically, wear comfortable boots.	Certain states require flagger training: www.flagger.com

2	Flagger activities	3	Dehydration, heat stress (summer months), cold stress (winter months), sunburn, windburn	Ensure drinking water is in immediate vicinity of the flagger, check with flagger periodically to evaluate signs of heat or cold stress, avoid caffeine or sugary drinks during hot or cold weather, schedule work for worker to eat at regular intervals, wear sun block	Certain states require flagger training: www.flagger.com
		4	Struck by debris off roadway from passing vehicles	Be aware of hazard and be vigilant for debris, wear eye protection at all times.	Certain states require flagger training: www.flagger.com
3	Working in work zone	1	Struck by vehicle while performing work	Always stay behind protective barriers or channeling devices, never park vehicle that exposes workers to on coming traffic outside of barriers and channeling devices. Wear clothing and PPE described in step one above. Park vehicles within work zone to act as barriers to oncoming traffic when possible.	
		2	Struck by equipment in work area	Establish eye contact with all equipment operators when entering equipment operating radius, wear high visibility clothing and PPE as described in step one above. Park project vehicle away form active work are but still in work zone barriers or channeling devices.	
		3	Slips, trips and falls on wet or uneven surfaces in road right of way.	Wear proper footwear with good tread and ankle support. Plan route when walking on sloped surfaces, when walking along roadway stay as far off roadway as possible to avoid falling into traffic if tripping.	

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Communication Devices	walkie talkie	if using flaggers	Required
Miscellaneous	fire extinguisher		Required
Miscellaneous	first aid kit		Required
Traffic Control	traffic cones		Required

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5441
Job Name	General Industry-Site inspection/walkover - undeveloped
Task Description	Site inspection/walkover
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 1:20:28 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Undeveloped Site Walk(Winter Conditions)	1	Slippery/icy conditions	Use caution and proper footwear with traction	
		2	Eye/face injury	Use caution when walking through trees and brush. Wear proper eye protection to avoid eye injury	
		3	Hypothermia/frostbite	Assess weather conditions and wear proper clothing to avoid hypothermia/frostbite and freezing	
		4	Falling ice/snow	Assess the site for falling ice/snow from trees/powerlines. Use caution when walking around trees and powerlines. Wear hard hat	
		5	Stray animals	Make lots of noise while walking through the site. carry repellent in the event of encountering stray animals. if a dangerous or aggravated animal is spotted, leave the area and return to your vehicle and contact animal control	
		6	Vehicular traffic	Asses the site and the surrounding area for vehical traffic. use caution when walking near busy roadways. Wear traffic vest II or III	
2	Undeveloped Site Walk (Summer Conditions)	1	Slips/trips/falls	Use caution when walking on un-even surfaces. Use proper footwear with traction	
		2	Eye injury	Use caution when walking through areas of trees and brush. Wear proper eye protection to avoid eye injury from tree limbs	
		3	Dehydration	Drink plenty of water and avoid long periods of direct sun exposure	
		4	Sunburn	Wear sunscreen. Avoid long periods of direct sun exposure. work in the shade if possible	
		5	Vehicular traffic	Assess the site and the surrounding area for vehicular traffic. Use caution when walking near busy roadways. Wear traffic vest II or III	
		6	Stray animals, ticks, bugs	Make lots of noise when traveling through the site and carry repellent spray. If a dangerous or aggravated animal is spotted, leave the area and return to your vehicle and contact animal control. Wear long pants/long sleeve shirt and use insect repellent as necessary	

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
Foot Protection	steel-toe boots		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	first aid kit		Required
Personal	eye wash (specify type)		Required
Personal	insect repellant		Recommended
Personal	sunscreen		Recommended

Job Loss Analysis

General

Client Name	NATIONAL GRID
JSA ID	5442
Job Name	General Industry-Surveying - land
Task Description	Surveying
Project Number	B00367130000
Project Name	ILION (EAST STREET) FORMER MGP SITE
PIC Name	NUSS, JAMES
Project Manager	CORBIN, ANDREW
Status	(3) Completed
Creation Date	6/30/2011 1:22:54 PM
Auto Closed	False

User Roles

Role	Employee	Due Date	Completed	Approve	Supervisor	Active Employee
Created By	Nodine, Douglas	7/21/2011	6/30/2011		Benoit, Michael	True

Job Steps

Job Step	Job Step Description		Potential Hazard	Critical Action	HSP Reference
1	Site reconnaissance and walk-around	1	Slips/trips/falls can occur from walking on uneven ground surface.	Survey the site upon arrival. Note any site conditions that may pose a potential hazard.	
		2	Site workers or equipment can be struck by site vehicular traffic	Wear Class II traffic vest and cone off the work area. Follow the JLA and Field H&S Handbook for roadway work.	
2	Deployment and retrieval of traffic control devices during roadway work	1	Stuck by vehicles	Face traffic and use spotter if not facing traffic, stay off the travelled roadway to extent practical, wear Class II (minimum) traffic vest. Familiarize yourself with work zone control layout prior to deploying devices.	
		2	Slips trips and falls on uneven road or land surfaces	Do not carry objects that obscure visibility of ground surface when walking, wear footgear with ankle support and good tread, use buddy system when carrying large bulky objects.	
		3	Lifting heavy or bulky signage or traffic channeling device	Brake down load to manageable size. Do not over reach to grab cones from the interior of the project vehicle. Use proper lifting techniques, maintain good vehicle housekeeping to easily retrieve control devices. Use buddy system to move heavy objects like barrels.	
		4	Pinch points to hands on folding components of sign stands	Wear leather gloves or other suitable glove. Watch for hazard and avoid placing hands in pinch areas. Do not hurry through setup/take down task.	

3	Sharpen machete, brush axe or other cutting tool	1	Sharpening machete can cause lacerations and can generate metal shavings that can cause eye abrasions.	Secure blade to a sturdy fixture such as work bench and use vice. Make sure that sharp edge does not come in contact with fingers/body when sharpening. Sharpen blade 4"-10" above handle. Tip is not sharpened. Use Kevlar gloves and safety glasses.	
		2	Cuts from unsheathed/uncovered cutting tool upon completion of sharpening activity	Promptly sheath or cover cutting blade of cutting tool upon completion of sharpening task, do not "stick" machetes in ground until needed for use.	
4	Line cutting with machete	1	Improper use of the machete can cause lacerations	Do not reach or over-extend when cutting, and cut away from the body at 45 degree angle. Always keep machete sharpened. Do not use tool if the handle becomes wet/slippery. Never stick the blade into the ground--sheath machete when not in use. See the Field H&S Handbook for detailed machete use instructions (section DD).	Field H&S Handbook Section DD
		2	Utility lines can be accidentally severed during cutting	Inspect area for location of overhead lines prior to starting the task. Do not use machete when cutting vegetation that is close to utility lines. Use more appropriate tools such as garden clippers or shears.	Field H&S Handbook Section DD
		3	Biologicals such as poisonous plants, bees/wasps, and other insects can be encountered during cutting of vegetation or brush.	Attempt to identify biological concerns prior to starting task. Use identification techniques outlined in the Field H&S Handbook.	Field H&S Handbook Section DD
		4	Cardio and muscle fatigue can be experience from prolonged use of machete or when using machete for cutting of thick vegetation.	Take proper rest breaks, and rotate work jobs with co-workers. For thick vegetation, make sure the machete is the best tool for the job.	Field H&S Handbook Section DD
		5	Impalement hazards from falls onto stumps of cut vegetation	Be aware of hazard and avoid walking in cut areas where vegetation exists that could present an impalement hazard. In areas where longer term work areas are cleared, take time to cut vegetation closer to ground surface without an angular cut.	Field H&S Handbook Section DD
		6	Objects can fall once cut, or particles can become airborne getting into eyes or puncturing skin.	Wear hard hat, safety glasses and steel-toe shoes. Determine a safe fall zone. Do not use hard strokes when cutting with the machete to limit flying particles.	Field H&S Handbook Section DD
		7	Fallen branches and vegetation can cause tripping hazard	Remove freshly cut limbs and brush from the work area to ensure balance, reduce slips and falls, and reduce obstructions.	Field H&S Handbook Section DD
5	Line cutting using brush axe or chainsaw (must be approved by Party Chief).	1	Improper use of the bush axe or chainsaw can cause serious injury	Inspect equipment before use, and keep chain sharp. Hold the chainsaw with both hands, never cut above shoulder height. Keep saw close to your body. Carry brush axes sheathed and blade facing away from body. Do not carry brush axes when carrying other large or bulky objects.	Site clearing JLA
		2	Struck by brush axe	Maintain proper separation distance when cutting, ensure anti-slip tape or other material on handles of brush axe to prevent slipping out of hands , wear gloves with good gripping capability.	Site clearing JLA

5	Line cutting using brush axe or chainsaw (must be approved by Party Chief).	3	Utility lines can be accidentally severed during cutting	Inspect area for location of overhead lines prior to starting the task. Note direction of fall for trees and ensure contact with utility lines will not occur	Site clearing JLA
		4	Objects can fall once cut, or particles can become airborne getting into eyes or puncturing skin.	Wear hard hat, safety glasses and steel-toe shoes. Determine a safe fall zone. to limit flying particles.	Site clearing JLA
		5	Fallen branches and vegetation can cause tripping hazard	Remove freshly cut limbs and brush from the work area to ensure balance, reduce slips and falls, and reduce obstructions.	Site clearing JLA
		6	Noise hazards (chainsaw)	Wear hearing protection (ear plugs or ear muffs)	Site clearing JLA
6	Removal of manhole covers	1	Pinch points and scrape hazards when removing MH cover.	Do not place fingers under lid during removal, use shovels, pry bars, etc to place under lid edge to lift. Wear sturdy work glove. Wear steel toe boot, do not purposely drop lids.	
		2	Back/neck/arm/shoulder strains and hand blisters could occur from over lifting, or not lifting properly.	Use proper lifting techniques, keep back straight, lift with legs, use “J” Hook or pry bar, Buddy System required	
7	Equipment set-up, calibration and survey of target area	1	Slips/trips/falls can occur from walking on uneven ground surface.	Watch for uneven ground, debris, and trip hazards. If possible clear area of trip hazards. Wear gloves and heavy denim work pants to avoid cuts when working in heavy brush/briers. Use buddy system to spot for uneven ground while surveying.	
8	Placement of stakes	1	Hands/fingers/arms can get struck by hammer/mallet. Splinters and lacerations can occur if stake splints during hammering.	Wear leather work gloves and safety glasses when placing stakes.	
9	Placement of monuments	1	Back strain from digging holes or mixing concrete	Use proper shoveling techniques and keep back straight, Use right tool for the job.	refer to Concrete work JLA
		2	Exposure to concrete can cause skin irritation or illness	Wear impermeable glove during mixing and concrete placement, promptly wash exposed skin. Do not use bare hands to mix, place, or finish concrete.	refer to Concrete work JLA
		3	Inhalation of concrete dust during mixing	Keep face away from concrete when poured out of bag, Promptly wet concrete to be mixed.	refer to Concrete work JLA

Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	work gloves (specify type)	Kevlar for machete use, leather for cutting	Required
Head Protection	hard hat		Required
Miscellaneous PPE	other	chainsaw chaps	Required

Supplies

Type	Supply	Description	Required
Miscellaneous	fire extinguisher		Required
Miscellaneous	first aid kit		Required
Miscellaneous	Other	snake chaps depending on work location	Recommended
Personal	water/fluid replacement		Required
Traffic Control	traffic cones	for roadway surveying	Required

1. POLICY

It is the policy of ARCADIS that work done in or adjacent to roadways or areas of vehicular traffic be done so to protect employees from the hazards of moving traffic. In addition, ARCADIS complies with US Department of Transportation (USDOT), Federal Highway Administration (FHWA) and applicable State and local government agency requirements associated with traffic and safety and traffic control devices.

2. PURPOSE AND SCOPE

2.1 Purpose

This procedure provides guidance to employees on ARCADIS requirements to develop and implement a Traffic Control Plan (TCP) for all roadway work and work performed off the roadway but under the jurisdiction of a DOT agency (cumulatively referred to in this procedure as "Roadway Work Zone" [RWZ]). This procedure also provides guidance on general H&S issues associated with RWZ safety and training requirements.

2.2 Scope

This procedure is specific to ARCADIS work performed in the RWZ. Work zone safety and traffic control on private property is addressed in the ARCADIS H&S Procedure ARC DOT-302, "Traffic Control and Employee Safety on Private Roadways and Parking Areas." Alternate TCPs developed as part of project work or permit requirements may be used in lieu of the requirements of this procedure as long as the alternate requirements are in writing and equivalent worker protection is achieved.

3. DEFINITIONS

Engineering Judgment - The evaluation of available pertinent information and the application of appropriate principles, standards, guidance, and practices as contained in the Manual on Uniform Traffic Control Devices (MUTCD) and other sources, for the purpose of deciding upon the applicability, design, operation, or installation of traffic control devices. Engineering Judgment shall be exercised by a qualified engineer, or by an individual working under the supervision of a qualified engineer, through the application of procedures and criteria established by the engineer.

High Volume Road – Any roadway that is not classified as a Low Volume Road. Roadways of this type require Engineering Judgment employee involvement in the design of RWZ controls.

Low Volume Road –Means:

- A roadway lying outside of built up areas of cities, towns, and communities with a traffic volume of < 400 vehicles (average annual daily traffic [AADT]). Note: for visual reference, generally, any roadway which has a vehicle at ≥ 2 minutes intervals at peak periods (usually 0700-0800 and 1700-1800) is considered a Low Volume Road.

- Is not a freeway, expressway, interchange ramp, freeway service road, or a road on a designated State highway system.

- The roadway may have paved or unpaved completion.

"Must", "Shall" and "Will" – Means the requirement is mandatory, even if the condition is permitted by regulation to a less stringent standard. This definition also applies to equivalent terms in DOT Fact Sheets associated with this procedure.

Reasonable Time and Place - A condition where the employee conducting the required task is permitted to perform the task in a rested state, free from any condition that would compel the employee to hurry through the assigned task due to:

- Work schedule,
- Budget, and/or
- Mandate requiring the task be performed during times normally considered by employees to be free of any obligation to perform work on behalf of ARCADIS (vacation, holidays, etc.)

Roadway – That portion of a highway improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the sidewalk, berm, or shoulder. In the event a highway includes two or more separate roadways, the term roadway refers to any such roadway separately, but not to all such roadways collectively.

"Should" and "May" – Means the requirement is recommended, if the requirement(s) is not in conflict with an applicable regulatory requirement(s). This definition applies to equivalent terms DOT Fact Sheets associated with this procedure.

Temporary Traffic Control Zone – An area of a highway where road user conditions are changed because of a RWZ or incident by the use of temporary traffic control devices, flaggers, uniformed law enforcement officers, or other authorized personnel.

Traffic Control Device – A sign, signal, marking, or other device used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, pedestrian facility, or shared-use path by authority of a public agency having jurisdiction.

Roadway Work Zone – Any portion of a roadway, shoulder, median, or off the shoulder area under the jurisdiction of a DOT agency with non-rail responsibilities (Federal, State or local) and where ARCADIS performs work. This term also includes sidewalks, berms and road cuts.

Work or Working – Means an ARCADIS employee performing an activity in the interest of ARCADIS (work activities) within a RWZ. The term also includes ARCADIS employees taking rest breaks, eating or drinking within the RWZ in association with work activities. The term does not include crossing a roadway for work that is not performed in the RWZ unless otherwise specified by the project specific HASP, Job Loss Analysis (JLA) or TCP.

4. RESPONSIBILITIES

4.1 Corporate Health and Safety

Corporate Health and Safety (through the DOT Compliance Manager) has the overall responsibility for the development, revision and maintenance of the ARCADIS DOT Program for Work Zone Safety. The DOT Compliance Manager, working with ARCADIS transportation engineers and other designated employees will provide stewardship, education and auditing of this program to all affected Employees.

4.2 RWZ Program Steward

The Transportation Business Practice will designate a RWZ Program Steward to provide overall guidance and support to Corporate Health and Safety, especially the DOT Compliance Manager, in RWZ issues. The Steward will also aid in indentifying other engineers within ARCADIS to provide Engineering Judgment support for TCPs.

4.3 Managers and Supervisors

Each ARCADIS Manager acting in a Project Manager or Task Manager responsibility, over projects involving RWZ work, will steward the DOT Program for Roadway Work Zone Safety and audit, to the extent necessary, each project team member's compliance with this program. Each affected manager will:

- Ensure financial resources and appropriate time scheduled to adequately construct and implement required TCPs,
- Make employees that are responsible and accountable for implementing any TCP requirements, available at a reasonable time and place, to review the relevant TCP and provide an opportunity for the employees to ask questions regarding the plan's content.
- Hold employees implementing TCP requirements accountable if found in non compliance with the TCP requirements.
- Make employees responsible for the development of TCPs available at a reasonable time and place to obtain any required training mandated by this procedure or by federal or state regulation.

4.4 Employees

Each Employee having a responsibility to implement any aspect of a TCP will follow the TCP as instructed. Employees have the absolute right to stop work if asked to perform work (either by ARCADIS or the client) in a manner inconsistent with the TCP. If deviations from the TCP are necessary due to site or other conditions, these deviations will be documented and approved by employees with Engineering Judgment before the deviations are implemented.

5. PROCEDURE

5.1 General

All work performed in a Roadway Work Zone will be conducted under a written project-specific TCP. The required content of the TCP is presented in section 5.2 below. Elements of the TCP must be consistent with:

- The ARCADIS DOT Program for Roadway Work Zone Safety;
- Any applicable governmental or client issued permit for working within or adjacent to the roadway;
- The USDOT MUTCD; and/or
- The relevant state and local equivalent to the MUTCD.

All employees working in a RWZ must have protection from traffic hazards beyond the use of personal protective equipment (PPE). This includes any work in a Temporary Traffic Control Zone. Each TCP will address the specific project methods and equipment to be used to address employee protection beyond PPE.

The TCP is considered an extension of the project specific Health and Safety Plan (HASP). An ARCADIS Template TCP for Public Roadways is available on the DOT Team Site and in the HASP section of the Health and Safety Team Site of the APEX. Alternate formats of the TCP are acceptable as long as the format used is written and effective in ensuring worker protection from traffic hazards.

The TCP will be included as an appendix to the HASP for use by employees in the field.

5.2 TCP Requirements

5.2.1 Required TCP Elements

Each project specific TCP will be in writing and will contain the following elements:

- General Project Information
    - Project name;
    - Project number;

- RWZ starting point;
- RWZ end point;
- Duration of RWZ work;
- Any time restrictions issued by the agency having jurisdiction over the roadway
- Speed limits and number of lanes on roads where work will be performed.
- Name of individual responsible for developing the TCP;
- Name of individual performing an Engineering Judgment of the TCP; and
- Name of individual responsible for implementing the TCP ("TBD" or similar entry is not permitted). Back up persons may also be provided if they meet the requirements of this procedure.

- Work Description
  - A brief description of the work to be performed, including estimated durations of time the worker will be in the RWZ both cumulatively and at each specific work location, if applicable.
  - Details of any time restrictions will also be provided.
- Traffic Control Layout
  - A pictorial description created by drafting or legibly hand drawn of the layout of the traffic control devices used.
    - Compliance may be achieved by attaching the applicable DOT Facts 300 series fact sheet for **Low Volume Roads** to the TCP; or
    - For **High Volume Roads, pedestrian control or bicycle control**, attach the relevant Typical Application diagram from the MUTCD or relevant diagram or drawing of the layout from the appropriate state or local issued guidance document. To avoid project delays, these scenarios require an individual with Engineering Judgment to participate in the planning and design of the RWZ layout.
- Indication of the traffic control devices to be used on the project, as required and appropriate:
  - Number of warning signs including wording to be used on the signs.
  - Number of cones, barrels, etc.
  - Number of flaggers, etc.
  - Type message signing, including message content, if warranted

- Work sequence (phasing)
    - Describe the order in which traffic control devices will be deployed and removed from the roadway.
- Approvals
    - Signature and date TCP developer
    - Signature and date of engineer or other person designated as having Engineering Judgment by Corporate H&S and/or the RWZ Program Steward.
- Reviews
    - Signature and of each employee performing work within the RWZ.

5.3 General PPE Requirements

Each employee will wear, at a minimum, a Class II reflective vest meeting ANSI 107-1999 requirements either orange or lime green in color (the latter color is preferred). A Class III reflective vest should be used on roadways with high traffic volume and is required for night work or when working on roadways with posted speed limits greater than or equal to 55 miles per hour (mph).

Other required PPE includes:

- Safety glasses;
- Hard hat;
- Sturdy boot with ankle support (steel toe may be required based on project safety requirements);
- Other high visibility clothing as prescribed by the project specific HASP, JLA, or TCP and; and
- Other PPE required by the project specific HASP, JLA or TCP will also be worn as specified.

5.4 Vehicle Requirements

Each ARCADIS vehicle operated in a RWZ will be equipped with high intensity rotating, flashing, oscillating, or strobe lights. Required lighting will be maintained in operational condition at all times. Standard vehicle flashers when used alone are not acceptable to meet this requirement.

Consideration should be made with regard to the vehicle's intended use and configuration for selection, mounting and type of high intensity lighting used. Vehicles involved with long term use of high intensity lighting should be equipped with energy efficient lighting to reduce the potential for vehicle battery drain.

6. Training

Each employee having a responsibility to implement any aspect of the TCP will be trained to the level appropriate to perform the required duty. The training will be consistent with any state requirements (like "flagger training"). At a minimum, the training will include review of this procedure and any applicable DOT Fact Sheets to the project work being performed.

In the absence of any client, state or local mandated flagger certification and/or training requirements, employees involved in flagger duties will be trained in the ARCADIS Flagger Training Program every 2 years.

Persons with TCP development and/or Engineering Judgment responsibilities will have training commensurate with all aspects of the traffic control application being utilized.

7. Reference Documents

- Manual on Uniform Traffic Control Devices, US Department of Transportation, Federal Highway Administration, current edition.
- ARC DOT-302, "Roadway Work Zone Safety, Traffic Control and Employee Safety on Private Roadways and Parking Areas."
- ARCADIS Traffic Control Plan Template for Public Roadways
- ARCADIS DOT Facts 300 series fact sheets

8. Records

TCPs, including any attached documents and permits, will be retained with the project specific HASP in the project files. The TCP and associated documents may be kept in hard copy or electronic formats. File retention for TCPs and associated documents will be consistent with ARCADIS requirements for document retention.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Sam Moyers, DOT Compliance Manager, ARCADIS

Approved By: Mike Thomas, H&S Director for Environment Division

History of Change

Revision Date	Revision Number	Reason for change
October 30, 2009	DRAFT	Original draft document
November 4, 2009	DRAFT	Revised draft
November 9, 2009	DRAFT	Final draft
January 4, 2010	1	Final document

1. POLICY

It is the policy of ARCADIS that employees performing work in or adjacent to private roadways or in parking areas be adequately protected from vehicular and equipment traffic.

2. PURPOSE AND SCOPE

2.1 Purpose

This procedure provides guidance to employees on ARCADIS requirements for protection from site traffic on private roadways and work in parking areas not under the control of DOT or similar jurisdiction. This procedure provides requirements for preparation of a Site Traffic Awareness and Response (STAR) Plans for private property traffic control and management. This procedure also provides guidance on general H&S issues associated with safety and training requirements.

2.2 Scope

This procedure is specific to ARCADIS work performed in private roadways and parking areas. Work zone safety and traffic control on public roadways is addressed in the ARCADIS H&S Procedure ARC DOT-301, "Traffic Control and Employee Safety on Public Roadways" (ARC DOT-301).

This procedure does not address work on airport or railroad property where exposure to plane or train traffic is expected.

If the client has more restrictive requirements than what is presented in this procedure, the more restrictive requirement will apply.

3. DEFINITIONS

Engineering Judgment - The evaluation of available pertinent information and the application of appropriate principles, standards, guidance, and practices as contained in the Manual on Uniform Traffic Control Devices (MUTCD) and other sources, for the purpose of deciding upon the applicability, design, operation, or installation of traffic control devices. Engineering Judgment shall be exercised by a qualified engineer, or by an individual working under the supervision of a qualified engineer, through the application of procedures and criteria established by the engineer.

Client Site - Any portion of the client's facility under the control of the client and is not part of the public right of way. Excludes airports and railroad property where exposure to plane or train traffic is expected..

"Must", "Shall" and "Will" – means the requirement is mandatory. This definition also applies to equivalent terms in DOT Fact Sheets associated with this procedure.

Parking Area or Parking Lot – Any portion of the client site designated for parking vehicles or equipment. Paved or unpaved completion.

Reasonable Time and Place - A condition where the employee conducting the required task is permitted to perform the task in a rested state, free from any condition that would compel the employee to hurry through the assigned task due to:

- Work schedule,
- Budget, and/or
- Mandate requiring the task be performed during times normally considered by employees to be free of any obligation to perform work on behalf of ARCADIS (vacation, holidays, etc.)

Roadway – That portion of a road improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the sidewalk, berm, or shoulder.

"Should" and "May" – Means the requirement is recommended, if the requirement(s) is not in conflict with an applicable regulatory or client requirement(s). This definition also applies to equivlanet terms in DOT Fact Sheets associated with this procedure.

STAR Plan – A plan for the control and management of traffic on private roadways or parking areas for the protection of project workers. The term includes any requirements presented in project specific HASPs, Job Loss Analyses (JLAs), and/or in a STAR Plan template.

Temporary Traffic Control Zone – An area of a highway where road user conditions are changed because of a roadway work zone or incident by the use of temporary traffic control devices, flaggers, uniformed law enforcement officers, or other authorized personnel.

Traffic Control Device – A sign, signal, marking, or other device used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, pedestrian facility, or shared-use path by authority of a public agency having jurisdiction.

4. RESPONSIBILITIES

4.1 Corporate Health and Safety

Corporate Health and Safety (through the DOT Compliance Manager) has the overall responsibility for the development, revision and maintenance of the ARCADIS DOT Program for Work Zone Safety.

4.2 Managers and Supervisors

Each ARCADIS Manager acting in a Project Manager or Task Manager responsibility, over projects involving STAR work, will steward the DOT Program for Work Zone Safety and audit, to the extent necessary, each project team member's compliance with this program. Each affected manager will:

- Ensure financial resources and appropriate time scheduled to adequately construct and implement required STAR Plans,

- Make employees that are responsible and accountable for implementing any STAR Plan requirements available at a reasonable time and place to review the relevant STAR Plan and provide an opportunity for the employees to ask questions regarding the plan's content.

- Hold employees implementing STAR Plan requirements accountable if found in non compliance with the STAR Plan requirements.

- Make employees responsible for the development of STAR Plans available at a reasonable time and place to obtain any required training mandated by this procedure or by federal or state regulation.

4.3 Employees

Each Employee having a responsibility to implement any aspect of a STAR Plan will follow the STAR Plan as instructed. Employees have the absolute right to stop work if asked to perform work (either by ARCADIS or the client) in a manner inconsistent with the STAR Plan. If deviations from the STAR Plan are necessary due to site or other conditions, these deviations will be documented.

5. PROCEDURE

5.1 General

All work performed on or adjacent to private roadways and parking areas will be conducted in a manner that will protect workers from site traffic. Requirements for private property traffic control will be addressed in the project specific HASP, JLA or in the STAR Plan template. Elements of the STAR Plan must be consistent with:

- The ARCADIS DOT Program for Roadway Work Zone Safety; and/or

- Any applicable client requirement relating to facility traffic control;

All employees working in a STAR area must have protection from traffic hazards beyond the use of personal protective equipment (PPE). This includes any work in a Temporary Traffic Control Zone on a private roadway or in a parking lot. Each STAR Plan will address the specific project methods and equipment to be used to address employee protection beyond PPE.

The STAR Plan is considered an extension of the project specific HASP. An ARCADIS STAR Plan Template is available on the DOT Team Site and in the HASP section of the Health and Safety Team Site of the APEX to facilitate adherence to this procedure, however, use of the template is not mandatory as long as effective written controls are addressed in the HASP or JLA for the project.. Alternate formats of a standalone STAR Plan are acceptable if a specific format is required by a client.

The STAR Plan template, if utilized, will be included as an appendix to the HASP for use by employees in the field.

5.2 Relationship of STAR Plan Requirements to the DOT MUTCD

STAR design and layout used should be consistent with the MUTCD to the extent practical. Traffic control devices used for traffic control on private roadways and parking areas will meet MUTCD requirements for color, shape, reflectivity, and design.

5.3 Relationship of STAR Plan to Traffic Control Plan (TCP) Requirements for Public Roadways

Project sites with on-site activities requiring development of a STAR Plan and also having off-site activities requiring a TCP, may have all requirements for both on-site and off-site traffic control presented in a TCP that is reviewed and approved by an employee with Engineering Judgment. See ARC DOT-301 for more information.

5.4 STAR Plan Requirements

5.4.1 Required STAR Plan Elements

Each project specific STAR Plan will be in writing (computer generated or hand written) and will contain the following elements:

- General Project Information (see note below)
    - Project name;
    - Project number;
    - Name of individual responsible for developing the STAR Plan;
    - HASP Reviewer name;
    - Name of individual responsible for implementing the STAR Plan (“TBD” or similar entry is not permitted). Back up persons may also be provided if they meet the requirements of this procedure.
- Project Description (see note below)
    - A brief description of the work to be performed, including estimated durations of time the worker will be in the roadway or parking area.
- Anticipated vehicles or equipment expected to be encountered on the client site.
- STAR Layout
    - A narrative or pictorial (created by drafting or legibly hand drawn) description, of the traffic control device layout. Compliance may be achieved by:
        - Attaching the applicable DOT Facts 301 or 302 series fact sheet(s) to the STAR Plan; or

- Attaching the relevant diagram, drawing or narrative from client specific documents; or
- Attaching a specific legible drawing relevant to the condition expected to be encountered during project work.
- Manual revisions of the above documents are authorized to ensure project specific control.

- Indication of the traffic control devices, as appropriate and applicable, to be used on the project:
  - Number of warning signs including wording to be used on the signs.
  - Number of cones, barrels, etc.
  - Number of flaggers, etc.
- Approvals (see note below)
  - Signature and date STAR Plan developer.
  - Signature of HASP Reviewer (an employee with Engineering Judgement may also approve a STAR Plan even if not designated as a HASP Reviewer).
- Reviews (see note below)
  - Signature and of each employee performing work within the private roadway or parking area

Note: Information does not need to be duplicated if embedding the STAR Plan requirements within a HASP or JLA (project numbers, names, signatures, etc).

5.5 General PPE Requirements

Each employee will wear, at a minimum, a Class II reflective vest meeting ANSI 107-1999 requirements either orange or lime green in color (the latter color is preferred). A Class III reflective vest is required if night work.

Other required PPE includes:

- Safety glasses;
- Hard hat;
- Sturdy boot with ankle support (steel toe may be required based on project safety requirements); and
- Other PPE, including any other required high visibility clothing, required by the project specific HASP, JLA or STAR Plan template will also be worn, as specified.

5.6 Cone Requirements

Cones used in parking areas will meet recommended height and visibility requirements in DOT Facts-302b. At least one 42 inch high channelizer cone will be available at each work location in the parking area. Cones may be augmented with flags to increase visibility.

5.7 Use of Safety Fencing and High Visibility Caution Tape

Use of orange safety fencing and/or high visibility caution tape is recommended for static work activities in parking areas having durations greater than 1 hour per location. These devices may be used for shorter duration work if specific pedestrian control is required. Example work activities where use of these devices is recommended include, but is not limited to:

- Drilling operations;
- Excavation operations; and/or
- Long term aquifer testing activities.

Use of these devices should be used in conjunction with 42 inch tall channelizer cones. Caution tape and safety fencing will be inspected and maintained in good, secure condition at all times when used on the project.

5.8 Vehicle Requirements

Each ARCADIS operated vehicle operated in a private roadway work zone should be equipped with high intensity rotating, flashing, oscillating, or strobe lights. If the supplementary lighting is present, the lighting will be maintained in operational condition at all times. Standard vehicle flashers will be when used if other suggested lighting is not available.

6. Training

Each employee having a responsibility to implement any aspect of the STAR Plan will be trained to the level appropriate to perform the required duty. The minimum training requirement includes review of any applicable DOT Fact Sheet(s) relevant to the work being performed and/or other applicable work standard.

7. Reference Documents

- Manual on Uniform Traffic Control Devices, US Department of Transportation, Federal Highway Administration, current edition.
- ARC DOT-301, “Roadway Work Zone Safety, Traffic Control and Employee Safety on Public Roadways.”

- ARCADIS STAR Plan Template for Private Roadways and Parking Areas
- ARCADIS DOT Facts 300 series fact sheets

8. Records

STAR Plans, including any attached documents, will be retained with the project specific HASP in the project files. The STAR Plan and associated documents may be kept in hard copy or electronic formats. File retention for STAR Plans and associated documents will be consistent with ARCADIS requirements for document retention.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Sam Moyers, DOT Compliance Manager, ARCADIS

Approved By: Mike Thomas, H&S Director for Environment Division

History of Change

Revision Date	Revision Number	Reason for change
October 30, 2009	DRAFT	Original draft document
November 4, 2009	DRAFT	Revised draft
January 4, 2010	1	Final document

1. POLICY

It is ARCADIS US policy to be proactive in the identification, assessment and control of health and safety hazards and associated risks. To those means, any work involving trenching and excavation that is under the control or direction of ARCADIS or an ARCADIS subcontractor will be accomplished following, at a minimum, this procedure.

It is ARCADIS' policy that ARCADIS staff will not enter excavations and trenches unless it is absolutely necessary. If there are no suitable alternatives and it becomes necessary to enter excavations or trenches, this procedure, at a minimum will be strictly followed.

It is also the policy of ARCADIS to ensure an OSHA-defined Excavation Competent Person is on-site for all excavation work under ARCADIS contractual control. The competent person will be provided by the entity on site responsible for performing the excavation work unless otherwise required by the client. Thus, if an ARCADIS subcontractor is conducting the excavation work, that subcontractor will provide the competent person. If ARCADIS is self-performing the excavation services, then ARCADIS will provide a competent person whether a specialized subcontractor or authorized employee.

2. PURPOSE AND SCOPE

2.1 Purpose

To effectively control or eliminate the hazards presented by working near or entry into excavations or trenches, this procedure sets forth the accepted practice for and establishes the requirements for workplace safety near excavations and trenches and employee and subcontractor entry into such.

2.2 Scope

This procedure along with associated checklists and the Utility Location procedure (ARC HSFS019) apply to all employees of ARCADIS-US. Only trained and authorized personnel are permitted to work near or enter excavations and trenches, perform rescue services, or act as the excavation competent person.

3. DEFINITIONS

Exhibit 1 includes relevant definitions to this procedure including that for competent person qualifications.

4. RESPONSIBILITIES

4.1 Corporate H&S with Division and Practice Experts

On an annual basis, review and update, as necessary, this procedure. In addition, review cancelled checklists periodically to ensure conformance to this procedure. Provide the excavation competent person and qualified person training and retraining, or recommend qualified training provider. Provide technical assistance regarding excavation and trench

protocol, atmospheric testing equipment, PPE, hazard assessment and research information on unusual hazards. Audit project-specific excavation sites for compliance with this procedure.

4.2 Principal in Charge (PIC), Project Manager (PM), and Task Manager (TM)

PIC, PM and TMs are responsible to:

- Verify that all excavation and trench protocols are properly identified and addressed within the project work plan, project health & safety plan, and/or other project-related documents.
- Verify that their divisional or project team employees have received the proper training provided by Corporate Health & Safety or qualified training source prior to conducting excavation/trenching entry activities.
- Verify that any ARCADIS employee acting as the Excavation Competent person has been authorized and trained to do so as noted in Exhibit 1
- Verify that the proper entry equipment, including personal protective equipment (PPE), atmospheric testing equipment and safety equipment, is available for use by their divisional employees.
- Verify that copies of the completed checklists are available for Corporate Health and Safety review and retained with the project files

4.3 Health and Safety Plan Writers and Reviewers

Utilize this procedure as guidance to ensure the appropriate identification, assessment and control of excavation and trenching hazards for documentation in project HASPs

4.4 Entry/Work Supervisors (also see Training and Duties of Entry Supervisor)

- Work in direct coordination with and under the direction of the project excavation competent person
- Interface with the client representative to identify hazards associated with the client's excavation and trenching and/or work permit programs.
- Review existing soil sampling (if any) data or other pertinent hazard characterization information recorded by the client.
- Investigate the client's excavation/trenching protocol, to verify that any identified hazards and previous experience with earthwork at the site is properly communicated.
- Coordinate entry operations with the client's employees when both client and ARCADIS employees will be working in or near an excavation/trench.

- Coordinate necessary rescue assistance with either the client's in-house rescue team and/or the offsite rescue assistance specified by the client. The offsite rescue assistance specified by the client must have applicable rescue experience and be within a reasonable response distance.

- Verify that the client takes the necessary precautions in notifying their employees that our employees will be installing an excavation or trench.

- Review the lockout/tagout and isolation measures implemented by the client as necessary based on proximity of utilities or other energy sources in the area of the excavation/trench

- Immediately report any unusual or unforeseen excavation or trenching hazards to Corporate Health and Safety prior to authorizing entry

- Verify that all tests and precautionary measures identified on the Daily/Periodic Inspection Checklist located in Exhibit 1 and the ARCADIS Utility Location Policy and Procedure ARC HSFS019 has been performed prior to authorizing subsurface work or entry into an excavation or trench

- Offer all entrants an opportunity to review the applicable control measures and testing results and an opportunity to request a reevaluation as necessary

- Issue, authorize, and have the Utility Clearance and Daily/Periodic Inspection forms readily available for review

- Verify that copies of the completed clearance forms and checklists are properly disseminated to Corporate Health and Safety and retained with the project files, as specified in Section 8.0 – Records.

4.5 Entrants

- Qualified Employee Entrants must have training and instruction in their duties and responsibilities regarding the following:

- Recognize the hazards which may be faced during entry, as well as the signs and symptoms of exposure to the hazard(s).

- Maintain visual contact and/or verbal communications with the attendant at all times.

- Use the PPE, air monitoring and testing equipment that has been provided or have access to the information.

- Maintain an awareness of all required hazard controls and consult with the Competent Person as necessary

- Obey evacuation orders given by the Attendant, automatic alarm activation, or when self-perceived.

4.6 Competent Person

Meet all of the requirements specified for the Qualified Employee Entrants plus adequate training and experience for their duties and responsibilities to complete the following tasks:

- Anticipation, identification and control of excavation and trenching hazards, as well as the signs and symptoms of exposure to the hazard(s), and the Authority to implement all corrective actions including Stopping Work.
- Implement the ARCADIS Utility Clearance Policy and Procedure and complete the Daily/Periodic Excavation Inspection Checklist
- Verify adequate training and experience of all Entrants prior to entry

4.7 Attendants

- An attendant must be stationed outside the excavation and be available to monitor operations above and below ground. The attendant may have no other duties besides those listed in this section.
- All attendants must have training and instruction in their duties and responsibilities regarding excavation/trenching entry. The following are assigned duties.
- Maintain an accurate count of all entrants in the excavation
- Monitor activities both inside and outside the excavation/trench to verify the continued safety of entrants
- Maintain visual contact or verbal communication with all entrants
- Order evacuation of the excavation/trench if an uncontrolled hazard develops, either within or outside the space, or upon observing a behavioral effect of hazard exposure among entrants
- Keep unauthorized persons away from the excavation area
- Participate in non-entry rescue as appropriate
- Summon rescue and other emergency services
- Attendants must maintain current certification in basic first aid and cardiopulmonary resuscitation (CPR).

4.8 All ARCADIS Employees

Use the TRACK process described below regularly and frequently. In addition, employees read and understand all documented hazard identification and risk assessments conducted using the HARC process and documented in HASPs, JSAs, and other written plans that are associated with their work. ARCADIS employees will:

- Recognize the hazards of trenches and excavations
- Understand and follow the methods for working near trenches and excavations
- Notify the PIC, PM, TM or entry/work supervisor if they have not received appropriate training
- Participate in entry operations only if trained and authorized to do so
- Never enter an excavation/trench without completion of the required Utility Location Procedure, Daily/Periodic Inspection Checklist and have an authorized attendant
- Never attempt entry rescue within a excavation unless trained in entry rescue with appropriate equipment available
- If unexpected conditions arise during entry, immediately notify other entrants, evacuate the space and inform the designated Competent Person

5. PROCEDURE

5.1 General Safety Requirements for all Excavations

- All surface obstructions must be moved or supported so as to protect employees and equipment.
- Prior to excavation, all underground installations (water, electric, telephone, gas, etc.) must be located and documented in accordance with ARCADIS Utility Clearance Policy and Procedure ARC HSFS019.
- When excavating in areas near underground installations, proper precautions must be taken to determine the exact location of the installations and to adequately protect and support them. While an excavation is open, underground installations shall be protected, supported or removed as necessary to protect employees.
- Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person.
- Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.
- Ladders used for access and egress from the excavation must extend at least 36” (3 feet) above the landing surface.

- If personnel are working in a location exposed to vehicular traffic they must be provided with and be required to wear reflective safety vests. Adequate, signs, barriers or other equivalent traffic controls must be used to protect employees.

- Personnel are not permitted to be beneath elevated loads handled by equipment or be in excavations when heavy equipment is digging in or near the excavation.

- Mobile equipment located near open excavations must be adequately protected from falling or rolling into excavations by the use of barricades or warning devices.

- All excavations over 4 feet in depth must be tested for hazardous atmospheres whenever personnel are required to enter and a potential exists for the existence of hazardous contaminants or oxygen deficiency. Excavations less than 4 feet in depth must be evaluated by the competent person and at the competent person's discretion be tested for hazardous atmospheres whenever personnel are required to enter and a potential exists for the existence of hazardous contaminants or oxygen deficiency.

- Means of rescue including a lifeline and body harness must be used by personnel entering excavations with a potential for air hazards. A standby person must be stationed outside the excavation to tend the lifeline(s).

- Water must not be allowed to accumulate in open excavations where employees are working. When necessary, means such as diverting natural drainage around the excavation or actively pumping water must be used to prevent or control water accumulation.

- All structures adjacent to an open excavation must be supported, or a registered professional engineer (PE) must determine that the structure will not be affected by the excavation activities.

- Excavated materials (spoil) must be placed no closer than 2 feet from the edge of an open excavation, and otherwise retained to prevent loose material from falling into the excavation.

- Protection such as guardrails, barricades or covers must be in place to protect personnel from possible falls into open excavations, pits, wells and shafts.

- Work tasks will be designed to limit the number of personnel required to enter any excavation. All tasks that can be completed remotely from outside the excavation (such as soil sampling) will be conducted in such a manner.

- Personnel will not be allowed to enter any excavation unless adequate protective systems and procedures are utilized to prevent accidents and injury.

- All excavations over four feet in depth shall be provided with a stairway, ladder, ramp, or other safe means of egress so as to require no more than 25 feet of lateral travel. As deemed necessary by the competent person, excavations less than 4 feet in depth will be provided with a stairway, ladder, ramp, or other safe means of egress so as to require no more than 25 feet of lateral travel.

5.2 Excavations Requiring Protective Systems

This section defines excavations that require protective systems.

- All excavations into which employees will enter, regardless of depth, where the potential for cave-in exists.

- Any excavation over 4 feet in depth into which employees will enter that is not entirely in stable rock as defined in this procedure.

- Any excavation near a structure, (e.g. foundations, piers, footers, walls, sidewalks, tanks, roadways, etc.), as required by the registered professional engineer reviewing the stability of the excavation and the structure.

- All excavations over 20 feet in depth must be designed by a registered professional engineer regardless of whether personnel will enter it or not.

- All excavations with adjacent structures which are located a distance less than 6 times the depth of the excavation away shall be reviewed by a registered professional engineer to determine if the stability of the structure will be affected by the excavation.

- Support systems for an adjacent structure must be designed by a registered professional engineer.

5.3 Selection and Use of Protective Systems

5.3.1 Shoring or Shielding

- If shoring or shielding is selected as the protective system for an excavation, soil classification in accordance with 1926 Subpart P Appendix A (see Section 9 of this procedure) is required.

- One of the following options must be utilized for all excavations which will be shored or shielded.

    - Timber shoring as specified in 1926 Subpart P Appendix C must be utilized

    - Hydraulic shoring, trench jacks, air shores, or shields as required in 1926.652 (c)(2) must be utilized following the system manufacturer's data

    - A system which follows other tabulated data (approved by a registered professional engineer) must be utilized

- The excavation must be designed by a registered professional engineer

5.3.2 Sloping

- If sloping is selected as the protective system for an excavation, the excavation sides must be sloped at a maximum of 34 degrees (1.5 Horizontal: 1 Vertical), unless the procedure listed above is followed.

- Soil classification in accordance with Section 10 of this procedure) is required for all excavations with sides which will be sloped greater than 34^{o} (1.5 Horizontal: 1 Vertical). If it will be sloped greater than 34^{o}, the one of the following options must be utilized:

    - Option 1 - assume Type C and slope 1.5/1 - probably the most common and preferred method for us
    - Option 2 - classify soil according to the standard and use Type A/B sloping requirements
    - Option 3 – use other tabulated data with PE approval
    - Option 4 – PE approval of sloping/benching design

5.4 Atmospheric Testing for Entry

Any excavation over 4 feet in depth with a potential for hazardous contaminants or oxygen deficiency must be tested for hazardous atmospheres prior to and during activities involving entry. After atmospheric testing, if the area is found to be oxygen deficient or a hazardous atmosphere exists or could exist a confined space permit must be obtained if the area will be entered.

The site designated "competent person" will document initial and periodic air monitoring results for all activities requiring entry into the excavation. All atmospheric testing of excavations must be conducted in the following sequence and meet the following air quality criteria.

- Oxygen content must be 19.5 to 23.5%
- Combustible gas or vapor must not exceed 10% of its lower explosive limit (LEL)
- Toxic air contaminant levels must not exceed 50% of the PEL or TLV for the specific contaminant whichever is lower
- Carbon monoxide must not exceed 10 ppm for a 5 minute average or ceiling value of 25 ppm
- Hydrogen sulfide must not exceed 0.5 ppm

5.5 Location of Underground/Overhead Utilities

- The competent person and the project manager shall both verify that local underground facilities location/protection agencies are notified within the required time frame prior to the initiation of excavation activities and meet all requirements in the ARCADIS Utility Location Policy and Procedure ARC HSFS019.

- Prior to initiation of excavation or trenching operations the competent person shall verify that all utilities have been located.

5.6 Daily/Periodic Inspections

- Prior to initiation of daily excavation or trenching operations the competent person shall complete a daily inspection of the excavation.

- During excavation or trenching operations the competent person shall complete a periodic inspection after any event (e.g., thunderstorm, vibration, excessive drying) that may affect excavation stability.

- The competent person shall complete the daily/periodic inspection checklist (A copy of the checklist is attached to this Policy as Exhibit A– Subcontractors must complete an equivalent inspection form) is completed for each inspection of excavation and trenching activities.

5.7 Soil Classification for Selection of Protective Systems

5.7.1 Soil Classification

This section describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. This section contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

This section applies when a sloping, benching or shoring system is utilized as a method of protection for employees from cave-ins.

5.7.2 Soil Classification Definitions

5.7.2.1 Types/Classes of Soil

Type/Class A Soils are cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) (144kPa) or greater. Examples of cohesive soils are: Clay, silty clay, sandy clay, clay loam and in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if the following apply.

- The soil is fissured

- The soil is subject to vibration from heavy traffic, pile driving, or similar effects
- The soil has been previously disturbed
- The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4 Horizontal:1 Vertical) or greater
- The material is subject to other factors that would require it to be classified as a less stable material

5.7.2.1.1 Type Class B Soils

- Cohesive soils with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa)
- Granular cohesionless soils including angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam
- Previously disturbed soils except those which would otherwise be classed as Type C soil
- Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration
- Dry rock that is not stable
- Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4 Horizontal:1 Vertical), but only if the material would otherwise be classified as Type B

5.7.2.1.2 Type/Class C Soils

- Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less
- Granular soils including gravel, sand, and loamy sand
- Submerged soil or soil from which water is freely seeping
- Submerged rock that is not stable
- Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4 Horizontal:1 Vertical) or steeper

5.7.2.2 Methods for Classifying Soils

Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in this section. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis conducted by a competent person using tests described below, or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

The visual and manual analyses, such as those noted as being acceptable in this section, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits. Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.

Observe the following:

- Samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine grained material is cohesive material. Soil composed primarily of coarse grained sand or gravel is granular material.

- Soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.

- The side of the open excavation and the surface area adjacent to the excavation. Crack like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.

- The area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.

- The open side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.

- The area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the level of the water table.

- The area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.

5.7.2.3 Classifications

A. Plasticity. Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8 inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two inch (50 mm) length of 1/8 inch thread can be held on one end without tearing, the soil is cohesive.

B. Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.

C. Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicable after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.

D. Other strength tests. Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand operated shearvane.

E. Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick (2.54 cm) and six inches (15.24 cm) in diameter until it is thoroughly dry:

    1. If the sample develops cracks as it dries, significant fissures are indicated.

2. Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as an unfissured cohesive material and the unconfined compressive strength should be determined by using the thumb penetration or other test.

5.7.2.4 If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

5.7.2.5 Layered system

A layered system shall be classified in accordance with its weakest layer. Each layer may be classified individually where a more stable layer lies under a less stable layer.

5.7.2.6 Reclassifying Soils

A layered system shall be classified in accordance with its weakest layer. Each layer may be classified individually where a more stable layer lies under a less stable layer.

In most instances the ARCADIS designated Excavation/Trenching Competent person will assume Type C soil, unless they have conclusive data to validate Type A or B.

5.7.2.7 Excavation Construction Based on Soil Type

The Maximum allowable slope means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V). Short-term exposure means a period of time less than or equal to 24 hours that an excavation is open. Soil and rock deposits must be classified in accordance with Appendix A to Subpart P of Part 1926. The maximum allowable slope for a soil or rock deposit must be determined from the table provided below. The actual slope must not be steeper than the maximum allowable slope. The actual slope must be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope must be cut back to an actual slope which is at least horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope. When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person must determine the degree to which the actual slope must be reduced below the maximum allowable slope, and must assure that such reduction is achieved. Surcharge loads from adjacent structures must be evaluated in accordance with

1926.651(I). Configurations of sloping and benching systems must be in accordance with 29 CFR 1926 Subpart P, Appendix B.

EXCAVATION SLOPE TABLE 2 29 CFR 1926 SUBPART P APPENDIX B MAXIMUM ALLOWABLE SLOPES	
Soil or Rock Type	**Maximum Allowable Slopes (H:V)[1] for Excavations Less Than 20 Feet Deep[2]**
Stable Rock	Vertical (90 degrees)
Type A[3]	¾:1 (53 degrees)
Type B	1:1 (45 degrees)
Type C	1:½ (34 degrees)

1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
2. Sloping or benching for excavations greater than 20 feet deep must be designed by a registered professional engineer.
3. A short-term maximum allowable slope of 1/2H:1V (63 degrees) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth must be 3/4H:1V (53 degrees).

6. TRAINING

6.1 Project - Specific Training

All staff working on a site where trenching and excavation activities are being conducted by ARCADIS or its subcontractors will be provided with site orientation on excavation projects shall include a discussion of the following:

- Site excavation hazards and procedures
- Requirements for conducting activities remotely whenever possible
- Client requirements and procedures for excavation activities
- This Procedure

Daily Safety Meetings on projects involving excavation activities shall include a discussion of:

- Site excavation hazards and procedures
- Requirements for conducting activities remotely whenever possible
- Client requirements and procedures for excavation activities

- This Excavation and Trenching Procedure, as appropriate

6.2 Additional Training

Besides site orientation training, additional training will be provided as follows based on the employee's activities:

- All employees who work in the area of potential excavation/trenching sites will receive awareness level training as provided and/or approved by ARCADIS Corporate H&S in order to recognize and to understand the hazards.

- Entrants, Attendants, and Entrant Supervisors will receive additional training as approved by Corporate H&S. This training will be classroom in nature and cover the details of trenching and excavation hazards and controls

- Qualified Competent Persons will be provided training as follows:

  In order to be assigned duties as a competent person with respect to excavation and trenching, in addition to the criteria noted in Exhibit 1, personnel must complete an ARCADIS approved training course or an equivalent course approved by Corporate Health and Safety including but not limited to the following topics:

  - Introduction to trenches and excavations
    - Definition of trenches and excavations
    - General requirements of OSHA 29 CFR 1926 Subpart P
  - Responsibilities and requirements of a competent person
    - Necessary authority
    - When other/outside resources may be necessary
  - Hazard Identification and Assessment
    - Cave-In Hazards including nearby structures
    - Underground utilities
    - Confined Space
    - Hazardous atmospheres
    - Water accumulation
    - Vehicular traffic and falling loads
  - Hazard controls

- Soil analysis and testing (visual and manual
- Protective systems
  - Shoring
  - Sloping
  - Shielding
  - Benching
- Personal protective equipment
- Utility location
- Atmospheric testing
- Water drainage and pumping
- Site housekeeping and management
  - Spoils
  - Traffic control
  - Overhead hazard protection
- Communications
  - Verbal
  - Signaling
- Access and egress

- Emergency Procedures
  - Warning signs of cave-in
  - Evacuation procedures
  - Rescue
- Inspections
  - Checklists
  - Potential deficiencies

All training provided must be reviewed and approved by Corporate Health & Safety and will be managed through the Training Team.

Documentation of training certification received by attendance at any training course including externally provided training courses will be kept by the employee with copies provided to the Training Team

7. REFERENCES

7.1 ARCADIS Health and Safety Procedure ARC HSFS010– Health and Safety Planning

7.2 ARCADIS Health and Safety Procedure ARC HSFS004 – Control of Hazardous Energy (Lockout/Tagout)

7.3 ARCADIS Utility Clearance Policy and Procedure ARC HSF019

7.4 ARCADIS Confined Space Policy and Procedure ARC HSF003

7.5 OSHA 29 CFR Part 1926 Subpart P - Excavations

8. RECORDS

8.1 Training records will be kept by the individual employee with copies of such certificates kept by the Training Team. Training dates and times will be kept by the Training Team.

8.2 Completed clearance forms and checklists will be kept in the project files with copies available for Corporate H&S review.

8.3 Copies of all HASPs that document excavation trenching procedures will be kept in the project files.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Michael Thomas, CIH, CPEA

History of Change

Revision Date	Revision Number	Reason for change
12 May 2008	01	Original document

Revision Date	Revision Number	Reason for change
13 June 2008	02	Modified Section 5.1 – 4th bullet related to structural ramps. Modified Section 5.2 to designate a 6x factor for structural integrity of structures near the excavation. Revised Exhibit 1 to modify the definition of a Competent person
9 January 2009	03	Cleaned up definitions, deleted training requirements from Section 5.0 and moved them to Section 6.0, modified purpose statement

Exhibit 1 – Definitions

Attendant is a trained qualified individual stationed outside the excavation whose duty is to monitor authorized entrants inside the excavation or trench and have a means of communication with the designated rescue services.

Benching/Benching system means a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

Cave-in means the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury or otherwise injure and immobilize a person.

Competent person means one who, through education, training, and/or experience, is capable of identifying existing and predictable hazards or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them. All ARCADIS employee's, must meet the following minimum requirements to be considered a Competent Person:

- Be nominated to the appropriate Division H&S Director by their supervisor or project manager to be considered as a competent person. The nomination will include the submittal of various documentation that describes why the person should be nominated and to provide evidence that they have met the criteria listed below.
- Be jointly approved by the appropriate Division H&S Director and the appropriate Practice/Client H&S Manager or resource.
- Attend ARCADIS Competent Person training or an equivalent course approved by Corporate Health and Safety
- Have a minimum of 1 year of supervised field experience and approval from their supervisor to fill the role of competent person
- If on an Environmental project where HAZWOPER training is required by ARCADIS, completed a 40 Hour HAZWOPER and HAZWOPER Supervisor training course and be current on their annual 8 Hour refresher
- Attended a 10 or 30 Hour OSHA Construction Safety Course or have equivalent training to that provided by the 10 or 30 hour course
- If a hazardous atmosphere is present, or there is limited entry or exit and the excavation or trench must be entered as a confined space, the person must also be Confined Space trained and authorized as per the ARCADIS Confined Space procedure ARC HSFS003

Excavation means any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal into which a person can bodily enter. **Entry** constitutes the act by which an employee proceeds into an excavation or trench. Consideration of hazards, especially cave-ins and fall protection must still be considered and accounted for when equipment or personnel are near an excavation or trench, even if personnel will not be entering.

Entrants are employee's who are trained and authorized to enter a trench or excavation. Entrants must have attended a Qualified Excavation Training course offered or approved by Corporate Health and Safety.

Failure means the breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

Hazardous Atmosphere is an atmosphere which exposes employees to a risk of death, incapacitation, injury, or acute illness from one or more of the following:

- An atmospheric concentration of any substance in excess of 50% of its established permissible exposure limit (PEL); or its assigned threshold limit value (TLV) or other value listed on the Material Safety Data Sheet (MSDS) for the chemical constituent, whichever is lower.
- A flammable gas, vapor, or mist in excess of 10% of its lower explosive limit (LEL).
- An airborne combustible dust at a concentration that obscures vision at a distance of 5 feet or less.
- An atmospheric oxygen concentration below 19.5% (oxygen-deficient atmosphere) or above 23.5% (oxygen-enriched atmosphere).
- An atmosphere which is immediately dangerous to life and health.

Immediately Danger to Life and Health (IDLH) means any condition which poses an immediate threat to loss of life; may result in irreversible or immediate-severe health effects; may result in eye damage, irritation, or other conditions which could impair escape from the space.

Protective system means a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems and other systems that provide protection.

Ramp means an inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or from structural materials such as steel or wood.

Registered Professional Engineer means a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce. To oversee an excavation/trench activity the PE must have experience with and expertise in excavation, soil and stability considerations.

Sheeting means the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

Shield (Shield system) means a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shield can be either pre-manufactured or job-built in accordance with 1926.652 (c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields".

Shoring (Shoring system) means a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Sloping (Sloping system) means a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Stable rock means natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

Support system means a structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Trench means a narrow excavation (in relation to its length) made below the surface of the ground to which a person can bodily enter. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 meters). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 meters) or less (measured at the bottom of the excavation), the excavation is considered to be a trench.

Cemented soil means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand size sample cannot be crushed into powder or individual soil particles by finger pressure.

Cohesive soil means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sides, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.

Dry soil means soil that does not exhibit visible signs of moisture content.

Fissured means a soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

Granular soil means gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

Layered system means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

Moist soil means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

Plastic means a property of a soil which allows the soil to be deformed or molded without cracking, or appreciable volume change.

Saturated soil means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or sheer vane.

Soil classification system means, for the purpose of this procedure, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the characteristics of the deposits and the environmental conditions of exposure.

Submerged soil means soil which is underwater or is free seeping.

Unconfined compressive strength means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

Wet soil means soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

Exhibit 2 – Daily / Periodic Excavation Inspection Checklist

ARCADIS		**Daily / Periodic Excavation Inspection Checklist**
Project Name:		**Date / Time:**
Project Number:		**Location:**
Prepared By:		**Project Manager:**

This checklist must be completed for all excavations. It documents that daily and post-event / periodic inspections are conducted.

Soil Classified As: Stable Rock Type A Type B Type C

Soil Classified On: By:

Type of Protective System in Use: Sloping Shoring Other _____

Description:

Inspection Item	YES	NO	Comments
Has the ARCADIS Utility Clearance Procedure been completed?			
Are underground installations protected from damage?			
Are adequate means of entry / exit available in the excavation – at least every 25 feet?			
If exposed to traffic, are personnel wearing reflective vests and adequate barriers/traffic controls installed?			
Do barriers exist to prevent equipment from rolling into the excavation?			
Was air monitoring conducted prior to and during excavation entry?			
Was the stability of adjacent structures reviewed by a registered P.E.?			
Are spoil piles at least 2 feet from the excavation edge?			
Is fall protection in use near excavations deeper than 6 feet?			
Are work tasks completed remotely if feasible?			
Is a protective system in place and in good repair?			
Is emergency rescue (lifeline / body harness) equipment used due to potential atmospheric hazard?			
Is excavation exposed to vibration?			
Are employees protected from falling / elevated material?			
Is soil classification adequate for current environmental / weather conditions?			
Do portable ladders extend at least 4 feet above the excavation?			
Are portable ladders or ramps secured in place?			
Have all personnel attended safety meeting on excavation hazards?			
Are support systems for adjacent structures in place?			
Is the excavation free from standing water?			
Is water control and diversion of surface runoff adequate?			
Are employees wearing required protective equipment?			
ARCADIS Excavation Competent Person:			**Date/Time:**

EXECUTIVE SUMMARY

Damaging an underground or above ground utility can result in serious injury and loss of life, disrupt essential services, and create significant liability to ARCADIS, clients and subcontractors. Therefore, it is ARCADIS' policy that the presence of all existing utilities will be investigated and cleared (to the extent feasible) by locating, marking, and, where appropriate, visually verifying before the start of any field operation. The following requirements are mandatory under this policy:

- A minimum of three (3) reliable lines of evidence are required for an acceptable utility clearance.
- Additional lines of evidence are required if the primary lines of evidence cannot adequately identify subsurface, submarine or above ground utilities with reasonable certainty.
- The lines of evidence used will be reasonable and appropriate for the conditions expected to be encountered and the type of utilities expected to be encountered (e.g., gas line versus an irrigation line).
- Utility clearance information will be documented on the ARCADIS Utility and Structures Checklist or equivalent client provided checklist or permit presenting equivalent information.
- Employees overseeing utility clearance activities will:
    - Be familiar with the contents of this standard;
    - Have one year field experience in the identification of utilities; and
    - Have training and six months experience in the proper operation and results interpretation of any clearance equipment used by ARCADIS employees, including without limitation, magnetometers and ground penetrating radar.
- All utility strikes must be reported to Corporate Health and Safety and Legal within 24 hours using the Utility Line and Incident Involving a Third Party Incidents Investigation Form. Do not enter the incident into 4-Sight until approved to do so by Corporate Legal.

Report Utility Incident Now

1. POLICY

It is the practice of ARCADIS and its affiliated companies to implement appropriate, reasonable and practical standards within acceptable and customary industry practices to promote the health and safety of its employees, and avoid and mitigate exposure of risk in the performance of their work. In furtherance of this policy, ARCADIS promotes and encourages compliance by all employees with this policy and standards relating to work in the vicinity of subsurface, submarine or aboveground utilities.

2. PURPOSE AND SCOPE

2.1 Purpose

This standard directs general safety standards and best practices associated with the identification and management of subsurface, submarine and aboveground utilities on project sites.

2.2 Scope

This standard assigns responsibilities and expectations for proper utility clearance by both ARCADIS employees and ARCADIS subcontractors at project sites.

3. DEFINITIONS

Refer to ARC HSFS-019 Supplement 1 for definitions of terms used in this standard.

4. RESPONSIBILITIES

4.1 Project Manager Responsibilities

For every project site having the potential to come into contact with utilities, Project Managers must ensure that:

- The requirements of this standard are followed.
- Local regulations governing utility clearance are followed.
- Efforts are made to work with the client, project site representatives and subcontractors to identify the nature of any utilities, and to determine what control processes need to be implemented by ARCADIS and the subcontractors to prevent damage to these utilities and to properly manage the effects in the event there is utility damage.
- Utility clearance activities are only delegated to a Task Manager or other individual meeting the requirements of section 4.2 below, as appropriate. However, even if the Project Manager delegates certain responsibilities, the Project Manager maintains primary responsibility for a complete utility clearance.

4.2 Field Personnel Responsibilities

ARCADIS field personnel conducting work on a project site having the potential to come into contact with utilities have the responsibility to:

- Read, understand, and follow this standard and complete the appropriate checklists during the on-site utility locate process.
- Complete a minimum of 1 year of utility clearance related experience before accepting responsibility for any utility clearance tasks.
- Complete training and have 6 months of experience in operating and interpreting the results of remote sensing technologies, including without limitation, magnetometers and ground penetrating radar, before operating such technologies.
- Use their Stop Work Authority to eliminate any reasonable concern if utilities cannot be reasonably located.
- Ensure that ARCADIS subcontractors conduct their own reasonable independent utility clearance efforts as required by ARCADIS' standard subcontract, and are aware of any ARCADIS clearance standards used onsite.
- Be on site during any active intrusive activities involving contractor under contract to ARCADIS.

4.3 ARCADIS Subcontractor Responsibilities

According to ARCADIS' standard subcontract, subcontractors have agreed to take responsibility for any damages resulting from a utility impact cause by their work. Therefore, ARCADIS subcontractors are expected to take reasonable time and diligence to conduct their own independent utility clearance using reasonable standards and processes. Subcontractors have the responsibility to stop their work if utility concerns are identified and will report those concerns to the ARCADIS employee overseeing their work activities. ARCADIs staff should reinforce these responsibilities with subcontractors during job safety briefings.

5. STANDARD

5.1 General

Protocols to be followed during utility clearance activities are outlined in:

- Best Practices for Project Managers (or Their Delegates) Concerning Utility Clearance (ARC HSFS-019 Supplement 2).
- Best Practices for Field Personnel Concerning Utility Clearance (ARC HSFS-019 Supplement 3).

5.2 Lines of Evidence

A minimum of 3 lines of evidence are required for an appropriate utility clearance as defined in this standard. Generally, the following lines of evidence may be utilized to meet this requirement:

- Contact the State One Call or equivalent service (Nationwide "811" is acceptable) if working within the right-of-way or public areas served by such services. For work on private property or in areas not served by such services, utilize a reputable private utility locating company to locate and mark the utilities. Utilization of a private utility locator is encouraged for all projects with subsurface or submarine utility issues.

- Use detailed scaled site utility plans, preferably in the form of an "as-built" or "record" drawing, to identify and/or confirm utility locations.

- Conduct a detailed visual site inspection to identify and/or confirm utility locations. For underground utilities, conduct an inspection for structures that tend to indicate the presence and general location of such utilities, including, but not limited to manholes, vaults, valve covers, valve markers, telephone pedestals, transform housings, fire hydrants, spigots, sprinkler heads, air relief valves, backflow preventers, meters, downspouts going into the subsurface, power poles with wring going into the subsurface and line markers. Saw cut lines and concrete /asphalt repairs often yield valuable information regarding utility locations. Always discuss the presence of utilities with the site owner, operator or occupant to identify any potential utilities that might not be readily identified by non intrusive clearing methods or may be:

    - At depths > 5 ft below ground surface; or

    - At very shallow depths (< 2ft below ground surface) such as electrical conduits/wiring, irrigation lines, etc.

View the Utilities and Structures Checklist

If one of the above lines of evidence cannot be utilized, or if using the above lines of evidence does not adequately identify utilities with reasonable certainty, one or more additional lines of evidence must be utilized. Commonly used lines of evidence are listed on the Utility and Structures Checklist.

A discussion of use and limitations associated with common utility clearance methods is provided in ARC HSFS-019 Supplement 4.

The lines of evidence will be recorded on the Utility and Structures Checklist or equivalent client provided checklist or permit presenting equivalent information.

5.3 Color Codes Used for Utility Markings

The following colors are used for marking utilities. Some government agencies or large industrial facilities may use additional colors not provided below. ARCADIS policy is to assume any paint marking or pin flag color not provided below is a subsurface utility marking until proven otherwise.

COLOR	Utility Line
WHITE	Proposed Excavation
PINK	Temporary Survey Markings
RED	Electrical Power Lines, Cables, Conduit and Lighting Cables
YELLOW	Gas, Oil, Steam, Petroleum or Gaseous Materials
ORANGE	Communication, Alarm or Signal Lines, Cables or Conduit
BLUE	Potable Water
PURPLE	Reclaimed Water, Irrigation and Slurry Lines
GREEN	Sewer and Drain Lines

APWA and ANSI standard Z-53.1

5.4 Working in Close Vicinity of Subsurface Utilities

No work will be conducted within 30 inches of a subsurface utility marking, or as prescribed by the utility owner, unless the utility is exposed through hand clearing. Make sure to factor the diameter of the utility when determining the 30 inch buffer zone as this may increase the distance from the actual marking (if the markings do not indicate diameter of utility).

Manual clearing methods such as shoveling, using pick axes, digging bars and other hand tools should be used with caution. Excessive down force, prying or use in poor/obstructed visibility conditions is prohibited as these tools can damage utilities.

For borings and excavations, if the utility is known to be at depths where hand clearing is not reasonable or creates additional safety concerns, no work will be performed within 30 inches vertically or horizontally of the utility unless manual clearing is performed under the oversight of an Excavation Competent Person as defined in the ARCADIS Excavation and Trenching H&S standard (ARC HSCS005).

For horizontal borings, to avoid potential of utility strike, damage from vibration, damage by pressure of the advancing boring, do not plan the drill boring location within 30 inches vertically of utilities. This requirement applies even if the operating contractor has technology that places the location to within a few inches. Make sure to factor the diameter of the utility when determining the 30 inch buffer zone.

Additional cautions are required when coring/cutting through or removing concrete or asphalt. Utilities may be encased within these materials or in the gravel sub grade under these materials and may be damaged during the utility clearance process. Always work slowly, methodically and frequently stop work to evaluate conditions during these work activities.

Additional cautions for horizontal borings include gravity utilities such as sewers and storm drains as the depth of these utilities will change (sometimes

significantly) as they run across the project site. Always obtain the utility depth at the location where the boring will actually cross the line.

5.5 Acceptable Clearance for Working in Vicinity of Overhead Power Lines

No work will be performed by ARCADIS or a subcontractor where any equipment is within the limits specified below, unless the power line has been properly covered or de-energized by the owner or operator of the power line:

Power Line Voltage Phase to phase (kV)	Minimum Safe Clearance (feet)
50 or below	10
Above 50 to 200	15
Above 200 to 350	20
Above 350 to 500	25
Above 500 to 750	35
Above 750 to 1,000	45

ANSI standard B30.5-1994, 5-3.4.5

5.6 Reporting Utility Incidents

ARCADIS field personnel involved with any subsurface, submarine, and above-ground utility strikes should immediately stop work and contact the Project Manager to discuss the incident. The utility strike must be reported to Corporate Health and Safety and Legal Departments within 24 hours. Use the Utility Line and Incidents Involving a Third Party Incident Investigation Form as part of the notification process.

Selected utility strike incidents may also utilize a conference call with operations management to review findings and lessons learned. The Divisional Health and Safety Manager will make the determination concerning the need to have the call, and will arrange the call, if deemed necessary.

5.7 Relationship of this standard to the Project Specific HASP

With the exception of the Utility and Structures Checklist, this standard, including most supplements, are not designed to be printed off and attached to project HASPs. During project health and safety planning, this standard will be reviewed and applicable clearance technologies and methods will be documented on the Utility and Structures Checklist.

Additionally, emergency action standards specific to utility strikes should be addressed. ARC HSFS-019 Supplement 5 provides general guidelines for emergency response to utility strikes. Applicable information may be attached to the Utility and Structures Checklist to facilitate communication of response expectations.

5.8 Required Contract Terms and Conditions

ARCADIS' standard client and subcontractor contracts contain required terms and conditions defining responsibility for utility clearance and the allocation of risk associated with an impacted utility. These terms and conditions have prescribed language concerning subsurface work that is presented in ARCADIS client contracts and ARCADIS subcontractor contracts. If such provisions cannot be agreed upon, the reasons are documented and other risk-management actions should be identified, such as limits of liability, additional physical investigations, additional lines of evidence or utility location, assignment of risk to subcontractors, etc. In addition, any changes to these terms and conditions require approval by Legal Services.

6. TRAINING

Employees responsible for coordinating or conducting utility clearance activities will be familiar with the requirements of this standard.

7. REFERENCES

- Utility and Structures Checklist
- Utility Strike and Incidents Involving Third Parties Investigation Form
- HSFS-019 Supplement 1, Utility Definitions
- HSFS-019 Supplement 2, Best Practices for Project Managers (or Their Delegates) Concerning Utility Clearance
- HSFS-019 Supplement 3, Best Practices for Field Personnel Concerning Utility Clearance
- HSFS-019 Supplement 4, Use and Limitations Associated with Common Utility Clearance Methods
- HSFS-019 Supplement 5, Emergency Action Plan guidelines for Utility Strikes
- ARC HSCS005 Excavation and Trenching
- Required client contract language concerning subsurface work
- Required subcontractor language concerning subsurface work

8. RECORDS

8.1 Utility Clearance Records

All records (maps, checklists and documentation of communications) used to determine the location of utilities should be retained and kept in the project file.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Tony Tremblay, Environment Division Health and Safety Manager

History of Change

Revision Date	Revision Number	Reason for change
13 December 2006	01	Original document
26 March 2007	02	Put in new company format
15 May 2007	03	Added nation-wide 811 number
6 September 2007	04	Changing over to new template format
22 February 2008	05	Changing over to new template format
13 January 2009	06	Define lines of evidence
4 October 2010	07	Reformatting and addition of utility clearance information

1. POLICY

It is ARCADIS US policy that ARCADIS staff will participate in tailgate meetings to be held at least once daily on ARCADIS project sites that occur outside of an office environment to ensure that the health and safety issues of the day's activities are understood by all affected parties and that appropriate controls are in place.

2. PURPOSE AND SCOPE

2.1 Purpose

This procedure describes the requirements for implementing an incident- and injury-free workplace by providing guidance on tailgate safety meetings to be performed prior to all projects performed by ARCADIS staff outside of an office-setting or environment.

2.2 Scope

This procedure applies to all non-office related activities performed by ARCADIS or on behalf of ARCADIS. If the site and project is controlled by ARCADIS, tailgate meetings will include the participation of all ARCADIS staff, ARCADIS subcontractors and other involved site personnel as appropriate. If the site is controlled by another party (e.g., a construction site on which ARCADIS is providing a resident engineer or owner's representative), then ARCADIS staff should attend the tailgate meeting held by the controlling party, if one is held. If the tailgate meeting does not address ARCADIS activities or is not deemed adequate, then the ARCADIS staff will hold their own tailgate meeting following this procedure.

If there is only one ARCADIS staff on the site for the day, then the PM and field staff will conduct the tailgate via phone as deemed appropriate.

It is also ARCADIS US policy that more than one tailgate meeting may be held as appropriate for the activities.

3. DEFINITIONS

Definitions applicable to this procedure may be found in ARC HSMS000 – Health and Safety Management System.

4. RESPONSIBILITIES

Field Supervisor – In the scope of this practice, the designated field supervisor will lead or designate an alternative leader to lead the tailgate meeting. In addition, the field supervisor will verify that in the tailgate meeting, the following are clearly established, communicated and reinforced, and that the workforce understands them:

- A process for the transfer of control of work between work groups as appropriate and applicable

- Specific procedures and policies that will be followed (e.g., Health and Safety Plan (HASP), Job Loss Analysis (JLA), H&S Procedures, Field H&S Handbook, etc.)

- Assignment of other responsibilities based on the site activities and hazards to competent staff

Project and Task Managers – are responsible for ensuring that all appropriate hazard assessments have been completed, that all project requirements have been communicated to the field supervisor and other responsible parties, that competent personnel, based on the activities and hazards, have been assigned to the project, and that all employees including ARCADIS, subcontractors and other site personnel know of their requirement and participation in all tailgate meetings conducted for the project.

Health and Safety Staff and Project Site Safety Officers or Supervisors – assist with the completion of hazard identification and assessments as appropriate for the project. In addition, these staff will assist with determining the proper controls and provide information for the tailgate meetings that is relevant to the site activities and the hazards to be encountered by employees.

Employees – are responsible for actively participating in the tailgate meetings, acknowledging their presence at the tailgate meetings, and participating in hazard assessments for the activities in which they will be involved. Employees are responsible for understanding the hazards of their activities, implementing the controls for the hazards and using Stop Work Authority if they don't understand the hazards, their job tasks, or if they do not feel safe.

5. PROCEDURE

5.1 Tailgate Meetings

Tailgate meetings will be held, at a minimum, at the start of each work day, shift or task change. It may be necessary to hold tailgate meetings at other times based on the site, activities, and personnel on the site. Tailgate meetings are usually conducted by the field supervisor, the site safety officer or both. At times, the Project Manager or Task Manager may lead the tailgate meeting.

Work crews that include a lone worker will hold a tailgate meeting by telephone with the Project or Task manager as appropriate. The lone worker or small workgroup will call in at the end of the day to complete the tailgate meeting form per this procedure.

Tailgate meetings will review the planned work activities for the work period, discuss and resolve the risks and mitigations, discuss any health, safety, security and environment concerns and raise the consciousness of each worker before they start work. Utilizing the Tailgate Meeting form in Exhibit 1 will ensure that relevant topics are addressed.

5.2 Tailgate H&S Meeting Form

The *Tailgate H&S Meeting Form* (Exhibit 1) will be used to document the conduct of the tailgate H&S meeting. Copies of the completed form will be kept in the project files. It will be

completed by the designated leader of the meeting during the completion of the meeting and for post day activities review as indicated on the form.

5.3 Participation and Preparation

Effective tailgate meetings require participation. When selecting the location of the meetings, the meeting leader will ensure it is in a place free from distraction and that allows for interaction and participant comfort. This will help encourage participation.

6. TRAINING

No specific training or competence is required related to the conduct of the Tailgate Meeting.

7. REFERENCES

ARCADIS Health and Safety Plan procedure – ARC HSFS010

8. RECORDS

Tailgate Meeting forms to be kept on-site and then in project files per ARCADIS project recordkeeping requirements

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Mija Coppola, Director of H&S

History of Change

Revision Date	Revision Number	Reason for change
14 September 2009	01	Original document
1 Feburary 2010	02	Made minor edits to text. Also, made modifications to Tailgate Meeting form. Changed JSA to JLA.
22 February 2010	03	Added tagline to the Tailgate meeting form

Exhibit 1 –Tailgate Meeting form

ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name:			**Project Location:**
Date:	**Time:**	**Conducted by:**	**Signature/Title:**
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 _____ 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Topics from Corp H&S to cover?		
☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Any Stop Work Interventions yesterday?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ If deviations, notify PM & client
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ All equipment checked & OK?
☐ Staff has appropriate PPE?	☐ Staff knows Emergency Plan (EAP)?	☐ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e., ladder, scaffold, trips) (L M H)	☐ Motion (i.e., traffic, moving water) (L M H)	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☐ Environment (i.e., heat, cold, ice) (L M H)
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☐ Biological (i.e., ticks, poison ivy) (L M H)	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☐ Driving (i.e. car, ATV, boat, dozer) (L M H)

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

☒ **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - (*See statements below*)

☐ Elimination	☐ Substitution	☐ Isolation
☐ Engineering controls	☐ Administrative controls	☐ Monitoring
☐ General PPE Usage	☐ Hearing Conservation	☐ Respiratory Protection
☐ Personal Hygiene	☐ Exposure Guidelines	☐ Decon Procedures
☐ Emergency Action Plan (EAP)	☐ Fall Protection	☐ Work Zones/Site Control
☐ JLA to be developed/used *(specify)*	☐ LPO conducted *(specify job/JLA)*	☐ Traffic Control
		☐ Other *(specify)*

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the HASP

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at 1.720.344.3500

Visitor Name/Co - not involved in work

	In	Out
	In	Out
	In	Out
	In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB**, I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- ☐ Lessons learned and best practices learned today: _____
- ☐ Incidents that occurred today: _____
- ☐ Any Stop Work interventions today? _____
- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155
Near Loss Hotline - 1.866.242.4304

1. POLICY

It is the policy of ARCADIS to comply with OSHA's Medical Services and First Aid Standard as it relates to the work we do. According to OSHA, the employer will ensure the "ready availability of medical personnel", but how this is implemented is dependent on the circumstances of each place of work.

2. PURPOSE AND SCOPE

2.1 Purpose

This policy and standard assists ARCADIS employees in determining if the OSHA standard applies to their project sites, and assists in evaluating appropriate training needs for employees.

2.2 Scope

The Medical Services and First Aid standard applies to all ARCADIS offices that designate or expect employee(s) to act as First Aid Responders at the office location and/or a job site. Employees who are not designated or expected to act as a First Aid Responder may render first aid voluntarily if they are trained in first aid, but their actions are not covered under the OSHA standard.

If the office or job site is in near proximity to medical services, employees do not need to be designated or expect to act as First Aid Responders unless required to do so by a particular OSHA standard or client requirement. However, if the office or job site is not in near proximity to medical services, an employee or employees will be designated and trained to render first aid.

3. DEFINITIONS

3.1 Near Proximity – The ability to respond and start to administer first aid within 3 to 4 minutes.

3.2 First Aid Responder – An employee designated by ARCADIS to receive First Aid/CPR training so that he/she can respond to emergency situations and administer First Aid/CPR until medical attention can be administered by medical professionals.

3.3 HSS – Health & Safety Standard

4. RESPONSIBILITIES

4.1 Principal in Charge (PIC) and Project Manager (PM) – Determines if a First Aid Responder is required for their project site. Ensures that employees working on their project sites have the proper training as required by this policy and standard.

4.2 Location Leader and Office H&S Coordinator – Determines if a First Aid Responder is required for their office location. Ensures that employees working in those locations have the proper training as required by this policy and standard.

4.3 Employees – If designated as a First Aid Responder, ensures that training is up to date as required by this policy and standard.

5. PROCEDURE

5.1 Designation of First Aid Responders

The PIC, PM, Location Leader, and/or Office H&S Coordinator determines if they are required to designate First Aid Responders at the office location and/or at any particular job site. The types of accidents/injuries that could occur, location/availability of medical facilities, and the response time of emergency services are considered in making this determination.

In the absence of an infirmary, clinic or hospital in near proximity to the workplace, an employee(s) will be trained to render First Aid/CPR. This may also be necessary if required to do so by another standard (i.e. more stringent State standard) or a client. First aid supplies are readily available if an employee is designated as a First Aid Responder.

If the office and/or job site is in near proximity of emergency medical services (within 3-5 minutes of medical care), and if not required to do so by some other standard or client, there is no requirement to designate First Aid Responders. However, if the decision is made to designate First Aid Responders, all requirements of this HSP apply.

This HSP does not apply to employees who voluntarily obtain First Aid/CPR certification for their own personal benefit, and were not designated by ARCADIS as a First Aid Responder.

5.2 First Aid Supplies/Kits

Employees designated or expected to act as First Aid Responders have first aid supplies readily available. The type of work being done, worksite and office sites are considered when determining the contents of a first aid kit. If exposure to the weather is possible, the contents of the first aid kit are protected.

The OSHA standard does not specify what should be in a kit, but does reference the recommendations by ANSI in their Z308.1-1998 publication, “Minimum Requirements for Workplace First Aid Kits” which provides types of kits and basic and optional contents. The contents of a basic first aid kit are provided in Exhibit 1.

The first aid kit will also contain appropriate PPE and waste disposal supplies as required in OSHA’s Bloodborne Pathogens standard described in the ARCADIS Bloodborne Pathogen HSP (ARC HSGE005). First aid kits will not contain medications that have potential to cause drowsiness or contain prescription medications.

Some sort of routine inventory is done on all first aid kits. For job site first aid kits, the inventory is checked when it is initially taken to the job site, weekly thereafter, and anytime first aid is rendered. For office first aid kits, the inventory is checked monthly and anytime first aid is rendered. An example of an inventory form is included in Exhibit 2.

5.3 Emergency Eye Wash and Body Wash Equipment

Where the eyes or body of an employee may be exposed to injurious corrosive materials, suitable facilities for emergency drenching/flushing of the eyes and body is provided within the "immediate" work area.

6. TRAINING

First Aid/CPR training occurs prior to assignment as a First Aid Responder. Training is certified by the American Heart Association (AHA). Exceptions to using the AHA need to be approved by the Health & Safety Department before proceeding with training through another vendor.

In accordance with AHA guidelines, CPR certification is provided on a bi-annual (every two years) basis. Due to the importance of First Aid training, certification is required bi-annually at the same time as the CPR certification. Bloodborne pathogen training is required annually per OSHA's Bloodborne Pathogens standard described in ARCADIS Bloodborne Pathogen HSP (ARC HSIH005).

7. REFERENCES

CFR 1910.151, "Medical Surveillance and First Aid"

CFR 1926.50, "Medical Services and First Aid"

OSHA Technical Links, "Medical and First Aid"

OSHA September 2, 1993 Compliance Letter, "Definitions for 'near proximity' and 'serious injury'"

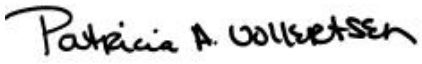
ANSI Z308.1-1998 publication, "Minimum Requirements for Workplace First Aid Kits"

8. RECORDS

Upon completion of the AHA First Aid/CPR course, certification cards are issued. Copies of the certification cards are sent to the Area Administrator and ARCADIS Training Department.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Pat Vollertsen, Director of H&S Training and Administration



History of Change

Revision Date	Revision Number	Reason for change
10 January 2008	01	Original document
28 April 2010	02	Add clarification of “near proximity” in section 5.1

Exhibit 1 – Basic First Aid Kit Contents

(ANSI Publication Z308.1-1998 and ARCADIS Best Practice*)

Item and Minimum Size or Volume	Minimum Quantity
Absorbent Compress, 32 sq. inches with no side smaller than 4 inches. (81.3 sq. cm. with no side smaller than 10 cm)	1 (sealed and sterile)
Adhesive Bandages, 1x3 inches 2.5x7.5 cm)	16 (sterile & individually packaged)
Adhesive Tape, 5 yards total (457.2 cm)	1
Antiseptic application, 0.5g (0.14 fl. oz.)	10 (individual use packets)
Burn Treatment, 0.5g (0.14 fl. oz.)	6 (individual use packets)
Medical Exam Disposable Gloves	2 pair
Sterile pad, 3x3 inches (7.5x7.5 cm)	4 (individually packaged pads)
Triangular Bandage, 40x40x56 inches (101x101x142 cm)	1
* Mouth Guard (to be used if giving mouth-to-mouth resuscitation)	1 (individually packaged)

Exhibit 2 – Sample First Aid Kit Inspection Form

MONTHLY CHECK OF FIRST AID CABINET

If any items appear missing, **(responsible ARCADIS party name or vendor name)** will be contacted that same day so that replacement supplies can be ordered. **(responsible ARCADIS party name vendor name)** will also inspect, replace and remove and replace out-dated items every **(#)** days.

Year _____

Date Checked	Checked By	Date Checked	Checked By

Checked by:

1.

2.

3.

Replacement: Place an asterisk (*) beside the date a missing item(s) was noted and when the vendor was called; note below when replacement was delivered. Include any other pertinent comments.

_____

_____

_____

_____

1. POLICY

It is ARCADIS policy to inform all employees of the hazardous chemicals they may encounter during their work activities. This shall be accomplished through the development and implementation of a location and project specific hazard communication process that includes Material Safety Data Sheets (MSDS), container labeling, and training. Hazard Communication (HazCom) requires a written program specific to each location or job site where hazardous chemicals/products are used or stored. The principal goal of the written program is to inform employees, contractors, and subcontractors about potential hazards associated with routinely used chemicals/products. A checklist that will assist in evaluating conformance with this procedure is found in Exhibit 1.

2. PURPOSE AND SCOPE

2.1 Purpose

The purpose of this Health and Safety Procedure (HSP) is to provide direction on the development and implementation of a office location or project specific HazCom program. Each office or job site that is subject to the HazCom standard shall have a written program regarding chemical use and storage. The program should describe how the requirements of the standard will be met. The program should address the following:

- Master Inventory List (MIL),
- Material Data Safety Sheets (MSDSs), and
- Labeling system and requirements.
- Training

2.2 Scope

This HazCom HSP applies to all office locations and job sites that store or use hazardous chemicals/products on site (office or field). Use of a hazardous chemical includes generation of that chemical as a byproduct. It covers the requirements of both the US OSHA and State, and Federal Canadian and Provincial standards.

3. DEFINITIONS

Workplace includes any office or job site where hazardous chemicals/products are stored or used.

Use of a chemical means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

4. RESPONSIBILITIES

Corporate H&S Staff - assist the locations and project sites with the development and implementation of the required HazCom program. In addition, provide the tools and resources for employees to have access to information on hazardous chemicals.

Location Leaders and H&S Coordinators – are responsible for the development and implementation of a HazCom program in their location.

Employees – are responsible for reviewing MSDS of the substances they are going to work with and make sure they understand all relevant information as well as take necessary precautions. They are responsible for ensuring that containers of hazardous chemicals they are using are appropriately labeled and if not, for obtaining the proper labeling.

Managers and Supervisors – are responsible for providing the necessary resources for the appropriate development and implementation of an appropriate HazCom program.

Project Managers and Principals in Charge (PICs) – are responsible for ensuring that a HazCom program is developed and implemented on projects where hazardous chemicals are utilized or encountered. PMs and PICs are also responsible for understanding their clients' requirements for HazCom and that hazardous chemical information is shared with the client. In addition, PICs and PMs are responsible for ensuring their project staff has had training in HazCom per this HSP.

Site Safety Officers (SSOs) – will act as the HazCom Program Coordinator for the project sites and shall maintain the Master Inventory List (MIL) of hazardous chemicals kept on the job Site. The SSO is responsible for maintaining MSDS on Site for all chemicals. The SSO is responsible to communicate the location of the MSDS and the hazards associated with these chemicals to all project Site ARCADIS employees and subcontractors during the safety orientation. The SSO shall ensure that all containers of chemicals (including drums, bags, pails, tanks, vessels, etc.) are labeled appropriately.

5. PROCEDURE

5.1 Written Program

Every office within ARCADIS shall develop and maintain a written HazCom program specific to their location and activities. The program should be developed using the template provided in Exhibit 2 of this procedure. The program shall be reviewed annually. The written program shall be maintained in a location that is accessible to each employee when they are in the office. Employees shall be notified of its presence and how to access it.

For project sites, the project H&S plan (HASP) shall serve as the documented written HazCom program for that site. The HASP shall provide information about the chemicals present on the site (inventory), the location of the MSDS on site, and the labeling of containers. In addition, the required training shall be part of the site orientation and the daily or more frequent tailgate meetings at the project site.

5.2 Master Inventory List (MIL)

A MIL is an inventory of all chemicals/products found on-site. At each location or project site, an inventory of the hazardous chemicals present shall be completed at least once per year, or as new chemicals are introduced to or removed from the location and more often as necessary. This inventory shall be developed into a MIL of hazardous chemicals. This inventory includes hazardous chemicals present in piping and those that may be generated as a byproduct of other activities.

Upon completion of the inventory, it shall be determined if any of the chemicals/products identified are exempt from the appropriate HazCom standard that is applicable to the location. If the chemicals/products at the location are exempt from HazCom, it shall be noted on the MIL. The MIL shall be made available to all employees and should be kept current and accurate. The MIL for a project will be found in the HASP. A sample MIL form for office use is found in Exhibit 3.

Common chemical exemptions include:

1. Foods, drugs, or cosmetics intended for personal consumption by employees;

2. Any consumer product or hazardous substance used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposures experienced by consumers; and

3. Office products to which office workers would have non-route exposure.

Exhibit 4 provides a listing of those chemicals which are commonly determined to be exempt in ARCADIS offices. However, each office and project site must determine what is exempt by using the exemption descriptions above.

The MIL shall be reviewed periodically. Any new chemicals/products will be added and those no longer in use or kept at the office or job site shall be deleted.

5.3 Labeling

All primary and secondary containers of hazardous chemicals/products listed on the MIL must be labeled. Labels or other forms of warning will be legible, in English, and prominently displayed on the container, or readily available in the work area. For employees who speak another language(s), information may be added in their language to the label or other form of warning. At a minimum, label information shall include:

- Proper chemical name,

- Appropriate hazard warnings (words, pictures, or symbols that illustrate the hazards of the chemical/product), and

- Name and address of the manufacturer/importer.

Manufacturer labels are acceptable as long as they meet these HAZCOM criteria. Any chemicals/products that do not meet the basic label requirements must not be used or purchased. Employees shall not use chemicals/products in unlabeled containers, and if the chemical/product is transferred to a temporary container, the temporary container must also have a proper label. Periodic inspections, which can be done in association with the periodic MIL review, shall be performed to ensure that all containers are appropriately labeled.

Exhibit 5 presents the most common labels used by manufacturers and Exhibit 4 is a description of the NFPA (National Fire Protection Association) chemical hazard label. These labels are available through the H&S vendor used by the company.

5.4 Material Safety Data Sheets (MSDSs)

A Material Safety Data Sheet shall be obtained and then maintained for each chemical subject to the HAZCOM standard. It shall be readily available to all employees who may utilize or be exposed to the applicable chemicals. The MSDS is the principal means of conveying chemical-specific information to the user. MSDS's must be present for each chemical used in the field.

MSDS for those hazardous substances purchased or obtained by ARCADIS or are in their original container from the manufacturer or have been transferred from their original container to a secondary container, shall be those specific MSDS developed and provided by the manufacturer for that specific substance. **(Manufacturer MSDS often are found on the manufacturer's website)** MSDS for hazardous substances identified in the environmental media as contaminants can be obtained as generic MSDS from an on-line or web-based source.

Currently ARCADIS uses a service known as the HazMat Zone which is linked on the Health & Safety APEX site.)

The MSDS shall contain at least the following:

- Identity used on the label;
- Physical and chemical characteristics;
- Physical hazards;
- Health hazards;
- Primary route(s) of entry;
- OSHA permissible exposure limit, ACGIH threshold limit value and any other exposure limit;
- If it is listed on the NTP report on Carcinogens or has been found to be a potential carcinogen;

- Any general precautions for safe handling and any applicable control measures;
- Emergency and first aid procedures;
- Date of preparation or revision of the MSDS; and
- Name, address and phone number of party responsible for the MSDS.

A master file of MSDSs will be maintained and MSDSs shall be made readily available to all employees at a central office location or a readily available location at the project site. The MSDS master file shall be reviewed, at a minimum, annually or any time the MIL is updated and obsolete or outdated MSDSs shall be removed. MSDSs removed from the master file shall be retained for at least 30 years.

5.5 Non-ARCADIS Employers

If appropriate, the written program will include information regarding how other employers at the workplace will be provided the following:

- Access to MSDSs for chemicals/products introduced to the workplace by ARCADIS;
- Information on precautions that should be taken regarding these chemicals/products; and
- Information regarding any site-specific labeling system.

In addition, clients frequently ask for us to provide MSDS for the chemicals ARCADIS will bring onto their sites. The PM shall determine if this is a requirement. However, ARCADIS field staff can also ask the client or other parties working in their vicinity for MSDS for hazardous substances being used.

6. TRAINING

All employees who may be exposed to hazardous chemicals/products under normal operating conditions or in foreseeable emergency situations shall receive HazCom training. Training shall occur upon initial assignment to work, whenever workplace hazards change, or anytime a new hazard is introduced. Training will be followed per the requirements and instruction provided by Archimedes and Corporate H&S.

HazCom training shall include the following elements:

- The requirements of the HazCom standard;
- The location of the written HazCom program;

- The location of the MIL and MSDSs;
- Instructions on reading MSDSs;
- Details on labeling requirements and label information;
- Operations in the workplace that involve or generate hazardous chemicals;
- Hazards associated with chemicals/products in the workplace;
- Methods that may be used to detect the presence of hazardous chemicals/products; and
- Methods employees can use to protect themselves from hazardous chemicals/products including appropriate work practices, emergency procedures, and personal protective equipment (PPE).

7. REFERENCES

29 CFR 1910.1200 "Hazard Communication Standard"

Canadian Hazard Communication Standard (WHMIS)
http://www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/index-eng.php

8. RECORDS

The MSDSs shall be kept at the office location or in the project files

Training records will be kept in the corporate training database.

Exhibits for this Section:

Exhibit 1 – HazCom Program Checklist
Exhibit 2 – Template HazCom written program document
Exhibit 3 – Master Chemical Inventory Form
Exhibit 4 – List of Common Exemptions
Exhibit 5 – Samples of Common Container Labels

9. APPROVALS AND HISTORY OF CHANGE

Approved By:

Mija A. Coppola, Director, H&S Compliance Assurance, LPS, Communications

History of Change

Revision Date	Revision Number	Reason for change
1 June 2009	01	Original document

Exhibit 1 - HazCom Program Checklist

HAZARD COMMUNICATION PROGRAM COMPLIANCE CHECKLIST

ARCADIS Office: _____ **Jobsite** (if applicable):_____

Completed By (name/job title): _____ **Date**:_____

	Yes	No	Comments
1. Do you have a copy of CFR 1910.1200?			
• Have you read and understand the requirements?			
2. Do you have a written program?			
• Have program responsibilities been assigned?			
• Does the program establish a procedure to review and evaluate program on an annual basis?			
3. Has a list of all hazardous chemicals/substances in the office/jobsite been prepared?[1]			
• Does the program contain a method for updating this list?			
4. Is there an MSDS for each hazardous chemical/substance?			
• Does the program ensure that incoming hazardous chemicals/substances have an MSDS?			
5. Does the program ensure that all incoming hazardous chemicals/substances have labels?			
6. Does the program address how to identify			

[1] The Chemical Inventory Report Form should be used to complete this list.

new chemicals/substances before they are used? • Does the program address how employees will be informed of new chemicals/substances?			
7. Do employees understand how to detect the release of hazardous chemicals/substances?			
8. Are employees: • Aware of HazCom Standard requirements and information specific to this office/jobsite?			
• Familiar with hazards of the chemicals/substances at this office/jobsite? • Informed of the hazards of performing non-routine tasks?			
9. Has training been provided in regard to proper work practices and PPE?			
10. Does the training:			
• Provide information on emergency procedures/first aid including symptoms of overexposure?			
• Provide an explanation of labels and warnings that are used in the work area?			
• Describe where employees can find the MSDS? • Describe how to read/use an MSDS?			

COMMENTS: _____

Exhibit 2 – Template HazCom Written Program for Offices

HAZARD COMMUNICATION PROGRAM

ARCADIS OFFICE:	
WRITTEN BY:	**DATE WRITTEN:**
REVISED BY:	**DATE REVISED:**

Applicability

Where applicable, ARCADIS shall comply with the OSHA Hazard Communication ("HazCom") standard (29CFR 1910.1200) by maintaining a hazardous chemicals list and associated MSDS; by ensuring that containers are labeled; and by providing training to applicable employees. This written HazCom program applies to all work locations where there is potential for exposure to hazardous chemicals under normal working conditions or during an emergency situation. A copy of the written program may be obtained from: _____ Program Coordinator

The _____, is the Program Coordinator. The Program Coordinator will be available to answer questions regarding hazards and appropriate protective measures, and shall ensure that:

- The written program is reviewed at least annually, updated as necessary, and that documentation of the reviews are kept with the plan;
- A list of hazardous chemicals is completed on the "Master Chemical Inventory List (MIL) Form" and updated as necessary (see Exhibit 3 of ARC HSGE007);
- An MSDS is available for all chemicals on the Chemical Inventory Report form except those that are exempt from the standard;
- MSDS that are no longer applicable are archived and maintained for 30 years;
- All hazardous chemicals are properly labeled;
- All applicable employees and new hires have received training before they begin work to which this program applies; and
- Safe work practices are followed in regard to hazardous chemicals.

Exhibit 1 of ARC HSGE007 includes a checklist that may be used as a tool to assure compliance with the HazCom standard

List of Hazardous Chemicals

The Program Coordinator shall make a list of all hazardous chemicals and will review the list at least annually, or more often as necessary, and maintain and update the list as necessary. Hazardous chemicals that are bought for and kept at a particular job site will not be included on this list, but shall be included in the site specific health and safety plan. The completed MIL for the _____ office can be found at _____.

The Program Coordinator must be informed of all new hazardous chemicals purchased unless the chemical is being purchased for and kept at a particular job site. Upon receiving this information, the Program Coordinator will update the MIL within 10 business days. Employees in a position to purchase materials must adhere to purchasing department guidelines and assure new chemicals are not used until the MSDS information has been obtained and appropriate employee training occurs.

Material Safety Data Sheets (MSDS)

MSDS provide specific information on the chemicals used by this office. For each chemical listed on the MIL (other than those exempt from the HazCom standard), an MSDS shall be kept on file in a location that is easily accessible and known to all applicable employees.

Copies of applicable MSDS for this office can be found _____, in a [indicate if they are kept in a binder, folder or electronically] that is labeled _____ [if your office maintains MSDS in other locations, such as work vehicle or job site, note this information here]. Applicable MSDS should accompany the hazardous chemical/chemicals to the jobsite, and the Project Manager shall ensure that each work site has applicable MSDS on hand at the job site.

The Program Coordinator is responsible for acquiring and updating MSDS and will contact the chemical manufacturer or vendor if additional research is necessary or if an MSDS has not been supplied with an initial shipment/purchase.

The Program Coordinator must be informed of all new hazardous chemicals purchased unless the chemical is being purchased for and kept at a particular job site.

Labels and Other Forms of Warning

All hazardous chemicals must be properly labeled and the label should list at a minimum, the chemical identity, appropriate hazard warnings, and the name and address of the manufacturer, importer or other responsible party. The Program Coordinator can assist employees in verifying if containers are properly labeled and answer questions employees may have about label content.

Chemicals should be used in the original container whenever possible. If it becomes necessary to transfer a chemical to a portable/temporary container, the following rules apply:

- If it is intended for immediate use, no labels are required for the portable/temporary container; or

- If it will not be used immediately (e.g., used over several days or by various people), a label that identifies the hazards (e.g., samples in Exhibit 5 of ARC HSGE007) must be completed.
    - Hazard information from the manufacturer's hazard label should used to complete the temporary label.
    - The temporary label will be affixed to the temporary/portable container and removed once the container is no longer being used.
    - Remember, temporary labels are for internal use only and can't be used as or replace shipping labels.

Where applicable, the contents of pipes or piping systems shall be described in training sessions, and they do should be labeled as to their contents. (This will be a site specific issue that should be addressed in site specific safety plans)

[If you utilize stationary containers within a work area, include the following information in this program: If stationary containers within a work area have similar contents and hazards, labels shall be posted on them to convey hazard information.]

Non-Routine Tasks

Where applicable, site specific health and safety plans shall address the chemical hazards associated with non-routine tasks (e.g., cleaning tanks, entering confined spaces, etc.). The site specific plan will inform applicable employees of the hazardous chemicals to which they may be exposed and the precautions they must take to reduce or avoid exposure. It will also address any additional training that may be required.

Training

All employees who work with (or are in the vicinity of) hazardous chemicals or who are potentially exposed to hazardous chemicals, shall receive initial training on the HazCom Standard and the safe use of those hazardous chemicals.

The Program Coordinator_____ will conduct these training sessions in a _____ [indicate if you will use classroom, or an online/classroom combination] format. [Whether you are using an online or classroom program, information specific to your office must be part of the training. For example, who is the program coordinator, where is the chemical inventory form kept, where are the MSDS located, etc.] Whenever a new hazard is introduced, additional training shall be provided to applicable employees.

The training program shall emphasize these items:

- A summary of the standard and this written program.
- The chemical and physical properties of hazardous materials (e.g., flash point, vapor pressure, reactivity) and methods that can be used to detect the presence or release of chemicals (including, where applicable, chemicals in unlabeled pipes).
- The physical hazards of applicable chemicals (e.g., potential for fire, explosion, etc.).

- The health hazards, including signs and symptoms of exposure, of the chemicals in work area and any medical condition known to be aggravated by exposure to these chemicals.

- Procedures to protect against chemicals hazards (e.g., required personal protective equipment, and its proper use and maintenance; work practices or methods to ensure appropriate use and handling of chemicals; and procedures for emergency response).

- Work procedures to follow to assure protection when cleaning hazardous-chemical spills and leaks.

- Labeling system to be used.

- The location of the MSDS, how to read and interpret the information on labels and MSDS, and how employees may obtain additional hazard information.

The Program Coordinator or his/her designate will review the employee training program and make changes as necessary. Retraining is required when hazards change or when a new hazard is introduced into the workplace.

Contractors

The Program Coordinator shall advise contractors performing work in ARCADIS offices of any chemical hazards that may be encountered in the normal course of their work on the premises, the location of MSDS, the labeling system in use, the protective measures to be taken, and the safe handling procedures to be used. Each contractor bringing chemicals on-site must provide the Program Coordinator with the appropriate hazard information for these substances, including MSDS, labels, and precautionary measures to be taken when working with or around these chemicals.

Project Managers for ARCADIS projects will follow the requirements of the project health and safety plan for communication with the contractors used on projects.

Additional Information

Employees can obtain further information on this written program, the hazard communication standard, applicable MSDS, and chemical information lists from the Program Coordinator.

Exhibit 3 – Master Inventory List form

ARCADIS

MASTER CHEMICAL INVENTORY LIST (MIL) FORM

(Hazardous chemicals/substances bought specifically for one job and kept at that job site aren't listed here, but should be listed in the site specific Health and Safety Plan)

ARCADIS Office: _____

Jobsite Address (if applicable): _____

Date Of Inventory: _____ **Completed By** (name/job title): _____

Common Name	**Amount On Hand**[1]	**Container Size**	**Container Type** (e.g., plastic, metal, drum)	**Hazard Rating** (e.g., NFPA or HMIS®III, etc., or put N/A if not applicable)	**MSDS On Hand** (if no, explain below)	**Work Practice(s) Associated With The Chemical**	**Check if Exempt** (Per ARCADIS definition and example list)

Explain each "No" listed under the MSDS column: _____

_____

[1] Indicate the amount that is usually kept on hand.

Chemical Inventory Report Form (con't)

Common Name	**Amount On Hand**[1]	**Container Size**	**Container Type** (e.g., plastic, metal, drum)	**Hazard Rating** (e.g., NFPA or HMIS®III, etc., or put N/A if not applicable)	**MSDS On Hand** (if no, explain below)	**Work Practice(s) Associated With The Chemical**	**Check if Exempt** (Per ARCADIS definition and example list)

Explain each "No" listed under the MSDS column: _____

_____

_____

[1] Indicate the amount that is usually kept on hand.

Exhibit 4 – List of Common Exemptions

For purposes of the ARCADIS HazCom program and to comply with the Occupational Safety and Health Administration Hazard Communication Standard (HCS), the following categories of materials are exempted from the requirements of the HazCom program:

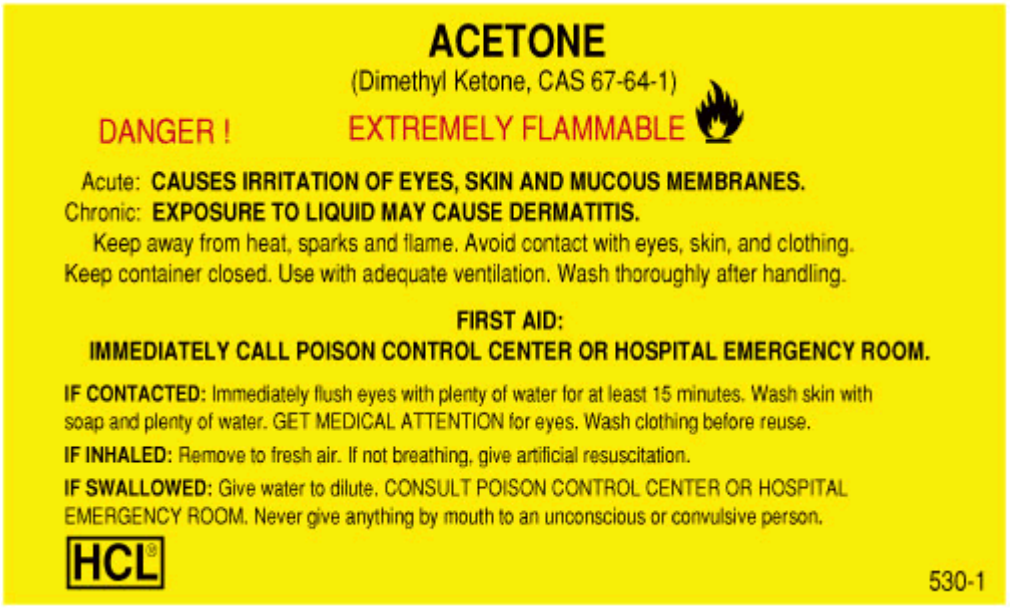
- Articles defined as:
  - Items that are formed to a specific shape or design during manufacture; and
  - Items that have end use functions dependent in whole or in part upon its shape or design during end use; and
  - Items that do not pose a physical hazard or health risk to employees; and
  - Items that, under normal use, do not release more than very small quantities (e.g., minute or trace amounts of a hazardous chemical).
    - Note: If the use and/or repair of the article requires a modification that results in severe alterations of the article (e.g. grinding, cutting, welding, brazing, soldering, etc.), then the material that make up the article and any other material being used to alter the article ARE NOT exempted from the HazCom standard.
- Tobacco or tobacco products.
- Wood or wood products when handled as an article.
- Food or alcoholic beverages.
- Drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies).
- Cosmetics.
- Ionizing and non-ionizing radiation.
- Biological hazards (e.g. bloodborne pathogens, snake venom, poison ivy/oak, etc.)
- Any consumer product where the use results in a duration and frequency of exposure, which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended.
  - Examples of products used at ARCADIS that are used as a consumer would use them are:
    - window cleaner
    - paper correction fluid
    - sealed containers of cartridge toner for copiers
    - cleaning supplies in consumer-available quantities
    - dry cell batteries that could be used in consumer equipment

Note: The following are examples of products that **are not exempt** because they are used in a manner not considered consumer use:

- spray paint used for surveying, utility locates, etc,
- lab chemicals and supplies
- chemicals used for environmental testing equipment (pH buffers, chemical packets and dyes)
- cleaning supplies associated with lab work and decontamination (e.g., Alconox detergent)
- Cements and primers used for making PVC pipe connections
- Spray lubricants used for industrial equipment maintenance (e.g., WD-40 and rust removers)
- spray adhesives used as drafting supplies

Exhibit 5 – Sample Container Labels

These types of labels can be purchased from various vendors with pre-filled in or blank.



1. POLICY

It is ARCADIS policy that during the conduct of their work, ARCADIS and subcontractor employees have the authority and responsibility to Stop Work immediately in any situation when the Health, Safety, Security and Environment hazards and associated risks associated with work being performed is not clearly understood, established or controlled. This standard presents the requirements to be observed if and when this situation occurs.

2. PURPOSE AND SCOPE

2.1 Purpose

This standard describes the authority, obligation and responsibility to stop potentially unsafe work at the earliest stage possible. Every ARCADIS and subcontractor employee is responsible for prevention of unsafe acts, behaviors or conditions, consequently preventing harm to people, the environment or property.

Every ARCADIS and subcontractor employee has the authority and obligation to stop work that he or she considers to be unsafe. The ARCADIS leadership team is committed to support anyone who exercises his or her 'Stop Work' authority. There will be no negative consequences as a result of 'Stop Work' actions.

2.2 Scope

This standard applies to all activities performed by ARCADIS or on behalf of ARCADIS. A stop work process will include the participation of all ARCADIS, ARCADIS subcontractors and other involved personnel as appropriate.

3. DEFINITIONS

Planned 'Stop Work' is a 'Stop Work' situation previously identified in a Job Loss Analysis, HASP or other standard (e.g., 'Stop Work' trigger)

'Stop Work' is the stopping of all activities associated with a task, condition, situation, action or activity (issue) that anyone views as potentially unsafe. 'Stop Work' can be applied to the single issue, a group of issues, or an entire job project or site as applicable.

4. RESPONSIBILITIES

Senior Leaders (including Account Managers and company leadership)

In the scope of this standard, senior leaders shall establish the clear expectation for ARCADIS employees and subcontractors to exercise 'Stop Work Authority', create a culture where 'Stop Work' is exercised freely, resolve 'Stop Work' conflicts when they arise, and hold those accountable who do not to comply with established 'Stop Work' policies.

Project Managers and Field Supervisors

In the scope of this standard, project managers and field supervisors are responsible for confirming that 'Stop Work' requirements and obligations are understood thoroughly by ARCADIS

and subcontractor employees, creating a culture where 'Stop Work' is exercised freely, honoring and responding promptly to requests to stop work, working to resolve issues to the satisfaction of all involved parties before operations resume, recognizing proactive participation and verifying that all 'Stop Work' actions are properly reported with required follow-up, as necessary.

ARCADIS and Subcontractor Employees

In the scope of this standard, ARCADIS and subcontractor employees are responsible for understanding their authority and obligations under 'Stop Work,' initiating a 'Stop Work' intervention when warranted, supporting the intervention of others and properly reporting all 'Stop Work' actions as described in this standard. ARCADIS and subcontractor employees are responsible for understanding the hazards of their activities, implementing the controls for the hazards and using 'Stop Work' authority if they don't understand the hazards, their job tasks, or if they do not feel safe for any reason. In addition, employees will participate in determining and implementing the solutions for mitigating the unsafe issue.

5. PROCEDURE

5.1 General Requirements:

- ARCADIS and subcontractor employees are made aware of their obligation to 'Stop Work' for issues that they consider to be unsafe.
- Employees have the authority, obligation and responsibility to stop any task or operation where there are concerns or questions regarding the control of the hazards or risks associated with a task or operation that is being performed.
- No work will resume until all 'Stop Work' concerns or questions have been adequately addressed and associated risks have been eliminated or mitigated to acceptable levels to the satisfaction of all parties involved.
- All employees are made aware of the actions they shall take, including reporting, when stopping unsafe work.
- All indications from personnel that the work is unsafe must be properly investigated as deemed appropriate for the situation. All instances of work being stopped for reasons of health and safety shall be recorded and appropriately investigated. This documentation may be completed using the Tailgate Meeting form or using the ARCADIS Incident Investigation process.
- Any form of retaliation or intimidation directed at any individual or company for exercising their authority as outlined in this standard will not be tolerated. Disregard for the requirements in this standard shall be addressed with disciplinary actions in accordance with ARCADIS policy.
- Before work begins, a responsible person shall be defined by the Project Manager for coordination of any 'Stop Work' activities, including hazard and risk assessment and mitigation actions following a 'Stop Work' intervention (refer to the Tailgate Meetings standard – ARC HSGE001).

5.2 'Stop Work' process

In general terms, 'Stop Work' involves:

- Initiating a 'Stop Work.'
- Notifying affected employees, other personnel (including client staff) and supervision.
- Assessing hazards and associated risks.
- Identifying and implementing controls.
- Resuming work once a hazard assessment and controls implementation (if applicable) are approved by a competent person and are satisfactory to all parties involved.

5.2.1 Initiate a 'Stop Work'

When a person identifies a perceived or actual unsafe condition, act, error, omission, confusion or lack of understanding that could result in harm to persons, the environment or property, he or she shall immediately initiate a 'Stop Work' intervention.

This intervention shall:

- Be initiated in a positive manner.
- Result in a stop of associated work activities, if there is an immediate risk of injury or accident; removal of all person(s) (also persons not directly related to the ARCADIS Work Team) from the area; as appropriate to the issue; stabilization of the situation and making the area as safe as possible, until more permanent solutions can be developed and implemented as appropriate to the situation.
- If there is no immediate risk, address the potentially unsafe issue with the person(s) potentially at risk and/or the person(s) causing the risk. This includes all affected employees of ARCADIS, subcontractor, client and other parties.

5.2.2 Notifying the Affected Parties

All personnel affected by the 'Stop Work' situation shall be notified as soon as possible .

5.2.3 Assessing Hazards and Associated Risks

A competent person (e.g. task manager, field supervisor, task or job expert, H&S resource) shall guide the assessment for all potential hazards and risks by involving the affected parties to determine the hazards and assess the associated risks, so that appropriate controls can be identified. This information will be documented on the Tailgate Meeting form or an incident investigation form in 4Sight.

5.2.4 Identifying Controls

To identify controls that eliminate risk or mitigate it to an acceptable level and to decide on an appropriate course of action, the following questions and others shall be considered:

- How can the risk be controlled or otherwise mitigated to an acceptable level and to the reasonable satisfaction of the parties involved?
- Is a competent person approving the hazard and risk assessment and the identified controls in order to prepare to re- start work?

All affected parties should be in agreement with the hazard and risk assessment and controls identification.

The results of the hazard and risk assessment and controls identification resulting from the 'Stop Work' shall be reported, documented and maintained on either Tailgate Meeting form or the incident investigation form as appropriate for the issue.

5.2.5 Qualifiers for Stopping/Resuming Work

The following should be considered when stopping or resuming work as the result of a 'Stop Work' intervention:

- If the 'Stop Work' intervention is based on a perceived (but not an actual) risk as determined from the hazard and risk assessment, the affected person(s), as appropriate, should:
    - Show appreciation to the initiator for his or her awareness and concern.
    - Proceed with work.
    - Share the learnings with the initiator and involved parties.
- If the 'Stop Work' intervention is based on an actual risk that cannot be immediately assessed and/or controlled on site by the present employees and available resources, work shall be suspended. If the identified controls that mitigate the risk in the 'Stop Work' situation are not within the original scope of work, the change will be managed appropriately, and the JSA and HASP should be reviewed to include a hazard and risk assessment and identify subsequent controls.
- If the work is in the scope of a permit, the permit issuer shall review/reissue the permit with the necessary changes or modifications.

Work can be resumed only once a competent person with the appropriate level of authority approves the hazard and risk assessment and the implemented controls and all parties are satisfied with the controls.

5.3 Reporting

All planned and unplanned 'Stop Work' interventions shall be documented on the Tailgate Meeting form or on the incident investigation form as appropriate to the issue.

Adequate descriptions shall be given of the act, behavior or condition that caused the 'Stop Work' intervention, its hazard and risk assessment and implemented risk mitigations.

'Stop Work' reports, like other incident reports, shall be reviewed by H&S personnel and reported to senior leaders to:

- Measure participation.
- Determine the quality of interventions and follow-up.
- Track common issues and identify trends and opportunities for improvement.
- Facilitate the sharing of learnings.
- Provide feedback from recognition programs.

The H&S team shall regularly communicate incident details regarding the number of 'Stop Work' actions reported by practice as well as details regarding common trends and learnings.

6. TRAINING

Training on Stop Work initiation and subsequent measures as desribed in this standard will be conducted as follows:

- Basic H & S implementation training for all employees performing field work
- Annual refresher trainig
- Tailgate meetings

7. REFERENCES

ARCADIS Health and Safety Plan standard – ARC HSFS010

ARCADIS Incident Investigation Standard – ARC HSMS010

8. RECORDS

Tailgate Meeting forms

Incident Investigation reports

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Mija Coppola

History of Change

Revision Date	Revision Number	Reason for change
15 February 2010	01	Original document

1. POLICY

It is the policy of ARCADIS to assess the workplace to identify and assess hazards in order to appropriately implement controls for those hazards. In addition, it is ARCADIS policy to supply personal protective equipment (PPE) for employees in a working environment where engineering and administrative controls are not feasible or effective in the control of hazards. ARCADIS will train and supply this PPE at no cost to the employee.

2. PURPOSE AND SCOPE

2.1 Purpose

The purpose of PPE is to shield or isolate individuals from the chemical, physical, and biologic hazards that may be encountered in their work environment. A hazard analysis or assessment will be performed before a job task is begun to evaluate the if PPE is necessary to protect an employee from identified hazards and determine the type of PPE required. This analysis will include the identification of hazards/suspected hazards and their routes of exposure.

Combinations of protection may be needed to provide the appropriate level of protection for any given work environment. The level of PPE may change during a job, so periodic evaluation will be done to ensure that the most appropriate PPE is being used. Over-protection, as well as under-protection, can be hazardous and should be avoided where possible.

Subcontractors and other non-ARCADIS employees must supply their own PPE. ARCADIS will not supply PPE to any non-ARCADIS employees unless specific arrangements and agreements are made with the other party.

This Health and Safety Procedure (HSP) provides guidance on the proper selection, use, care and maintenance of PPE.

2.2 Scope

Whenever possible, engineering, substitution, and administrative controls will be used to reduce or eliminate hazards, but when they are not feasible, practical or adequate, PPE will be used to protect employees from exposure to hazards during ARCADIS-related work tasks.

3. DEFINITIONS

Eye/Face Protection - Equipment designed to provide eye or face protection when exposed to hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

Foot Protection - Footwear designed to provide foot and toe protection when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and/or where an employee's feet are exposed to electrical hazards. These include such measures as steel toe, metatarcal, and boot warmers

Hand and Body Protection - Equipment designed to provide protection to the hands and body during exposures to potential hazards such as potential for skin absorption of harmful substances, sharp objects, abrasive surfaces, punctures, temperature extremes and chemical contact.

Hazard Assessment - The process utilized to identify hazards in the workplace and to select the appropriate PPE to guard people against potential hazards (see attachment Hazard Assessment for Personal Protective Equipment (PPE)).

Head Protection - Equipment designed to provide protection to the head during exposure to potential hazards such as falling objects, striking against objects, or electrical hazards.

Hearing Protection - Equipment designed to provide protection to an individual's hearing during exposure to excessive noise levels and any 8hr work day with noise levels consistently 85dB or above.

Personal Protective Equipment (PPE) - Equipment designed to provide protection to the wearer from potential hazards to the eyes, face, hands, head, feet, ears, extremities, and respiratory system.

Respiratory Protection - Equipment designed to provide protection to the wearer from potential inhalation hazards such as vapors, mists, particulates, and gases.

4. RESPONSIBILITIES

4.1 ARCADIS Management

Is responsible for providing resources for the acquisition of PPE and for the conduct of hazard assessments.

4.2 Project Managers

Project Managers are responsible, as part of the project hazard assessment, for determining PPE necessary to complete the project. In addition, the project manager is responsible for determining client requirements with respect to PPE. Project Managers notify health and safety staff of biological, chemical, and physical hazards present or potentially present on the site.. Project Managers are also responsible for ensuring that project staff has the appropriate and applicable training for PPE use prior to those staff beginning work.

4.2 Corporate Health and Safety

Corporate Health and Safety is responsible for keeping this policy and procedure up-to-datewith current regulatory requirements and best practices and for assisting in determining the appropriate PPE for a particular task and work environment and for assisting in the identification of appropriate vendors of such PPE.

4.3 Health and Safety Staff

Project Health and Safety Staff including designated Writers and Reviewers of Project Health and Safety Plans (HASPs) are responsible for developing control processes andtechniques on specific projects based on the physical, chemical, and biological hazards expected to be encountered on project facilities.

4.4 ARCADIS Staff

ARCADIS staff are responsible for completing PPE training as required by this policy and procedure, and for following all hazard control processes designated by the Project Manager, Project Health and Safety Staff, and the project HASP. If project personnel believe that a hazard is present that was not previously identified or is at levels that are higher than expected, they should stop work and notify project health and safety staff or the project manager immediately and not proceed until authorized.

5. PROCEDURE

5.1 Minimum PPE Requirements

All staff who regularly conduct field work or visit project sites outside of office environments will be issued a field bag that contains, at a minimum, the following PPE:

- An ARCADIS logo'd hardhat
- Two pair of safety glasses, one clear pair and one tinted pair, or one pair of prescription safety glasses with transitional lenses
- Hearing protection
- A minimum, Type 2 reflective vest in either orange, lime green or yellow
- Steel toe safety boots

Office locations will stock extra bags with the equipment listed above for use by other staff who do not regularly go to field locations. Additional PPE and H&S equipment will be issued to staff based on the hazards they face on specific projects (i.e. respirators, goggles, chaps, etc.).

No ARCADIS staff should arrive at a field or project site without this minimum PPE.

5.2 The PPE Program

The basic objectives of a PPE program are to protect the wearer from safety and health hazards; and to prevent injury to the wearer from incorrect use and/or malfunction of the PPE. This document serves as the overall ARCADIS PPE program and is used as guidance for the development of a project-specific PPE program which becomes part of a project-specific health and safety plan. A project-specific PPE program in combination with this HSP will address the following:

- PPE selection based upon site hazards (Hazard Identification/Assessment).

- Identify the hazards/suspected hazards and their potential routes of exposure (e.g., skin, inhalation, ingestion or eye contact).

- The use and limitations of the equipment including limitations during temperature extremes and under certain medical conditions;

- The work mission duration;

- Maintenance, storage, decontamination and disposal of PPE;

- Training including proper fit and how to properly put on and take off PPE;

- PPE inspection procedures prior to, during, and after use; and

- Periodic evaluation of the effectiveness of the PPE program.

5.3 PPE Selection

The use of PPE can itself create significant worker hazards, such as heat stress, physical and psychological stress and impaired vision, mobility and communication. Over-protection, as well as under-protection, can be hazardous and should be avoided where possible. Site or project-specific health and safety plans take into consideration engineering, substitution, and administrative controls first as a means to eliminate/reduce the need for PPE. When it is not feasible or practical to eliminate the use of PPE, PPE selection will be based on an evaluation of the performance characteristics of the PPE relative to the following:

- The requirements and limitations of the tasks or work environment;

- The task-specific conditions and duration; and

- The hazards and potential hazards identified at the site.

The level of protection will be increased whenever it is shown that increased protection is necessary to reduce employee exposures to the hazards. It may be decreased when it is shown that this will not result in hazardous exposure to employees.

5.4 Levels of PPE Protection

For work on hazardous sites, a combination of PPE may be categorized into levels A, B, C, or D with level A offering the highest level of protection and D the lowest. Monitoring the effectiveness of PPE will be done throughout a project to ensure that the appropriate level of protection is being worn. These levels of protection are described below.

Level A Protection

Level A PPE offers the highest level of respiratory and skin protection and should be worn when:

- The hazardous substance has been identified and requires the highest level of protection of the skin, eyes, and respiratory system based on either:
  - The measured (or potential) high concentrations of atmospheric gases, vapors, or particulates; or
  - If site operations and work functions involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates which are harmful to skin eyes, or the respiratory system.
- There is a known or suspected high degree of hazard to the skin and skin contact is possible.
- Conducting work in a confined, poorly ventilated area and the other criteria requiring Level A PPE have not been determined.

Level A equipment includes:

- NIOSH approved positive pressure, full-face piece self contained breathing apparatus (SCBA), or positive pressure supplied airline respirator with escape SCBA;
- Totally encapsulating chemical-protective suit (material based on the hazard);
- Chemical resistant outer **and** inner gloves (type and material based on the hazard);
- Chemical resistant boots with steel toe and shank;
- Disposable protective suit, gloves and boots (depending on suit construction, may be worn over the totally encapsulating suit);
- Coveralls (optional, as applicable);
- Long underwear (optional, as applicable); and
- Hard-hat - under suit (optional, as applicable).

Level B Protection

Level B PPE offers a high degree of respiratory protection with lesser levels of skin protection. Level B PPE should be worn when:

- The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection but less skin protection;
- The atmosphere contains less than 19.5 percent oxygen; or
- The presence of incompletely identified vapors or gases is indicated by direct reading organic vapor detection instruments, but the vapors and gases are not suspected of

containing high levels of chemical harmful to the skin or capable of being absorbed through the skin. Level B is the minimum level of protection that should be worn when there is insufficient information to determine the hazards or potential hazards of the substance.

Level B PPE equipment includes:

- NIOSH approved positive pressure, full face piece self contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA;
- Hooded chemical resistant clothing (overalls and long sleeve jacket; coveralls; one or two piece chemical splash suit; disposable chemical resistant overalls) (materials based on the hazards);
- Chemical resistant outer **and** inner gloves (material based on the hazards);
- Chemical resistant boots with steel toe and shank;
- Coveralls (optional, as applicable);
- Outer chemical resistant boot covers (optional, as applicable);
- Hard hat (optional, as applicable); and
- Face shield (optional as applicable).

Level C Protection

Level C PPE is used when the concentration and type of airborne substance is known, and the criteria for using an air purifying respirator are met. It should be worn when:

- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin;
- The types of air contaminants have been identified, concentrations measured, and an air purifying respirator is available that can remove the contaminants; and
- All criteria for the use of an air purifying respirator are met.

Level C PPE equipment includes:

- NIOSH approved full face or half mask air purifying respirator (with appropriate cartridges based on the hazards);
- Hooded chemical resistant clothing (overalls and long sleeve jacket; coveralls; one or two piece chemical splash suit; disposable chemical resistant overalls) (materials based on the hazards);

- Chemical resistant outer **and** inner gloves (materials based on the hazards);
- Chemical resistant boots with steel toe and shank;
- Coveralls (optional, as applicable);
- Outer chemical resistant boot covers (optional, as applicable);
- Hard hat (optional, as applicable);
- Escape mask (optional, as applicable); and
- Face shield (optional, as applicable).

Level D Protection

Level D PPE offers the least skin and respiratory protection and should be worn when the atmosphere contains no known hazards, and work functions preclude splashes, immersions or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

Level D PPE equipment may include any or all of the following depending on the hazards of the site:

- Chemical resistant boots with steel toe and shank (optional, as applicable);
- Coveralls (optional, as applicable);
- Gloves (optional, as applicable);
- Outer chemical resistant boots (disposable) (optional, as applicable);
- Safety glasses or chemical splash goggles (optional, as applicable);
- Hard hat (optional, as applicable);
- Escape mask (optional as applicable); and
- Face shield (optional as applicable).

5.5 Combinations of Protection

Combinations of protection are acceptable if the task hazard analysis and the site conditions warrant modification of PPE levels.

5.6 Equipment List

Eye/Face Protection

All employees engaged in or working in or adjacent to areas with eye-hazardous activities or operations, such as but not limited to flying objects and hazardous chemicals shall wear appropriate eye protection.

- Safety glasses with side shields are required for impact protection and shall meet ANSI Standard Z87.1 requirements.
- Chemical goggles (for protection against chemical splash).
- Face shields (for face protection from chemical splash and are not a substitute for primary eye protection).
- Full-face respirators can provide eye and face protection in lieu of safety glasses, goggles, or face shields.
- Shaded eye protection meeting the minimum shade requirements established in 29 CFR 1910.133 (for employees exposed to sources of injurious light radiation [e.g., welding, cutting, lasers]).
- For prescription eye protection contact your supervisor to fill out an AOSafety order form available on APEX.

Respiratory Protection

Respirators will be provided and used in accordance with the ARCADIS Respiratory Protection Policy/Procedure ARC HSGE017 and 29CFR 1910.134.

Hearing Protection

Hearing protection will be provided and used in accordance with the ARCADIS Hearing Conservation Policy/Procedure ARC HSIH008 and 29CFR 1910.95.

Foot Protection

- Basic foot protection is required for all ARCADIS job sites and industrial locations. Specialized footwear will be provided as required by the nature of the work. Special foot protection may include, but is not limited to, chemically resistant, thermally shielded, metatarsal guards, etc.
- Leather Safety Boots will be provided for employees employees; one pair of leather safety boots will be provided as necessary by ARCADIS. The employee purchasing the footwear is required to ensure that it meets ANSI Standard Z41.
- For most work done by ARCADIS, safety boots will be equipped with steel toes and shanks. It is also required that puncture resistant soles or in-soles are equipped in the safety boots. Some clients require puncture resistant soles or in-soles.

- The maximum expenditure or reimbursement for approved safety shoe purchases will be $150. Reimbursement requests must be approved by the employee's supervisor.

- Athletic-style safety shoes ("safety sneakers") are prohibited (due to the difficulties created by these styles in supervising proper use of protective footwear).

Head Protection

Hard hats meeting ANSI Z89.1 will be provided to protect employees from impact, penetration, falling objects, and/or limited electrical shock and burn, as appropriate for work site hazards. A hard hat must be replaced when it becomes damaged, contaminated (and contamination cannot be removed) or it has been struck by an object of sufficient size to potentially compromise its integrity.

Hardhats must resist penetration by objects, be water resistant and slow burning, and have a chin strap if it is worn while working at elevation. It must be worn square on the head and not be pushed back, to the side or forward.

There are two types and three classes of head protection described in ANSI standard

Z89.1-1997. The types and classes are divided by the protection they provide from impact and electricity. It is important that the level of protection necessary be evaluated when during preparation of the site specifc HASP.

Other hazard situations to consider are:

- In areas of heavy vegetation or in any area where hunters may be present, it is recommended that some type of brightly colored head protection be worn. For example, a bright orange or yellow baseball cap or stocking cap.

- If cold exposure is an issue, hardhat liners are available (made specifically for the particular hardhat) or if a hardhat is not required, some type of insulated head protection such as a stocking cap should be worn.

Hand Protection

Appropriate hand protection will be provided if employee's hands are exposed to hazards while on the job.

such as:

- pinch points
- sharp/pointed tools or objects
- incorrect or inadequate tool use
- improper use
- rotating/energized/automated parts
- abrasive materials

- inadequate job planning
- lack of/inadequate protection
- changing weather conditions and extreme temperatures
- hazardous material
- jewelry and loose clothing.

Once these hazards are identified, the appropriate glove or hand protection must be selected. When choosing gloves, keep in mind:

- Hazardous Chemicals/Substances to be Contacted
- Nature of Contact (total immersion, splash, etc.)
- Duration of Contact
- Area of Protection (hand only, forearm, arm)
- Equipment (rotating, sharp edges, etc.)
- Grip (dry, wet, oily)
- Thermal Protection
- Abrasion/Cut/Puncture Resistance
- Tear/Tensile Strength
- Ergonomics (size, heat stress, dexterity)
- Decontamination/Disposal

In selecting chemically protective gloves, the toxic properties of the chemical(s) will be determined. Information provided on the manufacturer's label or by chemical compatibility charts regarding breakthrough time, permeation rate, and degradation should be considered during selection.

Body Protection

Protective clothing, gloves, boots, and other protective equipment will be provided as appropriate for the hazards associated with the tasks being performed.

Long pants are required for all field work unless approval is granted by corporate H&S. . Additional protection such as cooling vests may be required. In environments with potential biological hazards such as ticks, plantsor snakes, gloves and long sleeves should be worn along with head protection of somekind to protect the scalp. In areas of roadway work or other vehicle traffic high visibility Class II safety vests will be worn.

Chemically Protective Clothing (CPC) will be selected by evaluating the performance characteristics of the CPC against the requirements and limitations of the site and task-

specific conditions. This selection should be performed by an employee with training and experience taking into consideration:

- Permeation, degradation, penetration of the CPC by the chemical and;
- Durability, flexibility, fit, temperature effects, ease of decontamination, compatibility with other necessary equipment (e.g., hardhats, SCBA, etc.); and duration of use that could effect the employees ability perform the task.

Specialized Equipment

All other specialized safety equipment required for an assignment (e.g., work gloves, specialized protective clothing, hip boots, field rain gear, personal floatation devices) will be provided by the Firm as specified in the HASP.

Extreme Cold Environments

Supervisors will provide as necessary any of the following to protect from extreme cold environments:

- Hats/hat liners and gloves
- Thermal clothing
- Hi-Visibility clothing
- Winter footwear

Use of specialized equipment will be charged to projects in accordance with established policy and rental rates.

5.7 Maintenance/Storage/Disposal

PPE Maintenance and Disposal

PPE must be inspected by the user before and after each use for defects, rips, tears, and/or damaged parts. Damaged or compromised PPE will not be used and must be repaired before re-use or disposed. PPE must be disposed of according to the HASP and other project plans for the site. If non-disposable, PPE must be decontaminated and sanitized before being reused according to the HASP Contaminated PPE which cannot be properly decontaminated by normal procedures must be disposed of accordingly.

PPE Storage

All PPE must be stored to protect against dust, sunlight, extreme heat and cold, excessive moisture, and damaging chemicals. Storage must be in accordance with the manufacturer's specifications.

Contaminated Boots

Boots contaminated or damaged on the job will be replaced. Contaminated boots will be disposed of with the site waste.

6. TRAINING

Training in the proper use of PPE will generally be provided in conjunction with HAZWOPER training or via coursework selected and approved by Corporate H&S. Training will be completed prior to the employee's use of PPE, when changes in the work place alter the use or type of PPE, and when inadequacies in the employee's knowledge or use of PPE are noted.

The training will include at a minimum:

- When and what PPE is necessary;
- How to put on, adjust, wear and take off the PPE;
- Limitations of the PPE; and
- Proper care, maintenance, useful life, and proper disposal of PPE.

7. REFERENCES

29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response"

29 CFR 1910 Subpart I "Personal Protective Equipment"

8. RECORDS

Records of the PPE training are retained by the Employee and in the ARCADIS training database. Medical certification/recertification are retained by Corporate H&S.

9. APPROVALS AND HISTORY OF CHANGE

Approved by: Michael A. Thomas, CIH, Director H&S Environmental Division

History of Change

Revision Date	Revision Number	Reason for change
20 February 2009	01	Original document

1. POLICY

It is ARCADIS US policy to be proactive in the identification, assessment and control of health and safety hazards and associated risks. ARCADIS will assess potential respiratory exposure hazards resulting from or encountered by our staff during job activities in accordance with the ARCADIS Industrial Hygiene Standard ARC HSIH009. To the extent feasible, appropriate engineering and/or administrative controls will be used to reduce or eliminate exposure to airborne compounds. If those controls are not able to reduce exposure adequately, employees who are exposed or potentially exposed to a respiratory hazard at or above the applicable occupational exposure guideline are required to wear appropriate respiratory protection. ARCADIS' policy requires that our staff be adequately trained, medically cleared, and appropriately fit-tested before using respiratory protection.

2. PURPOSE AND SCOPE

2.1 This standard sets forth the requirements for the selection, use and care of respiratory protective equipment (respirators) by ARCADIS staff.

2.2 This standard applies to all employees who use or could potentially use respiratory protection. It also applies to all work where airborne hazards present the potential where respiratory protection may be required.

3. DEFINITIONS

All definitions are documented in Exhibit 1.

4. RESPONSIBILITIES

4.1 **Corporate H&S** - On an annual basis, review and update, as necessary, this standard and associated attachments and assess the effectiveness of the program. In addition, Corporate H&S serves as the overall Respiratory Protection Program Administrator in accordance with OSHA 29 CFR 1910.134 (Exhibit 5).

4.2 **Operations Managers and Supervisors** - support the requirements of this standard and provide the resources necessary to implement this standard including equipment, time for training, medical exams, and fit-testing, and other appropriate and necessary resources.

4.3 **Project and Task Managers** – ensure the completion of exposure assessments on applicable projects to determine the need for respiratory protection. In addition, ensure that appropriate budgets are established on projects to provide the necessary respiratory protection based on the exposure assessments. Also, understand the requirements of the client with regards to respiratory protection.

4.4 **Health and Safety Staff and Project Site Safety Officers or Supervisors** – conduct or assist with the completion of exposure assessments and respirator training and fit-testing as necessary. These staff will also assist in the proper selection of respiratory protection and ensure the proper use and care of respiratory protection by ARCADIS staff. In addition, these staff will assist in the assessment of this respiratory protection program and procedure.

4.5 **Designated Medical Provider – WorkCare** – coordinates annual medical surveillance exams to determine the employee's ability to use a respirator and provides documentation to the employee and ARCADIS in regard the employee's ability to wear a respirator. WorkCare may also coordinate fit testing and, in these situations, provide documentation as to the outcome of the fit test. WorkCare is responsible for maintaining all medical records, including the required medical questionnaire.

4.6 **Location H&S Coordinators or Fit Testing Designees** – responsible for conducting qualitative fit-testing for employees in their locations unless the location elects to use WorkCare for such activities. The H&S Coordinator or Fit Testing Designee will conduct the fit tests in accordance with this standard. They will check that the employee is medically cleared to participate in the fit-testing activity and ensure that the fit-test record is sent to Corporate H&S either via hard copy or electronically as determined by the Corporate H&S Administrator. In addition, the H&S Coordinator or Fit Testing Designee is responsible for purchasing a complete Qualitative Fit Testing kit to have on hand at the office location for performing the fit testing. The specific kit and source will be designated by Corporate H&S

4.6 **Employees** - Wear respirators as required by project conditions and as outlined in the site-specific Health and Safety Plan (HASP) or approved project guidance. Use and maintain respirators per the manufacturer's recommendations and this standard. Perform pre-use negative and positive pressure fit checks of respirators. Participate in the required medical evaluation, training, and fit test prior to assignment and inform the site supervisor if medical, training, or fit test certifications have expired. Provide the site supervisor with a copy of medical and training certifications, and fit test results, upon request. Will not participate in the fit-testing procedure or wear a respirator of any kind for any reason nor put themselves in any situation where a respirator may be necessary if the medical clearance has expired or a fit-test has not been conducted within the last 12 months.

5. PROCEDURE

5.1 Respirator Selection

Respirators will be selected as follows:

- All respirators must have NIOSH approval.
- Only respirators selected, supplied, and/or approved by ARCADIS may be used.
- The maximum use concentration (**MUC**) shall be evaluated for proper respirator selection. The MUC can be calculated by multiplying the APF rating for the respirator selected by the PEL or TLV for the contaminant of interest. If the airborne concentrations of the contaminant exceed the MUC for the respirator, then another respirator, meeting the MUC requirements, shall be selected.
- The following "Rule of Thumb" may also be used in conjunction with the information below:

- If the chemical has a boiling point greater than 70° C and the concentration is less than 200 parts per million (ppm), a service life of 8 hours at a normal work rate can be expected.
- Service life is inversely proportional to work rate.
- Reducing the concentration by 10 will increase service life by a factor of 5.
- Humidity above 85 percent will reduce service life by 50 percent.

5.1.1 Air purifying respirators

A. ARCADIS recommends that air purifying respirators of the full-face, dual cartridge design be used when an APR is required and appropriate. However, a half-face respirator may be used following appropriate hazard and risk assessment to ensure the protection factor is adequate for the exposure.

B. Respirator cartridge selection must be based on the anticipated hazards as identified in the site-specific health and safety plan (HASP). The following points must be considered when selecting air purifying cartridges*: [Air-purifying respirators do not supply oxygen and may not be used in oxygen-deficient atmospheres or in ones that are immediately dangerous to life or health (IDLH)].*

- The anticipated air contaminant(s) concentration and the potential for air contaminant(s) to be present in concentrations which present an immediate danger to life and health (IDLH) and/or an oxygen deficient atmosphere.
- The nature of the air contaminant (s) (e.g. gas, vapor, particulate).
- The odor characteristics and odor threshold of the contaminant.
- Irritant properties of the air contaminant(s).
- The Occupational Safety and Health Administration (OSHA), Permissible Exposure Limit (PEL), the American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Value (TLV), and/or the National Institute for Occupational Safety and Health (NIOSH), Recommended Exposure Limit (REL).
- Work activities and the anticipated duration of respirator usage.

C. The filters are split up into three classes: N, R, and P:

- N series filters: **N**ot resistant to oil - can be used in environments where oil particles are not present in the atmosphere.
- R series filters: **R**esistant to oil – can be used in atmospheres where oil particles are present.

- P series filters: oil **P**roof – can be used in atmospheres where oil particles are present for more than 8 hours.

  In addition to the N, R, and P series above, filter efficiency shall also be considered for appropriate selection. There are three filter efficiency categories: 95 percent, 99 percent, and 99.7 percent. The higher the filter efficiency, the lower the filter leakage

D. Respirator cartridge End of Service Life shall be factored when selecting the appropriate cartridge. Use of warning properties such as odor and taste are not permissible practices. Some cartridges are equipped with End of Service Life Indicators (ESLIs). If the cartridges selected have ESLIs, cartridges will be changed based upon that indicator. If cartridges are not equipped with ESLIs, then the ESL shall be determined and a cartridge change out schedule established in the task hazard analysis stage of the project.

At a minimum, organic vapor filters should be changed at the end of each day's use or sooner, if the respirator manufacturer change-out schedule software program dictates otherwise.

Using respirator manufacturer-supplied information (this may be in the form of computer software), a change out schedule will be established based on conditions and/or concentration data obtained from the job site. The Director of Health and Safety or designate will specify if the cartridge change out schedule for a particular activity differs from that presented above.

Cartridges will be changed out as required by the established schedule or as job site conditions dictate. The change out will be performed only when the user has left the work area and has followed decontamination procedures.

Several OSHA chemical-specific standards specifically address cartridge change out schedules. Examples include the following:

Chemical	OSHA Standard	Change Out Schedule
Acrylonitrile	1910.1045 (h)(2)(ii)	end of service life indicator (ESLI) or end of shift (whichever occurs first)
Benzene	1910.1028 (g)(2)(ii)	ESLI or beginning of shift (whichever occurs first)
Butadiene	1910.1051 (h)(2)(ii)	Every 1, 2, or 4 hours dependent upon concentration according to Table 1 of standard and at beginning of every shift

Chemical	OSHA Standard	Change Out Schedule
Formaldehyde	1910.1048 (g)(2)(ii)	For cartridges every three hours or end of shift (whichever is sooner); for canisters, every 2 or 4 hours according to the schedule in (g)(3)(iv)
Vinyl chloride	1910.1017 (g)(3)(ii)	ESLI or end of shift in which they are first used (whichever occurs first)
Methylene chloride	1910.1052 (g)(2)(ii)	Canisters may only be used for emergency escape and must be replaced after use.

5.1.2 Atmosphere-supplying respirators/ Supplied Air Respirators (SARs)

A. This section applies to compressed air/oxygen and liquid air/oxygen used for supplied-air and SCBA respirators. Atmosphere-supplying respirators are designed to provide breathable air from a clean air source other than the surrounding contaminated work atmosphere.

B. They include airline-type supplied-air systems supplying air from cascaded breathing air cylinders or compressors, systems, self-contained breathing apparatus (SCBA) and complete air-supplied suits.

C. Breathing air couplings must *not be compatible* with outlets for nonrespirable worksite air or other gas systems. Compressed and liquid oxygen will meet the U.S. Pharmacopoeia requirements. Compressed breathing air will meet at least the requirements for Grade D breathing air described in ANSI G-7.1-1989 to include:

- Oxygen content (v/v) of 19.5-23.5%;
- Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
- Carbon monoxide (CO) content of 10 ppm or less;
- Carbon dioxide content of 1,000 ppm or less; and
- Lack of noticeable odor.

D. Cylinders of purchased breathing air must have a *certificate* of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air.

Cylinder air must be tested (Oxygen content (v/v) of 19.5-23.5%) by a calibrated oxygen sensor prior to being placed into service.

E. Cylinders used to supply breathing air must also be hydrostatically tested by a qualified organization. Steel tanks must be tested at least every five year and composite tanks at least every three years. The tested tanks will be marked with the date of the last test. Breathing air containers must be marked in accordance with the NIOSH Respirator Certification Standard, 42 CFR Part 84.

F. Employees using SARs must attend additional respirator training covering the use, care, and limitations of this equipment.

G. Airlines used in compressor or cascaded cylinder systems shall be used only for breathing air and no other gas or liquid. Maximum length of the lines is 300 feet. Airlines will be inspected before each use and at a minimum, daily and checked for damage, contamination, etc.

H. Where airline systems are utilized, all users will be equipped with a suitable escape respirator system.

I. Compressors used to supply breathing air to respirators must be constructed and/or situated to provide the following:

- Prevent contaminated air from entering the system.
- Have in-line air-purifying filters to further ensure breathing air quality. Filters must be maintained and replaced periodically following the manufacturer's instructions.
- Display a tag with the most recent filter change date with the signature of the individual authorized to perform the filter maintenance.
- Have a carbon monoxide alarm to monitor carbon monoxide (CO) levels. Levels of CO in breathing air must be maintained below 10 ppm.

5.2 Fit Testing

Fit testing will be completed on all employees that may wear or do wear respirators as follows:

- Fit testing will be conducted as required in OSHA 29 CFR 1910.134 Appendix A which is mandatory and as described in Exhibit 2.
- Employees must have received an initial and annual medical examination in accordance with the ARCADIS Medical Surveillance Standard prior to fit testing. Evidence of medical clearance to wear respiratory protection or physician authorization must be provided for review to the individual conducting the fit test.
- The fit-tester will complete a fit-test form and provide a copy to the employee upon completion of the fit-test using the form shown in Exhibit 3 or similar form.

- Fit testing will be conducted prior to actual respirator use and at least annually thereafter.
- Additional fit testing will be conducted in the event that an employee's physical condition changes resulting in the potential for an inadequate "fit." i.e. Significant weight gain/loss, reconstructive facial surgery, etc.
- Fit testing must be performed by trained and qualified individuals in accordance with the OSHA respiratory protection standard and manufacturer's specifications. Fit testing may be conducted by the ARCADIS medical exam provider or by an approved provider whether an internal or external source. (as long as the medical examination and qualification is received first). ARCADIS Corporate H&S will approve those fit-test providers.
- Only those respirators that have been properly fitted may be worn. Alternative respirator makes, models, and sizes will require additional fit testing.
- If after passing a fit test, an employee notifies a supervisor or the respirator program administrator that the fit is not acceptable, an additional fit test will be conducted.
- Fit testing will be, at a minimum, qualitative (QLFT). Quanitative Fit Testing (QNFT) will be conducted as required by the client or based on the exposure assessments completed before the initiation of a project and the protection factors required to adequately control exposure. When QNFT is conducted, it will be done so using a Porta-Count or similar device. QLFT is also acceptable as long as the respirator is used at protection factors as designated by OSHA.
- If QLFT is used, any of the approved challenge agents approved by OSHA and NIOSH shall be utilized including isoamyl acetate (banana oil), irritant smoke (stannous chloride), sacharrine, or Bitrex.
- The person doing the fit-test will ensure the respirator user is competent to conduct and understand the following:

  A. Donning and doffing of the respirator

  B. Negative and positive fit checks

  C. Parts and pieces of the respirator

  D. Maintenance and care

  E. Inspections

5.3 Respirator Usage

5.3.1 General Requirements

A. Staff doing active field work will be provided their own full-face air purifying respirator.

B. Only medically cleared, trained, and fit tested, employees may use respirators.

C. Employees must use only those respirators in which they have been fit tested.

D. Employees must wear and use all respirators in accordance with training, this standard, and the manufacturer's instructions.

E. Respirators must be assigned to a single individual for their exclusive use.

F. Respirators must not be worn if there is any condition that prohibits a good face to face piece seal (i.e., facial hair, glasses, loss of weight, lack of teeth). If an employee requires corrective lenses, ARCADIS will provide glass inserts for the respirator.

G. Respirator users will conduct a respirator user seal check each time they put on a respirator.

H. Respirator users must exit the work area immediately upon the following:

- Odor breakthrough.
- Increased breathing resistance.
- Physical symptoms, such as headache, dizziness, nausea, blurred vision or any other conditions that indicate respirator failure.

I. Respirator users must leave the work area to change filter cartridges or air bottles.

J. Surveillance will be conducted during respirator use to monitor the work area, employee exposure, or any other condition that may affect respirator effectiveness.

K. The buddy system must be used during all activities requiring the use of a respirator.

L. Respirator cartridges must be changed when they are damaged, defective, dirty, odor breakthrough, or increased breathing resistance occurs, or when indicated by the end of life service indicator (ELSI), or in accordance with a project-specific change-out schedule that must be documented in the site-specific health and safety plan (See section 5.1.1 D).

5.3.2 IDLH atmospheres

A. Work in an IDLH atmosphere shall be approved by the Environmental Division H&S Director or designate

B. In IDLH atmosphere situations, at least one person will be located outside the IDLH atmosphere. In addition visual, voice, or signal line communication will be maintained between the person in and the person outside the IDLH atmosphere. The person located outside the IDLH atmosphere will be trained to provide effective emergency rescue, and will be equipped with pressure demand, other positive SCBA or supplied-air respirator with auxiliary SCBA and:

- Appropriate retrieval equipment if it will not increase the overall risk; or
- Equivalent means for rescue where retrieval equipment is not required as noted above.

C. The appropriate supervisor will be notified before the person located outside the IDLH atmosphere enters the IDLH atmosphere to provide emergency rescue. Once notified, the supervisor will provide assistance appropriate to the situation.

5.4 Program Evaluation

A. Evaluations of work areas (site inspections) will be conducted by supervisory and Health and Safety personnel to determine the effectiveness of the program.

B. During site inspections and the annual HAZWOPER 8-hour refresher-training program, employees will be consulted to assess program effectiveness and identify problem areas.

C. Corporate Health and Safety, will review information compiled during site inspections and employee discussions and make adjustments to the program to correct identified deficiencies.

5.5 Voluntary Respirator Use

A. Respirators will be provided at the request of an employee, if the use of the respirator will not create a hazard.

B. Prior to voluntary respirator use, employees must undergo a medical examination to ensure they are physically able to use the respirator.

C. Prior to voluntary respirator use, employees must be trained in the use, care, and limitations of the respirator.

D. Prior to voluntary respirator use, employees must be fit tested as outlined in section 5.2.

E. A copy of 29 CFR 1910.134 Appendix D "Information for Employees Using Respirators When Not Required Under the Standard" will be provided to any employee who wears a respirator when its use is not required.

5.6 Maintenance, Care, and Storage of Respirators

5.6.1 Inspection

A. All respirators will be inspected according to the schedule outlined below. The checklist shown in Exhibit 6 should be followed to ensure a complete and thorough inspection:

- Respirators used routinely will be inspected before each use and during cleaning;
- SCBAs will be inspected before each use, during cleaning and monthly; inspection will include making sure that the regulator and warning devices function properly;
- Respirators that are maintained for emergency use will be inspected monthly and in accordance with the manufacturer's recommendations; and
- Emergency escape-only respirators will be inspected before being taken to the work site.

B. Documentation of respirator inspections will include checks on the following:

- Respirator function.
- Tightness of connections and condition of parts (e.g., face piece, head straps, valves, connecting tube and filters, canisters or cartridges).
- Pliability and any deterioration of any elastic or elastic-type parts.
- Condition of the regulator.
- Proper functioning of warning devices.
- If air and oxygen cylinder are fully charged. Cylinders will be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level.

C. Respirators that fail inspection must be removed from service and tagged "DO NOT USE."

5.6.2 Cleaning

- As often as necessary to maintain a sanitary condition if used exclusively by one employee.

- Each time before it is worn if used by more than one employee.
- After each use if maintained for emergency use.
- After each use if used for fit testing.

The procedure for cleaning respirators is presented in Exhibit 4.

5.6.3 Maintenance

Respirators requiring maintenance due to worn or malfunctioning parts will be repaired as follows:

- Repairs shall be conducted only by individuals appropriately trained to perform necessary repairs;
- Replacement parts shall be approved by the manufacturer of the respirator; be NIOSH approved for use with the respirator; and designed and manufactured for the specific respirator being repaired.
- Repairs are to be made in accordance with manufacturer recommendations and specifications.
- Reducing and admission valves, regulators, and alarms shall only be adjusted or repaired by an authorized technician trained by the manufacturer or by the manufacturer.

5.6.4 Storage

- All respirators shall be stored in the following manner which protects them from damage, contamination, dust, sunlight, temperature extremes, excessive moisture, damaging chemicals and shall be stored in a manner which prevents deformation of the face piece and exhalation valve.
- Emergency respirators shall be stored in readily accessible condition to the work area, stored in containers or covers clearly marked as containing emergency respirators, and stored in accordance with manufacturer recommendations. Since most emergency respirators are issued to ARCADIS by the client at job sites, any client protocol for proper storage and use shall be followed.

5.7 Work Area Surveillance

- Air monitoring will be performed continuously during any work that involves use of respiratory protection. The type of monitoring to be performed will be identified during the task hazard analysis phase of the work and will be specified in the site-specific health and safety plan for the project in accordance with policy ARC HSFS010, “Health and Safety Plans”.
- Workers wearing respirators will be monitored during work to ensure employees are not enduring undue stress or difficulty of any type while wearing the respirator

and to ensure the respirator is adequate protection for the hazard. Surveillance will also be conducted to identify any changes in the work method of environmental conditions which may alter the effectiveness of respirator use.

5.8 Medical Evaluation

- Because using a respirator may place a physiological burden on an employee that may vary depending upon the type of respirator and workplace conditions, the written Respiratory Protection Program includes what medical evaluation process we have implemented at ARCADIS. All employees who use a respirator as defined under this standard will participate in the company's medical monitoring program ARC HSGE010. Medical evaluations may cease if the employee is no longer required to use a respirator per the Medical Surveillance standard.

- A physician or other licensed health care professional will perform the evaluation using a medical questionnaire as defined in CFR 1910.134, Appendix C or an equivalent medical examination. A follow-up medical examination may be given depending upon the answers to the questionnaire and/or medical examination.

5.8.1 Timeframe of Medical Evaluations

Medical evaluations will take place according to the following schedule:

- Prior to fit testing and use at the work site;

- When an employee reports medical signs/symptoms that may be related to his/her ability to use a respirator;

- When a physician, supervisor or the respirator Program Administrator suggests/requests an evaluation;

- When information such as observations made during fit testing or program evaluation indicate a need; or

- When a change occurs in workplace conditions that may result in a substantial increase in the physiological burden placed on an employee (e.g., physical work effort, protective clothing, temperature, etc.).

5.8.2 Written Medical Opinion

The physician or other licensed health care professional will determine and provide a written opinion as to the employee's ability to use a respirator. This opinion will contain:

- Whether or not the employee is medically able to use the respirator;

- Any limitations on respirator use;

- The need for follow-up medical evaluations; and

- A statement that the employee was provided with a copy of the written recommendation.

6. TRAINING

Training will be provided prior to respirator use; annually; when changes in the workplace or respirator make the training obsolete; when inadequacies are found in the employee's knowledge or use of PPE; or any other situation in which retraining appears necessary.

6.1 General Requirements

A. All employees who use respirators must be trained in their use, care, and limitations. Employees will also be trained to understand why respirators are necessary and the importance of a proper fit, the signs and symptoms of over exposure, the requirements of this standard and the general requirements of the OSHA Respiratory Protection Standard.

B. Respirator training will be conducted prior to actual respirator use and at least annually thereafter. Annual training will be conducted as part of the HAZWOPER 8-hour refresher-training program.

C. All training provided must be reviewed and approved by Corporate Health & Safety and will be managed through the corporate training database.

D. Documentation of training certification received by attendance at any training course including externally provided training courses will be kept by the employee with copies provided to the corporate training group.

6.2 Training Content Requirements

Training will ensure that employees can demonstrate, at a minimum, knowledge of the following:

- Why the respirator is necessary and its limitations and capabilities;
- How improper fit, usage, or maintenance can compromise the protective effect of the respirator, and how to recognize the signs and symptoms that may limit or prevent the effective use of respirators;
- How to use the respirator effectively in emergency situations, including when it malfunctions;
- How to inspect, put on and remove, use, and check the seals of the respirator;
- Proper procedures for maintenance and storage of the respirator; and
- The general requirements of this standard.

6.3 Other Training Considerations

- Training does not need to be repeated for a new employee if he/she can provide documentation of training within the 12 months prior.
- Although annual HAZWOPER training may be utilized to help meet compliance with the training portion of this standard, training will be specific to the type of respirator used and the conditions at the job/work site.

6.4 Training for ARCADIS Fit Testers

- ARCADIS Fit Testers will complete either live meeting training or course posted on Archimedes. In addition, following completion of the training, fit testers will complete an on-line quiz to test their knowledge and competency before they conduct fit-testing of employees. A score of 90% will be required to pass the quiz.

7. REFERENCES

- 29 CFR 1910.134 “Respiratory Protection”
- National Institute for Occupational Safety & Health (NIOSH) Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84, NIOSH 96-101, 1996.
- NIOSH Guide to Industrial Respiratory Protection, NIOSH 87-116, 1987.
- ARCADIS Health and Safety Standard ARC HSGE010 – Medical Surveillance

8. RECORDS

- Training records will be kept by the individual employee with copies of such certificates kept by the ARCADIS corporate training group. Information related to the course such as training dates and vendors, will be kept by the corporate training group.
- Air monitoring results must be maintained with project files.
- Results of medical surveillance examinations will be maintained by the designated medical provider in compliance with 29 CFR 1910.1020.
- Fit test records will be maintained by the employee who is fit tested per CFR 1910.134 (m)(2)(11) and, where utilized, the designated medical provider. In addition, records for those employees fit-tested by an ARCADIS fit tester will be sent to the ARCADIS corporate office either in hard copy or electronically by the fit tester.
- Copies of fit test records are to be kept centrally at the corporate office or they will be scanned and sent to ARCADIS' designated medical provider to be kept with the employee's medical records.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: 

History of Change

Revision Date	Revision Number	Reason for change
19 January 2009	01	Original document
1 September 2009	02	Updated requirements for fit-testing and made other changes to clarify requirements. Added fit-testing responsibilities for H&S Coordinators or their designee, added the fit test agents that are allowed for use for qualitative fit testing, and added training requirements for ARCADIS fit-testers. Updated the fit test form.
1 February 2010	03	Enhanced the section on Change out Schedule for respirator cartridges to better meet the intent of the US Occupational Health and Safety Administration respiratory protection standard.
24 February 2010	04	Modified section 5.1.1 A to allow the use of half face air purifying respirators

Exhibit 1 – Definitions

Air-purifying respirator means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned protection factor (APF) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

Atmosphere-supplying respirator means a respirator that supplies the respirator user with suitable breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

Canister or cartridge means a container with a filter, sorbent, catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand respirator means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection. Note: all exposure assessments are made and reported regardless of the assigned protection factor of the respiratory protective device used

End-of-service-life indicator (ESLI) means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Escape-only respirator means a respirator intended to be used only for emergency exit.

Filter or air purifying element means a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering facepiece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit factor means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. See also Qualitative fit test (QLFT) and Quantitative fit test (QNFT).

Helmet means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter means a filter that is at least 99.97% efficient in

removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece means a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum use concentration (MUC) means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

Negative pressure respirator (tight fitting) means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere means an atmosphere with oxygen content below 19.5% by volume.

Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.

Positive pressure respirator means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR) means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

Qualitative fit test (QLFT) means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting facepiece means a respiratory inlet covering that forms a complete seal with the face.

User seal check means an action conducted by the respirator user to determine if the respirator is properly seated to the face. This is conducted through the performance of a negative and positive pressure check each time the respirator is donned.

Exhibit 2 – Fit Testing Procedure

A. This is a summary of the fit-testing procedure. The person conducting the fit-test should thoroughly review OSHA 29 CFR 1910.134 Appendix A for the method of fit-testing that is to be performed.

B. The employee will be instructed in the proper placement and positioning of the respirator on the head and face. Proper tensioning of the straps will be reviewed as well as methods to determine proper and acceptable fit. A mirror should be provided to assist with this review.

C. The selected respirator shall be worn for 5 minutes to determine the comfort of the respirator. An assessment of comfort will include the following which will be discussed with the employee:

- Position of the mask on the nose
- Room for eye protection, as appropriate
- Room to talk
- Position of mask on the face and cheeks

D. Adequacy of the respirator selected will be evaluated using the following criteria:

- Proper placement of chin
- Adequate strap tension
- Fit across bridge of the nose
- Size of respirator appropriate to span distance from nose to chin
- Tendency of respirator to slip
- Employee evaluation of proper fit and position

E. The employee shall perform a seal check consisting of a positive and negative pressure check as follows:

- *Positive Pressure Check.* Close off exhalation valve and gently exhale into the facepiece. The test is satisfactory if slight positive pressure can be produced without any evidence of leakage from the mask and face seal.
- *Negative Pressure Check.* Close off the inlet opening of the canister or cartridge(s) by covering with palm of the hand(s) or by replacing filter seal(s). Inhale gently so that the mask collapses slightly and hold breath for 10 seconds. The test is considered satisfactory when the facepiece remains in its collapsed position and no inward leakage of air is detected.

F. Perform test exercises as follows:

- *Normal breathing.* In a normal standing position, without talking, the employee shall breathe normally.
- *Deep breathing.* In a normal standing position, the employee shall breathe slowly and deeply, taking caution not to hyperventilate.
- *Turning head side to side.* Standing in place, the employee shall turn his/her head slowly from side to side between the extreme positions of each side. The head shall be held at each extreme side position momentarily so the employee can inhale.
- *Moving head up and down.* Standing in place, the employee shall slowly move his/her head up and down. The employee shall be instructed to inhale in the up position.
- *Talking.* The employee shall talk out loud slowly and loud enough to be heard by the individual conducting the test. The employee shall read the Rainbow Passage:

  "When sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is according to legend, a boiling pot of gold at each end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow."
- *Bending over.* The test subject shall bend over at the waist as if he/she were to touch his/her toes. Qualitative fit tests using a shroud or other device to contain the testing media may substitute jogging in place for bending over at the waist.
- *Normal breathing.* The employee shall repeat exercise number 1.

G. Each test shall be performed for one minute. The employee shall be questioned regarding the comfort of the respirator. If the respirator becomes unacceptable due to discomfort, adequacy of seals, or for any other reason identified during the fit test process, then the respirator will be replaced with another suitable and acceptable respirator and the fit test procedure repeated.

H. TThe fit-tester will record the information on the fit test form, have the employee sign the form, sign the form themself and submit it either hard copy or electronically to Corporate H&S. A copy should also be given to the employee.

Exhibit 3 - Respirator Program Fit Test Form and Employee Checklist

Employee Name: _____
Last First

Employee Number: _____

Date: _____

Office: _____

Division: _____

Business practice: _____

Checklist Item	OK
Respirator Training	☐
Medical Review/Exam **(mandatory)** *Date completed:*	☐
Medical Clearance Records on File	☐

Fit Test Method: ___ Qualitative; Test Agent Used: _____

Model: _____ Type: _____Size: _____

___ Quantitative; Model: _____ Size: _____

Response:	**Passed**	**Failed**	**Fit Factor (QN)**
Normal Breathing	☐	☐	_____
Deep Breathing	☐	☐	_____
Turning Head Side to Side	☐	☐	_____
Moving Heads Up and Down	☐	☐	_____
Talking	☐	☐	_____
Grimace	☐	☐	_____
Bending Over	☐	☐	_____
Normal Breathing	☐	☐	_____
Pass or Fail (Qualitative Fit Test)	☐	☐	_____
Overall Fit Test Factor: (from Portacount)	☐	☐	_____

Employee: Printed name_____
Signature_____

Test Administrator: Printed name_____
Signature_____
Company_____

Respirator Type [1]	**Assigned Protection Factor**
Single use or quarter mask	5
Air purifying half mask with cartridge and/or any type of particulate filter	10
Air purifying full facepiece with cartridge and/or high efficiency filter	50
Supplied air equipped with full facepiece and operated in pressure demand or other positive pressure mode	2000
Self contained breathing apparatus with tight fitting facepiece and operated in pressure demand mode	10,000

[1]For respirators not listed in this table, contact corporate health and safety for assistance in determining APFs.

Exhibit 4 – Respirator Cleaning Procedure

- Remove cartridges/canisters/filters. Disassemble facepiece by removing speaking diaphragm, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer.
- Wash components with warm (<110° F) water with a mild detergent or with a cleaner approved by the manufacturer. A soft, non-wire bristle brush may be used to facilitate dirt removal.
- Rinse with warm (<110° F) clean water, preferably running water.
- If the cleaner used does not contain a disinfecting agent, respirator components should be immersed in one of the following for two minutes:
    a. Hypochlorite solution (50 ppm chlorine) made by adding approximately 1 milliliter of laundry bleach to 1 liter of water at 110° F; or
    b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine [6-8 grams ammonium and/or potassium iodide/100 cubic centimeters (cc) of 45 percent alcohol] to one liter of water at 110° F; or
    c. Other commercially available cleansers of equivalent disinfectant quality, when used as directed by the manufacturer, and are approved for use by the respirator manufacturer.
- Thoroughly rinse the respirator components in clean, warm, (<110° F) running water.
- Components should be hand dried with a soft lint free cloth or allowed to air dry.
- Reassemble the facepiece and restore cartridges/canisters/filters as necessary.
- Test the respirator for proper working condition.

Exhibit 5 - OSHA Standards with Respiratory Protection Requirements

Compound	29 CFR
Asbestos	1910.1001
4-Nitrobiphenol	1910.1003
Alpha-Naphthylamine	1910.1004
Methyl-Chloromethyl Ether	1910.1006
3,3-Dichlorobenzidine (+ salts)	1910.1007
Bis-Chloromethyl Ether	1910.1008
Beta-Naphthylamine	1910.1009
Benzidine	1910.1010
4-Aminodiphenyl	1910.1011
Ethyleneimine	1910.1012
Beta-Propiolactone	1910.1013
2-Acetylaminofluorene	1910.1014
4-Dimethylaminoazobenzene	1910.1015
N-Nitrosodimethylamine	1910.1016
Vinyl Chloride	1910.1017
Inorganic Arsenic	1910.1018
Lead	1910.1025
Benzene	1910.1028
Coke Oven Emissions	1910.1029
Cotton Dust	1910.1043
1,2,Dibromo-3-Chloropropane	1910.1044
Acrylonitrile	1910.1045
Ethylene Oxide	1910.1047
Formaldehyde	1910.1048

Exhibit 6 – Respirator Inspection Checklist

The following is a guideline to be used when inspecting a respirator before wearing:

Head Strap

_____ attached properly to the respirator
_____ pliable, not stretched out or too stiff
_____ the rubber is not cracked or warped in anyway

Face Shield

_____ no visible cracks
_____ securely attached to the respirator
_____ not badly scratched, visibility is good
_____ there are no gouges or divots
_____ if there are screws, make sure they are securely in place

Nose Piece

_____ is securely in place
_____ contains all inhalation valves

Actual Face Seal

_____ pliable, not stiff
_____ does not contain any cracks or warped areas
_____ does not appear worn or discolored

Inhalation and Exhalation Valves

_____ are they in place
_____ they are not sealed shut
_____ pliable, not brittle

Cartridge Connectors

_____ plastic is not cracked
_____ if bayonet style, all three prongs are in place
_____ of screw-in style, it is not stripped
_____ O-ring is in place and not brittle

Speaker Diaphragm

_____ the diaphragm is not missing
_____ plastic cover is in place
_____ screw is in place and not loose

1. POLICY

ARCADIS considers motor vehicle operation a risk that demands strict management to lead to accident prevention and the resultant decrease in employee injuries, lost productivity and insurance costs to be a vital key in accomplishing our company's vision. Motor vehicle accident prevention involves the safety and well-being of our employees as well as the general public.

To that end, it is the policy of ARCADIS that defensive driving skills and techniques along with good administrative management and controls be implemented by all of its employees at all times during the operation of ARCADIS vehicles, rental vehicles or personal vehicles used for company business.

2. PURPOSE AND SCOPE

2.1 Purpose

2.1.1 Purpose Statement **-** ARCADIS is committed to providing a healthy and safe work environment for our employees, subcontractors, clients and visitors. To this end, ARCADIS embraces this Health and Safety (H&S) Motor Vehicle Safety Program (MVSP) Policy and Procedure.

2.1.2 Providing Standard Practices - This policy and the accompanying procedures provide standard practices with regards to defensive driving and vehicle administration as required by employees as it relates to motor vehicle operation during the conduct of ARCADIS business.

2.2 Scope

2.2.1 Business Driving - This MVSP policy and associated procedures apply to the operation of any motor vehicle during the conduct of ARCADIS business. It applies to every ARCADIS Driver operating an ARCADIS, rental or personal vehicle used for company business.

2.2.2 Area Involved **-** This policy applies to the operation of motor vehicles for company business in any country in which ARCADIS employees or temporary agency employees are working.

2.2.3 Exceptions **-** Additional requirements apply to operation of commercial motor vehicles (CMVs). Refer to the ARCADIS DOT Program for Commercial Motor Vehicles (CMV Program) for additional information.

3. DEFINITIONS

ARCADIS Vehicle: Any vehicle owned or leased by ARCADIS US.

ARCADIS Driver: Any ARCADIS US employee or temporary agency employee who drives an ARCADIS vehicle, rental vehicle, or personal vehicle for business reasons whether the use of the vehicle includes operation from the local office or for travel while away from the local office.

ARCADIS Employee: Any full-time, part-time, temporary or as needed employee and interns employed by ARCADIS US.

Business Use of ARCADIS, Rental, or Personal Vehicle: For the purposes of this policy, examples of business use of an ARCADIS, rental, or personal vehicle includes but is not limited to: attending meetings; driving to and from a client location; driving to dinner while out of town on business; and driving to an office supply store to pick up office supplies. Use of the vehicle for business would not include personal use as described below.

HSP: Health & Safety Procedure

Manager: The employee's project supervisor or an Operations Manager

MVR: Motor Vehicle Report

MVSP: Motor Vehicle Safety Program

Personal Use of ARCADIS Vehicle or Rental Vehicle: For the purposes of this policy, examples of personal use of an ARCADIS Vehicle or Rental Vehicle include but are not limited to: driving to dinner with a non-business-related person(s) in the vehicle; driving for the purposes of personal entertainment; using an ARCADIS Vehicle or Rental Vehicle for staying over period of time not required for business (e.g., staying over a weekend to visit friends, etc.).

Rental Vehicle: For the purposes of this policy, any motor vehicle rented from an established rental car company for ARCADIS business whether the use of the vehicle is operated from the local office or for travel while away from the local office.

Supervisor: The employee's administrative supervisor.

Temporary Agency Employee: A temporary agency employee utilized by ARCADIS for temporary work. A temporary agency employee may become an ARCADIS employee after completing the ARCADIS employment process. Temporary Employee Agency agreements shall provide for standard automobile insurance and other terms consistent with this policy.

4. RESPONSIBILITIES

4.1 Corporate H&S Department – Have the responsibility for: Communicating the policy and procedure requirements in this MVSP with all offices within ARCADIS – US. They are also responsible for ensuring that offices are aware of this MVSP. They also ensure this MVSP is being implemented effectively.

4.2 Corporate HR Department – Have the responsibility to review applicable portions o this policy and procedure for the purposes of ensuring consistency with HR policies and procedures regarding motor vehicle operation. They also have the responsibility to perform required Motor Vehicle Report acquisitions and review in conjunction with Corporate H&S.

4.3 Health and Safety Managers and Specialists – Are responsible for facilitating the policy and procedure requirements in this MVSP for providing "hands-on" assistance to ARCADIS staff to ensure this procedure is implemented appropriately.

4.4 ARCADIS Managers and Supervisors (including project and task managers) – Provide oversight management for the H&S of employees in their respective operations, and ensure that the MVSP is being implemented. In addition, they assure that appropriate time is provided to facilitate the implementation of this MVSP.

4.5 ARCADIS Employees – Have the responsibilities to adhere to this MVSP and to communicate H&S concerns, issues and questions to their supervisor or to Health and Safety staff. In addition, all employees have the responsibly to use the TRACK process prior to any activity and follow all ARCADIS, federal, state, provincial, and local jurisdiction regulatory; and client requirements.

5. PROCEDURE

5.1 General Procedure and Requirements

Only ARCADIS Drivers as defined above are permitted to drive ARCADIS vehicles. Exceptions to this requirement are permitted only upon approval of the Division President and General Counsel.

ARCADIS Drivers who drive an ARCADIS vehicle, rental vehicle or personal vehicle for business will maintain a valid driver's license, appropriate for the vehicle they are operating, that is free from any driving restrictions or suspension. An ARCADIS Driver who is asked to drive for business purposes in any type of vehicle, shall notify their supervisor or ARCADIS contact by the next business day if:

- Their license is suspended, revoked, or restricted ; and
- They receive a moving violation while driving for ARCADIS-related business.

In the case that one of these two issues occurs, the employee's supervisor or ARCADIS contacts ARCADIS Human Resources. Human Resources, in cooperation with Corporate H&S and legal, as deemed necessary, evaluates the employee's driving status (especially in instances of license suspension, revocation or restriction) and, as appropriate, corrective action recommendations are made.

All ARCADIS Drivers driving on ARCADIS business will:

- Wear seat belts at all times in any vehicle with seat belts (this includes taxis and shuttle buses equipped with seat belts)
- Operate and license the vehicle in accordance with applicable laws
- Operate the vehicle consistent with client driving rules, speed limits, and requirements when operating the vehicle on project sites
- Drive defensively as learned through training, education, and experience

- Exercise caution when taking any prescription or over-the-counter medication that may cause drowsiness or an altered mental state
- Have headlights on at all times, even during daylight hours
- Not use controlled substances, illegal drugs, or alcohol while driving on ARCADIS business
- Not drive in a manner that could be deemed reckless or aggressive by other drivers
- Not use radar/laser-type detectors
- Not pick up hitchhikers
- Not smoke in company vehicles

5.2 Defensive Driving Training and Education Requirements for All Employees

On a frequency defined on an annual basis by Corporate H&S in cooperation with Operations, employees with an active driver's license shall complete an on-line defensive driving training course as designated by Corporate H&S or an equivalent course as approved by Corporate H&S.

If a client requires classroom or hands-on drivers' training, Corporate H&S, working through Archimedes will arrange for the required classroom training. The on-line training will not be required for those employees, who attend - classroom training (hands-on or subject matter training) consistent with Smith System defensive driving principles. .

All active drivers are expected to review and be familiar with the contents of the Operator's Manual(s) for the vehicles they will be operating.

Additional training may be provided or required at the request of an employee's supervisor or Corporate H&S, or as required by a client.

5.2.1 Defensive Driving Training and Education Requirements for New Hires

Human Resources, and Corporate H&S, as required for drivers of commercial motor vehicles (CMVs), will review the motor vehicle records (MVRs) (see section 5.16) of all new hires. If the MVR is acceptable, the new hire process proceeds as indicated below. If it is determined that the MVR is poor or borderline, the hiring manager will work with Corporate H&S, Human Resources and legal, as necessary, to determine their employment and driving status with the company. The criteria for assessing new hire driving records are presented in Exhibit 1.

5.2.1.1 Drivers Possessing a Driver's License Less than 1 year

New hires possessing a valid driver's license less than 1 year will not be permitted to drive for ARCADIS unless successfully completing Smith On-Line, Smith Hands-On and successfully participating as an observee in a driving LPO after required training is

complete. The employee's supervisor may schedule additional LPOs or a Commentary driver at their discretion in addition to required training.

5.2.1.2 Drivers with Borderline or Poor MVRs

New hires with an active driver's license and borderline or poor MVRs must complete Smith On-Line and Smith Hands On prior to operating a vehicle for ARCADIS. Unless driving restricted by the Accident Review Committee (ARC), the supervisor may assign additional corrective measures on a case by case basis to ensure the prospective driver understands required safe driving behaviors. Upon completion of corrective actions, the supervisor will verify safe driving behaviors using the LPO process prior to permitting the driver to operate a vehicle for ARCADIS.

5.2.1.3 Drivers with Clear or Acceptable MVRs

New hires with an active driver's license and a clear or acceptable MVR shall complete the on-line defensive driving training course as designated by Corporate H&S or an equivalent course as approved by Corporate H&S within 30 days of hire. If the new hire is approved to drive for the company based on the MVR and the new hire will drive on average 5 or more days per month for the company business, the following process is implemented to determine additional driving requirements.

The new hire is required to:

- Complete the online training described above before they are permitted to drive on company business unless approved for limited driving by their supervisor;
- Within 60 days of employment complete a Loss Prevention Observation (LPO) where the new hire is the "observee"; (refer to the LPS database for a driving LPO form).
- If questionable behaviors are observed during the LPO per the outcome of the feedback session, it is at the supervisor's discretion to require the successful completion of a Smith System one-day, hands-on defensive driving training course or enroll into an appropriate Smith system video training tailored to the improvement need. Completion of the corrective action will be required before the employee is permitted to continue driving for ARCADIS.
- Within 30 days of corrective action completion, a follow up driving LPO will be conducted where the driver is the observee to verify safe driving behaviors.
- If the new hire continues to exhibit repeated questionable driving behaviors that, in the opinion of the supervisor, affects the safe operation of the motor vehicle during the subsequent LPO, and the supervisor wishes to permit the driver to drive for ARCADIS, the case will be referred to the ARC for review and recommendations. The driver will be prohibited from driving on behalf of ARCADIS until all recommendations issued by the ARC are implemented and verified through the LPO process.

– **Note: Employees operating vehicles that must comply with the CMV Program must complete the "CMV Road Test" prior to operating the vehicle.**

Refer to the flowchart in Exhibit 2 for the decision-making process for new hires.

5.2.2 Additional Defensive Driving Training and Education Requirements for Existing Employees

In addition to the training as required in Section 5.3, existing employees may complete hands-on defensive driving training at the discretion of their supervisor or manager based on one of the following conditions.

- If a manager or supervisor determines that the driving hazards faced by the employee require hands-on training to assist in the prevention of motor vehicle accidents;
- If the results of an LPO conducted by a supervisor or manager indicate that the employee requires additional training; or
- As a result of a MVR evaluation, Corporate HR and Corporate H&S determine that the employee's driving record is borderline or poor as defined by this policy for existing employees.

5.2.3 Additional Defensive Driving Training and Education Requirements for Employees Involved in a Motor Vehicle Accident

Any ARCADIS employee involved in a motor vehicle accident while driving on company business, may be required to complete Smith System hands-on defensive training, participate in the Commentary Drive program or view relevant Smith System video based training (on-line).The determination to require hands-on defensive driving or video based training will be based on solutions derived from the investigation process using the Factors and Solutions Flowchart or as required by the employee's supervisor. This training may be repeated as often as necessary at the supervisor's discretion in cooperation with Corporate H&S and Human Resources.

Additional training may not be provided if it is determined by the supervisor in cooperation, as necessary from HR, legal, and/or Corporate H&S, that the employee will no longer be permitted to drive on company business.

5.3 Sources for On-Line and Hands-On Defensive Driving Training

The on-line defensive driving training or equivalent training is provided by, or based on, a nationally recognized defensive driving training company such as the Smith System or other recognized provider as approved by Corporate H&S. The current provider through Archimedes is Smith System.

Hands-on defensive driving training is provided by, or based on, a nationally recognized defensive driving training provided such as the Smith System or provider approved by Corporate H&S. The trainer must be certified in the program upon which they are instructing and can be either internal or external to ARCADIS. The current provider of hands-on defensive driving training is Smith System. If not provided by an internal trainer, arrangements for hands-on defensive driving courses are handled directly

through Smith System. Contact the Corporate Health and Safety Administrator in the Denver office for assistance.

Video based defensive driving training modules (online through Smith System) will be arranged through the Training Team.

5.4 Commentary Drive Program

To add flexibility and focus training and education to specific driving needs, the Commentary Drive process may be used. The Commentary Drive evaluates driver understanding of safe driving behaviors by having the driver verbalize their observations to the Commentary Drive observer when operating the vehicle. The observer will use a standard evaluation form (Exhibit 3) to document driver understanding of safe driving principles such as the Smith System "5 Keys". The observer will also provide real time feedback on questionable driving behaviors. Commentary Drives are expected to last a minimum of 1 hour behind the wheel driving time.

Use of the Commentary Drive Program will be focused to individuals:

- Working for clients requiring a Commentary Drive at specified frequencies,
- Having questionable LPO results that are deemed by the supervisor as unsafe for continued vehicle operation,
- As a solution for MVAs (as long as it does not supersede any LPO or Smith System Hands On requirement specified in this policy), or
- At the discretion of the supervisor as a supplemental corrective action for a borderline or questionable MVR.

5.5 Additional Training and Education for Other Driving Conditions

Supervisors, managers, or H&S staff have the responsibility of determining additional training for employees driving under special conditions such as CMVs, towing trailers, riding and operating all-terrain vehicles (ATVs) or other non-routine driving conditions. Training is coordinated and approved by Corporate H&S and the Training Team.

5.6 Driving Distractions and Cell Phone Use While Operating a Motor Vehicle

ARCADIS drivers avoid distractions while they operate motor vehicles and the vehicle is moving. These distractions include such things as eating, drinking, reading maps or other information, operating the radio, and using cell phones. Specific requirements regarding cell phones are as follows:

- The safest driving occurs when drivers can focus their full attention on operating the vehicle and the surrounding conditions. To minimize driving distractions, any use of cell phones by ARCADIS employees while operating a motor vehicle is not recommended and highly discouraged. It is expected that all ARCADIS drivers will use the TRACK process to assist in assessing the safety of using a cell phone while

driving. Cell phone use is only where it is not banned by a client or regulatory requirement, and only if it is hands free.

- Using a cell phone or Blackberry for sending/reading text messages, or reading, preparing or sending emails is strictly prohibited while driving.

- Supervisors and managers are permitted to apply more stringent requirements regarding cell phone use (i.e., no cell phone use at all while driving) based on client, business, or regulatory requirements.

5.7 Additional Required Defensive Driving Procedures

ARCADIS requires additional defensive driving techniques to assist in the elimination or minimization of motor vehicle accidents. These required techniques include:

- When a second ARCADIS employee is available, and where it is safe to do so, all vehicle backing operations will require the use of a spotter to assist with the backing operation.

- To assist drivers in their potential lack of familiarity with the location in which they are driving, one of the following will be utilized by drivers traveling to unfamiliar locations:

    - The use of GPS systems in rental cars such as Hertz Never Lost

    - Pre-Trip Route Planning through the use of Google Maps or MapQuest

    - Development and use of a Journey Management Plan (this is required by some clients).

5.8 Cone Placement and Retrieval to Encourage Visual Inspection Around Vehicle

To ensure that the area around a parked vehicle is clear of obstacles, all company owned or leased trucks (also includes rental vehicles if required by the manager or supervisor) will be equipped with two to four traffic cones that will be placed around the vehicle whenever the driver leaves the vehicle unattended (when the vehicle is parked and the occupants are outside of the vehicle regardless of distance or visual site); the cones will be placed in the configurations shown on the following page. Upon departing in the vehicle, the driver will pick up the cones and look around the vehicle before moving.

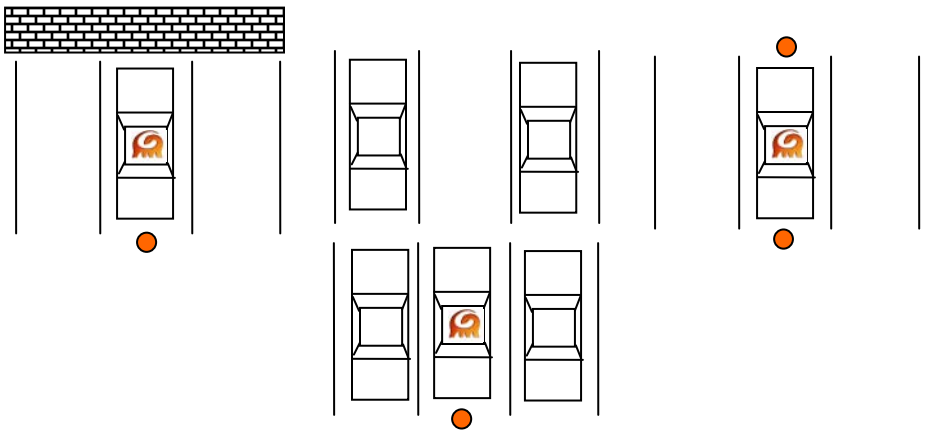
Employees will use TRACK and place cones around vehicles in a manner that promotes driver awareness of vehicle surroundings and is appropriate to conditions encountered. The following general guidelines will help facilitate adherence to this program.

Parking Lots:

- At a minimum, one cone will be placed at the end of the vehicle in the direction of movement from the parking place when only one direction can be driven (Example 1).

- Parking lots with facing parking spaces, only deploy cone on the roadway end of vehicle (Example 2).

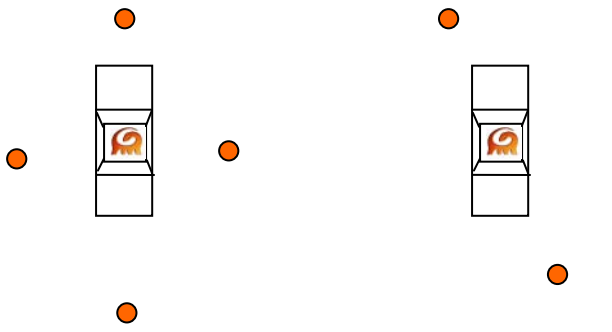
- Two cones will be required (one at each end of the vehicle) if potential movement can be from a forward or backing direction (Example 3)



Example 1 | Example 2 | Example 3

Project Sites:

- It is recommended that one cone be placed on all four sides of the parked vehicle at a distance sufficient to prevent trip hazards during the course of normal work around the vehicle (Example 4). If only two cones are available, the placement of the cones should be as shown in Example 5.



Example 4 | Example 5

- Cone placement is not required for vehicles used for non- field work purposes.

- Use TRACK for all cone placement activities:
    - DO NOT place cones in parking lots in a manner that could cause a trip hazard to employees or the public.
    - DO NOT place cones in a manner that would affect or impede the flow of traffic, unless part of a traffic control program.

Offices and/or Projects should consider the purchase of exterior cone stands (mount on the vehicle bumper) for easy cone access when complying with this program. Cones should be orange color and have a minimum height of 18 inches. These cones may be procured from existing office stock or are available for purchase on the ARCADIS Section of the Wise Safety and Environmental website.

5.9 Vehicle Inspections and Maintenance

All company owned or leased vehicles will be maintained in safe operating condition. To ensure vehicles are properly maintained. A weekly inspection (daily if required by the manager or supervisor or if vehicle is operated in harsh environments) is required. Rental vehicles operated by ARCADIS for more than one week also must be inspected weekly. Inspections are required to be documented. An example inspection checklist is presented in Exhibit 4.

Deficiencies identified in inspections or at any other time will be managed through LeasePlan. Routine maintenance (gasoline, oil, etc) will also be managed through LeasePlan. All fuel purchases in company owned or leased vehicles must be made using the fuel purchase card issued for each vehicle. Each employee is issued a PIN number to use the fuel card at participating retailers. Contact your supervisor if you need a PIN number.

Use of the fuel card assigned to the vehicle is critical to help ensure maintenance schedules are maintained for the vehicle. Records of vehicle inspections should be maintained at the office or project location where the vehicle is assigned.

Employees operating company owned or leased vehicles (including qualifying rental vehicles) required to be maintained under the CMV program will follow inspection and maintenance requirements specified in the CMV program. Use of Exhibit 4 for CMV inspection is not permitted.

5.10 Fatigue Management

Employees operating vehicles on behalf of ARCADIS must be rested and mentally alert. The following table provides to reduce the hazards of fatigue:

Fatigue Management Requirements (Non-CMV Drivers)

Maximum Time Driving before taking a break, and break duration	Maximum Hours of Driving in a 24 hour period	Maximum Time on Duty in a 24 hour period	Maximum Hours of Driving Per Week
Required: 3 hours, followed by a 15 minute break **Recommend: 2 hours, followed by a 10 minute break**	**10**	**16**	**40 over 4 consecutive days, followed by a break of 24 hours**

Notes:

1) CMV drivers have alternate requirements; refer to ARC DOT-009, "Hours of Service" for more information
2) Client requirements may vary

5.11 Vehicle Use and Insurance

Only ARCADIS employees and authorized temporary agency employee shall drive ARCADIS Vehicles or Rental Vehicles.

Non-business use during business hours and/or having non-business related passengers in an ARCADIS Vehicle or Rental Vehicle during such business use is prohibited. In the event of an accident in one of these situations, the employee could be personally liable for injuries and damages associated with such an accident. Operating an ARCADIS Vehicle for strictly personal use on weekends, evenings and holidays is prohibited. If the employees uses a passenger vehicle that is a Rented Vehicle during these periods, such use will be considered personal use. The employee, and not ARCADIS, will be responsible for all rental charges and will be responsible for any damages or injuries occurring during such periods.

Use of an ARCADIS Vehicle or Rental Vehicle to commute to and from work should be limited to those situations where there is a sound business reason to do so and must be authorized by the Operations Manager.

Temporary agency employees are only permitted to drive ARCADIS Vehicles or Rental Vehicles under the following requirements:

- The temporary agency employee's MVR is clear of any violation for the prior three (3) years and lists no prior critical violations. Critical violations include such issues as:
    - Alcohol-related offenses
    - Driving while impaired or under the influence of alcohol or drugs
    - Homicide, negligent homicide, or manslaughter by vehicle

- Fleeing or attempting to elude police officer
- Hit and run – Failure to stop after an accident or leaving the scene of an accident.

- Completion of drivers training consistent with that required of ARCADIS employees (see section 5.3).

If a temporary agency employee receives a violation or has an accident while driving, regardless of fault or preventability, on ARCADIS business, they are immediately prohibited from driving ARCADIS Vehicles, Rental Vehicles or a personal vehicle for ARCADIS business.

5.12 Insurance

ARCADIS has vehicle insurance coverage for ARCADIS Vehicles and Rental Vehicles. If an accident occurs or damage is sustained, there is a $2,000 deductible for damage to the ARCADIS Vehicle or Rental Vehicle ("collision") and a $10,000 deductible for damage to another vehicle, property damage or injury to another party ("liability"). These deductibles are paid by the relevant ARCADIS division.

If an accident should occur during non-business hours while an employee is driving an ARCADIS Vehicle or Rental Vehicle, in accordance with state law, the ARCADIS employee could be personally liable for injuries and damages associated with such an accident.

5.12.1 Insurance – Rental Vehicles

5.12.1.1 Vehicle Rental in United States

As stated above, ARCADIS has insurance for all ARCADIS Vehicles and Rental Vehicles. Therefore, when renting for business in the United States, there is no need to accept the insurance coverage offered by the rental company.

In addition, the national accounts and agreements the company has with Enterprise Rent-A-Car and Hertz includes insurance coverage. There are no deductibles associated with the Enterprise and Hertz insurance coverage. Insurance arrangements with these rental car companies are as follows:

- Enterprise: Collision and liability. The company's ID number (NA12ARC) must appear on the rental agreement. Employees should waive insurance coverage offered when picking up the vehicle.

- Hertz: Collision and liability. The company's CDP number (26931) must appear on the rental agreement. Employees should waive insurance coverage offered when picking up the vehicle.

- National: Collision and liability. The company's CDP number (5434890) must appear on the rental agreement. Employees should waive insurance coverage offered when picking up the vehicle.

5.12.1.2 Vehicle Rental Outside United States

If an ARCADIS employee is renting a vehicle for business **outside of the United States, the employee must accept the insurance offered by the local rental car company in order to be fully covered under the company's Foreign Package policy.** In addition, check with the Corporate Legal Department about any additional coverage that may be needed for the country in which you are renting.

5.12.2 Insurance – Personal Vehicles Being Driven for Business

Employees who drive their own vehicle for company business, as a condition for performance of his or her duties, shall comply with all minimum state requirements for auto insurance as required by their state. This requirement includes auto liability insurance with the minimum amounts of coverage meeting or exceeding that state's requirements. If requested, employees shall provide a current insurance card which indicates the amount of coverage as adequate proof of insurance coverage.

If a personal vehicle is damaged or involved in an accident while being driven for company business, the insurance covering that personal vehicle is primary. ARCADIS does not reimburse employees for personal auto insurance deductibles.

5.13 Drivers License Verification

As requested by ARCADIS' insurance carrier or as deemed necessary by ARCADIS, ARCADIS reserves the right to review any employee's or temporary agency employee's MVR, or request driver's license verification. This review can be done at anytime during the course of employment with ARCADIS.

5.14 Internal Accident Review

ARCADIS' Incident Investigation/Near Loss reporting and investigation process is applicable to all employees or temporary agency employees driving for ARCADIS following an accident in an ARCADIS Vehicle, Rental Vehicle, or personal vehicle while driving for business. All motor vehicle accidents will be reported and investigated in accordance with the ARCADIS incident investigation procedure.

5.15 Accident Review Committee

The Accident Review Committee (ARC) is comprised of representatives from ARCADIS' Human Resources, Health and Safety, and Legal departments. The ARC is used on a case by case basis at the discretion of Corporate H&S, Corporate HR or Corporate Legal. The function of the ARC is to make recommendations in regard to:

- Corrective action following motor vehicle accidents in ARCADIS, Rental, and personal vehicles being driven by ARCADIS employees for company business. Motor vehicle accidents that involve a temporary agency employee will not be reviewed by the ARC.

- MVRs categorized as "borderline" or "poor" for current ARCADIS employees and new hire candidates once an offer of employment has been made.

- Incidents in which an ARCADIS employee receives a ticket while driving an ARCADIS, Rental, or personal vehicle for company business.

- An ARCADIS employee who drives on ARCADIS business whose driver's license has been suspended, revoked or is under a restricted status.

- Evaluations of drivers who continue to have questionable driving behaviors after corrective actions have been implemented.

In situations where the ARC is used, the ARC recommends corrective action that may include internal or external defensive drivers training, LPOs, and/or MVR checks at specified time intervals. The ARC may also recommend restriction or suspension of driving privileges.

All offers of employment that require a candidate to operate a vehicle as a part of his or her duties will contain an express condition to the offer that the offer is contingent upon the candidate's MVR meeting the requirements of this policy. If a new hire's MVR is categorized as borderline or poor, the ARC may recommend restrictions on driving or corrective actions, or they can recommend the candidate/prospective employee be notified that the offer of employment is withdrawn since the candidate's MVR failed to meet the conditions of the offer. If withdrawn, the office may appeal to the ARC. If any corrective action is required or job offer withdrawn, the new hire/potential new hire are notified in accordance with the Fair Credit Reporting Act and/or applicable state statute.

5.16 Motor Vehicle Reports

An MVR lists violations that have been issued to an individual which could, according to the insurance industry, indicate an established pattern of "at risk" driving behavior. Therefore, it is important to review MVRs of current applicable employees, all temporary agency employees who will be driving ARCADIS, Rental or personal vehicle driven for business, and applicable new hires to proactively address those reports that are of concern.

When reviewing an MVR for ARCADIS employees and applicable new hires, all critical violations in the person's MVR history are considered. Minor, major, and serious violations are considered for the current and prior three years. Upon review, reports are categorized as clear, acceptable, borderline or poor in accordance with the Driver Evaluation Criteria seen in Exhibit 1.

As stated above, any temporary agency employee with an MVR that indicates any violation for the prior three (3) years and any prior critical violations is prohibited from driving an ARCADIS Vehicle, Rental Vehicle, or any personal vehicle for business.

MVRs are requested as follows:

- HR may ensure that an MVR is obtained on all new hires that are expected to drive an ARCADIS, Rental, or personal vehicle for business.

- Routine MVR requests and reviews may be done on all drivers of ARCADIS Vehicles, Rental Vehicles, or personal vehicles used for business. ARCADIS can review MVRs at any time as deemed necessary by Human Resources, Corporate H&S or the ARC.

- ARCADIS may request MVRs on current employees following a motor vehicle accident or receipt of a moving violation in an ARCADIS, Rental, or personal vehicle being driven for business, or at other times as deemed necessary.

MVRs are reviewed by Human Resources and/or Corporate Health & Safety.

If a new hire's MVR is categorized as borderline or poor, the ARC may recommend restrictions on driving or corrective actions, or they can recommend that the job offer be rescinded. If rescinded, the manager may appeal to the ARC. If any corrective action is required or job offer withdrawn, the new hire/potential new hire are notified in accordance with the Fair Credit Reporting Act and/or applicable state statute.

If a current employee's MVR is categorized as borderline or poor, corrective action may be required as determined by the ARC. If any corrective action is required, the employee will be notified in accordance with the Fair Credit Reporting Act and/or applicable state statute.

6. TRAINING

See section 5.3 of this procedure for training requirements.

7. REFERENCES

ARCADIS HSP - ARC HSMS011 – Incident Reporting and Investigation

ARCADIS HSP - ARC HSMS015 – Root Cause Analysis and Solutions Development

ARCADIS HSP - ARC HSMS006 – Health and Safety Training and Competence

ARCADIS DOT Program for Commercial Motor Vehicles.

ARCADIS Employee Handbook

8. RECORDS

MVRs and related correspondence, employee authorizations, defensive driving training certificates, loss prevention observations under the Loss Prevention System, and ARC findings regarding a preventable accident are maintained in the appropriate files per ARCADIS record keeping requirements.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Mija A. Coppola, Director, H&S Compliance Assurance and LPS

History of Change

Revision Date	Revision Number	Reason for change
26 March 2007	01	Original document
18 August 2007	02	Change in required on-line defensive drivers training
22 October 2007	03	Changing over to new template format and addition of the "Comments on My Driving?" program
21 January 2008	04	Change to new template; change to 2008 organization job titles; change to prohibit texting/emailing while driving
13 June 2008	05	Addition of Sections 5.10 and 5.11 on other defensive driving techniques and cone placement.
6 October 2008	06	Clarified who is required to complete online training in Section 5.3 and modified section on when hands-on defensive driving is required after an accident.
8 April 2009	07	Incorporated references to the CMV program and vehicle inspection requirements. Incorporated Vehicle Use Policy. Added fatigue management requirements. Deleted references to the Commentary Drive which is obsolete.
3 November 2009	08	Incorporated Smith System videos as a corrective action, Commentary Drive Program and revised Exhibit 2 and added new Exhibit 4.
1 November 2010	09	Deleted Comments on my driving section as program was discontinued.

Exhibit 1 – Driver Qualification Criteria

VEHICLE SAFETY PROGRAM

DRIVER EVALUATION CRITERIA

VIOLATION CATEGORIES

CRITICAL VIOLATIONS	SERIOUS VIOLATIONS
• Driving while impaired or under the influence of alcohol or drugs • Homicide by vehicle, negligent homicide, or involuntary manslaughter • Fleeing or attempting to elude police officer • Hit & Run, failure to stop after an accident, and/or leaving the scene of an accident	• Reckless driving/Careless driving • Driving while license is suspended or revoked • Evading responsibility after an accident • Speeding (20 or more mph over limit) • Speeding in a school zone • Passing a stopped school bus loading or unloading children
MAJOR VIOLATIONS	**MINOR VIOLATIONS**
• Speeding (less than 20 mph over limit) • Speed greater than reasonable or prudent or too fast for conditions • Careless driving • Failure to yield • Failure to obey traffic sign or signal • Improper backing, turning, or passing • Following too closely • Other moving violation • Driving without a license • Accident in which a ticket is issued	• Defective equipment or other equipment violation • Oversize or overweight load • Operating without required equipment or warnings • Accident in which no ticket is issued • Cell phone use violation • Seatbelt violation

TYPE OF VIOLATION

NUMBER OF VIOLATIONS	CRITICAL	SERIOUS	MAJOR	MINOR
0	Clear	Clear	Clear	Clear
1	Poor	Borderline	Acceptable	Acceptable
1 + any other violation	Poor	Poor	Borderline	Acceptable
2 + any other violation	Poor	Poor	Poor	Borderline
3 + any other violation	Poor	Poor	Poor	Poor

DECISION MAKING GUIDE - Example:

1 Serious and 1 Major – 1 Serious would be Acceptable, but the addition of a Major violation takes it to the next category – Poor.

- Clear: No action is required.
- Acceptable: No action is required.
- Borderline: Corrective Action required.
- Poor: Corrective Action required, including but not limited to, job offer rescinded, or restricted from driving.

Exhibit 2 – Defensive Driving Training and Education for New Hires

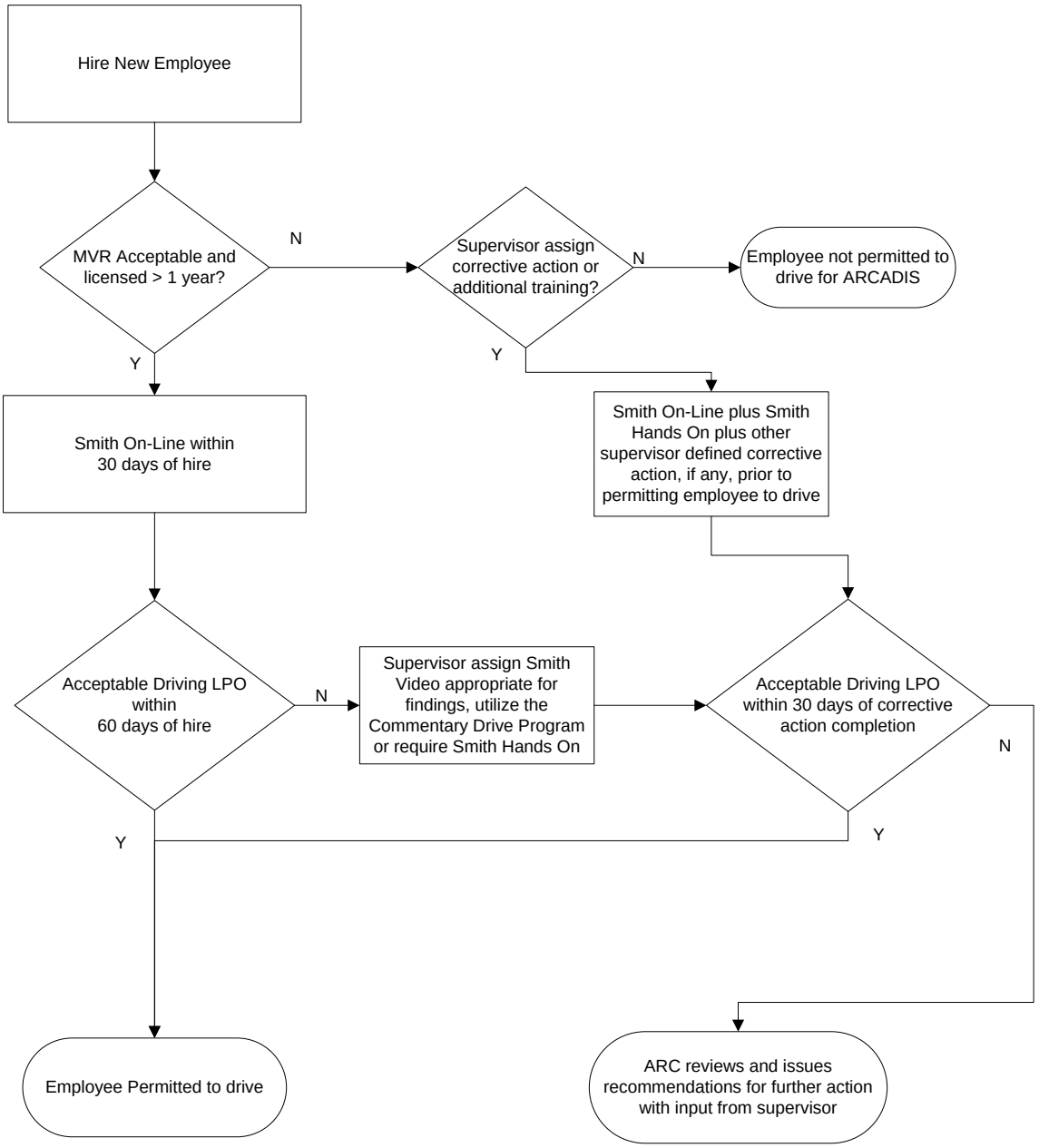


Exhibit 3 – Commentary Drive Evaluation Form

Commentary Drive Evaluation Form

Instructions:

- Minimum driving time is 1 hour
- Driver to discuss observations and driving functions to the observer
- Observer provides real time feedback of questionable driving behaviors
- Submit completed form to employee's supervisor for filing.

Driver's Name:_____ Observer's Name _____

Date:_____

No.	Activity	Q? Y/N	No.	Activity	Q? Y/N
1	Looking ahead?		16	Brakes early and gradually?	
2	Anticipates actions of others?		17	Properly times use of the turn indicator and uses signals appropriately?	
3	Strives to drive in the lane of least resistance?		18	Uses the horn properly to signal others?	
4	Maintains proper following distance and adding time for each additional hazard?		19	Maintains proper speed in parking lot?	
5	Observing traffic ahead, to the side and rear?		20	Plans parking with considerations for exit	
6	Observing relevant objects?		21	Selects parking places to pull through without backing?	
7	Observing signs and signals?		22	Backs into parking places when pull through not available?	
8	Adjusting speed for weather and road conditions?		23	Selects parking with space around vehicle, when safe to do so?	
9	Scans intersections prior to entering?		24	Uses Cone and Spotter Program when applicable and appropriate	
10	Checks mirrors?		25	Communicates properly with others in parking lot?	
11	Checks blind spot when changing lanes?		26	Backs slowly and carefully?	
12	Eyes moving?		27	Looking at all sides when backing?	
13	Maintains proper space in front of vehicle at intersections and allows vehicle ahead to move before accelerating?		28	Backs no further than necessary?	
14	Maintains proper space behind intersection line		29	Vehicle is legally parked?	
15	Creates and maintains space around vehicle?		30	Sets parking brake and secures vehicle?	

Q: Questionable Driving Behavior

Comments

Exhibit 4 – Example Vehicle Inspection Checklist

ARCADIS

WEEKLY INSPECTION CHECKLIST

Office Location: _____ Vehicle/Plate Number:_____

1. Check under the hood; 2. Examine exterior; 3. Check for leaks under hood and exterior; 4. Test brakes, steering, transmission; and, 5. Examine interior.
"S" = satisfactory or "NS"= not satisfactory. If "NS" is noted, please explain below and include what corrective action was taken and the date it was taken.

	Date/Initials	S or NS	Date/Initials	S or NS	Date/Initials	S or NS	Date/Initials	S or NS	Date/Initials	S or NS	Date/Initials	S or NS	Date/Initials	S or NS
Odometer Reading														
Inside:														
Side & Rear-View Mirrors														
Horn and Door Locks														
Windshield wipers														
Heater, Defroster, AC														
Interior Lights & Panel/Gages														
Flashers & Turn Signals														
Parking & Emergency Brake														
Steering Wheel (excessive play?)														
Clutch (if applicable)														
Engine:														
Engine (start without problem?)														
Fluid Levels & Belts														
Noticeable Leaks														
Exterior:														
Lights, Flashers, Signals, Reflectors														
Tires (condition, inflation)														
Cargo Area/Tie-Downs Secure														
License Tags – Check Status (Date)														

Checked by – Name and initials

1. 3. 5. 7.
2. 4. 6. 8.

Explanation:_____

_____

_____

Note: Above checklist to be used on non-CMV vehicles.

1. POLICY

ARCADIS understands the hazards of personal exposure to benzene. Based on this understanding, ARCADIS will implement the appropriate controls to minimize or eliminate the hazards of benzene. These controls will focus first on engineering controls to mitigate benzene hazards where appropriate and practical. Administrative controls may also be implemented as appropriate and practical. Where it is not appropriate or practical to implement engineering and administrative controls, personal protective equipment (PPE) will be implemented to control benzene hazards below known occupational exposure limits.

2. PURPOSE AND SCOPE

2.1 Purpose

2.1.1 Benzene Exposure Protection **-** This policy and associated standards provides information to protect ARCADIS employees, subcontractors, and other effected personnel from exposures to benzene while conducting work on ARCADIS projects.

2.1.2 OSHA Requirements – This policy meets the requirements of the U.S. Occupational Safety and Health Administration (OSHA) regulations including Title 29 Code of Federal Regulations (CFR) Part 1910.1028.

2.2 Scope

This policy and the associated standards apply to all projects where benzene is known or thought to be present, and where ARCADIS employees, subcontractors and other effected personnel are or could be exposed to benzene above the Action Level**.**

3. DEFINITIONS

Benzene—is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

Benzene is encountered on ARCADIS projects, frequently, as a contaminant in soils, ground and surface water, sediments, and other environmental media. Personnel may also encounter benzene in other forms at certain client facilities at which ARCADIS works. It can be encountered at petroleum-related facilities, chemical production facilities and other types of industrial sites.

Action Level—the airborne concentration established by OSHA that triggers certain regulatory requirements.

HSS—Health and Safety Standard

Permissible Exposure Limit (PEL)—an average airborne concentration regulatory limit established by OSHA above which requires control to protect people from adverse health effects.

Short Term Exposure Limit (STEL)—a PEL or TLV established as a limit of exposure measured over a designated period of time less than 8 hours.

Threshold Limit Value (TLV)—a recommended average airborne concentration limit established by ACGIH. The TLVs are reviewed and updated as appropriate annually.

Time Weighted Average (TWA)—a measurement of airborne exposure to a chemical compound measured and averaged over a designated period of time for comparison to an STEL or an 8-hour PEL or TLV.

4. RESPONSIBILITIES

4.1 Principal-In-Charge, Project and Task Managers are responsible, as part of the project hazard assessment, for determining if benzene is or is potentially present on a project site. In addition, the project or task manager is responsible for determining client requirements with respect to the control of benzene hazards. Project and Task Managers notify health and safety staff when working on sites containing benzene. Project and Task Managers are also responsible for ensuring that project staff has the appropriate and applicable training for benzene prior to those staff beginning work.

4.2 Corporate Health and Safety is responsible for keeping this policy and standard up-to-date with current regulatory requirements and best practices. In addition, Corporate Health and Safety oversees the medical surveillance program for benzene, as applicable and provides a benzene training package for presentation to appropriate staff.

4.3 Project Health and Safety Staff including designated Writers and Reviewers of Project Health and Safety Plans (HASPs) are responsible for developing control processes and techniques on specific projects based on the levels of benzene expected to be encountered on project facilities.

4.4 Project Personnel are responsible for completing benzene training as required by this policy and standard, and for following all hazard control processes designated by the Project Manager, Project Health and Safety Staff, and the project HASP. If project personnel believe that benzene is present that was not previously identified or is at levels that are higher than expected, they should stop work and notify project health and safety staff or the project manager immediately and not proceed until authorized.

5. PROCEDURE

5.1 Benzene Hazards

- Benzene is primarily an inhalation hazard. Benzene vapor does not present an appreciable skin hazard; benzene liquid is absorbed through the skin.

- The acute (short term) effects of inhalation exposure are similar to most other hydrocarbons (narcosis, dizziness, weakness, headache, nausea).

- Prolonged or repeated exposure to concentrations above the permissible exposure limits may lead to blood disorders, including anemia, leucopenia (low white blood cell counts), and leukemia (cancer of the blood system).

- As with most hydrocarbons, repeated/prolonged skin exposure to liquid may lead to the aforementioned disease(s) of the blood.

5.2 Exposure Limits and Regulated Areas

The following personal exposure limits are established for benzene by inhalation:

- OSHA ACTION LEVEL – 0.5 ppm benzene in air 8-hour TWA.

- OSHA PELs
  - TWA - 1.0 part per million (ppm) benzene in air averaged over an 8 hour period.
  - STEL - 5.0 ppm benzene in air averaged over any 15 minute period.

- ACGIH TLVs
  - TWA – 0.5 ppm benzene in air averaged over an 8 hour period
  - STEL – 2.5 ppm benzene in air averaged over an 8 hour period
  - Skin notation – meaning that there is a significant contribution to overall exposure by the cutaneous route including mucous membranes and the eyes, and by contact with vapors, liquids and solids containing benzene.

- Personal exposure is the concentration of benzene to which a person would be exposed if that person were not wearing respiratory protection. Personal exposures shall be measured over the exposure period in the breathing zone of the employee. Personal exposures should not be determined by area sampling.

- REGULATED AREA
  - An area where the benzene exposure does or can be expected to exceed the PELs or TLVs. Since it may be difficult to determine the exposure time for employees working in areas with concentrations that exceed PEL or TLV values, the facility/location may wish to regulate any area that exceeds 0.5 ppm or per the requirements of the client or of the project HASP.
  - The PEL for benzene is relatively low as compared to the PEL or TLV of other hydrocarbons such as gasoline (300 ppm); therefore, depending on exposure conditions, it may be very “easy” to exceed the PEL or TLV for benzene even though other hydrocarbon levels are not considered very high. Also of concern is historic monitoring data that indicates that short term work activities such as draining a cargo hose of gasoline or pumping free product from an aquifer may result in a benzene exposure exceeding the STEL.

5.3 Actions for Employee Exposures Greater Than or Equal to the OSHA Action Level or ACGIH TLV – TWA but Less than the OSHA PEL - TWA

- Training: Annual benzene training is required.
- Respiratory Protection: full-face air purifying respirators equipped with organic vapor cartridges will be used per the project HASP.
- Medical Surveillance: Initial and annual medical exams (see below) are required if employee personal exposures do or can be reasonably expected to exceed the Action Level on at least 30 calendar days during the coming year.
- Periodic Monitoring - shall be conducted at least annually until at least two consecutive exposure determinations (no less than 7 days apart) indicate the exposure is below the Action Level.

5.4 Actions for Employee Exposures Greater Than PELs

- Respiratory Protection: respirators shall be used in all regulated areas.
- Training: Annual benzene training is required.
- Medical Surveillance: Initial and annual medical exams (see below) are required if employee personal exposures do or can be reasonably expected to exceed the PEL on a least 10 calendar days during the coming year.
- Written Program: A written program to reduce personal exposure is required detailing the methods to be used to reduce exposures below the TLVs and the OSHA Action Level. These written programs will be in the form of the project HASP based on project-specific and client requirements. The HASP will indicate the schedule for the implementation of the any benzene-related hazard control processes or methods. The HASP is reviewed periodically per the ARCADIS HSP ARC HSFS010 – Health and Safety Plans. All project personnel have access to the project HASP at all times.
- Periodic Monitoring - at least every 6 months until at least two consecutive exposure determinations (no less than 7 days apart) indicate the exposure is below the PEL; then annually until at least two consecutive exposure determinations (no less than 7 days apart) indicate the exposure is below the PEL Action Level.

5.5 Exposure Monitoring

- Representative personal exposure monitoring is required for each type of operation involving the handling of or potential exposure to benzene.
- Personal exposure monitoring shall utilize standard industrial hygiene sampling techniques and recordkeeping.
    - Passive badges such as the 3M 3500 or charcoal tube sampling may be used for this sampling activity.

  - Detection tubes shall not be used for compliance personal exposure determination but may be used for work and confined space entry permitting and defining regulated areas.

  - Employees who have been monitored for benzene exposure shall be notified of the monitoring results within 15 working days of receipt of these results. If the PEL is exceeded, the notification must indicate the follow-up plans or corrective actions to be taken to reduce exposures to below the PEL.

- Personal STEL monitoring should be used to characterize exposures for specific tasks such as gauging, O&M of treatment equipment, hose connect and disconnect, maintenance tasks such as flange breaking, etc.

- Personal TWA monitoring can be used for extended tasks, such as well developing and sampling, loading, tasks inside vessel holds, tank cleaning, and maintenance tasks such as pump removal, etc.

- Area sampling can be used to determine regulated areas; the sampling media shall determine the duration of sampling:

  - Detection tubes (Kitagawa #118SB, or Draeger 0.5/c) can be used for real-time determination.

  - Charcoal tube samples must be taken for at least 15 minutes (passive badges are not recommended for area sampling).

- Periodic Monitoring is required if exposures exceed the Action Level or PELs.

5.6 Requirements for Regulated Areas

- Posting: Regulated areas shall be indicated such as by barricades, barricade tape, painted demarcations, or other devices.

- A sign shall be posted at the access to the regulated area with the warning:

1. DANGER
2. BENZENE
3. CANCER HAZARD
4. FLAMMABLE - NO SMOKING
5. AUTHORIZED PERSONNEL ONLY

[Minimum lettering height: DANGER BENZENE 4"; others 3"]

- Respiratory Protection: Respirators shall be worn by all personnel when in a regulated area, regardless of the time period or over-all personal exposure measurement.

- Labeling

  - In addition to appropriate Hazard Communication labeling, containers or equipment containing > 0.1% benzene must also be labeled as such:

  - 

  - Pipelines do not need to be labeled.

5.7 Exposure Reduction

- Written Program

  - The Project Manager and the Project Health and Safety Staff will develop a written program for exposure reduction if there is a determination that employee exposures may exceed the PELs or TLVs.

  - The written program must list the corrective actions that will be taken to reduce employee exposure to at or below the PELs and TLVs:

  - identify regulated areas/tasks;

  - engineering controls;

  - revised work practices;

  - respiratory protection and protective clothing; and

  - schedule of development and implementation.

- Spills and Emergencies
  - An emergency is any occurrence which may result in an unexpected significant release of benzene that may result in a significant inhalation or skin exposure. After an emergency, appropriate monitoring must be conducted to assure the ambient benzene levels are back to normal; and conduct appropriate medical surveillance for affected employee(s).

- Respiratory Protection and Personal Protective Equipment
  - Respirators shall be worn, maintained and managed in accordance with the OSHA procedure, 29 CFR 1910.134 and ARCADIS HSP ARC HSGE017 – Respiratory Protection. In addition, any client requirements on project sites will be followed.
  - Per the project HASP, respiratory protection will be worn at all times when airborne concentrations of benzene exceed the OSHA Action Level or the ACGIH TLV-TWA. The respirator will be a full-face air purifying respirator equipped with organic vapor cartridges. Action limits for upgrading to a higher level of protection will be documented in the project HASP or per client requirements.
  - Appropriate eye protection will be worn as necessary. Protective clothing and gloves suitable for the particular product (such as for gasoline) will generally be suitable for protection against the benzene in that product. For most hydrocarbon products, nitrile gloves, provide adequate protection. Chemical resistant clothing may vary depending on the product and degree of exposure.
  - For “pure” benzene the following materials are recommended:
  - Gloves: poly-vinyl alcohol (PVA)
  - Clothing: Saranex or Barricade (DuPont) or equivalent.

5.8 Medical Surveillance

- Initial medical surveillance is required:
  - If employee personal exposures are reasonably expected to exceed the Action Level on at least 30 calendar days per year; or
  - If employee personal exposures are reasonably expected to exceed the PEL on a least 10 calendar days per year.

- Periodic exams are required on an annual basis for employees who continue to meet the criteria listed above. Annual exams may be discontinued after the exam conducted the year after personal exposures fall below the limits stated above in this section.

- The specific medical exam requirements are explained in detail in ARCADIS HSP ARC HSGE010 - Medical Surveillance.

- The physician must be supplied a copy of the OSHA benzene regulation 29 CFR 1910.1028 and a description of the employee's benzene exposure.

- For employees exposed to benzene from an emergency, a urine sample must be taken at the end of the shift. A urinary phenol test must be performed on the sample within 72 hours.

- OSHA regulations for benzene have specific medical removal provisions for medical examinations results falling outside of certain criteria. The facility/location should contact the Corporate Health and Safety Manager if the examining physician indicates that an employee may fall into these criteria.

6. TRAINING

Initial benzene training is required for all employees assigned to a work area suspected or known to contain benzene.

Annual benzene training is required for all employees actually or potentially exposed to greater than the Action Level (TWA > 0.5 ppm).

Initial and annual training shall consist of:

- The operations that involve benzene exposure.
- The methods/observations that can be used to detect the presence or release of benzene
- The physical and health hazards of benzene.
- Methods used to protect against the hazards of benzene.
- The proper use of personal protective equipment in emergency situations.
- The meaning of a regulated area and how such are demarcated.
- A review of the applicable standard and where copies can be found.
- An explanation of the medical surveillance program

7. REFERENCES

OSHA 29 CFR 1910.1128 Benzene

ACGIH 2006 TLVs and BEIs – Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices

ARCADIS Medical Surveillance HSP – ARC HSGE006

8. RECORDS

- All exposure, medical, and training records shall be kept for 30 years.
- All exposure and medical records shall be made available to appropriate regulatory agencies upon written request.
- Employees who have been monitored for benzene exposure shall be notified of the monitoring results within 15 working days of receipt of these results; a written request is not required.

9. APPROVALS AND HISTORY OF CHANGE

Approved By: Mija Coppola, Director H&S Compliance Assurance and LPS

History of Change

Revision Date	Revision Number	Reason for change
26 March 2007	01	Original document
7 June 2007	02	Change to new template
6 September 2007	03	Changing over to new template format
22 February 2008	04	Template change

1. POLICY

It is the policy of ARCADIS to assess noise hazards resulting from or encountered by our staff during job activities and to control such noise hazards to minimize and eliminate hearing loss among our staff, subcontractors, clients, and the public. Any employee who will be exposed to noise at or over 85 decibels (excluding brief intermittent ambient noise) for any amount of time will be required to wear appropriate hearing protection. When in doubt, ARCADIS will provide hearing protection.

2. PURPOSE AND SCOPE

2.1 Purpose

ARCADIS is committed to providing a healthy and safe work environment for our employees, subcontractors, clients and visitors. To this end, ARCADIS embraces this Hearing Conservation Health & Safety (HS) Policy. The purpose of the ARCADIS Hearing Conservation HS Policy is to provide a standard policy on the health and safety requirements and processes for all employees with potential exposure to excessive noise (levels in excess of 85dBA for any amount of time) and to comply with 29CFR1910.95. ARCADIS defines excessive noise as any noise environment that requires speech levels above those used for normal conversation.

2.2 Scope

This policy and associated procedures apply to every project and all operations conducted by ARCADIS. Hearing Protection is supplied and/or approved by ARCADIS for use by employees in carrying out their assignments. All employees conducting work where the potential for excessive noise is present, are required to have their assigned hearing protection available and used as required by the project Health and Safety Plan (HASP), Job Safety Analysis (JSA), or client requirements.

3. DEFINITIONS

NRR – Noise Reduction Rating is the measure, in decibels, of how well a hearing protector reduces noise, as specified by the Environmental Protection Agency. The higher the number, the greater the noise reduction. When dual protectors are used, the combined NRR provides approximately 5 decibels more than the higher rated of the two products. For example, using ear plugs (NRR of 29 decibels) with ear muffs (NRR 27) would provide a Noise Reduction Rating of 34 decibels. For practical purposes, users should assume they will actually receive protection that is 5 decibels less than the published value.

HSS – Health and Safety Standard

TWA – Time Weighted Average; The average exposure to a contaminant or condition (such as noise) to which workers may be exposed without adverse effect over a period of 8 hours a day or a 40 hour work week.

Decibels – A Weighted – the unit of measure to be used when measuring noise levels on ARCADIS work sites and when comparing to occupational exposure standards and limits.

4. RESPONSIBILITIES

Employees – are required to wear prescribed hearing protection during activities with identified excessive noise levels. In addition, employees are required to have their provided hearing protection available where the potential for excessive noise exists and to use as required by HASPs, JSAs, or client requirements.

In addition, employees have the responsibilities to adhere to this HSP and to communicate HS concerns, issues and questions to their supervisor or their respective Health and Safety resource. In addition, all employees have the responsibility to:

- Use the TRACK process prior to any activity;
- Follow all ARCADIS and client requirements;
- Participate in the medical monitoring program, including annual audiogram and hearing conservation training as applicable based on their job duties;
- Notify the Corporate Health and Safety if they were exposed to high noise levels and required to wear hearing protection during the previous year and are not already in the medical monitoring program;
- To understand and appropriately utilize the “Stop Work Authority” concept.

Managers – Have the responsibility to steward the HS program to ensure that staff in their practice are appropriately equipped with the necessary hearing protection and have been provided the appropriate training. To accomplish this, Business Practice Managers (BPMs) have the responsibility to know and understand our HS program, policy, vision, and this HSP in detail enough so as to be prepared to explain it to a client when required. In addition, Managers have the responsibility to provide oversight management for the HS of employees in their respective operations. Each will assure that appropriate time and resources are provided to facilitate the implementation of this HSP. In addition, the Managers will involve themselves in any “Stop Work” issued by an employee as requested by an ARCADIS employee, project manager, or Principal-in-Charge (PIC). Managers will assist in resolving the issue associated with the “Stop Work Authority” issued by an employee.

Project Managers and Principals in Charge (PICs) – Have the responsibility to know and follow all applicable ARCADIS and client HS requirements, for ensuring work is conducted under the policy stated in this HSP, and for implementing the standard requirements provided for in this HSP on any project and/or in offices that pose hazards to ARCADIS employees or employees of its subcontractors, clients, and other organizations present in the vicinity of work controlled by ARCADIS

For project related work, Project Managers and PICs responsibilities also include determining and communicating any specific client requirements that are applicable, including:

- Communicating with and appropriately managing subcontractors, ensuring that employees have appropriate training and qualifications, and for ensuring all client HS requirements are met;

- Involving the appropriate ARCADIS HS Staff and project client staff, as necessary;
- Ensuring that all subcontractors have been communicated with concerning the minimum HS requirements for the project
- Providing adequate resources and budget for personal protective equipment (PPE), including hearing protection; PPE will be provided at not cost to the employee

In addition, as project and client agents and on behalf of ARCADIS, the Project Managers and Client Managers for client-related work shall be responsible for:

- Understanding and compliance by employees with HS rules and the requirements;
- Guaranteeing each employee the absolute right to exercise “Stop Work Authority” in good faith without fear of retribution or disciplinary action
- Using the ARCADIS Incident Investigation process for formally resolving a “Stop Work” condition.

Using this “Stop Work Authority” process, the manager and the employee will:

- Discuss and document the condition;
- Identify and document the root cause for the condition;
- Determine and document the solutions;
- Implement the solutions;
- Sign and acknowledge the solutions are in place to the satisfaction of the employee.

Corporate HS Staff – Have the responsibility for:

- Communicating the policy and standard requirements in this HSP with all offices within ARCADIS – US;
- Ensuring that offices are aware of this HSP;
- Ensuring this HSP is being implemented effectively;
- Provide required training or guidance on approved training options;
- Providing the necessary suppliers and criteria for selection of H&S equipment.

Health and Safety Managers and Specialists – Are responsible for facilitating the policy and standard requirements in this HSP in their area of responsibility and for providing “hands-on” assistance to ARCADIS staff to ensure this standard is appropriately implemented.

5. PROCEDURE

5.1 Noise Monitoring and Exposure Assessments

Noise monitoring should be conducted on any or all activities where excessive noise may be present. The monitoring will be prescribed by H&S professionals during the development of HASP and/or JSA. Noise monitoring may also be conducted at the discretion of the health and safety supervisor (HSS) or any staff members that have questions or concerns about potential noise exposure. ARCADIS defines excessive noise as any noise environment that requires speech levels above those used for normal conversation. If noise monitoring is not feasible, the staff will assume that exposures that require elevated speech are above 85 db and will use appropriate hearing protection. Monitoring results will be collected in accordance with guidance provided in 29CFR1910.95 Appendix G - Monitoring noise levels non-mandatory informational appendix. Monitoring results will be communicated to staff and used to determine adequate types and effectiveness (NRR) of hearing protection.

Community based noise monitoring may also be required based on the scope of the project. Community based noise monitoring will be conducted in accordance with the Project specifications and applicable Environmental Protection Agency (EPA), State or Local ordinances.

5.2 Audiometric Testing

Audiometric tests will be scheduled in conjunction with pre-placement, periodic, and termination medical examinations as required by the Medical Surveillance Program. All employees that are not already part of the medical monitoring program must inform their supervisor and Corporate Health and Safety if they were exposed to high noise levels as part of their job duties. Employees that were exposed to high noise levels must receive an audiogram as specified by the Medical Surveillance Program. Employees will be informed of the requirement that they avoid both non-occupational and occupational noise exposure for 14 hours prior to audiometric testing.

Audiograms will be compared to baseline and prior tests to determine if a standard threshold shift has occurred. If a shift is detected, retesting may be done within 30 days. If a shift is confirmed, the employee will be informed in writing and may need to be refitted and retrained in hearing protection use. If subsequent testing shows that a standard threshold shift is not present, the employee will be informed. Additional audiometric testing may be conducted at the discretion of Health and Safety.

The Physician or audiologist will determine if further evaluation is needed and, if so, will provide to the specialist all the information that is required by 29 CFR 1910.95 (g)(7)(iii). If the physician determines that the medical pathology is unrelated to work exposure or wearing hearing protectors, the employee will be informed by the physician.

5.3 Hearing Protection Devices

Employees will select from hearing protection supplied, and/or approved by the company.

6. TRAINING

Employees required to wear hearing protection will receive training as provided by Corporate H&S. The training will be provided at least annually with refresher training as necessary and will

include information regarding: effects of noise on hearing, the purpose of hearing protectors, their advantages/disadvantages and attenuation of various types, the proper selection, fit, use and care of protectors, and the purpose of audiometric testing. Employees will be trained concerning site specific noises hazards and hearing protection by H&S or project H&S staff as applicable.

7. REFERENCES

- OSHA Standard 29 CFR 1910.95

8. RECORDS

Record Maintenance – All records regarding noise exposure measurements will be maintained by the offices for two years. All audiometric test records will be maintained for the duration of the affected employee's employment. Original copies of shipping declarations and related shipping documents for hazardous materials will be kept in central file in each office location with copies kept in project files, as appropriate. These documents will be kept for a minimum of 2 years (3 years for manifests) or with the project files as long as the project files are kept.

9. APPROVALS AND HISTORY OF CHANGE

Approved By:

Mija A. Coppola, Director, H&S Compliance Assurance, LPS, Communications

Revision Date	Revision Number	Reason for change
1 December 2007	01	Original document
30 January 2008	02	Change to new template
5 October 2010	03	Change name from Procedure to Standard; revision of section 5.3

1. POLICY

An Incident is defined as "a sudden and unplanned event or chain of events, which has, or could have caused, injury or illness and/or damage to assets".

It is ARCADIS US' policy that:

- All incidents are reported. This includes near losses.
- Reporting of incidents is every employee's responsibility
- Incidents involving injury are reported to WorkCare first to ensure proper medical care and management if they are non-emergency in nature
- All incidents are investigated
- Incident investigation is the supervisor's responsibility to initiate and lead
- The level of investigation is based on the severity of the outcome or the potential outcomes of the incident
- All incident investigations result in learning that is communicated to appropriate staff

2. PURPOSE AND SCOPE

2.1 Purpose

The purpose of reporting and investigating incidents is to prevent similar or more serious incidents from recurring. This is completed by determining the contributing factors to the incident and the root causes of those factors using the Root Cause Analysis standard (ARC HSMS011).

2.2 Scope

The types of incidents reported and investigated under the ARCADIS H&S program include:

- Work-related injuries and illnesses
  - fatality/permanent disability
  - lost time
  - restricted duty
  - medical treatment
  - first aid
- Near losses

- Motor vehicle accidents
- Environmental releases
- Equipment or property damage
- Regulatory violations
- Operational or system inefficiencies or losses

This standard is also followed for any of the above-listed incidents incurred by subcontractors providing services to ARCADIS. The investigation team will include subcontractor workers and a subcontractor supervisor. ARCADIS personnel may also participate on the investigation team to provide knowledge of the project site and to facilitate the proper use of the process.

Additional client-specific and contract requirements may also be required and implemented.

3. DEFINITIONS

See Exhibit A of ARC HSMS000 – ARCADIS US HS Management System.

4. RESPONSIBILITIES

	All Personnel (Field and office employees)	Supervisor	H&S Professional	PM, PIC, Area Manager or Department Manager	Senior Leadership
Incident Occurs	If a non-emergencywork-related injury or illness,call Work Care first for proper medical care Notify supervisor and stop operation until it is determined safe to resume operations. Co-workers are considered authorized to accompany the employee to the medical care facilty as appropriate.	Complete initial verbal reporting of incident to H&S professional; evaluate risk of incident reoccurrence. If Motor Vehicle Accident or damage, notify Corporate H&S and Corporate Insurance coordinator	Ensure that the ARCADIS Workers Compensation manager has been notified of any injury-related incident Complete reporting and notification process	Receive initial notification based on severity of the incident	Receive initial notification as appropriate

	All Personnel (Field and office employees)	Supervisor	H&S Professional	PM, PIC, Area Manager or Department Manager	Senior Leadership
Investigation	Participate as team member in investigation; help to identify root causes and develop solutions.	Initiate investigation process; select personnel for investigation team; participate/lead investigation team.	Participate as necessary.	Participate as appropriate.	Participate as appropriate.
Investigation Report	Participate in completing investigation report form.	Participate in completing investigation report form; assign reviewers.	Review investigation reports and provide feedback as necessary.	Review investigation reports and provide feedback as necessary.	Review investigation reports and provide feedback as necessary. Steward process for quality, timeliness, participation, and provide feedback.
Communication **Safety Alert and Info Sharing Report**	Participate in the development of a Safety Share or other communications as able and as appropriate. Review incident related communications, Safety Shares.	Participate in the development of Safety Shares written by reporting employees. For others, communicate incident related information to personnel, including Safety Alerts and Info Sharing Reports, as appropriate.	Communicate information internally as necessary. Review Safety Shares as appropriate	Communicate information internally as necessary.	Steward Safety Shares
Solution Implementation, Verification & Validation of Effectiveness	Implement as directed. Notify supervisor of effectiveness.	Manage implementation; field verify and validate solutions.	Field verify and validate solutions and provide feedback as appropriate	Field verify and validate solutions and provide feedback	Field verify and validate solutions and provide feedback.

5. PROCEDURE

- The procedures discussed in this section are broken down into several steps as to the completion of the reporting and investigation of incidents including:
- Near losses
- Investigation Team
- Stop Work

- Reporting and Notification
- Case Management and WorkCare Intervention
- Timing of investigation
- Initiating the investigation
- Documentation
- Fact gathering
- Incident descriptions
- Conclusions
- Root Causes
- Solutions
- Review
- Validation and Verification

5.1 Near Losses

Near losses are incidents and are, therefore, an integral part of the incident investigation process. Health and safety research indicates that for every major incident there are hundreds of near losses that could potentially result in a major injury or other type of loss can be avoided. In other words, by managing near losses, incidents involving a loss can be prevented.

Therefore, employees are required to report all near losses without fear of reprimand or peer pressure, and no individual should feel threatened about honest reporting of a near-loss. A near loss is simply an injury, illness or other loss that was avoided because of more favorable circumstances, or "luck." By managing near losses, we have an opportunity to be proactive in the identification and resolution of hazards before an injury, illness or other loss occurs.

5.2 Reporting and Notification

The employee is responsible for reporting any incident including reporting to the Supervisor/PM and/or the client as outlined in the project H&S Plan. Reporting and notification times vary depending on the incident, but all should be done as soon as possible and no later than as outlined in the Incident Reporting and Investigation Process flowchart in Exhibit A. This reporting will be completed via telephone to the appropriate person or via the Near Loss Hotline.

As necessary, an ARCADIS employee that is present on the site where the injury occurred is authorized to and will accompany the employee to the treating facility.

5.3 Case Management and WorkCare Intervention

Every non-emergency, work-related injury or illness is required to be called into WorkCare via their reporting hotline number to ensure proper medical management of the injury. WorkCare will manage the case along with the ARCADIS Workers Compensation manager to ensure the appropriate and effective care is provided to the employee and so that the interests of the company are also represented. A flowchart of the WorkCare internvention process is shown in Exhibit B

5.4 Investigation Team

Team composition varies depending on the type, location, and severity of the incident. Personal knowledge and experience are key to the success of the investigation. Furthermore, the people who perform the tasks that led to an incident have the knowledge to identify the real root cause(s) and develop the solution(s) that will likely keep the incident from recurring.

The recommended members of the investigation team are listed in the Investigation Flowchart in Exhibit A. Management may designate personnel in addition to the members listed, as appropriate (e.g., legal department, technical specialist).

5.5 Incident Investigation Process

Immediately following an incident, **STOP** operations until it is determined that it is safe to resume! This assessment may be as simple as performing TRACK or as complex as a team assessment of practices and conditions.

5.6 Initiating the Investigation

Information or conditions that may change with time must be captured immediately. This may include taking pictures of damage before it is repaired and of the site before conditions change, and getting names of witnesses before they leave the area. The longer the delay in examining the incident scene and interviewing witnesses the greater the possibility of obtaining erroneous or incomplete information.

The severity or potential severity of the incident will determine when the formal investigation should be initiated. If a person sustains a major injury, or if the incident had the potential for serious or fatal injury, the operation must be stopped and the investigation initiated immediately. Other incidents, including near losses should be initiated as soon as possible.

5.7 Fact Gathering

It is essential that proper information and data gathering take place at all times during the investigation. The accuracy and thoroughness with which the investigators obtain and record information and data largely determines the quality of the final report and the effectiveness of corrective actions.

For minor incidents, the information may be gathered by the supervisor or other personnel immediately following the incident. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the incident, determine the root cause, and develop solutions. More complex situations may require the

investigation team to revisit the incident site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and any damaged equipment or property should be taken from all sides and from various distances. Sketches or drawings could also be pertinent to the investigation. This is especially important when the investigation team is not able to visit the incident scene.

5.8 Starting an Investigation

The supervisor, as it relates the activity being conducted at the time of the incident, is responsible for initiating the investigation process. The incident investigation is initiated once the area is secure, injured people have received appropriate medical attention, and appropriate notifications have been made.

5.9 Investigation Reporting Form

All incident investigations are maintained in the LPS database. Information is documented on the ARCADIS Incident/ Investigation Form and then entered into the database or entered directly in the LPS database. The purpose of the form is fourfold:

- State clearly what happened;
- Conclude why the incident occurred by identifying causal and contributing factors;
- Determine root cause(s); and
- Develop and implement solution(s) to prevent similar events from occurring in the future.

5.10 Description of Incident

It is critical to accurately describe what happened. Do not speculate on causes, state "just the facts." The description should be clear and concise. For example:

> "Mechanics opened the flange on transfer line Number 2 from Tank 101 and 50 gallons of diesel fuel was released No injuries occurred. Spill was contained in the area drainage system".

5.11 Conclusion: Determining the Causal and Contributing Factor(s)

The contributing factors section describes WHY the loss or near loss occurred. Avoid repeating what happened and focus instead on causal and contributing factors. It is important to investigate beyond mere symptoms to identify fundamental causes and contributing factors that led to the event. Only then can accurate root causes be identified.

5.12 Determining the Root Cause(s) of the Causal and Contributing Factor(s)

The Root Cause Analysis Flow Chart presented in ARC HSMS011will be used by the investigation team to identify the root cause(s) for all investigations. This chart leads investigators through a range of possibilities for factors that cause or contribute to incidents. This keeps investigators focused on potential root causes, steering them away from

symptoms.

Any incident may have one or more root cause. Those that relate to the person involved in the incident, his/her peers, the supervisor, or manager are referred to as "personal factors." Causes that pertain to the system or environment within which the incident occurred are referred to as "job factors."

5.13 Development of Solution(s)

Each root cause must be addressed by a solution, with a responsible person identified and notified for solution implementation. The investigation team cannot identify a root cause and then make no recommendation to address it. Furthermore, there must be a "match" between the root cause and the solution.

There are a few guidelines that should generally be adhered to when deciding what solution to recommend... The solutions are:

Practical: The most effective solutions to most incidents address basic worker activities, require that standards for job procedures are developed and maintained, and confirm that the right tools are provided for and used by workers.

Specific and Verifiable: The solution should be specific to something that can be verified as having been implemented and effective not only by those involved, but by other personnel not involved in the incident. For example, "Always work safely" is neither specific nor verifiable.

Controllable: The most effective solutions are those that focus on personal or job factors that the worker or supervisor can control.

Cost Effective: A $1M solution is not needed for a $100 hazard. Again, the majority of effective solutions are relatively inexpensive and are implemented with resources within one's own organization.

Sustainable: This solution is not merely for the week or month; it must be sustainable. If solutions are made that are even remotely unsustainable, the solutions must be re-evaluated. Otherwise, the road is being paved for "loss of credibility."

5.14 Review Process

The roles and responsibilities of the investigation and review processes are outlined in the Incident Reporting and Investigation Process flowchart presented in Exhibit A. Review and follow-up on incident investigations is important to verify the effectiveness of the process.

Quality reviews of incident investigations begin with the immediate project or department manager and continue up through the executive management levels. At each level, there is an opportunity to provide positive feedback or constructive advice for the continued improvement of LPS tool effectiveness.

5.15 Validation and Verification

Management provides follow-up on incident investigations by verifying that the solutions have been implemented and validating that the solutions have adequately addressed the root

cause(s) of the incident. Again, each of these steps provides opportunities for positive management feedback to those involved in the investigation.REFERENCES (regulation citation, technical links, publications, etc.)

6. TRAINING

All employees receive Incident Reporting and Investigation training during LPS training

7. REFERENCES

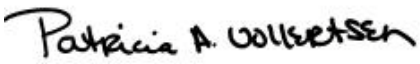
ARC HSMS011 – Root Cause Analysis and Solution Development

8. RECORDS

All incidents are recorded and stored in the LPS database and maintained per ARCADIS recordkeeping requirements.

9. APPROVALS AND HISTORY OF CHANGE

Approved by:



Patricia A. Vollertsen, Director, H&S Administration

History of Change

Revision Date	Revision Number	Reason for change
22 October 2007	01	Original document
9 June 2009	02	Revision and update to incude WorkCare intervention which has been implemented since 2006 but documented in separate document. Also update new LPS terminology
26 June 2009	03	Revision to include language that, when necessary, an injured employee will be accompanied to medical care by authorized employee

Revision Date	Revision Number	Reason for change
6 Ocotober 2010	04	Change name from Procedure to Standard; revision to section 5.2 & App A to clarify client must be notified when required by the HASP

Exhibit A
Incident Reporting and Investigation Process Flow

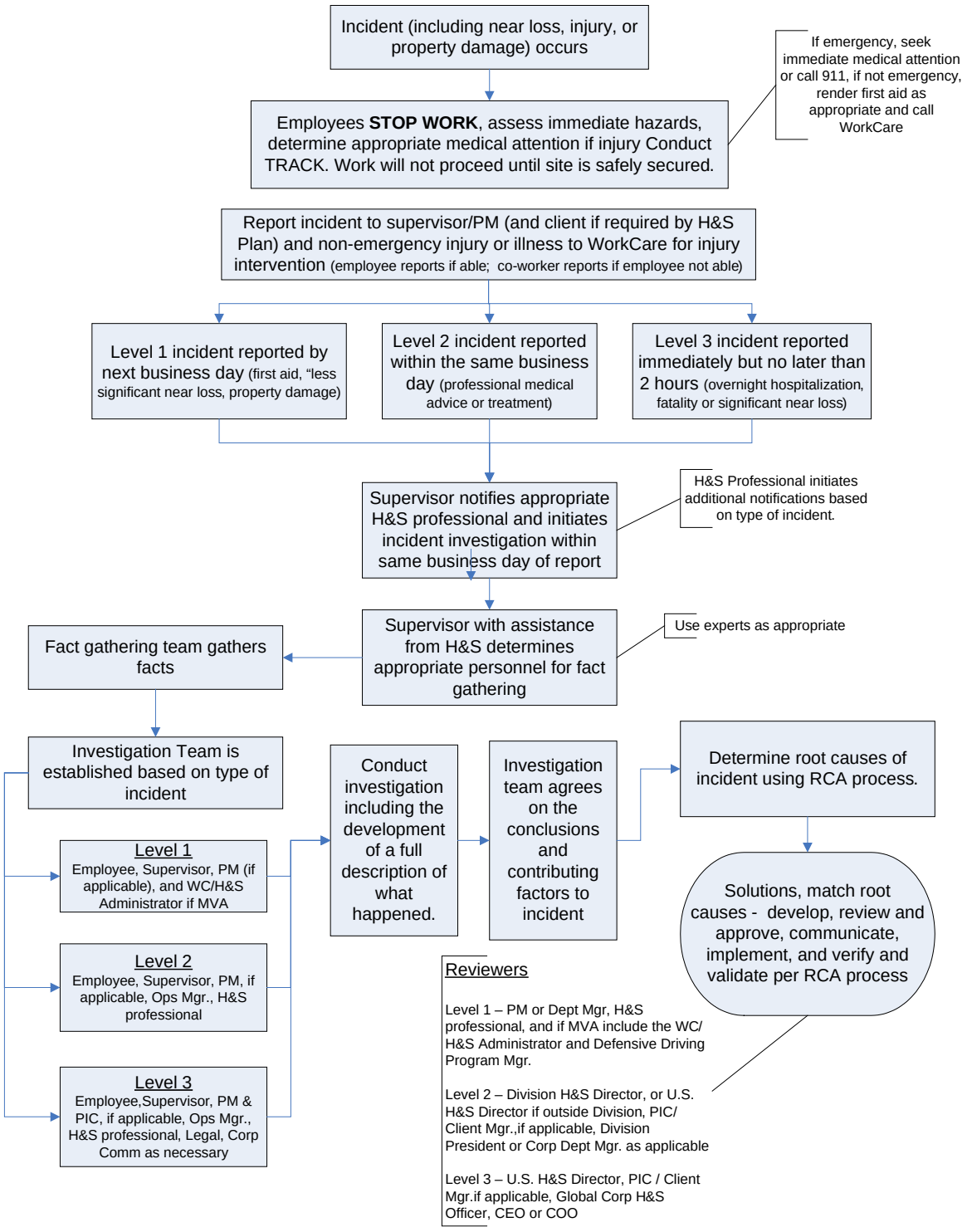
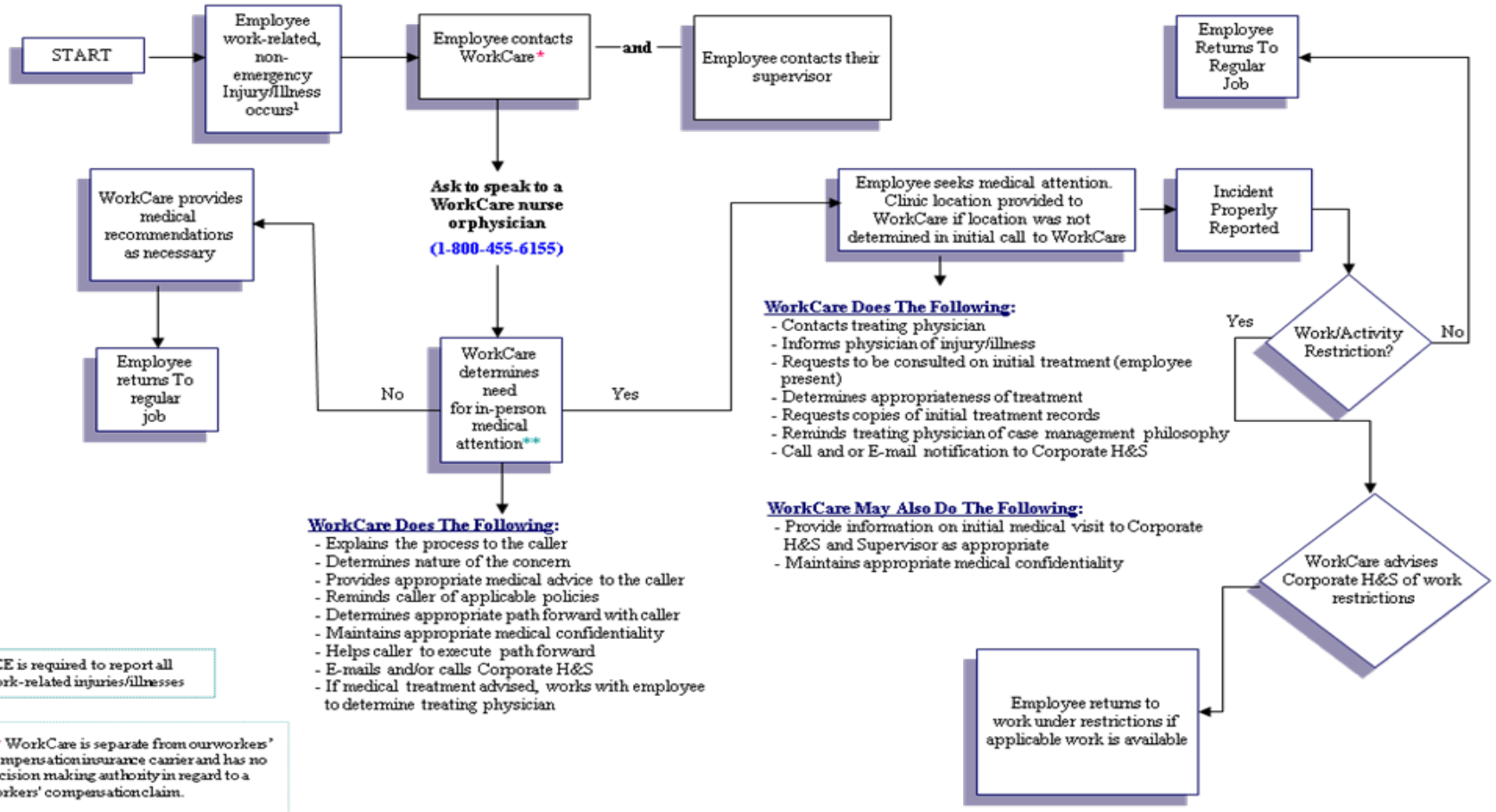


Exhibit B

ARCADIS WorkCare Incident Intervention®

For work-related injuries or illnesses that are not life threatening or emergencies



Appendix H

PPE Checklist

ARCADIS

PPE Checklist

R = Equipment required to be present on the site. **O** = Optional equipment.
Subcontractors must have the same equipment listed here as a minimum.

Description (Put Specific Material or Type in Box)	Level of Protection	
	D	**C**
Body		
Coveralls	O	
Chemical Protective Suit		R
Splash Apron		
Rain Suit	O	
Traffic Safety Vest (reflective)	R	
Head		
Hard Hat (if does not create other hazard)	R	R
Head Warmer (depends on temperature and weather conditions)	O	O
Eyes and Face		
Safety Glasses (incorporate sun protection as necessary)	R	
Goggles (based on hazard)	O	
Splash Guard (based on hazard)		
Ears		
Ear Plugs	R	R
Ear Muffs	O	O
Hands and Arms		
Outer Chemical Resistant Gloves		R
Inner Chemical Resistant Gloves	R	R
Insulated Gloves	O	
Work Gloves	R	
Feet		
Safety Boots (steel toe and shank)	R	R
Rubber, Chemical Resistant Boots		R (near water)
Rubber Boots	R (near water)	

Description (Put Specific Material or Type in Box)	Level of Protection	
	D	C
Disposable Boot Covers	O	R
Respiratory Protection		
1/2 Mask APR		
Full Face APR (OV/HEPA cartridges are required)		R
Dust Protection	O	
Powered APR		
SCBA		
Air Line		

Appendix I

MSDSs

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111
Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Acenaphthene **CAS Number:** 83-32-9
Chemical Formula: $C_{12}H_{10}$
Structural Chemical Formula: $C_{10}H_6(CH_2)_2$
EINECS Number: 201-469-6
ACX Number: X1001052-9
Synonyms: ACENAPHTHENE; ACENAPHTHYLENE,1,2-DIHYDRO-; 1,8-DIHYDROACENAPHTHALENE; 1,2-DIHYDROACENAPHTHYLENE; 1,8-DIHYDROACENAPHTHYLENE; 1,8-ETHYLENENAPHTHALENE; ETHYLENENAPHTHALENE; NAPHTHYLENEETHYLENE; PERI-ETHYLENE NAPHTHALENE; PERIETHYLENENAPHTHALENE
Derivation: By passing ethylene and benzene or naphthalene through a red hot tube; by heating tetrahydroacenaphthene with sulfur to 356 °F (180 °C); or by reacting acenaphthenone or acenaphthenequinone by high-pressure hydrogenation in decalin with nickel at 356 to 464 °F (180 to 240 °C). Occurs as a by-product in coal tar production during the high-temperature carbonization or coking of coal.
General Use: Used as an intermediate for dyes, pharmaceuticals, insecticides, fungicides, and plastics.

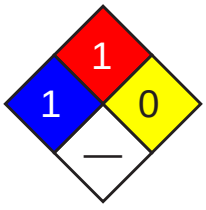
Section 2 - Composition / Information on Ingredients

Name	CAS	%
Acenaphthene	83-32-9	ca 98% wt

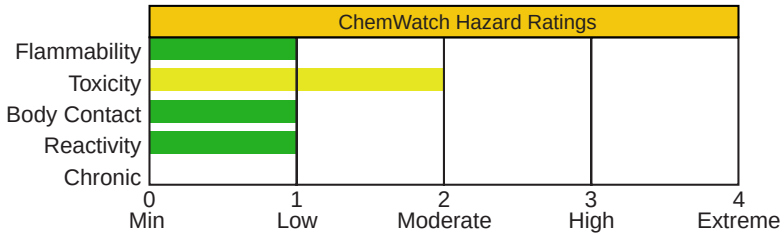
OSHA PEL **NIOSH REL**

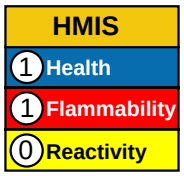
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

White, needle-like crystals. Irritating to eyes/skin/respiratory tract. Also causes: vomiting if large amounts are ingested. Chronic: possible mutagenic activity (animal studies). Combustible.

Potential Health Effects

Target Organs: Eyes, skin, respiratory tract.
Primary Entry Routes: Inhalation, skin and eye contact.
Acute Effects
Inhalation: Irritation of the respiratory tract may occur.
Eye: Irritation may occur.
Skin: Irritation may occur.
Ingestion: Ingestion of large amounts may cause vomiting. Irritation of the gastrointestinal tract may occur.
Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: Pre-existing skin disorders.
Chronic Effects: None reported.

Section 4 - First Aid Measures

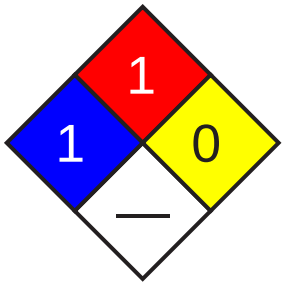
Inhalation: Remove exposed person to fresh air and support breathing as needed.
Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water. Consult a physician or ophthalmologist if pain or irritation persist.
Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water followed by a thorough soap and water wash.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water to dilute. Vomiting may be spontaneuos if large amounts are ingested.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians: Treatment is symptomatic and supportive.

See DOT ERG

Section 5 - Fire-Fighting Measures

Flash Point: Combustible
Autoignition Temperature: None reported.
LEL: None reported.
UEL: None reported.
Flammability Classification: Combustible Solid
Extinguishing Media: Use dry chemical, carbon dioxide, water spray, fog, or foam.
General Fire Hazards/Hazardous Combustion Products: Carbon oxide(s).
Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

See DOT ERG



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, isolate and ventilate area.
Small Spills: *Do not* sweep! Carefully scoop up or vacuum (with appropriate filter) and place in suitable containers.
Large Spills: Flush spills with water to containment area for later disposal. *Do not* release into sewers or waterways. Damp mop any residue.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

See DOT ERG

Section 7 - Handling and Storage

Handling Precautions: Use only with ventilation adequate to prevent airborne hazards. *Do not* use near heat and ignition sources.
Never eat, drink, or smoke in work areas. Practice good personal hygiene after using acenaphthene, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.
Recommended Storage Methods: Store in a cool, dry, well-ventilated area away from heat, ignition sources and incompatibles (Sec. 10).
Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where possible, enclose all processes to prevent dust dispersion into work area. To prevent static sparks, electrically ground and bond all equipment used with and around acenaphthene. Provide general or local exhaust ventilation systems to maintain airborne concentrations at least as low as those given for *nuisance dusts*. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.
Administrative Controls: Consider periodic medical exams to determine if any irritation upon exposure to acenaphthene has occurred.
Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove acenaphthene from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: White, needle-like crystals.
Physical State: Solid
Odor Threshold: 0.5048 mg/m^3
Vapor Pressure (kPa): < 0.02 mm Hg at 68 °F (20 °C); 10 mm Hg at 268 °F (131 °C)
Formula Weight: 154.21
Specific Gravity (H_2O=1, at 4 °C): 1.0242 at (194 °F) 90 °C
Refractive Index: 1.6048 at 212 °F (100 °C)
Boiling Point: 531.5 °F (277.5 °C)
Freezing/Melting Point: 200.5 °F (93.6 °C)
Water Solubility: 100 mg/L
Other Solubilities: Soluble as 1 g/ 31 mL (ethanol), 56 mL (methanol), 25 mL (propanol), 2.5 mL (chloroform), 5 mL (benzene & toluene); 3.2 g/100 mL glacial acetic acid.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Acenaphthene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization does not occur. Exposure to heat, ignition sources, and incompatibles.

Storage Incompatibilities: Acenaphthene reacts with molecular oxygen in the presence of alkali-earth metal bromides to form acenaphthequinone; reacts with ozone in the presence of alkali-earth metal hydroxides to form 1,8-naphthaldehyde carboxylic acid; and is oxidized to aromatic alcohols and ketones by reaction with transition metal catalysts.

Hazardous Decomposition Products: Thermal oxidative decomposition of acenaphthene can produce carbon oxide(s) and thick, acrid smoke.

Section 11 - Toxicological Information

Other Effects:

Microorganisms (species unspecified): 3 mg (-S9) caused mutation.
Rat, intraperitoneal, LD_{50}: 600 mg/kg.

See *RTECS* AB1000000, for additional data.

Section 12 - Ecological Information

Environmental Fate: In soil, acenaphthene will biodegrade under aerobic conditions with a half-life of 10 to 60 days. A soil absorption coefficient of 2065 to 3230 indicates slight mobility. In water, biodegradation will occur under aerobic conditions with a half-life of 1 to 25 days, as well as photolysis in direct sunlight. Volatilization is another means of removal with half- lives of 11 hr from a model river and 39 days from a model pond which considers the effect of adsorption. In air, acenaphthene reacts with photochemically-produced hydroxyl radicals with a half-life of 7.2 hr.

Ecotoxicity: *Pimephales promelas* (fathead minnow), LC_{50} = 1700 µg/L/72 hr, 1600 µg/L/96 hr; *Salmo gairdneri* (rainbow trout), LC_{50} = 1570 µg/L/24 hr, 1130 µg/l/48 hr, 800 µg/L/72 hr, 670 µg/L/96 hr.

Henry's Law Constant: 1.55 x 10^{-4} atm/m^3/mole at 77 °F (25 °C)

Octanol/Water Partition Coefficient: log K_{ow} = 3.92

Section 13 - Disposal Considerations

Disposal: Acenaphthene is a good candidate for rotary-kiln incineration. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Environmentally hazardous substances, solid, n.o.s.
ID: UN3077
Hazard Class: 9 - Miscellaneous hazardous material
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 9 - Class 9
Special Provisions: 8, 146, B54, IB8, N20
Packaging: **Exceptions:** 155 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** No limit **Cargo aircraft only:** No limit
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 100 lb (45.35 kg)
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Acenaphthylene
ACE1300

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Acenaphthylene **CAS Number:** 208-96-8
Chemical Formula: $C_{12}H_8$
EINECS Number: 205-917-1
ACX Number: X1001734-6
Synonyms: ACENAPHTHYLENE; CYCLOPENTA(DE)NAPHTHALENE
Derivation: Acenaphthylene is formed upon catalytic dehydration of acenaphthene. It was also extracted from oil furnace black. Not produced commercially.
General Use: Acenaphthylene is a constituent of coal tar and crude oil, a product of combustion, and can be released to the environment via natural fires associated with lightning, volcanic activity, and spontaneous combustion.

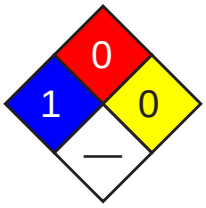
Section 2 - Composition / Information on Ingredients

Name	CAS	%
Acenaphthylene	208-96-8	ca 99+% wt

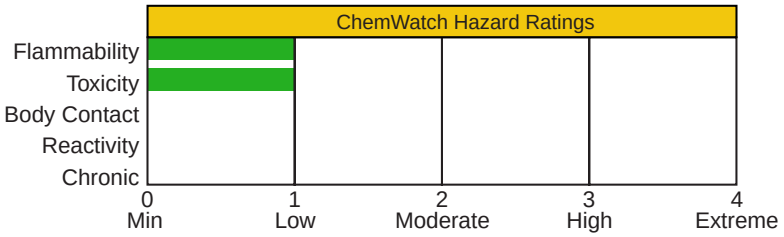
OSHA PEL **NIOSH REL**

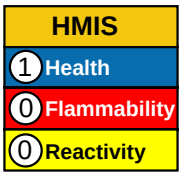
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Yellow crystalline solid. Irritating to eyes/skin/respiratory tract. Chronic: mutation effects, possible kidney and bladder cancer.

Potential Health Effects

Target Organs: Skin, eyes, blood, and respiratory and autonomic nervous systems
Primary Entry Routes: Inhalation, ingestion, skin/eye contact
Acute Effects
Inhalation: Causes irritation of the respiratory system and mucous membranes.
Eye: Contact causes irritation.
Skin: Contact causes irritation and burning.
Ingestion: No acute effects reported.
Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: Liver, kidney, and bladder damage.
Chronic Effects: Polycyclic aromatic hydrocarbons (PAH's) may cause coughing and bronchitis, eye photosensitivity, coal tar warts, erythema, dermal burns, acneiform lesions, and photosensitization of the skin. They may also cause leukoplakia, mild hepatotoxicity or mild nephrotoxicity (in animals), hematuria, and in rats - agranulocytosis, anemia, and pancytopenia. PAH's have been associated with kidney, bladder, lung, gastrointestinal tract, and skin cancer. PAH's may cross the placenta and are excreted in breast milk. Laboratory experiments have shown mutagenic effects.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 min. Consult a physician or ophthalmologist if pain, irritation, swelling, lacrimation, or photophobia persist.

Skin Contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water. *Do not* induce vomiting.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Arterial blood gases, pulmonary function, chest x-ray, and other monitoring may be indicated, based on the patient's presentation and the exposure characteristics. If cough or difficulty in breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Inhalation exposure to PAH's may be complicated by exposure to other substances which produce acute respiratory and systemic effects. Treat according to clinical presentation and exposure history. If bronchospasm and wheezing occur, consider treatment with inhaled sympathomimetic agent. Carefully observe patients with inhalation exposure for the developments of any systemic signs or symptoms and administer symptomatic treatment as necessary.

Section 5 - Fire-Fighting Measures

Flash Point: Data not found.

Autoignition Temperature: Data not found.

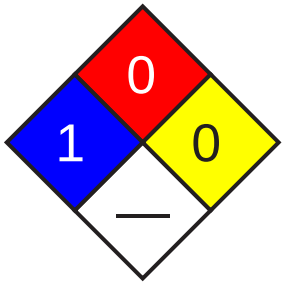
LEL: Data not found.

UEL: Data not found.

Extinguishing Media: Extinguish with water spray, carbon dioxide, dry chemical powder or appropriate foam.

General Fire Hazards/Hazardous Combustion Products: Toxic fumes of carbon monoxide and carbon dioxide can be released.

Fire-Fighting Instructions: *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, evacuate all unnecessary personnel, remove heat and ignition sources. Isolate and ventilate area, deny entry, stay upwind. Cleanup personnel should protect against exposure (Sec. 8). Most commonly produced as a product of incineration or combustion.

Small Spills: Carefully sweep, scoop up, or vacuum (with a HEPA filter). Avoid raising dust.

Large Spills: For large spills, dike far ahead of spill for later disposal. *Do not* release into sewers or waterways.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Wear personal protective clothing and equipment to prevent vapor inhalation and contact with skin or eyes (Sec. 8). Avoid prolonged or repeated exposure.

Never eat, drink, or smoke in work areas. Workers subjected to skin contact with acenaphthylene should wash any areas of the body that may have contacted the material, whether or not contact actually occurred. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed containers in a cool, well-ventilated area away from heat, light, ignition sources, and incompatibles.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose operations to avoid dispersion into the work area. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Educate workers about the health and safety hazards associated with this material. Train in work practices which minimize exposure. Identify areas in which exposure to acenaphthylene may occur by signs or other appropriate means and restrict access to these areas to authorized persons only. Routine monitoring and physical assessments (e.g., complete blood count, hepatic and renal function tests, chest x-ray and pulmonary function tests, dermal assessments) of individuals with significant exposure is recommended. Make available to employees exposed to acenaphthylene a complete history and physical examination with emphasis on the oral cavity, respiratory tract, bladder, and kidneys. Examine the skin for evidence of chronic disorders, for premalignant and malignant lesions, and evidence of hyperpigmentation or photosensitivity. Obtain a urinalysis including specific gravity, albumin, glucose, and a microscopic examination of centrifuged sediment, as well as a test for red blood cells. Also perform a complete blood count to search for leukemia and aplastic anemia. Employees having 5 or more years of exposure or who are 45 years of age or older should have a urinary cytology exam. Employees having 10 or more years of exposure or who are 45 year of age or older should have a sputum cytology examination, a 14" x 17" chest roentgenogram, and periodic measure of FVC and FEV (1 sec).

Personal Protective Clothing/Equipment: Wear chemically protective gloves, rubber boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear splash-proof chemical safety goggles with face shield (8 in. min), per OSHA eye- and face- protection regulations (29 CFR 1910.133). Contact lenses are not protective eye devices. Appropriate eye protection must be worn in conjunction with, or instead of, contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. The following recommendations are for coal tar pitch volatiles: For exposure to concentrations <= 2 mg/m^3, wear a chemical cartridge respirator with an organic vapor cartridge(s) and with a fume or high efficiency filter or any supplied-air respirator or any SCBA; for exposure to concentrations <= 10 mg/m^3, wear a chemical cartridge respirator with a full facepiece and an organic vapor cartridge(s) and with a fume or high efficiency filter, or a gas mask with a chin style or a front- or back- mounted organic vapor canister and with a full facepiece and a fume or high efficiency filter, or any supplied-air respirator with a full facepiece, helmet, or hood or any SCBA with a full facepiece; for exposure to concentrations <= 200 mg/m^3, wear a type C supplied-air respirator operated in pressure-demand or other positive-pressure or continuous flow mode, or a powered air-purifying respirator with an organic vapor cartridge and a high efficiency particulate filter; for exposure to concentrations <= 400 mg/m^3, wear a type C supplied-air respirator with a full facepiece operated in pressure-demand or other positive-pressure mode, or with a full facepiece, helmet, or hood operated in continuous flow mode. For exposure to concentrations >= 400 mg/m^3 or for emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Place clothing contaminated with acenaphthylene in closed containers for storage until it can be discarded or laundered by someone informed of the hazards of working with acenaphthylene. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Yellow

Physical State: Crystalline solid; prisms from ether; plates from alcohol

Vapor Pressure (kPa): $9.12x10^{-4}$ mm Hg at 77 °F (25 °C)

Formula Weight: 152.20

Density: 0.8988 g/cm^3 at 16 °C/2°C

Boiling Point: 509 °F (265 °C) to 527 °F (275 °C)

Freezing/Melting Point: 194 °F (90 °C) to 197.6 °F (92 °C)

Ionization Potential (eV): 8.22 +/- 0.2 eV

Water Solubility: Slightly soluble; 3.93 mg/L distilled water at 77 °F (25 °C)

Other Solubilities: Very soluble in 95% ethanol, benzene, and ether.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Acenaphthylene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Avoid contact with chemical incompatibles, heat, and sources of ignition.

Storage Incompatibilities: Include strong oxidizing agents.

Hazardous Decomposition Products: Thermal oxidative decomposition of acenaphthylene can produce toxic fumes of carbon monoxide and carbon dioxide.

Section 11 - Toxicological Information

Acute Oral Effects:

Mouse, oral, LD_{50}: 1760 mg/kg produced toxic effects of parasympathomimetic, respiratory depression, hemorrhage.

Other Effects:

Multiple Dose Toxicity Effects: Rat, inhalation, 500 µg/m^3 administered for 4 hours over 17 weeks intermittently produced toxic effects: lung, thorax, or respiration - structural or functional change in trachea or bronchi; lung, thorax, or respiration - bronchiolar dilation; nutritional and gross metabolic - weight loss or decreased weight gain.

Genetic Effects: Bacteria - *S Typhimurium*, 1 mmol/L/2 hr (-S9) induced mutations in microorganisms.

Human, lymphocyte, 15 mg/L induced mutations in mammalian somatic cells.

Rat, intraperitoneal, LD_{50}: 1700 mg/kg.

See *RTECS* AB1254000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Acenaphthylene is expected to biodegrade in the environment. It is not expected to hydrolyze or bioconcentrate in the environment, yet may undergo direct photolysis in sunlit environmental media. Volatilization from environmental waters may be important. It is expected to exist entirely in the vapor phase in ambient air. In the atmosphere, reactions with photochemically-produced hydroxyl radicals and ozone are likely to be important fate processes. Acenaphthylene is expected to have a low to slight mobility in soil. It could adsorb to, run off with, and bioaccumulate in, soil. In aquatic systems, it may partition from the water column to organic matter contained in sediments and suspended solids.

Ecotoxicity: Data not found.

Henry's Law Constant: $1.13x10^{-5}$ (calculated)

BCF: 2.11 (estimated)

Octanol/Water Partition Coefficient: log K_{ow} = 4.07

Soil Sorption Partition Coefficient: K_{oc} = 950 to 3315 (estimated)

Section 13 - Disposal Considerations

Disposal: Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber or consider chemical precipitation. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable federal, state, and local regulations. Handle empty containers carefully as hazardous residues may still remain. Triple rinse containers and dispose of wash wastewater appropriately.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Not specifically listed.

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed

CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 5000 lb (2268 kg)

SARA 40 CFR 372.65: Not listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2005/03/09

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier).
CAS# 497-19-8: LD50 4020 mg/kg - rat oral.
CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Solid

Appearance & odor: Almost odourless.
White granular powder.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): Not applicable.

Vapour density (air=1): Not applicable.

By weight: Not available.

Evaporation rate (butyl acetate = 1): Not applicable.

Boiling point (°C): Not applicable.

Freezing point (°C): Not applicable.

pH: (1% aqueous solution).
9.5

Specific gravity @ 20 °C: (water = 1).
0.85 - 1.10

Solubility in water (%): 100 - > 10% w/w

Coefficient of water\oil dist.: Not available.

VOC: None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: None

Section 5 : REACTIVITY DATA

Chemical stability: Stable under normal conditions.

Conditions of instability: None known.

Hazardous polymerization: Will not occur.

Incompatible substances: Strong acids.
Strong oxidizers.

Hazardous decomposition products: See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry: Skin contact, eye contact, inhalation and ingestion.

Effects of Acute Exposure

Eye contact: May cause irritation.

Skin contact: Prolonged contact may cause irritation.

Inhalation: Airborne particles may cause irritation.

Ingestion: May cause vomiting and diarrhea.
May cause abdominal pain.
May cause gastric distress.

Effects of chronic exposure: Contains an ingredient which may be corrosive.

LD50 of product, species & route: > 5000 mg/kg rat oral.

LC50 of product, species & route: Not available for mixture, see the ingredients section.

Exposure limit of material: Not available for mixture, see the ingredients section.

Sensitization to product: Not available.

Carcinogenic effects: Not listed as a carcinogen.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Medical conditions aggravated by exposure: Not available.

First Aid

Skin contact: Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.

Eye contact: Check for and remove contact lenses.
Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.

Inhalation: Remove victim to fresh air.
Seek medical attention if symptoms persist.

Ingestion: Dilute with two glasses of water.
Never give anything by mouth to an unconscious person.
Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak / Spill: Contain the spill.
Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.
Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves / Type:

Neoprene or rubber gloves.

Respiratory / Type:

If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye / Type:

Safety glasses with side-shields.

Footwear / Type: Safety shoes per local regulations.

Clothing / Type: As required to prevent skin contact.

Other / Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111
Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Anthracene **CAS Number:** 120-12-7
Chemical Formula: $C_{14}H_{10}$
Structural Chemical Formula: $(C_6H_4CH)_2$
EINECS Number: 204-371-1
ACX Number: X1001589-1
Synonyms: ANTHRACEN; ANTHRACENE; ANTHRACENE OIL; ANTHRACIN; COAL TAR PITCH VOLATILES:ANTHRACENE; GREEN OIL; P-NAPHTHALENE; PARANAPHTHALENE; PARANAPTHALENE; TETRA OLIVE N2G
Derivation: Occurs naturally in smoke (gasoline, coal, cigarette, etc.), charbroiled foods, and coal tar pitch volatiles. Obtained by distilling crude anthracene oil with alkali carbonate in iron retorts (phenanthrene is removed via carbon disulfide) *or* by salting out from crude anthracene oil and draining; the crude salts are then purified by pressing and the use of various solvents (phen-anthrene and carbazole are removed).
General Use: Used in chemical manufacture (phenanthrene, carbazole, anthraquinone), in calico printing; as a component of dyes, scintillation fluid, smoke screens; and in organic semi-conductor research.

Section 2 - Composition / Information on Ingredients

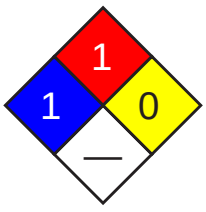
Name	CAS	%
Anthracene	120-12-7	ca 90 to 95% wt (commercial grade); 90 to 98% wt (technical grade)

Trace Impurities: phenanthrene, carbazole, chrysene, pyridine (0.2%), iron (0.03%)

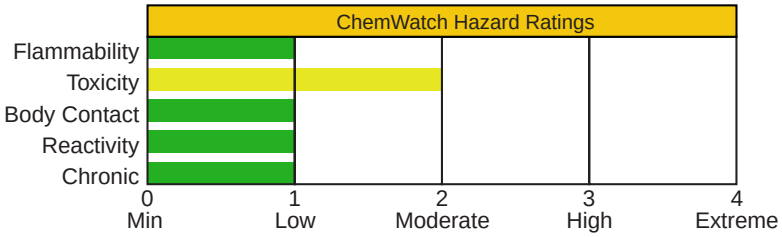
OSHA PEL **NIOSH REL**

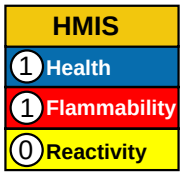
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless crystals with violet fluorescence (pure) or yellow crystals with green fluorescence. Irritating to eyes/skin/respiratory tract. Other Acute Effects: sun exposure can aggravate skin irritation and cause dermatitis. Combustible.

Potential Health Effects

Target Organs: Eyes, skin, respiratory and digestive tracts.
Primary Entry Routes: Inhalation, skin/eye contact
Acute Effects
Inhalation: Symptoms include irritation of the respiratory tract, headache, nausea and vomiting, loss of appetite, slowed reactions, and adynamia (lack or loss of strength due to disease or other outside agent). Acute symptoms disappear within several days of last exposure.
Eye: Irritation of the conjunctiva with burning, itching and watering.

Skin: Irritation with burning, itching, and edema (fluid build-up). Volunteers with a 2% crude tar solution applied to the skin showed anthracene absorption via blood tests.

Ingestion: Gastrointestinal tract irritation.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.

Medical Conditions Aggravated by Long-Term Exposure: Dermatitis.

Chronic Effects: Repeated skin contact can cause pigmentation of the skin with cornification of surface layers and telangioectasis (an abnormal dilatation of capillary vessels that often form small, raised, red, wart-like spots). Sensitization (including photo- sensitization) may also occur. Anthracene appears to concentrate in the fat and liver.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 minutes. Consult an ophthalmologist if pain and irritation persist.

See DOT ERG

Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water to dilute. Vomiting may be spontaneous.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Treatment is symptomatic and supportive.

Section 5 - Fire-Fighting Measures

Flash Point: 250 °F (121 °C), Closed Cup

Autoignition Temperature: 1004 °F (540 °C)

LEL: 0.6% v/v

UEL: Not reported.

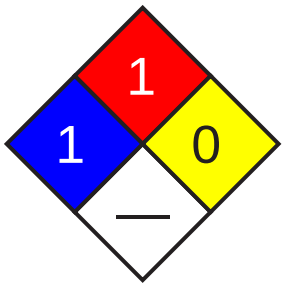
Flammability Classification: Combustible

See DOT ERG

Extinguishing Media: Use water spray, carbon dioxide, dry chemical, or foam.

General Fire Hazards/Hazardous Combustion Products: Include carbon oxide(s) and irritating, acrid smoke. May explode in air.

Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Cleanup personnel should protect against inhalation and skin/eye contact.

See DOT ERG

Small Spills: Carefully scoop up or vacuum (with appropriate filter) and place in suitable containers for disposal.

Large Spills: Use water to flush large spills to containment area for later disposal. Do not release into sewers or waterways. Damp mop any residue.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: *Do not* use near heat or flame. Wear appropriate PPE. Never eat, drink, or smoke in work areas. Practice good personal hygiene after using anthracene, especially before eating, drinking, smoking, using the toilet, or applying cosmetics. Skin cleansers (ex. 55% kaolin, 25% neutral soap, 20% bran) are recommended.

Recommended Storage Methods: Store in a cool, dry, well-ventilated area away from heat, ignition sources, and incompatibles (Sec. 10).

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: To prevent static sparks, electrically ground and bond equipment used with and around anthracene. Enclosure of equipment and mechanization of processes will aid in exposure control. Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Consider preplacement and periodic medical exams of exposed workers with emphasis on the skin.

Personal Protective Clothing/Equipment: Limit work in sunlight as much as possible to prevent photosensitization. Photoprotective creams or pastes must be applied to bare skin regions. Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Polyvinyl chloride is a suitable material for PPE. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. For any detectable concentration, use a SCBA or supplied-air respirator with a full facepiece and operated in pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive-pressure mode. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes and place in closed containers until laundered. Remove anthracene from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless crystals with a violet fluorescence (pure), yellow crystals with a green fluorescence (due to tetracene and naphthacene).

Physical State: Solid

Vapor Pressure (kPa): 1mm Hg at 293 °F (145 °C)

Formula Weight: 178.22

Density: 1.25 g/cm^3 at 80.6 °F (27 °C)

Boiling Point: 644 °F (340 °C)

Freezing/Melting Point: 423 °F (217 °C)

Water Solubility: 1.29 mg/L at 77 °F/25 °C (*distilled water*), 0.6 mg/L at 77 °F/25 °C (*salt water*)

Other Solubilities: 1 g in 67 mL absolute alcohol, 70 mL methanol, 62 mL benzene, 85 mL chloroform, 200 mL ether, 31 mL carbon disulfide, 86 mL carbon tetrachloride, and 125 mL toluene. Also soluble in acetone.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Anthracene darkens upon exposure to sunlight (transformed to *para*-anthracene). Hazardous polymerization *does not* occur. Exposure to heat, ignition sources, sunlight, and incompatibles.

Storage Incompatibilities: Include calcium hypochlorite (exothermic), fluorine (explodes), chromic acid, and calcium oxychloride.

Hazardous Decomposition Products: Thermal oxidative decomposition of anthracene can produce carbon oxide(s) and acrid, irritating smoke.

Section 11 - Toxicological Information

Acute Oral Effects:

Mouse, oral, LD: > 17 g/kg caused fatty liver degeneration.

Irritation Effects:

Mouse, skin: 118 µg caused mild irritation.

Other Effects:

Rat, oral: 20 g/kg intermittently for 79 weeks caused liver tumors.

Genetic Effects - Rat, liver cell: 300 µmoL caused DNA damage.

See *RTECS* CA9350000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to soil, anthracene is expected to absorb strongly and not leach to groundwater. It will not hydrolyze, but may be subject to biodegradation, the rate of which depends on soil type. In water, anthracene is subject to direct photolysis near the surface and undergoes significant biodegradation. Biodegradation in water is faster with increased temperature, increased oxygen, and acclimated microbes. Evaporation may also be significant with an estimated half-life range of 4.3 to 5.9 days from a river 1 m deep, flowing 1 m/sec, with a wind velocity of 3 m/sec. In the air, photolysis and reaction with photochemically-produced hydroxyl radicals (half-life: 1.67 days). Vapor phase anthracene is expected to degrade faster than particle-sorbed anthracene. A K_{oc} of 26,000 suggests anthracene is relatively immobile in soil and unlikely to leach to groundwater; it will absorb strongly to soil.

Ecotoxicity: *Leponis macrochirus* (bluegill sunfish), LC_{50} = 11.9 µg/L/96 hr; *Rana pipiens* (leopard frog), LC_{50} = 0.065 ppm/30 min & 0.025 ppm/5 hr. BCF (bioconcentration factor): goldfish (162), rainbow trout (4400-9200). Bioconcentration occurs most heavily in organisms which lack the enzyme microsomal oxidase. Anthracene can become concentrated on the waxy surface of some plant leaves and fruits.
Octanol/Water Partition Coefficient: log K_{ow} = 4.45 (calc.)

Section 13 - Disposal Considerations

Disposal: Anthracene is a waste chemical stream constituent which may be subjected to ultimate disposal by controlled incineration. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Environmentally hazardous substances, solid, n.o.s.
ID: UN3077
Hazard Class: 9 - Miscellaneous hazardous material
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 9 - Class 9
Special Provisions: 8, 146, B54, IB8, N20
Packaging: **Exceptions:** 155 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** No limit **Cargo aircraft only:** No limit
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 5000 lb (2268 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Benzene **CAS Number:** 71-43-2
Chemical Formula: C_6H_6
Structural Chemical Formula: C_6H_6
EINECS Number: 200-753-7
ACX Number: X1001488-9
Synonyms: Benzene; BENZENE; (6)ANNULENE; BENZEEN; BENZEN; BENZIN; BENZINE; BENZOL; BENZOL 90; BENZOLE; BENZOLENE; BENZOLO; BICARBURET OF HYDROGEN; CARBON OIL; COAL NAPHTHA; CYCLOHEXATRIENE; EPA PESTICIDE CHEMICAL CODE 008801; FENZEN; MINERAL NAPHTHA; MOTOR BENZOL; NITRATION BENZENE; PHENE; PHENYL HYDRIDE; POLYSTREAM; PYROBENZOL; PYROBENZOLE
General Use: Manufacture of chemicals including styrene, dyes, and many other organic chemicals. Has been used in artificial leather, linoleum, oil cloth, airplane dopes, lacquers; as solvent for waxes, resins, oils etc.
May also be a minor component of gasoline, petrol.
Exposure should be minimized by use in closed systems.
Handling procedures and control measures should be evaluated for exposure before commencement of use in plant operations.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
benzene	71-43-2	99.9

OSHA PEL
TWA: 1 ppm; STEL: 5 ppm.

NIOSH REL
TWA: 0.1 ppm; STEL: 1 ppm.

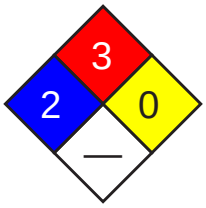
DFG (Germany) MAK
Skin.

ACGIH TLV
TWA: 0.5 ppm; STEL: 2.5 ppm; skin.

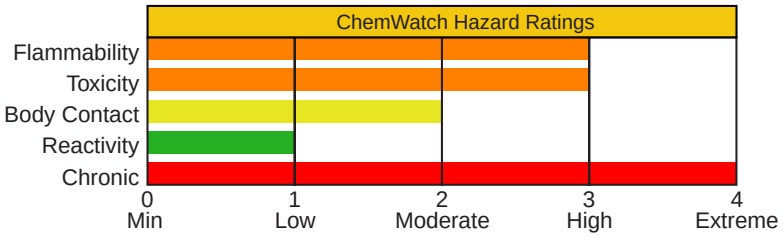
IDLH Level
500 ppm.

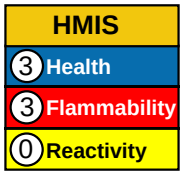
EU OEL
TWA: 1 ppm.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Danger!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless liquid; sweet odor. Irritating to eyes/skin/respiratory tract. Toxic. Other Acute Effects: headache, dizziness, drowsiness. Absorbed through skin. Chronic Effects: dermatitis, leukemia, bone marrow damage. Carcinogen. Reproductive effects. Flammable.

Potential Health Effects

Target Organs: blood, central nervous system (CNS), bone marrow, eyes, upper respiratory system, skin
Primary Entry Routes: inhalation, skin contact
Acute Effects
Inhalation: The vapor is discomforting to the upper respiratory tract and lungs and may be harmful if inhaled.

If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.
Acute effects from inhalation of high concentrations of vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination.
Inhalation hazard is increased at higher temperatures.
The symptoms of acute exposure to high vapor concentrations include confusion, dizziness, tightening of the leg muscles and pressure over the forehead followed by a period of excitement. If exposure continues the casualty quickly becomes stupefied and lapses into a coma with narcosis.
Effects of inhalation may include nausea, vomiting headache, dizziness, drowsiness, weakness, sometimes preceded by brief periods of exhilaration, or euphoria, irritability, malaise, confusion, ataxia, staggering, weak and rapid pulse, chest pain and tightness with breathlessness, pallor, cyanosis of the lips and fingertips and tinnitus. Severe exposures may produce blurred vision, shallow, rapid breathing, delirium, cardiac arrhythmias, unconsciousness, deep anesthesia, paralysis and coma characterized by motor restlessness, tremors and hyperreflexia (occasionally preceded by convulsions). Polyneuritis and persistent nausea, anorexia, muscular weakness, headache, drowsiness, insomnia and agitation may also occur. Two-three weeks after the exposure, nervous irritability, breathlessness and unsteady gait may still persist; cardiac distress and an unusual dicoloration of the skin may be evident for up to four weeks.
Hemotoxicity is not normally a feature of acute exposures although anemia, thrombocytopenia, petechial hemorrhage, and spontaneous internal bleeding have been reported. Fatal exposures may result from asphyxia, central nervous system depression, cardiac and respiratory failure and circulatory collapse; sudden ventricular fibrillation may also be fatal.
Death may be sudden or may be delayed for 24 hours. Central nervous system, respiratory or hemorrhagic complications may occur up to five days after the exposure and may be lethal; pathological findings include respiratory inflammation with edema, and lung hemorrhage, renal congestion, cerebral edema and extensive petechial hemorrhage in the brain, pleurae, pericardium, urinary tract, mucous membrane and skin.
Exposure to toxic levels has also produced chromosome damage.

Eye: The liquid is highly discomforting to the eyes, may be harmful following absorption and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/or other transient eye damage/ulceration.
The vapor is moderately discomforting to the eyes.
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Skin: The liquid may produce skin discomfort following prolonged contact.
Defatting and/or drying of the skin may lead to dermatitis. Open cuts, abraded or irritated skin should not be exposed to this material.
Toxic effects may result from skin absorption.
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.

Ingestion: The liquid is discomforting to the gastrointestinal tract and may be harmful if swallowed.
Ingestion may result in nausea, pain, vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

Carcinogenicity: NTP - Class 1, Known to be a carcinogen; IARC - Group 1, Carcinogenic to humans; OSHA - Listed as a carcinogen; NIOSH - Listed as carcinogen; ACGIH - Class A2, Suspected human carcinogen; EPA - Class A, Human carcinogen; MAK - Class A1, Capable of inducing malignant tumors as shown by experience with humans.

Chronic Effects: Liquid is an irritant and may cause burning and blistering of skin on prolonged exposure.
Chronic exposure may cause headache, fatigue, loss of appetite and lassitude with incipient blood effects including anemia and blood changes.
Benzene is a myelotoxicant known to suppress bone-marrow cell proliferation and to induce hematologic disorders in humans and animals.
Signs of benzene-induced aplastic anemia include suppression off leukocytes (leukopenia), red cells (anemia), platelets (thromocytopenia) or all three cell types (pancytopenia). Classic symptoms include weakness, purpura, and hemorrhage. The most significant toxic effect is insidious and often irreversible injury to the blood forming tissue. Leukemia may develop.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Lay patient down. Keep warm and rested.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor.

See DOT ERG

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.

Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately remove all contaminated clothing, including footwear (after rinsing with water).
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center.
Do NOT induce vomiting. Give a glass of water.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short-term repeated exposures to petroleum distillates or related hydrocarbons:

1.Primary threat to life from pure petroleum distillate ingestion and/or inhalation is respiratory failure.

2.Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO_2 <50 mm Hg or pCO_2 >50 mm Hg) should be intubated.

3.Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.

4.A chest x-ray should be taken immediately after stabilization of breathing and circulation to document aspiration and detect the presence of pneumothorax.

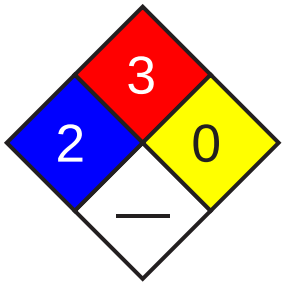
5.Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitization to catecholamines.
Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.

6.Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients. Consider complete blood count. Evaluate history of exposure.

Section 5 - Fire-Fighting Measures

Flash Point: -11 °C Closed Cup
Autoignition Temperature: 562 °C
LEL: 1.3% v/v
UEL: 7.1% v/v
Extinguishing Media: Foam, dry chemical powder, BCF (where regulations permit), carbon dioxide.
Water spray or fog - Large fires only.

See DOT ERG



Fire Diamond

General Fire Hazards/Hazardous Combustion Products: Liquid and vapor are highly flammable.
Severe fire hazard when exposed to heat, flame and/or oxidizers.
Vapor forms an explosive mixture with air.
Severe explosion hazard, in the form of vapor, when exposed to flame or spark. Vapor may travel a considerable distance to source of ignition.
Heating may cause expansion/decomposition with violent rupture of containers.
On combustion, may emit toxic fumes of carbon monoxide (CO).

Fire Incompatibility: Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
Fight fire from a safe distance, with adequate cover.
If safe, switch off electrical equipment until vapor fire hazard removed.
Use water delivered as a fine spray to control fire and cool adjacent area.
Avoid spraying water onto liquid pools.
Do not approach containers suspected to be hot.
Cool fire-exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.
Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

Small Spills: Remove all ignition sources. Clean up all spills immediately.
Avoid breathing vapors and contact with skin and eyes.
Control personal contact by using protective equipment.
Contain and absorb small quantities with vermiculite or other absorbent material. Wipe up. Collect residues in a flammable waste container.

See DOT ERG

Large Spills: Pollutant - contain spillage. Clear area of personnel and move upwind.
Contact fire department and tell them location and nature of hazard.

May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
No smoking, bare lights or ignition sources. Increase ventilation.
Stop leak if safe to do so. Water spray or fog may be used to disperse/absorb vapor. Contain spill with sand, earth or vermiculite.
Use only spark-free shovels and explosion proof equipment.
Collect recoverable product into labeled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
Collect solid residues and seal in labeled drums for disposal.
Wash area and prevent runoff into drains.
If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid all personal contact, including inhalation.
Wear protective clothing when risk of exposure occurs.
Use in a well-ventilated area. Prevent concentration in hollows and sumps.
DO NOT enter confined spaces until atmosphere has been checked.
Avoid smoking, bare lights, heat or ignition sources.
When handling, DO NOT eat, drink or smoke.
Vapor may ignite on pumping or pouring due to static electricity.
DO NOT use plastic buckets. Ground and secure metal containers when dispensing or pouring product. Use spark-free tools when handling.
Avoid contact with incompatible materials.
Keep containers securely sealed. Avoid physical damage to containers.
Always wash hands with soap and water after handling.
Work clothes should be laundered separately.
Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

Recommended Storage Methods: Metal can; metal drum. Packing as recommended by manufacturer.
Check all containers are clearly labeled and free from leaks.

Storage Requirements: Store in original containers in approved flame-proof area.
No smoking, bare lights, heat or ignition sources.
DO NOT store in pits, depressions, basements or areas where vapors may be trapped. Keep containers securely sealed.
Store away from incompatible materials in a cool, dry well ventilated area.
Protect containers against physical damage and check regularly for leaks.
Observe manufacturer's storing and handling recommendations.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area. Local exhaust ventilation usually required.
If risk of overexposure exists, wear NIOSH-approved respirator.
Correct fit is essential to obtain adequate protection. NIOSH-approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area.

Personal Protective Clothing/Equipment:

Eyes: Chemical goggles. Full face shield.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Nitrile gloves; Neoprene gloves.
Safety footwear.
Do NOT use this product to clean the skin.

Respiratory Protection:
Exposure Range >1 to 10 ppm: Air Purifying, Negative Pressure, Half Mask
Exposure Range >10 to 100 ppm: Air Purifying, Negative Pressure, Full Face
Exposure Range >100 to 1000 ppm: Supplied Air, Constant Flow/Pressure Demand, Full Face
Exposure Range >1000 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face
Cartridge Color: black
Note: must change cartridge at beginning of each shift

Other: Overalls. Eyewash unit. Barrier cream. Skin cleansing cream.

Glove Selection Index:
PE/EVAL/PE ..... Best selection
PVA ..... Best selection
TEFLON ..... Best selection

VITON ..... Best selection
VITON/NEOPRENE ..... Best selection
NITRILE+PVC ..... Poor to dangerous choice for other than short-term immersion
BUTYL ..... Poor to dangerous choice for other than short-term immersion
NITRILE ..... Poor to dangerous choice for other than short-term immersion
NEOPRENE ..... Poor to dangerous choice for other than short-term immersion
PVC ..... Poor to dangerous choice for other than short-term immersion
NATURAL RUBBER ..... Poor to dangerous choice for other than short-term immersion
BUTYL/NEOPRENE ..... Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Clear, highly flammable liquid; floats on water. Characteristic aromatic odor. Highly volatile. Mixes with alcohol, chloroform, ether, carbon disulfide, carbon tetrachloride, glacial acetic acid, acetone and oils.

Physical State: Liquid
Odor Threshold: 4.68 ppm
Vapor Pressure (kPa): 9.95 at 20 °C
Vapor Density (Air=1): 2.77
Formula Weight: 78.12
Specific Gravity (H_2O=1, at 4 °C): 0.879 at 20 °C
Evaporation Rate: Fast

pH: Not applicable
pH (1% Solution): Not applicable.
Boiling Point: 80.1 °C (176 °F)
Freezing/Melting Point: 5.5 °C (41.9 °F)
Volatile Component (% Vol): 100
Water Solubility: 0.18 g/100 g of water at 25 °C

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid reaction with oxidizing agents.

Section 11 - Toxicological Information

Toxicity
Oral (man) LD_{Lo}: 50 mg/kg
Oral (rat) LD_{50}: 930 mg/kg
Inhalation (rat) LC_{50}: 10000 ppm/7h
Inhalation (human) LC_{Lo}: 2000 ppm/5m
Inhalation (man) TC_{Lo}: 150 ppm/1y - I
Inhalation (human) TC_{Lo}: 100 ppm
Reproductive effector in rats

Irritation
Skin (rabbit): 20 mg/24 hr - mod
Eye (rabbit): 2 mg/24 hr - SEVERE

See *RTECS* CY 1400000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to soil, it will be subject to rapid volatilization near the surface and that which does not evaporate will be highly to very highly mobile in the soil and may leach to groundwater. It may be subject to biodegradation based on reported biodegradation of 24% and 47% of the initial 20 ppm in a base-rich para-brownish soil in 1 and 10 weeks, respectively. It may be subject to biodegradation in shallow, aerobic groundwaters, but probably not under anaerobic conditions. If released to water, it will be subject to rapid volatilization; the half-life for evaporation in a wind-wave tank with a moderate wind speed of 7.09 m/sec was 5.23 hours; the estimated half-life for volatilization from a model river one meter deep flowing 1 m/sec with a wind velocity of 3 m/sec is estimated to be 2.7 hours at 20 °C. It will not be expected to significantly adsorb to sediment, bioconcentrate in aquatic organisms or hydrolyze. It may be subject to biodegradation based on a reported biodegradation half-life of 16 days in an aerobic river die-away test. In a marine ecosystem biodegradation occurred in 2 days after an acclimation period of 2 days and 2 weeks in the summer and spring, respectively, whereas no degradation occurred in winter. According to one experiment, it has a half-life of 17 days due to photodegradation which could contribute to removal in situations of cold water, poor nutrients, or other conditions less conductive to microbial degradation. If released to the atmosphere, it will exist predominantly in the vapor phase. Gas-phase will not be subject to direct photolysis but it will react with photochemically produced hydroxyl radicals with a half-life of 13.4 days calculated using an experimental rate constant for the reaction. The reaction time in polluted atmospheres which contain nitrogen oxides or sulfur dioxide is accelerated with the half-life being reported as 4-6 hours. Products of photooxidation include phenol, nitrophenols, nitrobenzene, formic acid, and peroxyacetyl nitrate. It is fairly soluble in water and is removed from the atmosphere in rain.

Ecotoxicity: LC_{50} Clawed toad (3-4 wk after hatching) 190 mg/l/48 hr /Conditions of bioassay not specified; LC_{50} Morone saxatilis (bass) 5.8 to 10.9 ppm/96 hr /Conditions of bioassay not specified; LC_{50} Poecilia reticulata (guppy) 63 ppm/14 days /Conditions of bioassay not specified; LC_{50} Salmo trutta (brown trout yearlings) 12 mg/l/1 hr (static bioassay); LD_{50} Lepomis macrochirus (bluegill sunfish) 20 mg/l/24 to 48 hr /Conditions of bioassay not specified; LC_{100} Tetrahymena pyriformis (ciliate) 12.8 mmole/l/24 hr /Conditions of bioassay not specified; LC_{50} Cancer magister (crab larvae) stage 1, 108 ppm/96 hr /Conditions of bioassay not specified; LC_{50} Crangon franciscorum (shrimp) 20 ppm/96 hr /Conditions of bioassay not specified

Henry's Law Constant: 5.3×10^{-3}

BCF: eels 3.5

Biochemical Oxygen Demand (BOD): 1.2 lb/lb, 10 days

Octanol/Water Partition Coefficient: log K_{ow} = 2.13

Soil Sorption Partition Coefficient: K_{oc} = woodburn silt loam 31 to 143

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options and recycle where possible.
Follow applicable federal, state, and local regulations.
Incinerate residue at an approved site.
Recycle containers where possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Benzene
ID: UN1114
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: II - Medium Danger
Symbols:
Label Codes: 3 - Flammable Liquid
Special Provisions: IB2, T4, TP1
Packaging: **Exceptions:** 150 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** B **Other:** 40

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U019 Toxic Waste, Ignitable Waste
CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4), per RCRA Section 3001, per CWA Section 307(a), per CAA Section 112 10 lb (4.535 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Benz[a]anthracene **CAS Number:** 56-55-3
Chemical Formula: $C_{18}H_{12}$
EINECS Number: 200-280-6
ACX Number: X1002793-9
Synonyms: B(A)A; BA; BAA; 1,2-BENZ(A)ANTHRACENE; 1,2-BENZANTHRACENE; BENZ(A)ANTHRACENE; BENZANTHRACENE; BENZ[A]ANTHRACENE; 1,2-BENZANTHRAZEN; 1,2-BENZANTHRENE; BENZANTHRENE; 1,2-BENZOANTHRACENE; BENZO(A)ANTHRACENE; BENZOANTHRACENE; 2,3-BENZOPHENANTHRENE; BENZO(A)PHENANTHRENE; BENZO(B)PHENANTHRENE; 2,3-BENZPHENANTHRENE; NAPHTHANTHRACENE; TETRAPHENE
General Use: research chemistry

Section 2 - Composition / Information on Ingredients

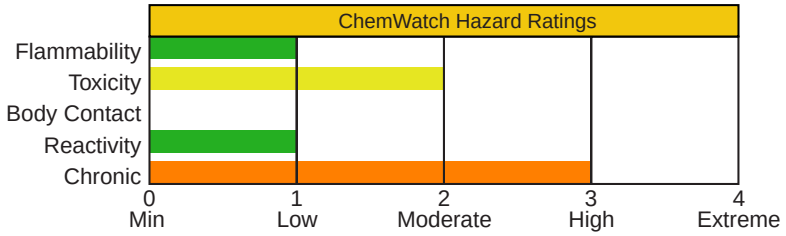
Name	CAS	%
benz[a]anthracene	56-55-3	>98

OSHA PEL

NIOSH REL

ACGIH TLV
Exposure by all routes should be carefully controlled to levels as low as possible.

Section 3 - Hazards Identification



ANSI Signal Word

Danger!


Poison

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless plates. May cause irritation. Poison. Other Acute Effects: may be fatal if inhaled, swallowed, or absorbed through skin. Chronic Effects: may cause heritable genetic damage; may alter genetic material. Carcinogen. Will burn.

Potential Health Effects

Target Organs: No data found.
Primary Entry Routes: accidental skin and eye contact, inhalation of generated dusts
Acute Effects

Inhalation: The dust is harmful and discomforting to the upper respiratory tract. Persons with impaired respiratory function, airway diseases, or conditions such as emphysema or chronic bronchitis may incur further disability if excessive concentrations of particulate are inhaled.

Eye: The dust may be discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/ or other transient eye damage/ ulceration.

Skin: The material may be mildly discomforting to the skin. Open cuts and abraded or irritated skin should not be exposed to this material. Toxic effects may result from skin absorption.

Ingestion: The solid/dust is discomforting to the gastrointestinal tract and harmful if swallowed. Considered an unlikely route of entry in commercial/industrial environments.

Carcinogenicity: NTP - Class 2B, Reasonably anticipated to be a carcinogen, sufficient evidence of carcinogenicity from studies in experimental animals; IARC - Group 2A, Probably carcinogenic to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Class A2, Suspected human carcinogen; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Class A2, Unmistakably carcinogenic in animal experimentation only.

Chronic Effects: Cited in many publications and by a number of regulatory authorities as a suspected human carcinogen. Subcutaneous injection produces sarcomas (soft tissue growths) in rats and mice. When administered by gavage benz[a]anthracene induced papillomas to the forestomach in mice and hamsters and mammary tumors in female rats.

Section 4 - First Aid Measures

Inhalation: • If dust is inhaled, remove to fresh air.
• Encourage patient to blow nose to ensure clear breathing passages.
• Rinse mouth with water. Consider drinking water to remove dust from throat.
• Seek medical attention if irritation or discomfort persist.
• If fumes or combustion products are inhaled, remove to fresh air.
• Lay patient down. Keep warm and rested.
• Other measures are usually unnecessary.

Eye Contact: • Immediately hold the eyes open and flush with fresh running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Seek medical attention if pain persists or recurs.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: • Immediately remove all contaminated clothing, including footwear (after rinsing with water).
• Wash affected areas thoroughly with water (and soap if available).
• Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center. If more than 15 minutes from a hospital:
• INDUCE vomiting with IPECAC SYRUP, or fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. NOTE: Wear a protective glove when inducing vomiting by mechanical means.
• SEEK MEDICAL ATTENTION WITHOUT DELAY.
• In the meantime, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
• If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided.
• If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Treat symptomatically.

Section 5 - Fire-Fighting Measures

Flash Point: Not available; probably combustible

Extinguishing Media: Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide. Water spray or fog - Large fires only.

General Fire Hazards/Hazardous Combustion Products: • Solid which exhibits difficult combustion or is difficult to ignite.
• Avoid generating dust, particularly clouds of dust in a confined or unventilated space, as dust may form an explosive mixture with air and any source of ignition, e.g., flame or spark, will cause fire or explosion.
• Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
• Build-up of electrostatic charge may be prevented by bonding and grounding.
• Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Fire Incompatibility: Avoid contamination with oxidizing agents i.e., nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Fire-Fighting Instructions: • Contact fire department and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves for fire only.
• Prevent, by any means available, spillage from entering drains or waterways.
• Use fire fighting procedures suitable for surrounding fire.
• Do not approach containers suspected to be hot.
• Cool fire-exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.

• Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

Small Spills: • Clean up all spills immediately.
• Avoid contact with skin and eyes.
• Wear protective clothing, gloves, safety glasses and dust respirator.
• Use dry clean up procedures and avoid generating dust.
• Vacuum up or sweep up.
• Place in clean drum then flush area with water.

See DOT ERG

Large Spills: • Clear area of personnel and move upwind.
• Contact fire department and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or waterways.
• No smoking, bare lights or ignition sources.
• Increase ventilation.
• Stop leak if safe to do so.
• Water spray or fog may be used to disperse/absorb vapor.
• Contain or absorb spill with sand, earth or vermiculite.
• Collect recoverable product into labeled containers for recycling.
• Collect solid residues and seal in labeled drums for disposal.
• Wash area and prevent runoff into drains.
• After clean up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.
• If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: • Avoid all personal contact, including inhalation.
• Wear protective clothing when risk of overexposure occurs.
• Use in a well-ventilated area.
• Prevent concentration in hollows and sumps.
• DO NOT enter confined spaces until atmosphere has been checked.
• Do not allow material to contact humans, exposed food or food utensils.
• Avoid smoking, bare lights or ignition sources.
• When handling, DO NOT eat, drink or smoke.
• Avoid contact with incompatible materials.
• Keep containers securely sealed when not in used.
• Avoid physical damage to containers.
• Always wash hands with soap and water after handling.
• Working clothes should be laundered separately. Launder contaminated clothing before reuse.
• Follow good occupational work practices.
• Observe manufacturer's storage/handling recommendations.
• Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Glass container. Plastic container. Metal can. Metal drum. Check that all containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Local exhaust ventilation usually required. If risk of overexposure exists, wear NIOSH-approved respirator. Provide adequate ventilation in warehouse or closed storage area.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields or chemical goggles. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear chemical protective gloves, e.g. PVC. Wear safety footwear.

Other: • Overalls.
• PVC Apron.
• PVC protective suit may be required if exposure severe.
• Eyewash unit.
• Ensure there is ready access to a safety shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Light yellow to tan crystalline powder.
Physical State: colorless plates
Vapor Pressure (kPa): 5 x10^{-9} torr at 20 °C
Formula Weight: 228.29
Evaporation Rate: Half life 89 hours
Boiling Point: Sublimes at 435 °C (815 °F)
Freezing/Melting Point: 162 °C (323.6 °F)
Volatile Component (% Vol): Negligible
Water Solubility: 0.014 mg/L in Water at 25 °C

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid reaction with oxidizing agents.

Section 11 - Toxicological Information

Toxicity
Intravenous (rat) LD_{50}: > 200 mg/kg

Irritation
Nil reported

See *RTECS* CV9275000, for additional data.

Section 12 - Ecological Information

Environmental Fate: When released into water it will rapidly become adsorbed to sediment or particulate matter in the water column, and bioconcentrate into aquatic organisms. In the unadsorbed state, it will degrade by photolysis in a matter of hours to days. Its slow desorption from sediment and particulate matter will maintain a low concentration in the water. Because it is strongly adsorbed to soil it will remain in the upper few centimeters of soil and not leach into groundwater. It will very slowly biodegrade when colonies of microorganisms are acclimated but this is too slow a process (half-life ca 1 year to be significant). In the atmosphere it will be transported long distances and will probably be subject to photolysis and photooxidation although there is little documentation about the rate of these processes in the literature.
Ecotoxicity: Algae: Anabaena flos-aquae 2w EC_{50} growth +0.014 mg/l NOEC growth +0.003 mg/l
BCF: daphnia 4.0
Octanol/Water Partition Coefficient: log K_{ow} = 5.61
Soil Sorption Partition Coefficient: K_{oc} = sediments 55 to 1.87 x10^{6}

Section 13 - Disposal Considerations

Disposal: • Recycle wherever possible or consult manufacturer for recycling options.
• Follow applicable local, state, and federal regulations.
• Bury residue in an authorized landfill.
• Recycle containers if possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: I - Great Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB7
Packaging: **Exceptions:** None **Non-bulk:** 211 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 kg **Cargo aircraft only:** 50 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: II - Medium Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP2, IP4
Packaging: **Exceptions:** None **Non-bulk:** 212 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 25 kg **Cargo aircraft only:** 100 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP3
Packaging: **Exceptions:** 153 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** 100 kg **Cargo aircraft only:** 200 kg
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U018 Toxic Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001, per CWA Section 307(a) 10 lb (4.535 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
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Benzo(a)pyrene
BEN5560

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Benzo(a)pyrene **CAS Number:** 50-32-8
Chemical Formula: $C_{20}H_{12}$
EINECS Number: 200-028-5
ACX Number: X1002798-4
Synonyms: B(A)P; BAP; BENZO(D,E,F)CHRYSENE; 3,4-BENZOPIRENE; 1,2-BENZOPYRENE; 3,4-BENZOPYRENE; 6,7-BENZOPYRENE; BENZO(A)PYRENE; 3,4-BENZPYREN; 3,4-BENZ(A)PYRENE; 3,4-BENZPYRENE; BENZ(A)PYRENE; BENZ[A]PYRENE; 3,4-BENZYLPYRENE; 3,4-BENZYPYRENE; 3,4-BP; BP; COAL TAR PITCH VOLATILES: BENZO(A)PYRENE
Derivation: Synthesized from pyrene and succinic anhydride.
General Use: Benzo(a)pyrene is no longer used or produced commercially in the US. In its pure form, benzo(a)pyrene may be used as a research laboratory reagent. It also occurs in combustion products of coal, oil, petroleum, wood and other biological matter; in motor vehicle and other gasoline and diesel engine exhaust; in charcoal-broiled foods; in cigarette smoke and general soot and smoke of industrial, municipal, and domestic origin. It occurs naturally in crude oils, shale oils, coal tars, gases and fly ash from active volcanoes and forest fires.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Benzo(a)pyrene	50-32-8	ca 100% wt

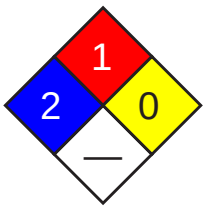
Except in laboratories, benzo(a)pyrene is usually mixed with other coal tar pitch chemicals. Consider exposure limits for coal tar pitch volatiles as a guideline. However, because benzo(a)pyrene is considered a probable carcinogen to humans, it is recommended that exposures to carcinogens be limited to the lowest feasible concentration.

OSHA PEL
TWA: 0.2 mg/m^3.

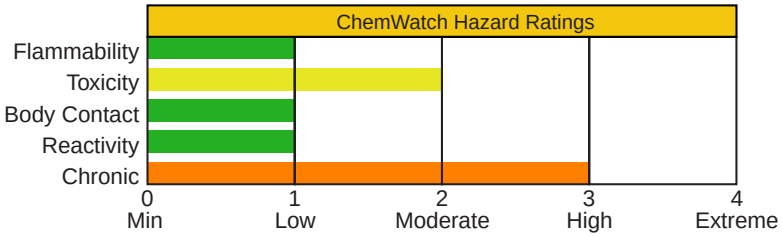
NIOSH REL

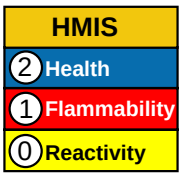
ACGIH TLV
Exposure by all routes should be carefully controlled to levels as low as possible.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Warning!

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Pale yellow, crystalline solid or powder. Irritating to skin, eyes, respiratory tract. Chronic Effects: carcinogen, mutagen. Handle with extreme caution!

Potential Health Effects

Target Organs: Respiratory system, bladder, kidneys, skin.
Primary Entry Routes: Inhalation, ingestion.

Acute Effects

Inhalation: Respiratory tract irritation. Pregnant women may be especially susceptible to exposure effects of benzo(a)pyrene; exposure may damage the fetus. In general, polyaromatic hydrocarbons such as benzo(a)pyrene tend to localize primarily in body fat and fatty tissues (for ex. breasts) and are excreted in breast milk. Benzo(a)pyrene may also affect the male reproductive system (testes and sperm).

Eye: Irritation and/or burns on contact.

Skin: Irritation with burning sensation, rash, and redness; dermatitis on prolonged exposure. Sunlight enhances effects (photosensitization).

Ingestion: None reported.

Carcinogenicity: NTP - Class 2B, Reasonably anticipated to be a carcinogen, sufficient evidence of carcinogenicity from studies in experimental animals; IARC - Group 2A, Probably carcinogenic to humans; OSHA - Not listed; NIOSH - Listed as carcinogen; ACGIH - Class A2, Suspected human carcinogen; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Class A2, Unmistakably carcinogenic in animal experimentation only.

Medical Conditions Aggravated by Long-Term Exposure: Respiratory system, bladder, kidney, and skin disorders.

Chronic Effects: Inhalation: Cough and bronchitis. Eye: Photosensitivity and irritation. Skin: Skin changes such as thickening, darkening, pimples, loss of color, reddish areas, thinning of the skin, and warts. Sunlight enhances effects (photosensitization). Other: Gastrointestinal (GI) effects include leukoplakia (a pre-cancerous condition characterized by thickened white patches of epithelium on mucous membranes, especially of the mouth). Cancer of the lung, skin, kidneys, bladder, or GI tract is also possible. Smoking in combination with exposure to benzo(a)pyrene increases the chances of developing lung cancer. Persons with a high degree of inducibility of the enzyme aryl hydrocarbon hydroxylase may be a high risk population.

Section 4 - First Aid Measures

See DOT ERG

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of tepid water for at least 15 min. Consult an ophthalmologist if irritation or pain persist.

Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water (less than 15 min). Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water to dilute. Inducing vomiting is not necessary since benzo(a)pyrene has a low acute toxicity and therefore, is generally an unnecessary procedure. Consider activated charcoal/cathartic.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Monitor CBC and arterial blood gases, conduct liver, renal, and pulmonary function tests (if respiratory tract irritation is present), and urinalysis. Biological monitoring techniques testing for metabolites in blood or urine, or DNA adducts in blood or tissues are useful for epidemiological studies that determine if exposure has occurred. Because neither normal nor toxic levels have been established, those techniques may not be useful for evaluating individual patients.

Special Precautions/Procedures: Emergency personnel should protect against exposure.

Section 5 - Fire-Fighting Measures

See DOT ERG

Flash Point: None reported. Benzo(a)pyrene may burn, but does *not* readily ignite.

Autoignition Temperature: None reported.

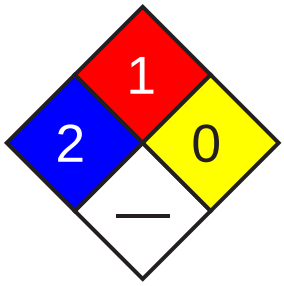
LEL: None reported.

UEL: None reported.

Extinguishing Media: For small fires, use dry chemical, sand, water spray, or foam. For large fires, use water spray, fog, or foam.

General Fire Hazards/Hazardous Combustion Products: Carbon monoxide and carbon dioxide.

Fire-Fighting Instructions: Isolate hazard and deny entry. If feasible and without undue risk, move containers from fire hazard area. Otherwise, cool fire-exposed containers with water spray until well after fire is extinguished. Do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode and full protective clothing.



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel of large spills, remove heat and ignition sources, and provide adequate ventilation. Cleanup personnel should protect against dust inhalation and skin or eye contact. Clean up spills promptly.

See DOT ERG

Small Spills: Carefully scoop up spilled material and place into appropriate containers for disposal. For liquid spills, take up with a noncombustible, inert absorbent and place into appropriate containers for disposal.

Large Spills: For large spills, dike far ahead of liquid spill or contain dry spill for later disposal. Do not release into sewers or waterways. *Do not* dry sweep! Use a vacuum with a HEPA filter or a wet method to reduce dust. After cleanup is complete, thoroughly decontaminate all surfaces. *Do not* reuse contaminated cleaning materials.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Handle with extreme caution and take all necessary measures to avoid exposure to benzo(a)pyrene because it is a carcinogen and mutagen. Follow good personal hygiene procedures and thoroughly wash hands with soap and water after handling. Use safety pipettes for all pipetting.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed and properly labeled containers in a cool, well-ventilated area.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use a Class I, Type B, biological safety hood when working with benzo(a)pyrene in a laboratory. Decrease the rate of air extraction, so that benzo(a)pyrene can be handled without powder being blown around the hood. Keep glove boxes under negative pressure. Use vertical laminar-flow, 100% exhaust, biological safety cabinets for containment of in vitro procedures. The exhaust air flow should be sufficient to provide an inward air flow at the face opening of the cabinet. Ensure contaminated air sheaths that are under positive pressure are leak-tight. Never use horizontal laminar-flow hoods or safety cabinets where filtered air is blown across the working area towards the operator. Test cabinets before work begins to ensure they are functioning properly. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Consider preplacement and periodic medical examinations with emphasis on the oral cavity, bladder, kidneys, skin, and respiratory tract. Conduct urinalysis including specific gravity, albumin, glucose, and microscopic examination of centrifuged sediment for red blood cells. Also, include 14" x 17" chest roentgenogram, FVC + FEV1, and CBC to detect any leukemia or aplastic anemia. It is recommended that this exam be repeated on an annual basis and semiannual basis for employees 45 yr of age or older or with 10 or more years of exposure to coal tar pitch volatiles. Train workers about the hazards of benzo(a)pyrene and the necessary protective measures to prevent exposure. Periodically inspect lab atmospheres, surfaces such as walls, floors, and benches, and interior of fume hoods and air ducts for contamination. Post appropriate signs and labels on doors leading into areas where benzo(a)pyrene is used.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. In animal laboratories, wear protective suits (disposable, one-piece and close-fitting at ankles and wrists), gloves, hair covering, and overshoes. In chemical laboratories, wear gloves and gowns. Wear protective eyeglasses or chemical safety, gas-proof goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Because contact lens use in industry is controversial, establish your own policy.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. The following respirator recommendations are for coal tar pitch volatiles. For any unknown concentration, wear any SCBA with a full facepiece and operated in a pressure- demand or other positive pressure mode, or any supplied-air respirator with a full facepiece and operated in a pressure-demand or other positive pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive pressure mode. For escape, wear any air-purifying full facepiece respirator (gas mask) with a chin-style or front- or back-mounted organic vapor canister having a high-efficiency particulate filter, or any appropriate escape-type SCBA. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Shower and change clothes after exposure or at the end of the workshift. Separate contaminated work clothes from street clothes. Launder before reuse. Remove benzo(a)pyrene from your shoes and clean personal protective equipment. Use procedures to ensure laundry personnel are not exposed. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Pale yellow monoclinic needles with a faint, aromatic odor.
Physical State: Solid
Vapor Pressure (kPa): >1 mm Hg at 68 °F (20 °C)
Formula Weight: 252.30
Specific Gravity (H_2O=1, at 4 °C): 1.351
Boiling Point: >680 °F (>360 °C); 590 °F (310 °C) at 10 mm Hg
Freezing/Melting Point: 354 °F (179 °C)
Water Solubility: Insoluble; 0.0038 mg (+/- 0.00031 mg) in 1 L at 77 °F (25 °C)
Other Solubilities: Ether, benzene, toluene, xylene, concentrated hydrosulfuric acid; sparingly soluble in alcohol, methanol.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Benzo(a)pyrene is stable at room temperature in closed containers under normal storage and handling conditions. It undergoes photo-oxidation when exposed to sunlight or light in organic solvents and is also oxidized by chromic acid and ozone. Hazardous polymerization cannot occur. Avoid heat and ignition sources and incompatibles.
Storage Incompatibilities: Strong oxidizers (chlorine, bromine, fluorine) and oxidizing chemicals (chlorates, perchlorates, permanganates, and nitrates).
Hazardous Decomposition Products: Thermal oxidative decomposition of benzo(a)pyrene can produce carbon monoxide and carbon dioxide.

Section 11 - Toxicological Information

Acute Oral Effects:
Rat, oral: 15 mg/kg produced gastrointestinal and musculoskeletal tumors.
Irritation Effects:
Mouse: 14 µg caused mild irritation.
Other Effects:
Rat, oral: 40 mg/kg on the 14th day of pregnancy caused changes in the extra embryonic structures.
Rat, oral: 2 g/kg administered 28 days prior to mating and 1-22 days of pregnancy produced a stillbirth.
Tumorgenicity, mouse, oral: 75 mg/kg administered to the female during the 12- 14 day of pregnancy produced biochemical and metabolic effects on the newborn.
Mouse, inhalation: 200 ng/m^3/6 hr administered intermittently over 13 weeks produced tumors of the lungs.
Human, HeLa cell: 1500 nmol/L caused DNA inhibition.
Human, lung cell: 1 µmol/L caused DNA damage.
Human, liver cell: 100 nmol/L caused DNA damage.
Rabbit, skin: 17 mg/kg administered intermittently over 57 weeks produced tumors of the skin and appendages.

See *RTECS* DJ3675000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to water, benzo(a)pyrene adsorbs very strongly to particulate matter and sediments, bioconcentrates in aquatic organisms which cannot metabolize it, but does not hydrolyze. Direct photolysis at the water surface, evaporation, or biodegradation may be important, but adsorption may significantly retard these processes. Adsorption to particulates may also retard direct photolysis when benzo(a)pyrene is released to air. Benzo(a)pyrene may be removed from air by reaction with nitrogen dioxide (half-life, 7 days) or ozone (half-life, 37 min), or photochemically produced hydroxyl radicals (estimated half-life, 21.49 hr). It will adsorb very strongly to the soil. Although it is not expected to appreciably leach to the groundwater, groundwater samples indicate that it can be transported there. It is not expected to significantly evaporate or hydrolyze from soils and surfaces. However, it may be subject to appreciable biodegradation in soils. It will adsorb very strongly to the soil. Although it is not expected to appreciably leach to the groundwater, groundwater samples indicate that it can be transported there. It is not expected to significantly evaporate or hydrolyze from soils and surfaces. However, it may be subject to appreciable biodegradation in soils.
Ecotoxicity: Oysters, BCF (bioconcentration factor): 3000; rainbow trout, BCF: 920; *Daphnia pulex*, BCF: 13,000.
BCF: Some marine organisms such as phytoplankton, certain zooplankton, scallops (*Placopecten sp*), snails (*Litternia littorea*), and mussels (*Mytilus edulis*) lack a metabolic detoxification enzyme system to metabolize benzo(a)pyrene and therefore, tend to accumulate benzo(a)pyrene. Humic acid in solution may decrease bioconcentration.
Octanol/Water Partition Coefficient: log K_{ow} = 6.04

Section 13 - Disposal Considerations

Disposal: Small quantities: 10 mL of a solution containing 0.3 mol/L of potassium permanganate and 3 mol/L of sulfuric acid will degrade 5 mg of benzo(a)pyrene. Also, can treat with sodium dichromate in strong sulfuric acid (1-2 days). Benzo(a)pyrene is also a good candidate for fluidized bed incineration at a temperature range of 842 to 1796 °F (450 to 980 °C) or rotary kiln incineration at 820 to 1600°C. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Environmentally hazardous substances, solid, n.o.s.
ID: UN3077
Hazard Class: 9 - Miscellaneous hazardous material
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 9 - Class 9
Special Provisions: 8, 146, B54, IB8, N20
Packaging: **Exceptions:** 155 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** No limit **Cargo aircraft only:** No limit
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U022 Toxic Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001, per CWA Section 307(a) 1 lb (0.454 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Benzo[%i/**i%]fluoranthene** **CAS Number:** 205-99-2
Chemical Formula: $C_{20}H_{12}$
EINECS Number: 205-911-9
ACX Number: X1004486-7
Synonyms: B B F; B E F; B (B) F; B(B)F; B(E)F; BBF; BEF; 3,4-BENZ(E)ACEPHENANTHRYLENE; BENZ(E)ACEPHENANTHRYLENE; 2,3-BENZFLUORANTHENE; 3,4-BENZFLUORANTHENE; BENZO(B) FLUORANTHENE; BENZO[%I/**I%]FLUORANTHENE; 2,3-BENZOFLUORANTHENE; 3,4-BENZOFLUORANTHENE; BENZO(B)FLUORANTHENE; BENZO(E)FLUORANTHENE; BENZO[B]FLUORANTHENE; 2,3-BENZOFLUORANTHRENE**
Derivation: No manufacturing information available; found in coal tar, coke oven emissions, cigarette smoke and automobile exhaust. There is no commercial production of this compound in the U.S.
General Use: Used as a research chemical.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Benzo[%i/**i%]fluoranthene	**205-99-2**	**ca 100% wt**

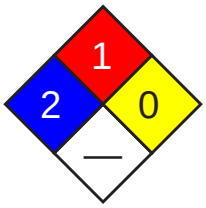
(Note that, except when in the form of a laboratory research chemical, benzo[%i/i%]fluoranthene is typically found in mixtures with other PAHs (polycyclic aromatic hydrocarbons), such as coal tar pitch).

OSHA PEL

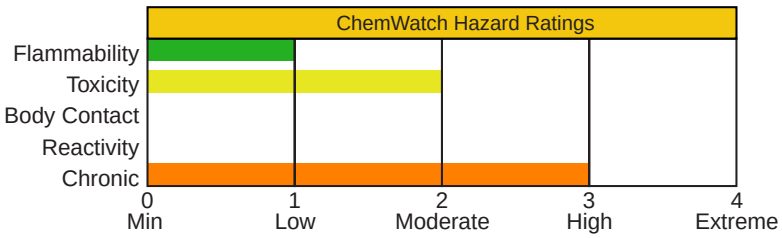
NIOSH REL

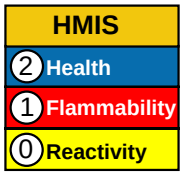
ACGIH TLV
Exposure by all routes should be carefully controlled to levels as low as possible.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless needles. May be irritating to eyes/skin/respiratory tract. Possible human carcinogen and mutagen.

Potential Health Effects

Target Organs: Eyes, skin, respiratory system, gastrointestinal (GI) system, blood, liver, kidneys
Primary Entry Routes: Inhalation, ingestion, skin and/or eye contact/absorption
Acute Effects
Inhalation: Irritation may result from inhalation of benzo[%i/**i%]fluoranthene dust or fumes.**
Eye: Contact may result in irritation.
Skin: Contact may cause irritation.
Ingestion: None reported.

Carcinogenicity: NTP - Class 2B, Reasonably anticipated to be a carcinogen, sufficient evidence of carcinogenicity from studies in experimental animals; IARC - Group 2B, Possibly carcinogenic to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Class A2, Suspected human carcinogen; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Class A2, Unmistakably carcinogenic in animal experimentation only.

Medical Conditions Aggravated by Long-Term Exposure: None reported.

Chronic Effects: Although there is no direct epidemiological evidence linking benzo[%i/**i%]fluoranthene with cancer, it is frequently a component of mixtures associated with human cancer. Epidemiological studies demonstrate increased incidence of cancer (skin, lung, urinary tract, GI system) with exposure to mixed PAHs and substances that contain them. Coal tar pitch volatiles are reported to cause an excess of bronchitis. In animal studies, benzo[%i/i%]fluoranthene has been found to be tumorigenic and mutagenic.**

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 minutes. Consult a physician or ophthalmologist if pain and/or irritation develop.

See DOT ERG

Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water, then induce vomiting.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Treat overexposure symptomatically and supportively. Medical surveillance may be necessary for high exposures (skin, mouth, GI, respiratory system). Animal testing suggests a synergism (combined effect greater than sum of parts) of mutagenicity between benzo[%i/**i%]fluoranthene and other PAHs.**

Section 5 - Fire-Fighting Measures

Flash Point: Probable combustible solid

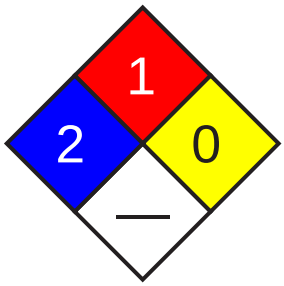
Autoignition Temperature: None reported.

LEL: None reported.

UEL: None reported.

Flammability Classification: Probable combustible solid

See DOT ERG



Fire Diamond

Extinguishing Media: Use water spray; carbon dioxide, dry chemical powder or appropriate foam.

General Fire Hazards/Hazardous Combustion Products: Heating benzo[%i/**i%]fluoranthene to decomposition can produce carbon monoxide (CO) and carbon dioxide (CO_2).**

Fire-Fighting Instructions: *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, isolate area and deny entry. Remove sources of ignition, and provide maximum ventilation.

See DOT ERG

Small Spills: Vacuum or carefully scoop up material and deposit in sealed containers. Absorb liquid containing benzo[%i/**i%]fluoranthene with vermiculite, earth, sand or similar material.**

Large Spills: Dike far ahead of liquid spill for later disposal. *Do not* release into sewers or waterways. Stay upwind and have cleanup personnel protect against inhalation and contact.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid dust inhalation, and skin and eye contact. Avoid sunlight exposure of contaminated skin. Use only with ventilation sufficient to reduce airborne concentrations as low as possible. Wear protective gloves, goggles, and clothing (see Sec. 8). Keep away from heat and ignition sources.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed container in cool, well-ventilated area, away from heat, ignition sources and incompatibles (see Sec. 10). Periodically inspect stored materials.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Work with benzo[%i/**i%]fluoranthene only under an exhaust hood. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.**

Administrative Controls: Have employees with potential for exposure submit to preplacement and periodic medical examinations with emphasis on oral cavity (including sputum cytology), respiratory tract, skin (chronic disorders, lesions), blood (complete count), bladder and kidneys (urinalysis: specific gravity, albumin, glucose, microscopic examination of sediment; urinary cytology). Repeat medical exam on an annual basis, or on a semi-annual basis for employees 45 years or older or with 10 or more years of exposure to pitch volatiles. Periodically inspect lab atmospheres, and surfaces such as walls, floors, and benches and interior of fume hoods and air ducts for contamination. Post appropriate signs and labels on doors leading to areas where benzo[%i/**i%]fluoranthene is used.**

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent skin contact. Wear splash-proof chemical safety goggles, and face shield (8-inch minimum), per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For any detectable concentration (of coal tar pitch volatiles) use SCBA with full facepiece operated in pressure-demand or other positive pressure mode, or supplied-air respirator with full facepiece operated in pressure-demand or other positive pressure mode in combination with auxiliary SCBA operated in pressure-demand or other positive pressure mode; escape, air purifying full face respirator (gas mask) with a chin-style or a front- or back-mounted organic vapor canister and with a full facepiece and a fume or high-efficiency filter, or escape-type SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless needles
Physical State: Solid
Vapor Pressure (kPa): 5 x10^{-7} mm Hg at 68 °F (20 °C)
Formula Weight: 252.32
Freezing/Melting Point: 334.4 °F (168 °C)
Water Solubility: 0.0012 mg/L

Other Solubilities: 95% ethanol: <1 mg/mL at 66 °F (19 °C); acetone: 10-50 mg/mL at 66 °F (19 °C); benzene: slightly soluble; DMSO: 10-50 mg/mL at 66 °F (19 °C).

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Benzo[%i/**i%]fluoranthene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Heat, sunlight.**

Storage Incompatibilities: Include strong oxidizing agents.

Hazardous Decomposition Products: Thermal oxidative decomposition of benzo[%i/**i%]fluoranthene will produce carbon monoxide (CO) and carbon dioxide (CO_2).**

Section 11 - Toxicological Information

Other Effects:

Tumorgenicity, mouse, skin: 88 ng/kg/120 weeks intermittently produced toxic effects: tumorigenic - carcinogenic by RTECS criteria; skin and appendages - tumors; tumorigenic - tumors at site of application.

Hamster, lung cells: 100 µg/L produced morphological transformation.

Mouse, skin: 4037 µg/kg/20 days intermittently produced toxic effects: tumorigenic - equivocal tumorigenic agent by RTECS criteria; skin and appendages - tumors.

Rat, intraperitoneal: 100 mg/kg resulted in DNA adducts.

Mouse, skin: 72 mg/kg/60 weeks intermittently produced toxic effects: tumorigenic - equivocal tumorigenic agent by RTECS criteria; skin and appendages - tumors; tumorigenic - tumors at site of application.

Rat, intraperitoneal: 100 mg/kg induced sister chromatid exchange.

Rat, implant: 5 mg/kg produced toxic effects: tumorigenic - equivocal tumorigenic agent by RTECS criteria; lungs, thorax, or respiration - tumors; tumorigenic - tumors at site of application.

Human, lymphocyte cells: 55 µg/L produced mutation.

See *RTECS* CU1400000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Benzo[%i/**i%]fluoranthene has a low vapor pressure and Henry's Law Constant, and will not readily evaporate from water or soil. In surface water, it will partition from the water column to suspended sediments. Limited bioconcentration in aquatic organisms may occur (polychaete worms, BCF = 9.1); however, fish have an enzyme (microsomal oxidase) capable of rapidly metabolizing PAHs. Photolysis, photo-oxidation, and volatilization of dissolved benzo[%i/i%]fluoranthene may occur, but adsorption to suspended sediments is expected to inhibit these processes. Release to the soil may result in some biodegradation. Photolysis is not expected to be significant after release to soil. In the atmosphere it is likely to be adsorbed to particulate matter, and will be subject to wet and dry deposition. In the atmosphere, benzo[%i/i%]fluoranthene will rapidly degrade by reaction with photochemically produced hydroxyl radicals (half life 1.00 day). A high K_{oc} indicates significant sorption and low mobility in the soil column.**

Ecotoxicity: Evidence suggests that PAHs in lake bottom sediments may cause tumors in fish.

Henry's Law Constant: 1.38 x10^{-4} atm-m^3/mole, estimated

Octanol/Water Partition Coefficient: log K_{ow} = 6.124

Soil Sorption Partition Coefficient: K_{OC} = 5.88, estimated

Section 13 - Disposal Considerations

Disposal: Benzo[%i/**i%]fluoranthene is a good candidate for rotary kiln incineration. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.**

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Environmentally hazardous substances, solid, n.o.s.
ID: UN3077
Hazard Class: 9 - Miscellaneous hazardous material
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 9 - Class 9
Special Provisions: 8, 146, B54, IB8, N20
Packaging: **Exceptions:** 155 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** No limit **Cargo aircraft only:** No limit
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed
CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 1 lb (0.454 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Not listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Benzo(g,h,i)perylene
BEN5400

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Benzo(g,h,i)perylene **CAS Number:** 191-24-2
Chemical Formula: $C_{22}H_{12}$
EINECS Number: 205-883-8
ACX Number: X1007822-5
Synonyms: BENZO (G,H,I) PERYLENE; BENZO(GHI)PERYLENE; BENZO[GHI]PERYLENE; 1,12-BENZOPERYLENE; BENZO(G,H,I)PERYLENE; 1,12-BENZPERYLENE
Derivation: Combustion product of wood, coal, oil, propane, and diesel fuels.
General Use: Used for scientific research. There is no commercial production of this compound.

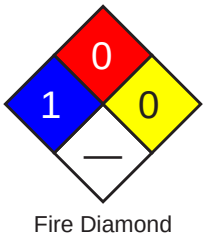
Section 2 - Composition / Information on Ingredients

Name	CAS	%
Benzo(g,h,i)perylene	191-24-2	

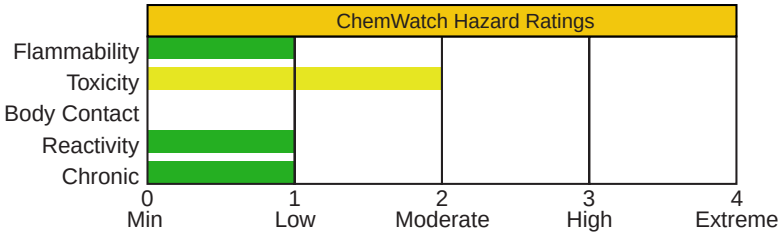
OSHA PEL **NIOSH REL**

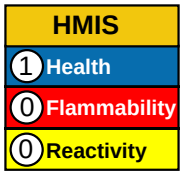
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Yellowish-green leaflets or plates. Acute toxicity is probably low in humans but it may produce chronic effects. Questionable carcinogen. Mutation data reported.

Potential Health Effects

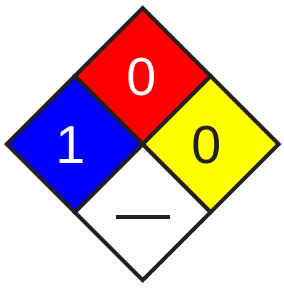
Target Organs: Skin, eyes
Primary Entry Routes: Inhalation, skin/eye contact, skin absorption, ingestion
Acute Effects
Inhalation: The toxicological properties of benzo(g,h,i)perylene have not been thoroughly investigated. In general, polynuclear aromatic hydrocarbons (PAHs) have a low order of acute toxicity in humans, but can produce a variety of non-cancer effects with chronic exposure.
Eye: Effects unknown.
Skin: May be absorbed through skin.
Ingestion: Effects unknown.
Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: None reported.
Chronic Effects: Polynuclear aromatic hydrocarbons (PAH's) may produce chronic effects such as eye photosensitivity and irritation; respiratory irritation with cough and bronchitis; leukoplakia; skin irritation, "coal tar warts" (precancerous lesions enhanced by UV light exposure), redness, dermal burns, photosensitivity, and acneiform lesions; mild kidney and liver toxicity (animals). Some, but not all, PAHs are carcinogens.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.
Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 minutes. Consult a physician or ophthalmologist if pain or irritation persist.
Skin Contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water. *Do not* induce vomiting.
After first aid, get appropriate in-plant, paramedic, or community medical support.

Section 5 - Fire-Fighting Measures

Flash Point: Data not found.
Autoignition Temperature: Data not found.
Extinguishing Media: Extinguish with water spray, carbon dioxide, dry chemical powder or appropriate foam.
General Fire Hazards/Hazardous Combustion Products: Toxic fumes of carbon monoxide and carbon dioxide.
Fire-Fighting Instructions: *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, evacuate all unnecessary personnel, remove heat and ignition sources. Isolate and ventilate area, deny entry, stay upwind. Cleanup personnel should protect against exposure (Sec. 8).
Small Spills: If in solid form, *do not* sweep! Carefully scoop up or vacuum (with a HEPA filter). Avoid raising dust. Absorb liquid spill with an inert, noncombustible absorbent such as sand or vermiculite.
Large Spills: For large spills, dike far ahead of liquid spill for later disposal. *Do not* release into sewers or waterways.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Wear personal protective clothing and equipment to prevent dust inhalation and contact with skin or eyes (Sec. 8).
Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.
Recommended Storage Methods: Store in tightly closed containers in a cool, well-ventilated area away from heat, light, ignition sources, and incompatibles.
Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose operations to avoid dust dispersion into the work area. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.
Administrative Controls: Educate workers about the health and safety hazards associated with this material. Train in work practices which minimize exposure. Consider preplacement and periodic medical exams with emphasis on liver and kidney functions, complete blood count, chest X-ray, pulmonary function tests, and skin and oral cavity examinations.
Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not protective eye devices. Appropriate eye protection must be worn instead of, or in conjunction with, contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, cartridge change schedules, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Yellowish-green; fluorescent
Physical State: Solid; leaflets or plates
Vapor Pressure (kPa): 1 x 10^{-10} mm Hg at 77 °F (25 °C)
Formula Weight: 276.34
Boiling Point: 1022 °F (550 °C)
Freezing/Melting Point: 530.6 °F (277 °C)
Ionization Potential (eV): 7.15 eV

Water Solubility: Insoluble; 2.5 - 2.7 x 10^{-4} mg/L at 77 °F (25 °C)
Other Solubilities: Soluble in 1,4-dioxane, dichloromethane, benzene, and acetone

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Benzo(g,h,i)perylene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Avoid contact with chemical incompatibles, heat, and sources of ignition.
Storage Incompatibilities: Include strong oxidizing agents. Reacts with NO and NO_2 to form nitro derivatives.
Hazardous Decomposition Products: Thermal oxidative decomposition of benzo(g,h,i)perylene can produce toxic fumes of carbon dioxide and carbon monoxide.

Section 11 - Toxicological Information

Other Effects:
Genetic Effects: *S Typhimurium*, 2 µg/plate/48 hours (-S9) induced mutation.
Mouse, skin, 40 µmol/kg induced DNA damage.
Human, lymphocyte cell, 80 µg/L induced mutations in mammalian somatic cells.

See *RTECS* DI6200500, for additional data.

Section 12 - Ecological Information

Environmental Fate: Benzo(g,h,i)perylene biodegrades slowly in the environment, with a half-life range in aerobic soil from 600 to 650 days. It is not expected to hydrolyze. In aquatic systems it partitions from the water column to organic matter contained in sediments and suspended solids. It also has the potential to bioconcentrate in aquatic systems. Volatilization from shallow, fast-moving waters may be important. In the atmosphere, the vapor phase reaction with photochemically-produced hydroxyl radicals with a half-life of 2 hours may be an important fate process. However, benzo(g,h,i)perylene is expected to exist almost entirely in the particulate phase in ambient air, though it may undergo direct photolysis in the atmosphere. Benzo(g,h,i)perylene is expected to be highly immobile in soil. Log K_{ow}: 6.58 - 6.63
Ecotoxicity: Data not found.
Henry's Law Constant: 2.66 x 10^{-7} atm-m^3/mol
BCF: 64,000, estimated
Soil Sorption Partition Coefficient: K_{OC} = > 1 x 10^6

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable federal, state, and local regulations. Handle empty containers carefully as hazardous residues may still remain. Triple rinse containers and dispose of wash wastewater appropriately.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Not specifically listed.

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 5000 lb (2268 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Not listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Benzo[k]fluoranthene **CAS Number:** 207-08-9
Chemical Formula: $C_{20}H_{12}$
EINECS Number: 205-916-6
ACX Number: X1004488-1
Synonyms: B; B (K) F; B K F; 8,9-BENZFLUORANTHENE; BENZO(K) FLUORANTHENE; 11,12-BENZO(K)FLUORANTHENE; 11,12-BENZOFLUORANTHENE; 8,9-BENZOFLUORANTHENE; BENZO(K)FLUORANTHENE; BENZO[K]FLUORANTHENE; 11,12-BENZOFLURANTHENE; 2,3,1',8'-BINAPHTHYLENE; 2,3,1',8'-BINAPTHYLENE; BKF; DIBENZO(B,JK)FLUORENE
General Use: there is no commerical use of this compound

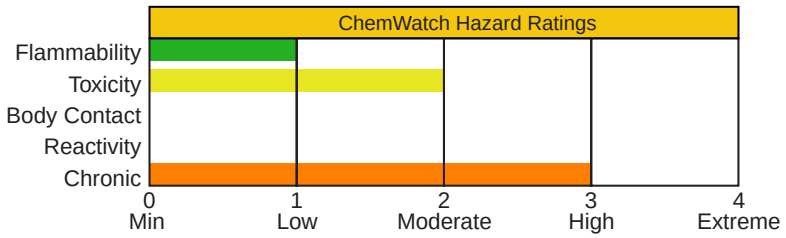
Section 2 - Composition / Information on Ingredients

Name	CAS	%
benzo[k]fluoranthene	207-08-9	>98

OSHA PEL **NIOSH REL**

ACGIH TLV

Section 3 - Hazards Identification



ANSI Signal Word

Warning!

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Pale yellow needles. Irritating to eyes/skin/respiratory tract. Toxic. Probable human carcinogen. Will burn.

Potential Health Effects

Target Organs: eyes, skin, respiratory system
Primary Entry Routes: skin contact/absorption, inhalation of generated dust
Acute Effects

Inhalation: The dust may be discomforting to the upper respiratory tract. Persons with impaired respiratory function, airway diseases, or conditions such as emphysema or chronic bronchitis may incur further disability if excessive concentrations of particulate are inhaled.

Eye: The material is moderately discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/ or other transient eye damage/ ulceration.

Skin: The material may be mildly discomforting to the skin. Open cuts and abraded or irritated skin should not be exposed to this material. The material may accentuate any pre-existing skin condition.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments. The material is moderately discomforting and harmful if swallowed in large quantity.

Carcinogenicity: NTP - Listed; IARC - Group 2B, Possibly carcinogenic to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Not listed.

Chronic Effects: When injected into pulmonary tissue of female rats benzo[k]fluoranthene induced squamous cell carcinomas. Topical administration initiated skin tumors in female mice whilst subcutaneous injection induced local sarcomas in mice of both sexes. Although there is no adequate data available to evaluate carcinogenicity of PAHs in

humans, there are a number of epidemiologic and mortality studies to show increased incidences of cancer in humans exposed to mixtures of PAHs. Lung and genitourinary cancer mortality amongst coke oven workers and skin tumors in workers exposed to creosote are examples.

Section 4 - First Aid Measures

Inhalation: • If dust is inhaled, remove to fresh air.
• Encourage patient to blow nose to ensure clear breathing passages.
• Rinse mouth with water. Consider drinking water to remove dust from throat.
• Seek medical attention if irritation or discomfort persist.
Eye Contact: • Immediately hold the eyes open and flush with fresh running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Seek medical attention if pain persists or recurs.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact: • Immediately remove all contaminated clothing, including footwear (after rinsing with water).
• Wash affected areas thoroughly with water (and soap if available).
• Seek medical attention in event of irritation.
Ingestion: Contact a Poison Control Center. If more than 15 minutes from a hospital:
• INDUCE vomiting with IPECAC SYRUP, or fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. NOTE: Wear a protective glove when inducing vomiting by mechanical means.
• SEEK MEDICAL ATTENTION WITHOUT DELAY.
• In the meantime, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
• If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided.
• If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians: Treat symptomatically.

Section 5 - Fire-Fighting Measures

Flash Point: Not available; probably combustible
Extinguishing Media: Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide. Water spray or fog - Large fires only.
General Fire Hazards/Hazardous Combustion Products: • Solid which exhibits difficult combustion or is difficult to ignite.
• Avoid generating dust, particularly clouds of dust in a confined or unventilated space, as dust may form an explosive mixture with air and any source of ignition, e.g., flame or spark, will cause fire or explosion.
• Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
• Build-up of electrostatic charge may be prevented by bonding and grounding.
• Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting. Combustion products include carbon dioxide (CO_2).
Fire Incompatibility: Avoid contamination with strong oxidizing agents as ignition may result.
Fire-Fighting Instructions: • Use water delivered as a fine spray to control fire and cool adjacent area.
• Do not approach containers suspected to be hot.
• Cool fire-exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.
• Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

Small Spills: • Clean up all spills immediately.
• Avoid contact with skin and eyes.
• Wear impervious gloves and safety glasses.
• Use dry clean up procedures and avoid generating dust.
• Vacuum up or sweep up.
• Place spilled material in clean, dry, sealable, labeled container.
Large Spills: • Clear area of personnel and move upwind.
• Contact fire department and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or waterways.

- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labeled containers for recycling.
- Neutralize/decontaminate residue.
- Collect solid residues and seal in labeled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.
- If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: • Avoid all personal contact, including inhalation.
• Wear protective clothing when risk of exposure occurs.
• Use in a well-ventilated area.
• Prevent concentration in hollows and sumps.
• DO NOT enter confined spaces until atmosphere has been checked.
• Avoid smoking, bare lights or ignition sources.
• Avoid contact with incompatible materials.
• When handling, DO NOT eat, drink or smoke.
• Keep containers securely sealed when not in use.
• Avoid physical damage to containers.
• Always wash hands with soap and water after handling.
• Work clothes should be laundered separately.
• Follow good occupational work practices.
• Observe manufacturer's storage and handling recommendations.
• Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

Recommended Storage Methods: Metal can. Metal drum. Check that all containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear NIOSH-approved respirator. Provide adequate ventilation in warehouse or closed storage areas.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses, safety glasses with side shields, or chemical goggles. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear general protective gloves, e.g. light weight rubber gloves.

Other: Overalls; impervious protective clothing. Eyewash unit.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Yellow powder.
Physical State: pale yellow needles
Vapor Pressure (kPa): 0.0000000000959 mm Hg at 25 °C
Vapor Density (Air=1): > 1
Formula Weight: 252.32
Boiling Point: 480 °C (896 °F) at 760 mm Hg
Freezing/Melting Point: 217 °C (422.6 °F)
Water Solubility: Insoluble in Water

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid storage with oxidizers.

Section 11 - Toxicological Information

Tumors at site of application.
NOTE: Substance has been shown to be mutagenic in various assays, or belongs to a family of chemicals producing damage or change to cellular DNA.

See *RTECS* DF6350000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Its presence in distant places indicates that it is reasonably stable in the atmosphere and capable of long distant transport. Atmospheric losses are caused by gravitational settling and rainout. On land it is strongly adsorbed to soil and remains in the upper soil layers and should not leach into groundwater. Biodegradation may occur but will be very slow (half-life ca 2 years with acclimated microorganisms). It will get into surface water from dust and precipitation in addition to runoff and effluents. In the water it will sorb to sediment and particulate matter in the water column. It would be expected to bioconcentrate in fish and seafood.
Ecotoxicity: No data found.
Henry's Law Constant: estimated at 4.2×10^{8}
BCF: fish 4.97
Octanol/Water Partition Coefficient: log K_{ow} = 6.84
Soil Sorption Partition Coefficient: K_{oc} = nearly 1×10^{6}

Section 13 - Disposal Considerations

Disposal: • Consult manufacturer for recycling options and recycle where possible.
• Follow applicable local, state, and federal regulations.
• Incinerate residue at an approved site.
• Recycle containers if possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: I - Great Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB7
Packaging: **Exceptions:** None **Non-bulk:** 211 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 kg **Cargo aircraft only:** 50 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: II - Medium Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP2, IP4
Packaging: **Exceptions:** None **Non-bulk:** 212 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 25 kg **Cargo aircraft only:** 100 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP3
Packaging: **Exceptions:** 153 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** 100 kg **Cargo aircraft only:** 200 kg
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Listed

CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 5000 lb (2268 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Not listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111
Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Chrysene **CAS Number:** 218-01-9
Chemical Formula: $C_{18}H_{12}$
EINECS Number: 205-923-4
ACX Number: X1001743-5
Synonyms: BENZO (A) PHENANTHRENE; BENZO[A|PHENANTHRENE; 1,2-BENZOPHENANTHRENE; BENZO(A)PHENANTHRENE; 1,2-BENZPHENANTHRENE; BENZ(A)PHENANTHRENE; CHRYSENE; COAL TAR PITCH VOLATILES: CHRYSENE; 1,2,5,6-DIBENZONAPHTHALENE
Derivation: Distilled from coal tar, coal tar pitch. A small amount is produced from the distillation or pyrolysis of many fats and oils. By heating hydrogen and acetylene. Chrysene is not produced commercially in the U.S. (except as a laboratory research chemical).
General Use: Used in organic synthesis; as a research chemical. Occurs in cigarette smoke.

Section 2 - Composition / Information on Ingredients

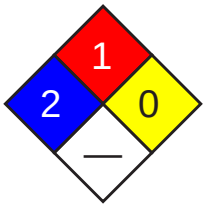
Name	CAS	%
No data found.		

OSHA PEL
TWA: 0.2 mg/m^3.

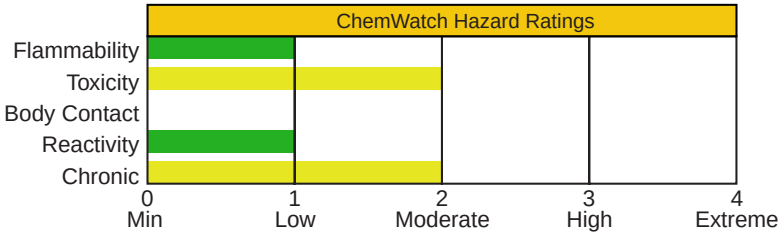
NIOSH REL

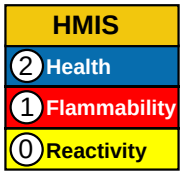
ACGIH TLV
Exposure by all routes should be carefully controlled to levels as low as possible.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless to white crystals with reddish-blue fluorescence. May be irritating to eyes/skin/respiratory tract. Also causes: may be absorbed through skin. May be cancer-causing in humans. Combustible.

Potential Health Effects

Target Organs: Eyes, skin, respiratory system
Primary Entry Routes: Skin absorption
Acute Effects *There is no human evidence available for the acute health effects of chrysene alone. There is, however, considerable data indicating that it is carcinogenic in humans. Based on the chemical properties of chrysene, as a polynuclear aromatic hydrocarbon, the following acute effects may occur.*
Inhalation: May cause irritation.
Eye: . May cause irritation.
Skin: May cause irritation or be absorbed.
Ingestion: None reported.
Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Listed as carcinogen; ACGIH - Class A3, Animal carcinogen; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Class A2, Unmistakably carcinogenic in animal experimentation only.

Medical Conditions Aggravated by Long-Term Exposure: None reported.

Chronic Effects: Animal data indicate that chronic exposure to chrysene and other coal tar pitch volatiles probably causes cancer. May also cause respiratory, skin, or eye irritation; cough, bronchitis, photosensitivity, "coal tar warts" (precancerous lesions enhanced by UV light exposure), erythema (skin inflammation), dermal burns, acneiform lesions, hematuria (blood in urine). May alter genetic material. Exposure to PAH's is believed to cause leukoplakia (precancerous patches on the tongue), lip and oral cavity cancers, and bladder cancer.

Section 4 - First Aid Measures

See DOT ERG

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 min. Consult a physician or ophthalmologist if pain, irritation, swelling, or photophobia persist.

Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water, then induce vomiting.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For high exposures, medical surveillance (skin, mouth, GI tract, respiratory system) may be necessary.

Section 5 - Fire-Fighting Measures

See DOT ERG

Flash Point: Combustible solid

Autoignition Temperature: None reported.

LEL: None reported.

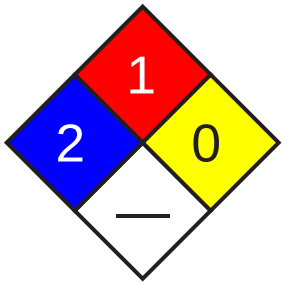
UEL: None reported.

Flammability Classification: Combustible solid

Extinguishing Media: Use water spray, carbon dioxide, dry chemical powder or appropriate foam.

General Fire Hazards/Hazardous Combustion Products: Acrid smoke and fumes, including carbon monoxide and carbon dioxide.

Fire-Fighting Instructions: *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.



Fire Diamond

Section 6 - Accidental Release Measures

See DOT ERG

Spill/Leak Procedures: Notify safety personnel, evacuate all unnecessary personnel, remove heat and ignition sources. Isolate and ventilate area, deny entry, stay upwind. Tag container as defective and return to supplier. Use spark-proof tools and explosion-proof equipment.

Small Spills: *Do not* sweep! Carefully scoop up or vacuum (with a HEPA filter). Absorb liquid spill with an inert, noncombustible absorbent such as sand or vermiculite.

Large Spills: Large spills of chrysene are unlikely. *Do not* release into sewers or waterways.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid dust inhalation and skin and eye contact. Use only with adequate ventilation to maintain concentrations at nonhazardous levels (see Sec. 2). Wear personal protective clothing and equipment to prevent contact with skin and eyes (see Sec. 8). Practice good personal hygiene procedures to prevent inadvertently ingesting this material.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed containers in a cool, well-ventilated area away from heat, ignition sources, and incompatibles.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose operations to avoid dust dispersion into the work area. Ventilate at the site of chemical release. To prevent static sparks, electrically ground and bond all containers and equipment. Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PEL (see Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Educate workers about the health and safety hazards associated with this material. Train in work practices which minimize exposure. Consider preplacement and periodic medical exams with emphasis on the skin and lungs.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Air purifying respirators may be adequate for handling small amounts of chrysene in a laboratory setting. For unlimited exposure ranges, wear a pressure-demand, full-face SCBA. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder clothing separately before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless to white rhombic plates with reddish-blue fluorescence.

Physical State: Solid

Vapor Pressure (kPa): 6.3 x10^{-7} mm Hg; 6.3 x10^{-9} mm Hg at 68 °F (20 °C)

Formula Weight: 228.28

Specific Gravity (H_2O=1, at 4 °C): 1.274 at 20 °C/4 °C

Refractive Index: 2610

Boiling Point: 838 °F (448 °C); sublimes easily in a vacuum

Freezing/Melting Point: 489 °F (254 °C) to 496 °F (258 °C)

Ionization Potential (eV): 7.59 +/- 0.2 eV

Water Solubility: Insoluble (0.0018 mg/kg)

Other Solubilities: Slightly soluble in 95% ethanol, acetone, carbon disulfide, ether, glacial acetic acid. Soluble in hot benzene, toluene.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Chrysene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Avoid contact with chemical incompatibles, heat and ignition sources.

Storage Incompatibilities: Include strong oxidizers.

Hazardous Decomposition Products: Thermal oxidative decomposition of chrysene can produce acrid smoke and fumes, including carbon monoxide and carbon dioxide.

Section 11 - Toxicological Information

Acute Skin Effects:

Mouse, skin: 192 µmol/kg produced DNA adducts.

Mouse, skin, TD_{Lo}: 3600 µg/kg.

Other Effects:

Tumorgenicity, mouse, skin: 23 mg/kg; toxic effects: tumorigenic - neoplastic by RTECS criteria; skin and appendages - tumors.

Human, lymphocyte: 6 µmol/L produced mutation.

Mouse, intraperitoneal, LD_{50}: >320 mg/kg.

Tumorigenic Effects: Mouse, skin, 3600 mg/kg for 30 weeks, intermittent; toxic effects: tumorigenic - equivocal tumorigenic agent by RTECS criteria; skin and appendages - tumors.

Hamster, intraperitoneal: 900 mg/24 hr induced sister chromatid exchange.

Bacteria, *S typhimurium*: 5 mg/plate (-S9) produced mutation.

See *RTECS* GC0700000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to water, it will adsorb very strongly to sediments and particulate matter, but will not hydrolyze or appreciably evaporate. It will bioconcentrate in species which lack microsomal oxidase. Calculated BCF: 4,230. K_{ow} indicates bioaccumulation, which could cause food-chain contamination. It will not hydrolyze or appreciably evaporate from soils or surfaces. The estimated biodegradation half-life in soil is 7 years. The estimated half-life of any gas phase in the atmosphere is 1.25 hours as a result of reaction with photochemically produced hydroxyl radicals. It will be subject to near-surface, direct photolysis with a half-life of 4.4 hours computed for exposure to sunlight at mid-day in midsummer at latitude 40°N. If released to air, it will be subject to direct photolysis, although adsorption to particulates may affect the rate of this process. If released to soil it will be expected to adsorb very strongly to the soil and will not be expected to leach appreciably to groundwater.

Ecotoxicity: *Anabaena flos-aquae* (algae), 2 weeks, EC_{35} growth: +/- 0.002 mg/L. *Daphnia magna* (crustaceans), 2 hr, LC_{50}: 1.9 mg/L. *Rana pipiens* (amphibians), 24 hr, LC_{50}: >6.7 mg/L. *Neanthes arenaceodentata* (fishes), 96 hr, LC_{50}: >1 mg/L.

Henry's Law Constant: 9.4×10^{-8}

Octanol/Water Partition Coefficient: log K_{ow} = 5.61 to 5.91

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations. One method is to dissolve or mix the material with a combustible solvent and burn in an incinerator equipped with an afterburner and scrubber. Handle empty containers carefully as hazardous residues may still remain. Triple rinse containers and dispose of wash wastewater appropriately.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Environmentally hazardous substances, solid, n.o.s.
ID: UN3077
Hazard Class: 9 - Miscellaneous hazardous material
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 9 - Class 9
Special Provisions: 8, 146, B54, IB8, N20
Packaging: **Exceptions:** 155 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** No limit **Cargo aircraft only:** No limit
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U050 Toxic Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001, per CWA Section 307(a) 100 lb (45.35 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Coal Tar Creosote
COA9000

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Coal Tar Creosote **CAS Number:** 8001-58-9
Chemical Formula: No data found.
EINECS Number: 232-287-5
ACX Number: X1002891-0
Synonyms: AWPA #1; BRICK OIL; COAL TAR CREOSOTE; COAL TAR CRESOTE; COAL TAR OIL; CREOSOTE; CREOSOTE OIL; CREOSOTE P1; CREOSOTE,FROM COAL TAR; CREOSOTUM; CRESYLIC CREOSOTE; DEAD OIL; EPA PESTICIDE CHEMICAL CODE 025004; HEAVY OIL; HODGSONS CREOSOTE; LIQUID PITCH OIL; NAPHTHALENE OIL; PRESERV-O-SOTE; SAKRESOTE 100; TAR OIL; WASH OIL
Derivation: By distillation of coal tar produced by high-temperature carbonization of bituminous coal; by mixing strained naphthalene oil, wash oil, and strained or light anthracene oil; as a by-product of conventional coal coking.
General Use: Used mainly as a wood preservative for railroad ties, poles, fence posts, marine pilings, and other lumber for outdoor use; as a water-proofing agent, fuel oil constituent, frothing agent for mineral separation, tap hole refractory cement, and lubricant for die molds. Used only in limited quantities as an animal and bird repellent, animal dip, and insecticide (ovicide).

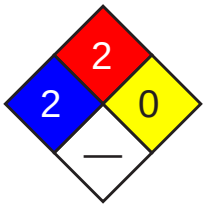
Section 2 - Composition / Information on Ingredients

Name	CAS	%
Coal tar creosote	8001-58-9	Consists of aromatic hydrocarbons, anthracene, naphthalene, and phenanthrene derivatives; some tar acids; and tar bases. Polycylic aromatic hydrocarbons make up at least 75%. * Creosote contains several carcinogenic polycyclic aromatic hydrocarbons including benz[a]anthracene, benzo[a]pyrene, and dibenz[a,h]anthracene.

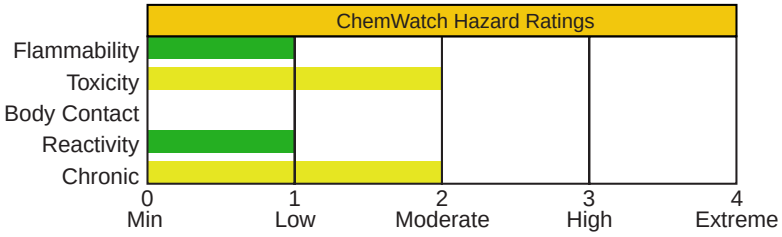
OSHA PEL **NIOSH REL**

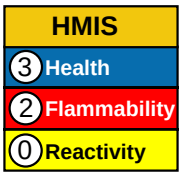
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Warning!

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless (pure) or yellow to black (industrial) liquid; aromatic smoky smell. Severely irritating to eyes/skin/respiratory tract. Probable human carcinogen. Combustible.

Potential Health Effects

Target Organs: Eyes, skin, bladder, kidneys, and respiratory system
Primary Entry Routes: Inhalation, skin absorption, and skin and/or eye contact
Acute Effects *Note! Phenol and phenolic derivatives of various aromatic hydrocarbons (tar acids), present in low concentrations, are the constituents most likely to be responsible for acute toxicity.*
Inhalation: Inhalation of vapors causes moderate irritation to the nose, throat, and upper respiratory tract.
Eye: Contact with liquid causes conjunctivitis (inflammation of the eye's lining), keratitis (corneal inflammation), or corneal burns with scarring. May cause loss of vision.

Skin: Contact causes irritation, burning, itching, redness, pigment changes, dermatitis (a rash of redness and bumps), or burns. Photosensitization (worsening of rash with exposure to sunlight) may occur.

Ingestion: Causes salivation, nausea; vomiting; gastrointestinal tract irritation or bleeding; abdominal pain; rapid, thready pulse; vertigo; headaches; loss of pupillary reflexes; hypothermia; cyanosis; respiratory distress; shock and mild convulsions. Large doses may be fatal.

Carcinogenicity: NTP - Not listed; IARC - Group 2A, Probably carcinogenic to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class B1, Probable human carcinogen based on epidemiologic studies; MAK - Not listed.

Medical Conditions Aggravated by Long-Term Exposure: Skin disorders.

Chronic Effects: Include dermatitis and, possibly, skin cancer or other forms of cancer. An increased risk of scrotal cancer for creosote-exposed brick makers was indicated in a worker mortality analysis. Epidemiological studies of coke oven workers reveal increased incidences of lung, bladder, prostate, pancreas, and intestinal cancer.

Section 4 - First Aid Measures

See DOT ERG

Inhalation: Remove exposed person to fresh air, monitor for respiratory distress, and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician or ophthalmologist immediately.

Skin Contact: *Quickly* remove contaminated clothing. Prior to washing and if readily available, use undiluted polyethylene glycol 300 to 400. Wash affected area with soap and flooding amounts of water for at least 15 min. *Do not* rub or apply pressure to the affected skin, apply any oily substance or use hot water to rinse. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Rinse the mouth several times with cold water. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water. *Do not induce vomiting!* Keep victim warm and at rest.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Creosote may be detected in urine.

Special Precautions/Procedures: An exposed person should examine their skin periodically for growths, changes in warts or moles, and sores that do not heal.

Section 5 - Fire-Fighting Measures

See DOT ERG

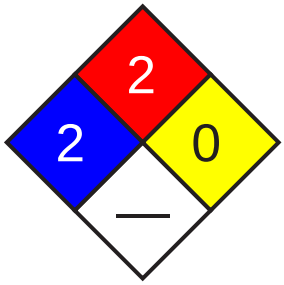
Flash Point: 165.2 °F (74 °C), Closed Cup

Autoignition Temperature: 637 °F (336 °C)

LEL: None reported.

UEL: None reported.

Flammability Classification: OSHA IIIA combustible liquid



Fire Diamond

Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or regular foam. For large fires, use water spray, fog or regular foam.

General Fire Hazards/Hazardous Combustion Products: Include carbon oxides. Coal tar creosote may present a vapor explosion hazard indoors, outdoors, and in sewers. Vapors may travel to an ignition source and flash back.

Fire-Fighting Instructions: If feasible and without undue risk, remove containers from fire hazard area. Otherwise use water spray to cool fire-exposed containers until well after they are extinguished. *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Also, wear full protective clothing. Stay away from ends of tanks. For massive fire in cargo area, use monitor nozzles or unmanned hose holders; if impossible, withdraw from area and let fire burn. Immediately leave area if you hear a rising sound from venting safety device or notice any fire-caused tank discoloration as a BLEVE (boiling liquid expanding vapor explosion) may be imminent. Isolate area for 1/2 mile in all directions if fire involves tank, rail car or tank truck. Fully decontaminate or properly dispose of personal protective clothing.

Section 6 - Accidental Release Measures

See DOT ERG

Spill/Leak Procedures: Notify safety personnel. Isolate hazard area, deny entry, and stay upwind of spills. Shut off all ignition sources. Cleanup personnel should protect against vapor inhalation and skin and eye contact.

Small Spills: Take up with earth, sand, vermiculite, or other absorbent, noncombustible material and place in suitable containers for later disposal.

Large Spills: Consider initial downwind evacuation for at least 300 meters (1000 feet). For large spills, dike far ahead of liquid spill for later disposal. Water spray may reduce vapor. *Do not* release into sewers or waterways. Use nonsparking tools during clean-up.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid vapor inhalation and skin and eye contact. Use ventilation sufficient to reduce airborne exposures to nonhazardous levels (Sec. 2). Wear protective gloves, goggles, and clothing to avoid contact. Wear respiratory protection when necessary (Sec. 8). Consult your industrial hygienist. Practice good personal hygiene procedures to avoid inadvertently ingesting this material. Keep away from ignition sources.
Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in a cool, dry, well-ventilated area away from heat and ignition sources. Store coal tar creosote as close to area of use as possible to minimize transporting distance. Avoid physical damage to containers.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Enclose all operations and/or ventilate at the site of release to avoid vapor dispersion into the work area. To prevent static sparks, electrically ground and bond all containers and equipment. Provide general or local exhaust ventilation systems equipped with high-efficiency particulate filters to maintain airborne concentrations below OSHA PEL (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Preplacement and periodic medical examinations of exposed workers emphasizing respiratory, skin, liver, and kidney disorders, including comprehensive work and medical history, physical examination, CXR, PFTs, urinalysis, LFT, and sputum cytology as the attending physician considers appropriate. Educate workers about the health and safety hazards associated with coal tar creosote.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent any skin contact. With breakthrough times of >8 hr, butyl rubber, Teflon, and Viton are recommended materials. Frequent change of protective garments is an additional protective measure. Wear protective eyeglasses or chemical safety goggles and face shield, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. (The following respirator recommendations are for coal tar pitch volatiles.) For concentrations above the NIOSH REL or at any detectable concentrations, wear a SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode; or any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive-pressure mode. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air- purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless (pure) or yellow to black (industrial); aromatic smoky smell.

Physical State: Oily liquid

Specific Gravity (H_2O=1, at 4 °C): 1.07 to 1.08 at 68 °F (20 °C)

Boiling Point: 381 to 752 °F (194 to 400 °C)

Water Solubility: Slightly soluble

Other Solubilities: Soluble in alcohol; ether; glycerin; dimethyl sulfate; fixed or volatile oils; in solution of fixed alkali hydroxides.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Coal tar creosote is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Avoid excessive heat and contact with chlorosulfonic acid.

Storage Incompatibilities: Creosote oil mixed with chlorosulfonic acid in a closed container causes an increase in temperature and pressure.

Hazardous Decomposition Products: Thermal oxidative decomposition of coal tar creosote can produce carbon oxides and thick, black, acrid smoke.

Section 11 - Toxicological Information

Acute Oral Effects:
Rat, oral, LD_{50}: 725 mg/kg.
Mouse, oral, LD_{50}: 433 mg/kg.

Other Effects:
Tumorgenicity, mouse, oral: 2 g/kg administered on gestational days 5-9 produced maternal effects and fetotoxicity.
Reproductive Effects - Hamster, ovary cell: 10 mg/L induced sister chromatid exchange.
Tumorigenicity: Mouse, skin, 99 g/kg/33 weeks administered intermittently produced tumors on skin and appendages (carcinogenic by RTECS criteria).
S. typhimurium: 20 µg/plate (-S9) produced mutations.

See *RTECS* GF8615000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.
Ecotoxicity: TL50, goldfish (*Carassius auratus*), 3.51 ppm/24 hr (60:40) mixture of creosote and coal tar; TL50, rainbow trout (*Salmo gairdneri*), 3.72 ppm/24 hr (60:40) mixture of creosote and coal tar; LD_{50}, bob white quail (*Colinus virginianus*), 1,260 ppm/8 days (60:40) mixture of creosote and coal tar.
Octanol/Water Partition Coefficient: log K_{ow} = 1.0

Section 13 - Disposal Considerations

Disposal: Coal tar creosote is a good candidate for rotary kiln and fluidized bed incineration. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations. Handle empty containers carefully as hazardous residues may still remain.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Corrosive liquids, n.o.s.
ID: UN1760
Hazard Class: 8 - Corrosive material
Packing Group: I - Great Danger
Symbols: G - Technical Name Required
Label Codes: 8 - Corrosive
Special Provisions: A7, B10, T14, TP2, TP27
Packaging: **Exceptions:** None **Non-bulk:** 201 **Bulk:** 243
Quantity Limitations: **Passenger aircraft/rail:** 0.5 L **Cargo aircraft only:** 2.5 L
Vessel Stowage: **Location:** B **Other:** 40

Shipping Name and Description: Corrosive liquids, n.o.s.
ID: UN1760
Hazard Class: 8 - Corrosive material
Packing Group: II - Medium Danger
Symbols: G - Technical Name Required
Label Codes: 8 - Corrosive
Special Provisions: B2, IB2, T11, TP2, TP27
Packaging: **Exceptions:** 154 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 1 L **Cargo aircraft only:** 30 L
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Corrosive liquids, n.o.s.
ID: UN1760
Hazard Class: 8 - Corrosive material
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 8 - Corrosive

Special Provisions: IB3, T7, TP1, TP28
Packaging: **Exceptions:** 154 **Non-bulk:** 203 **Bulk:** 241
Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Not listed
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Sodium Cyanide
SOD3100

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Sodium Cyanide **CAS Number:** 143-33-9
Chemical Formula: CNNa
Structural Chemical Formula: NaCN
EINECS Number: 205-599-4
ACX Number: X1000111-9
Synonyms: CIANURO DI SODIO; M-44 CYANIDE CAPSULES; CYANIDE OF SODIUM; CYANOBRIK; CYANOGRAN; CYANURE DE SODIUM; CYMAG; EPA PESTICIDE CHEMICAL CODE 074002; HYDROCYANIC ACID,SODIUM SALT; KYANID SODNY; SODIUM CYANIDE; SODIUM SALT OF HYDROCYANIC ACID
Derivation: By absorption of hydrogen cyanide in a solution of sodium hydroxide with subsequent vacuum evaporation; by heating sodium amide with carbon; or by melting sodium chloride and calcium cyanamide together in an electric furnace.
General Use: In the heat treatment of metals (case-hardening), the extraction of gold and silver from ores, electroplating operations (coppering, zincing), the manufacture of dyes, pigments, hydrogen cyanide, hydrocyanic acid, and mirrors; cleaning metals; insecticides; formerly for fumigation of citrus and other fruit trees, railway cars, ships, and warehouses; nylon intermediates; for ore flotation; and as a chelating compound.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Sodium Cyanide	143-33-9	95-98% wt

Mixtures of sodium cyanide with sodium chloride or carbonate for special uses are also marketed, as well as other grades, including 30% solution; 73-75%; 96-98%; reagent; technical; and granular briquettes.

OSHA PEL
TWA: 5 mg/m^3; skin, as CN.

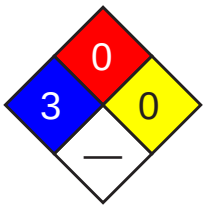
ACGIH TLV
Ceiling: 5 mg/m^3; skin.

NIOSH REL
Ceiling: 5 mg/m^3 (4.7 ppm) (10-minute).

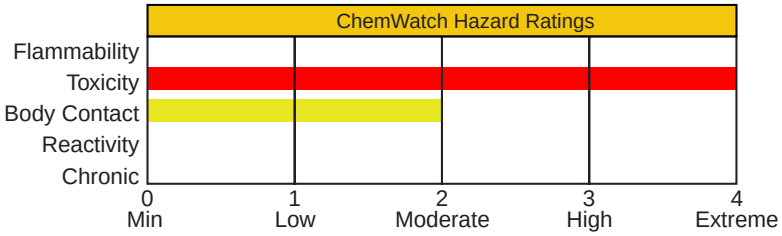
IDLH Level
25 mg/m^3 (as CN).

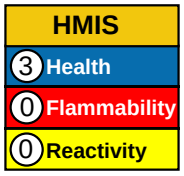
DFG (Germany) MAK
TWA: 3.8 mg/m^3; PEAK: 3.8 mg/m^3; skin; measured as inhalable fraction of the aerosol.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word
Danger!


Poison Corrosive

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

White, granular or crystalline solid; faint, almond-like odor, odorless when dry. Corrosive to eyes/skin; irritating to respiratory tract. Poison. Produces hydrogen cyanide gas upon contact with acid/water.

Potential Health Effects

Target Organs: Eyes; skin; upper respiratory, cardiovascular, and central nervous systems; thyroid; blood.
Primary Entry Routes: Inhalation; skin absorption; skin and/or eye contact; ingestion.
Acute Effects
Inhalation: Irritation of the nose and throat. Systemic symptoms like those seen via ingestion may also be caused by absorption through the mucous membranes. Nose irritation leading to obstruction, bleeding, sloughs, and in some cases septum perforation has been reported in workers in the electroplating industry.

Eye: Irritation and possible burns. Dilated pupils are common in severe poisoning. Corneal edema (swelling) may occur. Human poisoning cases due to eye exposure only have not been reported.

Skin: Itching, irritation, discoloration (bright pink color), dermatitis, rash, or corrosion (burns) may occur. Systemic symptoms like those seen via ingestion may also be caused by skin absorption. Mild systemic symptoms such as headache and dizziness have been caused by solutions as dilute as 0.5% sodium cyanide.

Ingestion: Chemical asphyxia and death may occur without warning from severe exposure. Initial symptoms of lesser exposure include burning, acrid, bitter taste upon ingestion, weakness, headache, flushing, dizziness, confusion, salivation, nausea and vomiting, hyperventilation, bradycardia (slowed heart beat), hypertension (high blood pressure), and anxiety. These may progress to increased rate and depth of respiration, slow and gasping respiration, pulmonary edema (fluid in lungs), lactic acidosis (abnormal accumulation of lactic acid in blood resulting in a metabolic derangement), stupor, seizures, coma, apnea (absence of breathing), tachycardia (rapid heart beat), hypotension (low blood pressure), and death.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Class A4, Not classifiable as a human carcinogen; EPA - Not listed; MAK - Not listed.

Medical Conditions Aggravated by Long-Term Exposure: Disorders of the skin, thyroid, and cardiovascular, upper respiratory, and central nervous systems.

Chronic Effects: Dermatitis, scarlet rash and papules, and itching have been reported in workers in the electroplating industry. Other symptoms may include headache, weakness, nausea, dizziness, loss of appetite, insomnia, memory loss, tremors, functional changes in hearing, enlarged thyroid gland, folate abnormalities, palpitations, chest discomfort, upper respiratory tract irritation, nose bleeds, and eye irritation.

Section 4 - First Aid Measures

Inhalation: *Note!* The odor of bitter almonds may be noted on the breath or vomitus. Remove exposed person to fresh air and immediately begin therapy with 100% oxygen.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 min. Consult a physician or ophthalmologist immediately if irritation or pain develop.

Skin Contact: *Quickly* remove contaminated clothing. Speed is extremely important. Rinse with flooding amounts of water for at least 15 min. Wash exposed area extremely thoroughly with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, *do not* induce vomiting.

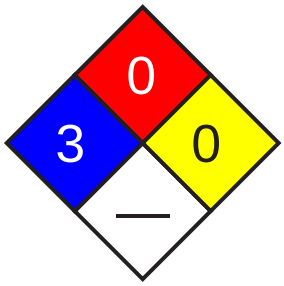
After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Determine hemoglobin, arterial blood gases, venous pO_2 or measured versus $\%O_2$ saturation, serum lactate, electrolytes, and whole blood cyanide levels. If the victim is unconscious, bradycardia and absence of cyanosis may be key diagnostic signs. For cases of ingestion, perform gastric lavage with a large bore tube after endotracheal intubation.

Special Precautions/Procedures: Note! *In all cases of exposure where absorption may occur (i.e. inhalation, skin contact, and ingestion), administer 100% oxygen immediately and obtain and prepare the cyanide antidote kit for use in symptomatic patients.*

To prevent self-poisoning, avoid mouth-to-mouth resuscitation during CPR. To avoid becoming a secondary victim, *do not* enter areas with high potent ial airborne concentrations without donning a self-contained breathing apparatus (SCBA). Give specific and detailed instructions on the use of cyanide antidote kits to all persons working with an d around sodium cyanide.

Section 5 - Fire-Fighting Measures



Fire Diamond

Flash Point: Noncombustible

Autoignition Temperature: None reported.

LEL: None reported.

UEL: None reported.

Extinguishing Media: Use extinguishing media suitable for the surrounding fire. Do not use water directly on spilled sodium cyanide. *Do not* use carbon dioxide extinguishers; this can liberate hydrogen cyanide by the action of the dissolved carbon dioxide.

General Fire Hazards/Hazardous Combustion Products: Nitrogen and sodium oxides and cyanide. Containers may explode violently in the heat of fire. Material may be transported in a molten form.

Fire-Fighting Instructions: If feasible and without undue risk, move containers from fire hazard area. *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Structural firefighters' protective clothing is *not* effective for sodium cyanide. Remove and isolate contaminated clothing at the site.

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel immediately, evacuate all unnecessary personnel, and isolate and ventilate area. Cleanup personnel should wear fully-encapsulating protective clothing to protect against inhalation and skin and eye contact.

See DOT ERG

Small Spills: Neutralize with a strong alkali solution of calcium hypochlorite. Carefully scoop up the spilled sodium cyanide and place in dry containers for disposal or reclamation. For sodium cyanide solution spills, take up with a noncombustible, absorbent material such as sand or vermiculite and place in containers for later disposal.

Large Spills: For large spills, dike far ahead of liquid spill for later disposal. *Do not* release into sewers or waterways. Prompt cleanup and removal are necessary. To avoid generating dust, *do not* sweep! Remove residue by vacuuming (with an appropriate HEPA filter) or flushing with a liberal quantity of water.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid all contact with sodium cyanide. Use only with ventilation sufficient to reduce airborne concentrations to nonhazardous levels. Wear appropriate personal protective equipment to protect against skin and eye contact. Make cyanide antidote kits readily available in all areas where sodium cyanide is used. Replace ingredients of kits every 1-2 yr to ensure freshness. Practice good personal hygiene procedures to avoid inadvertently ingesting sodium cyanide.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using sodium cyanide, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed containers in a cool, well-ventilated area away from water, acids, carbon dioxide, oxidizers, and other incompatibles (Sec. 10). Protect from physical damage. Keep containers covered or in exhausted hood when not in use.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose all operations to avoid dust dispersion into the workplace. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Consider preplacement and periodic medical exams with emphasis on the cardiovascular, upper respiratory, and nervous systems, skin, and thyroid. Maintain pertinent medical records for 5 years following the last exposure. Educate workers about the hazards of sodium cyanide and train in emergency first aid procedures for cyanide poisoning.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent skin contact. With breakthrough times of > 8 hr, natural rubber, Neoprene, nitrile rubber, and polyvinyl chloride are recommended materials for PPE for sodium cyanide (solid). Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For concentrations <= 25 mg/m^3, wear a supplied-air respirator or any SCBA with a full facepiece. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure- demand or other positive-pressure mode. If respirators are used, OSHA requires a written respiratory protection program.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove sodium cyanide from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: White, deliquescent, powder, granular, egg-shaped, or flake form. It is odorless when dry, but may have the characteristic cyanide almond odor when wet.

Physical State: Solid

Vapor Pressure (kPa): ~0 mm Hg at 68 °F (20 °C); 1 mm Hg at 1503 °F (817 °C); 0.76 mm Hg at 1472 °F (800 °C)

Formula Weight: 49.01

Specific Gravity (H_2O=1, at 4 °C): 1.60 at 77 °F (25 °C) (solid)

Refractive Index: 1.452

pH: Aqueous solutions are strongly alkaline.

Boiling Point: 2725 °F (1496 °C)

Freezing/Melting Point: 1047 °F (563 °C)

Viscosity: 26% aqueous solution: 4 cP at 86 °F (30 °C) **Other Solubilities:** Slightly soluble in alcohol.
Water Solubility: Soluble

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Sodium cyanide is stable at room temperature in closed containers under normal storage and handling conditions. A solution of sodium cyanide in water slowly decomposes to release ammonia. Hazardous polymerization cannot occur. Avoid contact with acids and acid fumes and other incompatibles.

Storage Incompatibilities: Violent reactions occur with fluorine, magnesium, nitrates, nitric acid, and nitrites. It explodes when melted with nitrite or chlorate at about 842 °F (450 °C). Sodium cyanide reacts with acids (even weak) or acid fumes to release highly toxic hydrogen cyanide gas and sodium oxide. Hydrogen cyanide gas is also released when sodium cyanide is dissolved in and reacts with water. However, unless this occurs in a closed space, the amount is too small to be hazardous. Sodium cyanide also reacts with carbon dioxide in the air to release hydrogen cyanide gas. It is corrosive to aluminum.

Hazardous Decomposition Products: Thermal oxidative decomposition of sodium cyanide can produce nitrogen and sodium oxides and cyanide.

Section 11 - Toxicological Information

Acute Oral Effects:

Rat, oral, LD_{50}: 6440 µg/kg.
Man, TD_{Lo}: 714 µg/kg caused hallucinations, distorted perceptions, and muscle weakness.
Human, LD_{Lo}: 2857 µg/kg.

Other Effects:

Hamster, implant: 5999 mg/kg administered to a female during 6-9 days of pregnancy caused fetotoxicity and specific developmental abnormalities of the musculoskeletal and cardiovascular systems.
D. melanogaster: 200 ppb inhaled caused sex chromosome loss/nondisjunction.

See *RTECS* VZ7525000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.
Ecotoxicity: Fathead minnows, TL_m, 96 hr: 0.23 ppm. Bluegill, TL_m, 96 hr: 0.15 ppm. Trout, lethal, 1 hr: 2 ppm.

Section 13 - Disposal Considerations

Disposal: Add sodium cyanide with stirring to a strong alkaline solution of calcium hypochlorite. Let stand 24 hr and route to sewage plant (only with approval from local municipality). Sodium cyanide is a poor candidate for incineration. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations. Handle empty containers carefully as hazardous residues may remain.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Sodium cyanide
ID: UN1689
Hazard Class: 6.1 - Poisonous materials
Packing Group: I - Great Danger
Symbols:
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: B69, B77, IB7, IP1, N74, N75, T14, TP2, TP13
Packaging: **Exceptions:** None **Non-bulk:** 211 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 kg **Cargo aircraft only:** 50 kg
Vessel Stowage: **Location:** B **Other:** 52

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed P106
CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4), per RCRA Section 3001 10 lb (4.535 kg)
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Listed
RQ: 10 lb
TPQ: 100 lb
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Dibenz[a,h]anthracene
DIB1550

Section 1 - Chemical Product and Company Identification 61

Material Name: Dibenz[a,h]anthracene **CAS Number:** 53-70-3
Chemical Formula: $C_{22}H_{14}$
EINECS Number: 200-181-8
ACX Number: X1002922-0
Synonyms: 1,2:5,6-BENZANTHRACENE; DB(A,H)A; 1,2,5,6-DBA; DBA; 1,2,5,6-DIBENZANTHRACEEN; 1,2,5,6-DIBENZANTHRACENE; 1,2:5,6-DIBENZ(A)ANTHRACENE; 1,2:5,6-DIBENZANTHRACENE; DIBENZ[A,H]ANTHRACENE; 1,2:5,6-DIBENZOANTHRACENE; DIBENZO(A,H)ANTHRACENE
General Use: research chemical

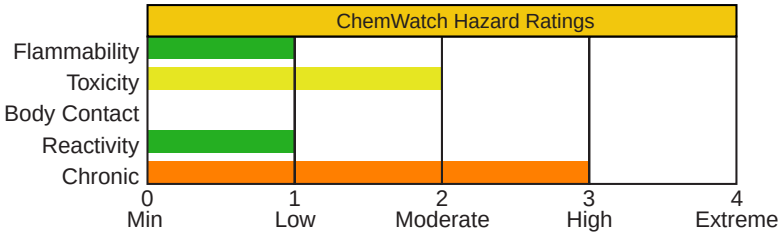
Section 2 - Composition / Information on Ingredients

Name	CAS	%
dibenz[a,h]anthracene	53-70-3	>98

OSHA PEL **NIOSH REL**

ACGIH TLV

Section 3 - Hazards Identification



ANSI Signal Word

Warning!

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless crystals, plates or leaflets. May cause irritation. Toxic. Chronic Effects: may cause heritable genetic damage; mutagen. Carcinogen. Will burn.

Potential Health Effects

Target Organs: respiratory system, liver
Primary Entry Routes: accidental skin and eye contact, inhalation of generated dusts
Acute Effects

Inhalation: The dust is harmful and discomforting to the upper respiratory tract. Persons with impaired respiratory function, airway diseases, or conditions such as emphysema or chronic bronchitis may incur further disability if excessive concentrations of particulate are inhaled.

Eye: The dust may be discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/ or other transient eye damage/ ulceration.

Skin: The material may be mildly discomforting to the skin. Open cuts and abraded or irritated skin should not be exposed to this material. Toxic effects may result from skin absorption.

Ingestion: The solid/dust is discomforting to the gastrointestinal tract and harmful if swallowed. Considered an unlikely route of entry in commercial/industrial environments.

Carcinogenicity: NTP - Listed; IARC - Group 2A, Probably carcinogenic to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Not listed.

Chronic Effects: The so-called polycyclic aromatic hydrocarbons (PAHs) comprise a large family; some members occur in coal tar, tobacco smoke, petroleum and air pollution. Some substituted derivatives have been identified, in animal studies, as amongst the most highly active carcinogens. Rodent species are sensitive to some PAHs with skin

application producing cancerous growths. Injection produces soft tissue tumors (sarcomas) in rats and mice. Administration of PAHs to Rhesus monkey on the other hand has not yet proved successful in yielding tumors and there is inadequate date to support the proposition that individual PAHs produce cancer in humans. There are however a number of epidemiology and mortality studies that show increased incidence of cancer in humans exposed to mixtures of PAHs. Evidence exists of lung and genito-urinary cancer mortality amongst coke-oven workers and skin tumors in workers exposed to creosote. Exposures to other chemical mixtures containing PAHs such as cigarette smoke, coal tar, coal tar pitch and bitumens, have been associated with increased incidences of lung cancer in humans.

Section 4 - First Aid Measures

See DOT ERG

Inhalation: • If dust is inhaled, remove to fresh air.
• Encourage patient to blow nose to ensure clear breathing passages.
• Rinse mouth with water. Consider drinking water to remove dust from throat.
• Seek medical attention if irritation or discomfort persist.
• If fumes or combustion products are inhaled, remove to fresh air.
• Lay patient down. Keep warm and rested.
• Other measures are usually unnecessary.

Eye Contact: • Immediately hold the eyes open and flush with fresh running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Seek medical attention if pain persists or recurs.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: • Immediately remove all contaminated clothing, including footwear (after rinsing with water).
• Wash affected areas thoroughly with water (and soap if available).
• Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center. If more than 15 minutes from a hospital:
• INDUCE vomiting with IPECAC SYRUP, or fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. NOTE: Wear a protective glove when inducing vomiting by mechanical means.
• SEEK MEDICAL ATTENTION WITHOUT DELAY.
• In the meantime, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
• If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided.
• If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Treat symptomatically.

Section 5 - Fire-Fighting Measures

See DOT ERG

Flash Point: Not available; probably combustible

Extinguishing Media: Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide. Water spray or fog - Large fires only.

General Fire Hazards/Hazardous Combustion Products: • Solid which exhibits difficult combustion or is difficult to ignite.
• Avoid generating dust, particularly clouds of dust in a confined or unventilated space, as dust may form an explosive mixture with air and any source of ignition, e.g., flame or spark, will cause fire or explosion.
• Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
• Build-up of electrostatic charge may be prevented by bonding and grounding.
• Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Fire Incompatibility: Avoid contamination with oxidizing agents i.e., nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Fire-Fighting Instructions: • Contact fire department and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves for fire only.
• Prevent, by any means available, spillage from entering drains or waterways.
• Use fire fighting procedures suitable for surrounding fire.
• Do not approach containers suspected to be hot.
• Cool fire-exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.
• Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

See DOT ERG

Small Spills: • Clean up all spills immediately.
• Avoid contact with skin and eyes.
• Wear protective clothing, gloves, safety glasses and dust respirator.
• Use dry clean up procedures and avoid generating dust.
• Vacuum up or sweep up.
• Place in clean drum then flush area with water.

Large Spills: • Clear area of personnel and move upwind.
• Contact fire department and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or waterways.
• No smoking, bare lights or ignition sources.
• Increase ventilation.
• Stop leak if safe to do so.
• Water spray or fog may be used to disperse/absorb vapor.
• Contain or absorb spill with sand, earth or vermiculite.
• Collect recoverable product into labeled containers for recycling.
• Collect solid residues and seal in labeled drums for disposal.
• Wash area and prevent runoff into drains.
• After clean up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.
• If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: • Avoid all personal contact, including inhalation.
• Wear protective clothing when risk of overexposure occurs.
• Use in a well-ventilated area.
• Prevent concentration in hollows and sumps.
• DO NOT enter confined spaces until atmosphere has been checked.
• Do not allow material to contact humans, exposed food or food utensils.
• Avoid smoking, bare lights or ignition sources.
• When handling, DO NOT eat, drink or smoke.
• Avoid contact with incompatible materials.
• Keep containers securely sealed when not in used.
• Avoid physical damage to containers.
• Always wash hands with soap and water after handling.
• Working clothes should be laundered separately. Launder contaminated clothing before reuse.
• Follow good occupational work practices.
• Observe manufacturer's storage/handling recommendations.
• Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Glass container. Plastic container. Metal can. Metal drum. Check that all containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Local exhaust ventilation usually required. If risk of overexposure exists, wear NIOSH-approved respirator. Provide adequate ventilation in warehouse or closed storage area.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields or chemical goggles. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear chemical protective gloves, e.g. PVC. Wear safety footwear.

Other: • Overalls.
• PVC Apron.
• PVC protective suit may be required if exposure severe.
• Eyewash unit.
• Ensure there is ready access to a safety shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Light-yellow crystalline powder. Soluble in petroleum ether, benzene, toluene, xylene, oils and cyclohexanane.

Physical State: colorless crystals, plates or leaflets
Vapor Pressure (kPa): 1 x10^{-10} mm Hg
Formula Weight: 278.33
Specific Gravity (H_2O=1, at 4 °C): 1.282
Boiling Point: 524 °C (975 °F)
Freezing/Melting Point: 266 °C (510.8 °F)
Volatile Component (% Vol): Negligible
Water Solubility: 0.0005 mg/L in Water at 27 °C

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid reaction with oxidizing agents.

Section 11 - Toxicological Information

No significant acute toxicological data identified in literature search.
NOTE: Substance has been shown to be mutagenic in various assays, or belongs to a family of chemicals producing damage or change to cellular DNA.

See *RTECS* HN2625000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Release to the environment is quite general since it is a ubiquitous product of incomplete combustion. It is largely associated with particulate matter, soils, and sediments. Its presence in places distant from primary sources indicates that it is reasonably stable in the atmosphere and capable of long distance transport. If it is released to soils it will be expected to adsorb very strongly to the soils and will not be expected to leach to the groundwater, hydrolyze or evaporate from soils or surfaces. It will be subject to biodegradation in soils with reported half-lives of 18 and 21 days. If it is released to water it will be expected to adsorb very strongly to sediments and particulate matter and to bioconcentrate in aquatic organisms which lack microsomal oxidase (this enzyme enables the rapid metabolism of certain polycyclic aromatic hydrocarbons). Based on limited data from laboratory screening tests using settled domestic wastewater and activated sludge, it may be subject to biodegradation in natural waters. Since it absorbs solar radiation strongly, it may be subject to direct photolysis in natural waters. However, adsorption may significantly retard photolysis as the photosensitivity of polyaromatic hydrocarbons is strongly dependent upon the nature of the surface upon which the compound is adsorbed. It will not hydrolyze and should not evaporate from water. If released to the atmosphere it will likely be associated with particulate matter and may be subject to moderately long range transport, depending mainly on the particle size distribution and climatic conditions which will determine the rates of wet and dry deposition. Its presence in areas remote from primary sources demonstrates the potential for this long range transport as well as it's considerable stability in the air. It may be subject to direct photolysis in the atmosphere; however, adsorption may significantly retard photolysis as the photosensitivity of polyaromatic hydrocarbons is strongly dependent upon the nature of the surface upon which the compound is adsorbed. The estimated vapor phase half-life in the atmosphere is 1.00 day as a result of reaction with photochemically produced hydroxyl radicals.
Ecotoxicity: TL_m Neanthes arenaceodentata > 1 ppm/96 hr at 22 °C in a static bioassay
Henry's Law Constant: calculated at 7 x10^{-8}
BCF: daphnia manga 652
Octanol/Water Partition Coefficient: log K_{ow} = 6.50
Soil Sorption Partition Coefficient: K_{oc} = sediments 8.05392 x10^5 to 3.059425 x10^6

Section 13 - Disposal Considerations

Disposal: • Recycle wherever possible or consult manufacturer for recycling options.
• Follow applicable local, state, and federal regulations.
• Bury residue in an authorized landfill.
• Recycle containers if possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: I - Great Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB7
Packaging: **Exceptions:** None **Non-bulk:** 211 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 kg **Cargo aircraft only:** 50 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: II - Medium Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP2, IP4
Packaging: **Exceptions:** None **Non-bulk:** 212 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 25 kg **Cargo aircraft only:** 100 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP3
Packaging: **Exceptions:** 153 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** 100 kg **Cargo aircraft only:** 200 kg
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U063 Toxic Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001, per CWA Section 307(a) 1 lb (0.454 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Ethylbenzene **CAS Number:** 100-41-4
Chemical Formula: C_8H_{10}
Structural Chemical Formula: $C_6H_5 \bullet C_2H_5$
EINECS Number: 202-849-4
ACX Number: X1003016-1
Synonyms: AETHYLBENZOL; BENZENE,ETHYL-; EB; ETHYL BENZENE; ETHYLBENZEEN; ETHYLBENZENE; ETHYLBENZOL; ETILBENZENE; ETYLOBENZEN; PHENYLETHANE
General Use: Used in the manufacture of cellulose acetate, styrene and synthetic rubber; solvent or diluent; component of automotive and aviation gasoline.
Component of many petroleum hydrocarbon solvents, thinners.
The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
ethylbenzene	100-41-4	>95

OSHA PEL
TWA: 100 ppm; 435 mg/m^3.

ACGIH TLV
TWA: 100 ppm; STEL: 125 ppm.

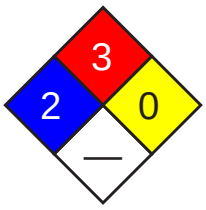
EU OEL
TWA: 100 ppm; STEL: 200 ppm.

NIOSH REL
TWA: 100 ppm (435 mg/m^3); STEL: 125 ppm (545 mg/m^3).

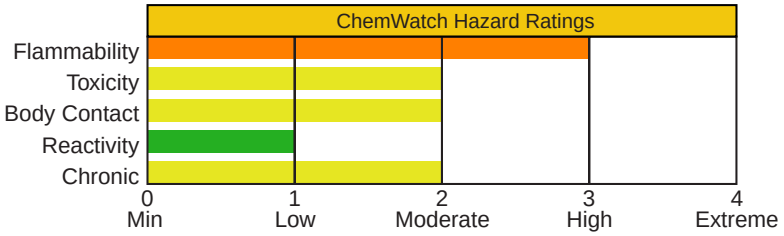
IDLH Level
800 ppm (10% LEL).

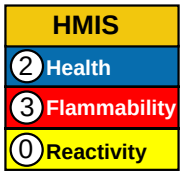
DFG (Germany) MAK
Skin.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word
Warning!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless liquid; pungent odor. Irritating to eyes/skin/respiratory tract. Other Acute Effects: chest constriction, vertigo, narcosis, cramps, respiratory paralysis. Chronic Effects: fatigue, sleepiness, headache, blood disorders, lymphocytosis. Flammable.

Potential Health Effects

Target Organs: eyes, respiratory system, skin, central nervous system (CNS), blood
Primary Entry Routes: inhalation, skin contact, eye contact
Acute Effects
Inhalation: The vapor is discomforting to the upper respiratory tract.
Inhalation hazard is increased at higher temperatures.
Acute effects from inhalation of high concentrations of vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination.

If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.
Inhalation of vapor may aggravate a pre-existing respiratory condition such as asthma, bronchitis, emphysema.
When humans were exposed to the 100 and 200 ppm for 8 hours about 45-65% is retained in the body. Only traces of unchanged ethyl benzene are excreted in expired air following termination of inhalation exposure.
Humans exposed to concentrations of 23-85 ppm excreted most of the retained dose in the urine (mainly as metabolites).
Guinea pigs that died from exposure had intense congestion of the lungs and generalized visceral hyperemia. Rats exposed for three days at 8700 mg/m^3 (2000 ppm) showed changes in the levels of dopamine and noradrenaline in various parts of the brain.

Eye: The liquid is highly discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/or other transient eye damage/ulceration.
The vapor is discomforting to the eyes.
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
Two drops of the material in to the conjunctival sac produced only slight irritation of the conjunctival membrane but no corneal injury.

Skin: The liquid is discomforting to the skin if exposure is prolonged and is capable of causing skin reactions which may lead to dermatitis.
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.
The mean rate of absorption of liquid ethyl benzene applied to 17.3 cm2 area of the forearm of seven volunteers for 10-15 minutes was determined to be 38 mg/cm2/hr. Immersion of the whole hand in aqueous solutions of ethyl benzene (112-156 mg/l) for 1 hour yielded mean absorption rates of 118 and 215.7 ug/cm2/hr. The rate of absorption is thus greater than that of aniline, benzene, nitrobenzene, carbon disulfide and styrene.
Repeated application of the undiluted product to the abdominal area of rabbits (10-20 applications over 2-4 weeks) resulted in erythema, edema and superficial necrosis. The material did not appear to be absorbed through the skin in sufficient quantity to produce outward signs of toxicity.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.
The liquid may produce considerable gastrointestinal discomfort and may be harmful or toxic if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.

Chronic Effects: Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes.
Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following.
Industrial workers exposed to a maximum level of ethyl benzene of 0.06 mg/l (14 ppm) reported headaches and irritability and tired quickly. Functional nervous system disturbances were found in some workers employed for over 7 years whilst other workers had enlarged livers.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Lay patient down. Keep warm and rested.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor.

See DOT ERG

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately remove all contaminated clothing, including footwear (after rinsing with water).
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

Ingestion: Rinse mouth out with plenty of water. DO NOT induce vomiting.
Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
Give water (or milk) to rinse out mouth. Then provide liquid slowly and as much as casualty can comfortably drink.
Transport to hospital or doctor without delay.

After first aid, get appropriate in-plant, paramedic, or community medical support.

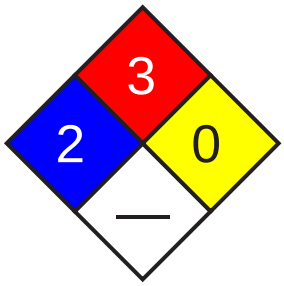
Note to Physicians: For acute or short-term repeated exposures to petroleum distillates or related hydrocarbons:

1. Primary threat to life from pure petroleum distillate ingestion and/or inhalation is respiratory failure.
2.Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO_2 <50 mm Hg or pCO_2 >50 mm Hg) should be intubated.
3.Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance
4.A chest x-ray should be taken immediately after stabilization of breathing and circulation to document aspiration and detect the presence of pneumothorax.
5.Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitization to catecholamines.
Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
6.Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients.

Section 5 - Fire-Fighting Measures

Flash Point: 12.8 °C Closed Cup
Autoignition Temperature: 432 °C
LEL: 1.6% v/v
UEL: 7% v/v
Extinguishing Media: Foam, dry chemical powder, BCF (where regulations permit), carbon dioxide.
Water spray or fog - Large fires only.
General Fire Hazards/Hazardous Combustion Products: Liquid and vapor are flammable.
Moderate fire hazard when exposed to heat or flame.
Vapor forms an explosive mixture with air.
Moderate explosion hazard when exposed to heat or flame.
Vapor may travel a considerable distance to source of ignition.
Heating may cause expansion or decomposition leading to violent rupture of containers.
On combustion, may emit toxic fumes of carbon monoxide (CO).
May emit clouds of acrid smoke.

See DOT ERG



Fire Diamond

Fire Incompatibility: Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.
Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways.
If safe, switch off electrical equipment until vapor fire hazard removed.
Use water delivered as a fine spray to control fire and cool adjacent area.
Avoid spraying water onto liquid pools.
Do not approach containers suspected to be hot.
Cool fire-exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.

Section 6 - Accidental Release Measures

Small Spills: Remove all ignition sources. Clean up all spills immediately.
Avoid breathing vapors and contact with skin and eyes.
Control personal contact by using protective equipment.
Contain and absorb small quantities with vermiculite or other absorbent material. Wipe up. Collect residues in a flammable waste container.

See DOT ERG

Large Spills: Clear area of personnel and move upwind.
Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways.
No smoking, bare lights or ignition sources. Increase ventilation.
Stop leak if safe to do so. Water spray or fog may be used to disperse/absorb vapor. Contain spill with sand, earth or vermiculite.
Use only spark-free shovels and explosion proof equipment.
Collect recoverable product into labeled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
Collect solid residues and seal in labeled drums for disposal.
Wash area and prevent runoff into drains.
If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist. Avoid all personal contact, including inhalation.
Wear protective clothing when risk of exposure occurs.
Use in a well-ventilated area. Prevent concentration in hollows and sumps.
DO NOT enter confined spaces until atmosphere has been checked.
Avoid smoking, bare lights, heat or ignition sources.
When handling, DO NOT eat, drink or smoke.
Vapor may ignite on pumping or pouring due to static electricity.
DO NOT use plastic buckets. Ground and secure metal containers when dispensing or pouring product. Use spark-free tools when handling.
Avoid contact with incompatible materials.
Keep containers securely sealed. Avoid physical damage to containers.
Always wash hands with soap and water after handling.
Work clothes should be laundered separately.
Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
Recommended Storage Methods: Metal can; metal drum. Packing as recommended by manufacturer.
Check all containers are clearly labeled and free from leaks.
Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build-up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear. Use in a well-ventilated area.
General exhaust is adequate under normal operating conditions.
If risk of overexposure exists, wear NIOSH-approved respirator.
Correct fit is essential to obtain adequate protection.
Provide adequate ventilation in warehouse or closed storage areas.
Personal Protective Clothing/Equipment:
Eyes: Safety glasses with side shields; or as required, chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.
Hands/Feet: Barrier cream with polyethylene gloves or Nitrile gloves.
Protective footwear.
Respiratory Protection:
Exposure Range >100 to <800 ppm: Air Purifying, Negative Pressure, Half Mask
Exposure Range 800 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face
Cartridge Color: black
Other: Overalls. Eyewash unit.
Glove Selection Index:
VITON ..... Best selection
TEFLON ..... Best selection

Section 9 - Physical and Chemical Properties

Appearance/General Info: Clear highly flammable liquid; floats on water. Aromatic solvent odor. Soluble in alcohol, benzene, carbon tetrachloride and ether.

Physical State: Liquid
Odor Threshold: 8.7 to 870.0 mg/m^3
Vapor Pressure (kPa): 1.333 at 25.9 °C
Vapor Density (Air=1): 3.66
Formula Weight: 106.17
Specific Gravity (H_2O=1, at 4 °C): 0.8670 at 20 °C
Evaporation Rate: Fast

pH: Not applicable
pH (1% Solution): Not applicable.
Boiling Point: 136.2 °C (277 °F) at 760 mm Hg
Freezing/Melting Point: -95 °C (-139 °F)
Volatile Component (% Vol): 100
Water Solubility: 0.01% by weight

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid storage with oxidizers.

Section 11 - Toxicological Information

Toxicity

Oral (rat) LD_{50}: 3500 mg/kg
Inhalation (human) TC_{Lo}: 100 ppm/8h
Inhalation (rat) LC_{Lo}: 4000 ppm/4h
Intraperitoneal (mouse) LD_{50}: 2642 mg/kg~
Dermal (rabbit) LD_{50}: 17800 mg/kg~
Liver changes, utheral tract, effects on fertility, specific developmental abnormalities (musculoskeletal system) recorded.
NOTE: Substance has been shown to be mutagenic in various assays, or belongs to a family of chemicals producing damage or change to cellular DNA.

Irritation

Skin (rabbit): 15 mg/24h mild
Eye (rabbit): 500 mg - SEVERE

See *RTECS* DA 0700000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to the atmosphere, it exist predominantly in the vapor phase based on its vapor pressure where it will photochemically degrade by reaction with hydroxyl radicals (half-life 0.5 to 2 days) and partially return to earth in rain. It will not be subject to direct photolysis. Releases into water will decrease in concentration by evaporation and biodegradation. The time for this decrease and the primary loss processes will depend on the season, and the turbulence and microbial populations in the particular body of water. Representative half-lives are several days to 2 weeks. Some may be adsorbed by sediment but significant bioconcentration in fish is not expected to occur based upon its octanol/water partition coefficient. It is only adsorbed moderately by soil. It will not significantly hydrolyze in water or soil.

Ecotoxicity: LC_{50} Cyprinodon variegatus (sheepshead minnow) 275 mg/l 96 hr in a static unmeasured bioassay; LC_{50} Pimephales promelas (fathead minnow) 12.1 mg/l/96 hr (confidence limit 11.5 - 12.7 mg/l), flow-through bioassay with measured concentrations, 26.1 °C, dissolved oxygen 7.0 mg/l, hardness 45.6 mg/l calcium carbonate, alkalinity 43.0 mg/l; Toxicity threshold (cell multiplication inhibition test): Pseudomonas putida (bacteria) 12 mg/l ; LC_{50} Palaemonetes pugio (grass shrimp, adult) 14,400 ug/l/24 hr in a static unmeasured bioassay; LC_{50} Palaemonetes pugio (grass shrimp, larva) 10,200 ug/l/24 hr in a static unmeasured bioassay; Toxicity threshold (cell multiplication inhibition test): Microcystis aeruginosa (algae) 33 mg/l; Scenedesmus quadricauda (green algae) > 160 mg/l

Henry's Law Constant: 8.44×10^{-3}

BCF: goldfish 1.9

Biochemical Oxygen Demand (BOD): theoretical 2.8%, 5 days

Octanol/Water Partition Coefficient: log $K_{ow} = 3.15$

Soil Sorption Partition Coefficient: $K_{oc} = 164$

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options and recycle where possible.
Follow applicable federal, state, and local regulations.
Incinerate residue at an approved site.
Recycle containers where possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Ethylbenzene
ID: UN1175
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: II - Medium Danger
Symbols:
Label Codes: 3 - Flammable Liquid
Special Provisions: IB2, T4, TP1
Packaging: **Exceptions:** 150 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** B **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4), per CWA Section 307(a) 1000 lb (453.5 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111
Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Fluoranthene **CAS Number:** 206-44-0
Chemical Formula: $C_{16}H_{10}$
EINECS Number: 205-912-4
ACX Number: X1001738-4
Synonyms: 1,2-BENZACENAPHTHENE; BENZENE,1,2-(1,8-NAPHTHALENEDIYL)-; BENZENE,1,2-(1,8-NAPHTHYLENE)-; BENZO (J,K) FLUORENE; BENZO(J,K)FLUORENE; BENZO(JK)FLUORENE; FLUORANTHENE; IDRYL; 1,2-(1,8-NAPHTHALENE)BENZENE; 1,2-(1,8-NAPHTHALENEDIYL)BENZENE; 1,2-(1,8-NAPHTHYLENE)BENZENE
Derivation: Fluoranthene is derived from coal tar and from the pyrolytic processing of organic raw materials such as coal or petroleum at high temperatures.
General Use: Fluoranthene is a constituent of coal tar and petroleum derived asphalt used as a lining material to protect the interior of steel and ductile-iron potable water pipes and storage tanks; used as a research chemical and medication.

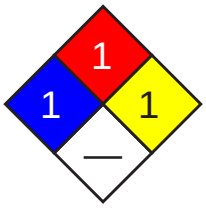
Section 2 - Composition / Information on Ingredients

Name	CAS	%
Fluoranthene	206-44-0	ca 98% wt

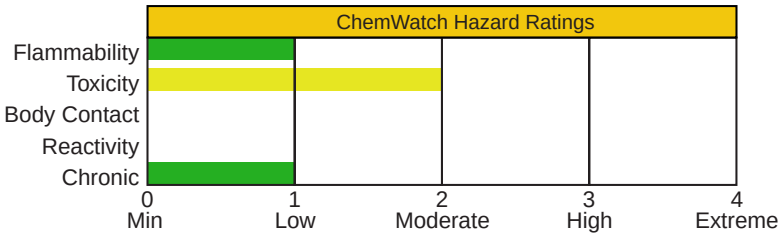
OSHA PEL **NIOSH REL**

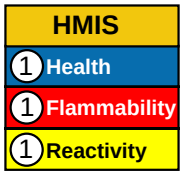
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

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Colorless to pale yellow solid. Irritating to eyes/skin/respiratory tract. Chronic: mutagenic and tumorigenic effects, possible kidney/bladder cancer. Combustible.

Potential Health Effects

Target Organs: Eyes, skin, and respiratory system
Primary Entry Routes: Inhalation, skin/eye contact, ingestion
Acute Effects Note: In general, polynuclear aromatic hydrocarbons (PAH's) have a low order of acute toxicity in humans. The following effects from exposure are based on analogy to phenol and coal tar.
Inhalation: Causes irritation of the mucous membranes and upper respiratory tract.
Eye: Contact causes eye irritation and burning.
Skin: Contact causes skin irritation and burning.
Ingestion: Causes nausea, tachycardia, cardiac arrhythmias, pulmonary edema, and respiratory arrest.
Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: Persons with existing skin disorders may be more susceptible to the effects of coal tar pitches.

Chronic Effects: Cough and bronchitis, photosensitivity of the eyes and skin, coal tar warts, erythema, and acneiform lesions, leukoplakia, mild hepatotoxicity, and hematuria. Laboratory experiments have shown mutagenic and tumorigenic effects. Some PAH's have been associated with kidney, skin, bladder, lung, and gastrointestinal cancers. PAH's may cross the placenta and are excreted in breast milk in animals.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 min. Consult a physician or ophthalmologist if pain, irritation, swelling, lacrimation, or photophobia persist.

Skin Contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water. *Do not* induce vomiting.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Monitor arterial blood gases, pulmonary function, and chest x-ray for patients with significant exposure. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. If bronchospasm and wheezing occur, consider treatment with inhaled sympathomimetic agents. Inhalation exposure to PAH's may be complicated by exposure to other substances which produce acute respiratory and systemic effects. Treat according to clinical presentation and exposure history. Treat dermal irritation or burns with standard topical therapy. Patients developing dermal hypersensitivity may require treatment with systemic or topical corticosteroids or antihistamines.

Section 5 - Fire-Fighting Measures

Flash Point: Data not found.

Autoignition Temperature: Data not found.

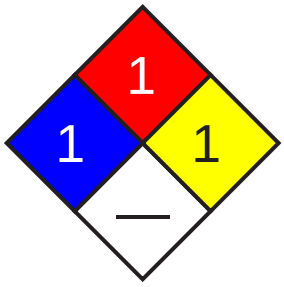
LEL: Data not found.

UEL: Data not found.

Extinguishing Media: Extinguish with water spray, carbon dioxide, dry chemical powder or appropriate foam.

General Fire Hazards/Hazardous Combustion Products: Emits toxic fumes of carbon monoxide and carbon dioxide.

Fire-Fighting Instructions: *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, evacuate all unnecessary personnel, remove heat and ignition sources. Isolate and ventilate area, deny entry, stay upwind. Cleanup personnel should protect against exposure (Sec. 8).

Small Spills: If in solid form, *do not* sweep! Spills of hot coal tar may be covered with sand. Carefully scoop up or vacuum (with a HEPA filter).

Large Spills: For large spills, dike far ahead of spill for later disposal. *Do not* release into sewers or waterways.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Wear personal protective clothing and equipment to prevent vapor inhalation and contact with skin or eyes (Sec. 8). To prevent skin absorption of coal tar products, *do not* use solvents to clean hands. Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed containers in a cool, well-ventilated area away from heat, light, ignition sources, and incompatibles. Control storage conditions to prevent overheating and pressure buildup in containers of coal tar products. Design and operate transfer and storage systems to prevent blockage by condensed coal tar products.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose operations to avoid vapor dispersion into the work area. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Educate workers about the health and safety hazards associated with this material. Train in work practices which minimize exposure. Institute a complete respiratory protection program which includes regular training, maintenance, inspection, cleaning, and evaluation. Make available to employees exposed to coal tar pitch volatiles a complete history and physical examination with emphasis on the oral cavity, respiratory tract, bladder, and kidneys. Examine the skin for evidence of chronic disorders, for premalignant and malignant lesions, and evidence of hyperpigmentation or photosensitivity. Obtain a urinalysis including specific gravity, albumin, glucose, and a microscopic examination of centrifuged sediment, as well as a test for red blood cells. Also perform a complete blood count to search for leukemia and aplastic anemia. Employees having 5 or more years of exposure or who are 45 years of age or older should have a urinary cytology exam. Employees having 10 or more years of exposure or who are 45 year of age or older should have a sputum cytology examination, a 14" x 17" chest roentgenogram, and periodic measure of FVC and FEV (1 sec).

Personal Protective Clothing/Equipment: Wear chemically protective gloves, aprons, and gauntlets to prevent any skin contact. Employees handling drums, cans, or other large containers of coal tar products shall wear impervious shoes or boots with safety toe caps. Protect leather safety shoes with impervious coverings such as rubbers. Wear cup type or rubber-framed chemical safety goggles with a full length, plastic face shield (20 cm min.), per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not protective eye devices. Appropriate eye protection must be worn instead of contact lenses. *Do not* wear contacts while working with fluoranthene.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. For exposure to concentrations <= 2 mg/m^3, wear a chemical cartridge respirator with an organic vapor cartridge(s) and with a fume or high efficiency filter or any supplied-air respirator or any SCBA; for exposure to concentrations <= 10 mg/m^3, wear a chemical cartridge respirator with a full facepiece and an organic vapor cartridge(s) and with a fume or high efficiency filter, or a gas mask with a chin style or a front- or back- mounted organic vapor canister and with a full facepiece and a fume or high efficiency filter, or any supplied-air respirator with a full facepiece, helmet, or hood or any SCBA with a full facepiece; for exposure to concentrations <= 200 mg/m^3, wear a type C supplied-air respirator operated in pressure-demand or other positive-pressure or continuous flow mode, or a powered air- purifying respirator with an organic vapor cartridge and a high efficiency particulate filter; for exposure to concentrations <= 400 mg/m^3 , wear a type C supplied-air respirator with a full facepiece operated in pressure-demand or other positive-pressure mode, or with a full facepiece, helmet, or hood operated in continuous flow mode. For exposure to concentrations >= 400 mg/m^3 or for emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes and place in a closed container in the change room. Launder daily before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless to pale yellow
Physical State: Solid; needles or plates from alcohol
Vapor Pressure (kPa): 0.01 mm Hg at 68 °F (20 °C)
Formula Weight: 202.2
Density: 1.252 g/mL at 0°C/4°C
Specific Gravity (H_2O=1, at 4 °C): 1.252
Boiling Point: 707 °F (375 °C)
Freezing/Melting Point: 230 °F (110 °C)
Ionization Potential (eV): 7.95 +/- 0.3 eV
Water Solubility: Insoluble; 0.20 to 0.26 mg/L
Other Solubilities: Soluble in acetic acid, benzene, carbon disulfide, chloroform, and ether; at 72 °F (22 °C): 5-10 mg/mL 95% ethanol, >= 100 mg/mL acetone, and >= 100 mg/mL DMSO

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Fluoranthene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Avoid contact with chemical incompatibles, heat, and sources of ignition.

Storage Incompatibilities: Include strong oxidizing agents.

Hazardous Decomposition Products: Thermal oxidative decomposition of fluoranthene can produce toxic fumes of carbon monoxide and carbon dioxide.

Section 11 - Toxicological Information

Acute Oral Effects:
Rat, oral, LD_{50}: 2 g/kg.
Acute Skin Effects:
Rabbit, skin, LD_{50}: 3180 mg/kg.
Other Effects:
Multiple Dose Toxicity Effects: Rat, oral, 67500 mg/kg administered for 90 days intermittently produced toxic effects: kidney, ureter, and bladder - changes in tubules (including acute renal failure, acute tubular necrosis); blood - normocytic anemia, changes in leukocyte (WBC) count.
Genetic Effects: Bacteria, *S Typhimurium*, 5 µg/plate (-S9) induced mutations in microorganisms.
Human, lymphocyte, 2 µmol/L induced mutations in mammalian somatic cells.
Hamster, ovary, 9 mg/L induced sister chromatid exchange.
Rat, embryo, 50 mg/L induced morphological transformation.
Mouse, skin, 280 mg/kg administered for 58 weeks intermittently produced toxic effects: tumorigenic - equivocal tumorigenic agent by RTECS criteria; skin and appendages - tumors; tumorigenic - tumors at site of application.

See *RTECS* LL4025000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Fluoranthene degrades slowly in soil. When released to water, fluoranthene is expected to bioconcentrate into aquatic organisms. In the unadsorbed state it will degrade by photolysis. It appears to be stable in sediment for decades or more. Biodegradation in a few years in the presence of acclimated organisms is expected to occur. Fluoranthene released in the atmosphere will photodegrade in the free state. Fluoranthene will rapidly become adsorbed to sediment and particulate matter in the water column. Fluoranthene adsorbs strongly to soil. It is expected to remain in the upper layers of soil. However, it has been detected in groundwater samples, which demonstrates that it can be transported there by some other process. log K_{ow}: 4.90
Ecotoxicity: *Lepomis macrochirus*/ LC_{50}: 4.0 mg/L/96 hr
BCF: 2.58 (rainbow trout)
Soil Sorption Partition Coefficient: $K_{OC} = 6.6x10^4$

Section 13 - Disposal Considerations

Disposal: Fluoranthene is a good candidate for disposal by rotary kiln or fluidized bed forms of incineration. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable federal, state, and local regulations. Handle empty containers carefully as hazardous residues may still remain. Triple rinse containers and dispose of wash wastewater appropriately.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Not specifically listed.

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Listed U120 Toxic Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001, per CWA Section 307(a) 100 lb (45.35 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111
Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Fluorene **CAS Number:** 86-73-7
Chemical Formula: $C_{13}H_{10}$
EINECS Number: 201-695-5
ACX Number: X1003048-3
Synonyms: 2,3-BENZINDENE; O-BIPHENYLENEMETHANE; O-BIPHENYLMETHANE; ALPHA-DIPHENYLENEMETHANE; DIPHENYLENEMETHANE; ALPHA-DIPHENYLENEMETHANE-9H-FLUORENE; 9H-FLUORENE; FLUORENE; METHANE,DIPHENYLENE-; 2,2'-METHYLENEBIPHENYL
Derivation: Fluorene is derived from coal tar; from acetylene and hydrogen in a red-hot tube; from charcoal by boiling and fuming with HNO_3; from 2,2'-dibromodiphenylmethane on boiling with hydrazine hydrate in the presence of palladium; or by reduction of diphenylene ketone with zinc.
General Use: Fluorene is used in the formation of polyradicals for resins, and in resinous products and dyestuffs. Derivatives of fluorene show activity as herbicides and growth regulators.

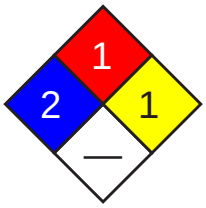
Section 2 - Composition / Information on Ingredients

Name	CAS	%
Fluorene	86-73-7	ca 98% wt

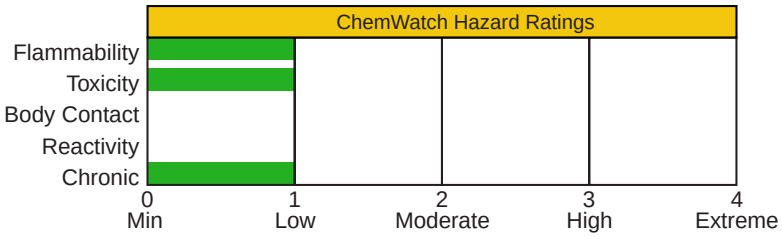
OSHA PEL **NIOSH REL**

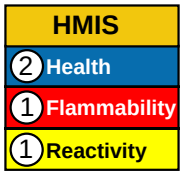
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

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Dazzling white leaflets or flakes, fluorescent when impure. Irritating to eyes/skin/respiratory tract. Chronic effects: mutation effects. Combustible.

Potential Health Effects

Target Organs: Skin, eyes, respiratory system
Primary Entry Routes: Inhalation and skin/eye contact
Acute Effects The toxicological properties of fluorene have not been thoroughly investigated. The following effects are for those of polycyclic aromatic hydrocarbons (PAHs) in general.
Inhalation: Causes irritation to the respiratory system.
Eye: Contact causes irritation.
Skin: Contact causes irritation.
Ingestion: Causes irritation.
Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: None reported.

Chronic Effects: Include photosensitivity and irritation of the eyes; irritation of the respiratory system with cough, bronchitis, and chance of bronchogenic cancer; leukoplakia and cancers of the lip and oral cavity; dermal burns, "coal tar warts" (precancerous lesions enhanced by UV light exposure), erythema, acneiform lesions, and irritation; mild hepatoxicity; hematuria; and an increased chance of cancer of the skin, kidney, bladder, lung and gastrointestinal tract. Fluorinated PAHs may cross the placenta.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer 100% humidified supplemental oxygen with assisted ventilation as required. If bronchospasm and wheezing occur, consider treatment with inhaled sympathomimetic agents.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 min. Consult a physician or ophthalmologist if pain, irritation, swelling, lacrimation or photophobia persist.

Skin Contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician. Treat dermal irritation or burns with a standard topical therapy. Patients developing dermal hypersensitivity reactions may require treatment with systemic or topical corticosteroids or antihistamines. Avoid direct exposure of affected skin to sunlight and UV sources.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water. *Do not* induce vomiting. Gastric lavage and routine use of cathartics are not recommended.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Chronic effects, particularly cancer, are more common than acute toxicity. Acute respiratory effects in persons are typically due to other toxic agents at the worksite. Carefully observe patients with inhalation exposure for the development of any systemic signs or symptoms and administer symptomatic treatment as necessary. Monitor arterial blood gases, pulmonary function, and chest x-ray for patients with significant exposure.

Section 5 - Fire-Fighting Measures

Flash Point: Data not found; combustible

Autoignition Temperature: Data not found.

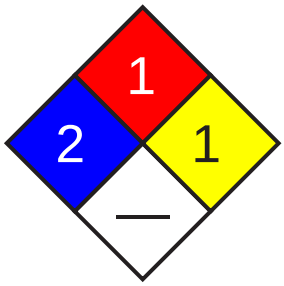
LEL: Data not found.

UEL: Data not found.

Extinguishing Media: Extinguish with water spray, carbon dioxide, dry chemical or appropriate foam.

General Fire Hazards/Hazardous Combustion Products: When heated to decomposition it emits acrid smoke and toxic fumes of carbon monoxide and carbon dioxide.

Fire-Fighting Instructions: *Do not* breathe the dust. *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Wear protective clothing including rubber boots and heavy rubber gloves to prevent contact with skin and eyes.



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, evacuate all unnecessary personnel, remove heat and ignition sources. Isolate and ventilate area, deny entry, stay upwind. Cleanup personnel should protect against exposure (Sec. 8).

Small Spills: If in solid form, *do not* sweep! Avoid raising dust. Carefully scoop up or vacuum (with a HEPA filter). Absorb liquid spill with an inert, noncombustible absorbent such as sand or vermiculite. Wash spill site after material pickup is complete.

Large Spills: For large spills, dike far ahead of liquid spill for later disposal. *Do not* release into sewers or waterways.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Wear personal protective clothing and equipment to prevent dust inhalation and contact of solid or liquid with skin or eyes (Sec. 8).

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed containers in a cool, well-ventilated area away from heat, light, ignition sources, and incompatibles.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose operations to avoid dust dispersion into the work area. Provide local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Educate workers about the health and safety hazards associated with this material. Train in work practices which minimize exposure. Consider preplacement and periodic medical exams including a complete blood count, hepatic and renal function test, dermal assessments, chest x-ray and pulmonary function tests.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not protective eye devices. Appropriate eye protection must be worn instead of, or in conjunction with, contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. For 'normal' uses an air-purifying toxic dust* mask for particulates, and an organic vapor with toxic dust* pre-filters for vapors, dusts, and mists (* = purple or magenta color cartridge). Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: White. Fluorescent when impure.

Physical State: Solid; crystalline powder or small crystalline plates; leaflets or flakes from alcohol. Sublimes easily in high vacuum.

Vapor Pressure (kPa): 0.013 mm Hg at 68 °F (20 °C)

Formula Weight: 166.21

Density: 1.202 g/mL

Specific Gravity (H_2O=1, at 4 °C): 1.203 at 0 °C/4 °C

Boiling Point: 563 °F (295 °C) (decomposes)

Freezing/Melting Point: 237 to 241 °F (114 to 116 °C)

Ionization Potential (eV): 7.89 +/-0.2 eV

Water Solubility: Insoluble; 1.98 mg/kg

Other Solubilities: Freely soluble in glacial acetic acid; soluble in hot 95% ethanol, acetone, benzene, carbon disulfide, carbon tetrachloride, ether, pyridine, and toluene.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Fluorene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Avoid contact with chemical incompatibles, heat, and sources of ignition. Avoid heating to decomposition.

Storage Incompatibilities: Include strong oxidizing agents.

Hazardous Decomposition Products: Thermal oxidative decomposition of fluorene can produce acrid smoke and toxic fumes of carbon monoxide and carbon dioxide.

Section 11 - Toxicological Information

Other Effects:

Genetic Effects: Mouse, lymphocyte, 150 µmol/L induced DNA damage.
Mouse, lymphocyte, 19500 nmol/L (+S9) induced mutations in microorganisms.
Mouse, lymphocyte, 584 µmol/L induced mutations in mammalian somatic cells.
Hamster, lung, 25 mg/L induced cytogenetic analysis.
Mouse, mammary gland, 1 µg/L induced morphological transformation.
Mouse, intraperitoneal, LD_{50}: >2 g/kg.

See *RTECS* LL5670000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to the atmosphere, fluorene will exist primarily in the vapor phase where it will degrade readily by photochemically produced hydroxyl radicals (estimated half-life of 29 hr). If released to soil or water, fluorene will biodegrade readily (aerobically) in the presence of acclimated microbes; microbial adaptation is an important fate process. Biodegradation can be slow in pristine soils or waters (or under conditions of limited oxygen). Strong adsorption to soil and water sediment is an important transport process. Log K_{ow}: 4.18 to 4.38

Ecotoxicity: TL_m *Neanthes arenaceodentata* LC_{50}/1.0 ppm/96 hr at 72 °F (22 °C) in a static bioassay, seawater
Henry's Law Constant: 0.0001
BCF: 1288 (fathead minnow)
Soil Sorption Partition Coefficient: K_{oc} = log 3.70 to 4.21

Section 13 - Disposal Considerations

Disposal: Dissolve or mix fluorene with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. The particle-bound portion of polycyclic aromatic hydrocarbons (PAH) can be removed by sedimentation, flocculation, and filtration processes. The remaining dissolved polynuclear aromatic hydrocarbons usually require oxidation for partial removal/transformation. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable federal, state, and local regulations. Handle empty containers carefully as hazardous residues may still remain. Triple rinse containers and dispose of wash wastewater appropriately.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Not specifically listed.

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 5000 lb (2268 kg)
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

ExxonMobil

35014-00 MOBIL UNLEADED GASOLINE
MATERIAL SAFETY DATA BULLETIN

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MOBIL UNLEADED GASOLINE
SUPPLIER: EXXONMOBIL OIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA 22037

24 - Hour Health and Safety Emergency (call collect): 609-737-4411

24 - Hour Transportation Emergency:
CHEMTREC: 800-424-9300 202-483-7616
LUBES AND FUELS: 281-834-3296

Product and Technical Information:
Lubricants and Specialties: 800-662-4525 800-443-9966
Fuels Products: 800-947-9147
MSDS Fax on Demand: 613-228-1467
MSDS Internet Website: http://emmsds.ihssolutions.com/

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: GASOLINE AND PROPRIETARY ADDITIVES

GLOBALLY REPORTABLE MSDS INGREDIENTS:

Substance Name	Approx. Wt%
GASOLINE	100

COMPONENT(S) OF PRODUCT INGREDIENTS INCLUDE:

METHYL-TERT-BUTYL ETHER (1634-04-4)	< 16
ETHANOL (64-17-5)	< 11
XYLENE (1330-20-7)	10
TRIMETHYL BENZENE (25551-13-7)	8
TOLUENE (108-88-3)	6

ETHYL BENZENE (100-41-4)	3
N-HEXANE (110-54-3)	3
BENZENE (71-43-2)	2
NAPHTHALENE (91-20-3)	0.5

NOTE: The concentration of the components shown above may vary substantially. In certain countries benzene content may be limited to lower levels (eg. US reformulated gasoline). Oxygenates such as tertiary-amyl-methyl ether, ethanol, di-isopropyl ether, and ethyl-tertiary-butyl ether may be present (eg. concentration to provide a minimum oxygen content of 1.5 Wt% in the US). Because of volatility considerations, gasoline vapor may have concentrations of components very different from those of liquid gasoline. The major components of gasoline vapor are: butane, isobutane, pentane and isopentane. The reportable component percentages, shown in the Regulatory Information section, are based on API's evaluation of a typical gasoline mixture.

See Section 8 for exposure limits (if applicable).

3. HAZARDS IDENTIFICATION

This product is considered hazardous according to regulatory guidelines (See Section 15).

EMERGENCY OVERVIEW: Clear (May Be Dyed) Liquid. EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion. DOT ERG No. : 128

POTENTIAL HEALTH EFFECTS: Skin irritation. May cause eye and respiratory irritation, headache, dizziness, nausea, loss of consciousness, and in cases of extreme exposure, possibly death. Low viscosity material-if swallowed may enter the lungs and cause lung damage. Overexposure to benzene may result in cancer, blood disorders and damage to the bone marrow. Long-term exposure to gasoline vapor has caused kidney and liver cancer in laboratory animals. Case reports of chronic gasoline abuse (such as sniffing) and chronic misuse as a solvent or as a cleaning agent have shown a range of nervous system effects, sudden deaths from heart attacks, blood effects and leukemia. These effects are not expected to occur at exposure levels encountered in the distribution and use of gasoline as a motor fuel.

POTENTIAL ENVIRONMENTAL EFFECTS: Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

For further health effects/toxicological data, see Section 11.

4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water. Immediately remove contaminated clothing, including shoes. (See Section 16 - Injection Injury)

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation.

INGESTION: Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIANS: Material if ingested may be aspirated into the lungs and can cause chemical pneumonitis. PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: Skin contact may aggravate an existing dermatitis. Benzene- Individuals with liver disease may be more susceptible to toxic effects. Hexane- Individuals with neurological disease should avoid exposure.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon Dioxide, Foam, Dry Chemical, Water Fog.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area. For large spills, fire fighting foam is the preferred agent and should be applied in sufficient quantities to blanket the product surface. Water may be ineffective, but water should be used to keep fire-exposed containers cool. Water spray may be used to flush spill away from exposures, but good judgement should be practiced to prevent spreading of the product into sewers, streams or drinking water supplies. If a leak or spill has not ignited, apply a foam blanket to suppress the release of vapors. If foam is not available, a water spray curtain can be used to disperse vapors and to protect personnel attempting to stop the leak.

SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion.

COMBUSTION PRODUCTS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.

Flash Point C(F): < -40(-40) (ASTM D-56).

Flammable Limits (approx.% vol.in air) - LEL: 1.4%, UEL: 7.6%

NFPA HAZARD ID: Health: 1, Flammability: 3, Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES: Report spills/releases as required to appropriate authorities. U.S. Coast Guard and EPA regulations

require immediate reporting of spills/releases that could reach any waterway including intermittent dry creeks. Report spill/release to Coast Guard National Response Center toll free number (800)424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:

LAND SPILL: Eliminate sources of ignition. Warn occupants in downwind areas of fire and explosion hazard. Shut off source taking normal safety precautions. Take measures to minimize the effects on ground water. Recover by pumping using explosion-proof equipment or contain spilled liquid with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.

WATER SPILL: Eliminate sources of ignition. Advise occupants and ships in the vicinity in downwind areas of fire and explosion hazard and warn them to stay clear. Notify port and other relevant authorities. Do not confine in area of leakage. Allow liquid to evaporate from the surface. Do not use dispersants.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.

PERSONAL PRECAUTIONS: See Section 8

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7. HANDLING AND STORAGE

HANDLING: USE NON-SPARKING TOOLS AND EXPLOSION-PROOF EQUIPMENT. NEVER SIPHON GASOLINE BY MOUTH. GASOLINE SHOULD NOT BE USED AS A SOLVENT OR AS A CLEANING AGENT. Avoid contact with skin. Avoid inhalation of vapors or mists. Use in well ventilated area away from all ignition sources. This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode. Use product with caution around heat, sparks, pilot lights, static electricity, and open flames. It is unlawful and dangerous to put gasoline into unapproved containers. Do not fill container in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. See Section 8 for additional personal protection advice when handling this product.

STORAGE: Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters. Store away from all ignition sources in a cool, well ventilated area equipped with an automatic sprinkling system. Outside or detached storage preferred. Storage containers should be grounded and bonded.

SPECIAL PRECAUTIONS: To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Use the correct grounding procedures. Refer to national or local regulations covering safety at petroleum handling and storage areas for this product.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:

ExxonMobil recommends an 8-hour time-weighted average (TWA) exposure of 300 mg/m3 (100 ppm vapor).

		---TWA---		----STEL---		NOTE
Substance Name (CAS-No.)	Source	ppm	mg/m3	ppm	mg/m3	
GASOLINE	OSHA	300	900	500	1500	
	ACGIH	300	890	500	1480	
METHYL-TERT-BUTYL ETHER (1634-04-4)	ACGIH	40	144			
	XOM	25		75		
ETHANOL (64-17-5)	OSHA	1000	1900			
	ACGIH	1000	1880			
XYLENE (1330-20-7)						
O, M, P, -Isomers	OSHA	100	435	150	655	
O, M, P, -Isomers	ACGIH	100	434	150	651	
TRIMETHYL BENZENE (25551-13-7)	OSHA	25	125			
	ACGIH	25	123			
TOLUENE (108-88-3)	OSHA	100	375	150	560	
Skin	ACGIH	50	188			
	XOM		200			
ETHYL BENZENE (100-41-4)	OSHA	100	435	125	545	
	ACGIH	100	434	125	543	
N-HEXANE (110-54-3)						

	OSHA	50	180		
Other Isomers	OSHA	500	1800	1000	3600
N-Hexane Skin	ACGIH	50	176		
Other Isomers	ACGIH	500	1760	1000	3500
BENZENE (71-43-2)					
	OSHA	1		5	
Skin	ACGIH	0.5	1.6	2.5	8
NAPHTHALENE (91-20-3)					
	OSHA	10	50	15	75
	ACGIH	10	52	15	79

NOTE: Limits shown for guidance only. Follow applicable regulations.

VENTILATION: Ventilation equipment must be explosion proof.
RESPIRATORY PROTECTION: Approved respiratory equipment must be used when airborne concentrations are unknown or exceed the recommended exposure limit. Self-contained breathing apparatus may be required for use in confined or enclosed spaces.
EYE PROTECTION: If splash with liquid is possible, chemical type goggles should be worn.
SKIN PROTECTION: Impervious gloves should be worn. Good personal hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.

APPEARANCE: Liquid
COLOR: Clear (May Be Dyed)
ODOR: Gasoline
ODOR THRESHOLD-ppm: NE
pH: NA
BOILING POINT C(F): > 20(68)
MELTING POINT C(F): NA
FLASH POINT C(F): < -40(-40) (ASTM D-56)
FLAMMABILITY (solids): NE
AUTO FLAMMABILITY C(F): NE
EXPLOSIVE PROPERTIES: NA
OXIDIZING PROPERTIES: NA
VAPOR PRESSURE-mmHg 20 C: > 200.0
VAPOR DENSITY: 3.0
EVAPORATION RATE: NE
RELATIVE DENSITY, 15/4 C: 0.79
SOLUBILITY IN WATER: Negligible
PARTITION COEFFICIENT: > 1
VISCOSITY AT 40 C, cSt: < 1.0
VISCOSITY AT 100 C, cSt: NA
POUR POINT C(F): NA
FREEZING POINT C(F): NE
VOLATILE ORGANIC COMPOUND: NE
DMSO EXTRACT, IP-346 (WT.%): NA

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

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10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.
CONDITIONS TO AVOID: Heat, sparks, flame and build up of static electricity.
INCOMPATIBILITY (MATERIALS TO AVOID): Halogens, strong acids, alkalies, and oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Product does not decompose at ambient temperatures.
HAZARDOUS POLYMERIZATION: Will not occur.

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11. TOXICOLOGICAL DATA

---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
INHALATION TOXICITY (RATS): Practically non-toxic (LC50: greater than 5 mg/l). ---Based on testing of similar products and/or the components.
EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less). ---Based on testing of similar products and/or the components.
SKIN IRRITATION (RABBITS): Irritant. (Primary Irritation Index: 3 or greater but less than 5). ---Based on testing of similar products and/or the components.
OTHER ACUTE TOXICITY DATA: Inhalation of high concentrations of vapors or aerosols/mists, especially deliberate or abuse exposure, may cause respiratory system irritation and damage. These exposures may also result in central nervous system depression and damage, possibly leading to death. Prolonged skin contact with gasoline may cause severe skin irritation similar to a chemical burn. The above effects, which may result from the whole gasoline or some of the gasoline components, are well documented in the medical literature. HAZARDS OF COMBUSTION PRODUCTS: Exposure to high concentrations of carbon monoxide can cause loss of consciousness, heart damage, brain damage and death.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Two dermal studies resulted in significant irritation in rabbits but no significant systemic toxicity. 90-day inhalation exposures (approximately 1500 ppm vapor) in rats and monkeys produced light hydrocarbon nephropathy in male rats, but no other significant systemic toxicity.

---NEUROTOXICOLOGY (SUMMARY)---

Exposure to high concentrations of unleaded gasoline in rodents caused reversible central nervous system depression, however, no persistent neurotoxic effects were observed in subchronic inhalation studies of

gasoline blending streams. No neurotoxic effects, as measured by a functional observation battery, motor activity, and neuropathology, were observed in rats exposed to light alkylate naphtha for 13 weeks at concentrations up to 6600 ppm. The medical literature clearly documents neurotoxic effects in humans from abusive gasoline inhalation (sniffing).

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

Two separate inhalation teratology studies of unleaded gasoline vapor at exposures up to 1600 ppm and 9000 ppm for 6 hours/day on days 6-20 did not result in any significant developmental effects in rats. No significant effects were observed in the mothers or offspring. A two-generation inhalation reproductive study (CONCAWE) of unleaded gasoline showed no reproductive or developmental effects in rats exposed to concentrations up to 20,000 mg/m3 (approx. 8000 ppm).

---CHRONIC TOXICOLOGY (SUMMARY)---

A lifetime mouse skin painting study of unleaded gasoline applied at 50 microliters, three times weekly, resulted in some severe skin irritation and changes, but no statistically significant increase in skin cancer or cancer to any other organ. A lifetime inhalation study of vaporized unleaded gasoline at up to 2000 ppm caused liver tumors in female mice and increased kidney tumors in male rats. The kidney tumors resulted from the formation of a compound unique to male rats, and are not considered relevant to humans. The U.S. EPA Risk Assessment Forum concluded that the male rat kidney tumor results are not relevant for human risk assessment. The implications for the female mice liver tumor data for human risk assessment have not been fully determined. Multiple short-term cancer predicative tests (Ames Test, etc.) have routinely been negative (no cancer or mutagenic potential) for unleaded gasoline.

---SENSITIZATION (SUMMARY)---

Unleaded gasoline was not a skin sensitizer in tests in a Buehler Guinea Pig Sensitization Assay.

---OTHER TOXICOLOGY DATA---

Gasoline and Refinery Streams: Isolated constituents of gasoline may display these or other potential hazards in laboratory tests. Gasoline consists of a complex blend of petroleum/processing derived paraffinic, olefinic, naphthenic and aromatic hydrocarbons which include up to 5% benzene (with 1-2 % typical in the U.S.), n-hexane, mixed xylenes, toluene, ethylbenzene and trimethyl benzene. Benzene has also caused damage to the fetus of test animals in developmental studies. Benzene has tested positive (mutagenic) in a number of short-term cancer/mutation predicative tests. Repeated exposures to low levels of benzene (50-500 ppm) have been reported to result in blood abnormalities including anemia and, in rare cases, leukemia in both animals and humans. Prolonged exposure to n-hexane may result in a condition known as peripheral neuropathy. This is nervous system damage and is characterized by numbness of the extremities and, in extreme cases, paralysis. This product contains ethylbenzene. The International Agency for Research on Cancer (IARC) has evaluated ethylbenzene and classified it as possibly carcinogenic to humans (Group 2B) based on sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Methyl Tertiary Butyl Ether (MTBE) was

tested for carcinogenicity, neurotoxicity, chronic, reproductive, and developmental toxicity. The NOAEL for all end points evaluated in three animal species was 400 ppm or greater. An increase in kidney tumors/damage and liver tumors was observed in animals exposed to high concentrations of MTBE. Some embryo/fetal toxicity and birth defects were observed in the offspring of pregnant mice exposed to maternally toxic doses of MTBE, however the offspring of exposed pregnant rabbits were unaffected. The significance of the animal findings at high exposures are not believed to be directly related to potential human health hazards in the workplace.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS:

In the absence of specific environmental data for this product, this assessment is based on information for representative substances.

ECOTOXICITY: Based on test results for similar products, this substance may be toxic to aquatic organisms such as algae and daphnia (EL50/IrL50 =1-10 mg/L). This substance has also been shown to be toxic to fish (LL50 = 1-10 mg/L).

MOBILITY: Dissolution of the higher molecular weight hydrocarbon components in water will be limited, but losses through sediment adsorption may be significant.

PERSISTENCE AND DEGRADABILITY: The majority of the components in this product are expected to be inherently biodegradable. When released into the environment, some of the constituents of gasoline will volatilize and be photodegraded in the atmosphere. The less volatile, more water-soluble components which are aromatic hydrocarbons will also undergo aqueous photodegradation.

BIOACCUMULATIVE POTENTIAL: Not established.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Product is suitable for burning for fuel value in compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

RCRA INFORMATION: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity, or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP).

BENZENE: 2.0000 PCT (TCLP)
FLASH: < -40(-40) C(F)

14. TRANSPORT INFORMATION

USA DOT:

SHIPPING NAME:	Gasoline
HAZARD CLASS & DIV:	3
ID NUMBER:	UN1203
ERG NUMBER:	128
PACKING GROUP:	PG II
STCC:	NE
DANGEROUS WHEN WET:	No
POISON:	No
LABEL(s):	Flammable Liquid
PLACARD(s):	Flammable
PRODUCT RQ:	NA
MARPOL III STATUS:	NA

RID/ADR:

HAZARD CLASS:	3
PACKING GROUP:	II
LABEL:	3
DANGER NUMBER:	33
UN NUMBER:	1203
SHIPPING NAME:	Gasoline
REMARKS:	NA

IMO:

HAZARD CLASS & DIV:	3
UN NUMBER:	1203
PACKING GROUP:	PG II
SHIPPING NAME:	Gasoline
LABEL(s):	Flammable Liquid
MARPOL III STATUS:	NA

ICAO/IATA:

HAZARD CLASS & DIV:	3
ID/UN Number:	1203
PACKING GROUP:	PG II
SHIPPING NAME:	Gasoline
SUBSIDIARY RISK:	NA
LABEL(s):	Flammable Liquid

STATIC ACCUMULATOR (50 picosiemens or less): YES

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15. REGULATORY INFORMATION

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.

EU Labeling: Product is dangerous as defined by the European Union Dangerous Substances/Preparations Directives.

Symbol: F+ T N Extremely flammable, Toxic, Dangerous for the environment.

Risk Phrase(s): R12-45-38-65-67-51/53.
Extremely flammable. May cause cancer. Irritating to skin. Harmful: may cause lung damage if swallowed. Vapors may cause

drowsiness and dizziness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrase(s): S16-53-45-2-23-24-29-43-62.
Keep away from sources of ignition - No smoking. Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Keep out of the reach of children. Do not breathe vapor. Avoid contact with skin. Do not empty into drains. In case of fire use foam/drypowder/CO2. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Contains: Low Boiling Point Naphtha.

Governmental Inventory Status: All components comply with TSCA, EINECS/ELINCS, AICS, METI, DSL, KOREA, and PHILIPPINES.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES:
FIRE CHRONIC ACUTE

This product contains the following SARA (313) Toxic Release Chemicals:

CHEMICAL NAME	CAS NUMBER	CONC.
BENZENE(COMPONENT ANALYSIS)	71-43-2	2%
PSEUDOCUMENE (1,2, 4-TRIMETHYLBENZENE)(COMPONENT ANALYSIS)	95-63-6	3%
ETHYL BENZENE(COMPONENT ANALYSIS)	100-41-4	3%
TOLUENE(COMPONENT ANALYSIS)	108-88-3	6%
N-HEXANE(COMPONENT ANALYSIS)	110-54-3	3%
XYLENES(COMPONENT ANALYSIS)	1330-20-7	10%
METHYL-TERT-BUTYL ETHER(COMPONENT ANALYSIS)	1634-04-4	<16%

The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS *
GASOLINE		1, 8, 19, 20, 21, 23, 25
ETHYL ALCOHOL (COMPONENT ANALYSIS)	64-17-5	1, 6, 10, 18, 19, 20, 21, 23, 25, 26
BENZENE (COMPONENT ANALYSIS) (2.00%)	71-43-2	1, 2, 4, 6, 9, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25,

		26
NAPHTHALENE (COMPONENT ANALYSIS) (0.50%)	91-20-3	16, 22
PSEUDOCUMENE (1,2, 4-TRIMETHYLBENZENE) (COMPONENT ANALYSIS)	95-63-6	1, 20, 24, 25
ETHYL BENZENE (COMPONENT ANALYSIS)	100-41-4	1, 8, 10, 18, 19, 20, 21, 23, 24, 25, 26
TOLUENE (COMPONENT ANALYSIS) (6.00%)	108-88-3	1, 10, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
N-HEXANE (COMPONENT ANALYSIS)	110-54-3	1, 10, 18, 19, 20, 21, 23, 24, 25, 26
XYLENES (COMPONENT ANALYSIS) (10.00%)	1330-20-7	1, 10, 18, 19, 20, 21, 22, 23, 24, 25, 26
METHYL-TERT-BUTYL ETHER (COMPONENT ANALYSIS)	1634-04-4	1, 21, 24, 25
TRIMETHYL BENZENE (COMPONENT ANALYSIS)	25551-13-7	1, 10, 18, 19, 20, 21, 23, 25, 26

--- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL	6=IARC 1	11=TSCA 4	16=CA P65 CARC	21=LA RTK
2=ACGIH A1	7=IARC 2A	12=TSCA 5a2	17=CA P65 REPRO	22=MI 293
3=ACGIH A2	8=IARC 2B	13=TSCA 5e	18=CA RTK	23=MN RTK
4=NTP CARC	9=OSHA CARC	14=TSCA 6	19=FL RTK	24=NJ RTK
5=NTP SUS	10=OSHA Z	15=TSCA 12b	20=IL RTK	25=PA RTK
				26=RI RTK

* EPA recently added new chemical substances to its TSCA Section 4 test rules. Please contact the supplier to confirm whether the ingredients in this product currently appear on a TSCA 4 or TSCA 12b list.
Code key:CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive

16. OTHER INFORMATION

USE: UNLEADED MOTOR FUEL

NOTE: PRODUCTS OF EXXON MOBIL CORPORATION AND ITS AFFILIATED COMPANIES ARE NOT FORMULATED TO CONTAIN PCBS.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the

ultimate extent of injury.

Precautionary Label Text:

CONTAINS GASOLINE, BENZENE, AND ETHYLBENZENE

DANGER!

EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. RESPIRATORY IRRITATION, HEADACHE, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS, AND IN CASES OF EXTREME EXPOSURE, POSSIBLY DEATH. LOW VISCOSITY MATERIAL-IF SWALLOWED, MAY BE ASPIRATED AND CAN CAUSE SERIOUS OR FATAL LUNG DAMAGE.

OVEREXPOSURE TO BENZENE MAY RESULT IN CANCER, BLOOD DISORDERS, AND DAMAGE TO THE BONE MARROW. LONG-TERM EXPOSURE TO GASOLINE VAPOR HAS CAUSED KIDNEY AND LIVER CANCER IN LABORATORY ANIMIALS, BLOOD EFFECTS, AND NERVOUS SYSTEM DAMAGE.

Keep away from heat, sparks, and flame. Avoid all personal contact. Avoid prolonged breathing of vapor. Use with adequate ventilation. Keep container closed. Approved portable containers must be properly grounded when transferring fuel. For use as a motor fuel only. Misuse of gasoline may cause serious injury or illness. Never siphon by mouth. Not to be used as a solvent or skin cleaning agent.

FIRST AID: In case of contact, wash skin with soap and water. Immediately remove contaminated clothing, including shoes. Destroy or wash clothing before reuse. If swallowed, seek immediate medical attention. Do not induce vomiting. Only induce vomiting at the instruction of a physician.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product. Refer to product Material Safety Data Sheet for further safety and health information.

****

For Internal Use Only: MHC: 1* 1* 1* 1* 2*, MPPEC: CF, TRN: 35014-00, REQ: US - MARKETING, SAFE USE: G
EHS Approval Date: 03APR2003

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Prepared by: ExxonMobil Oil Corporation
Environmental Health and Safety Department, Clinton, USA

Material Safety Data Sheet Collection
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1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: n-Hexane **CAS Number:** 110-54-3
Chemical Formula: C_6H_{14}
Structural Chemical Formula: $H_3C(CH_2)_4CH_3$
EINECS Number: 203-777-6
ACX Number: X1001498-5
Synonyms: DIPROPYL; ESANI; GETTYSOLVE-B; HEKSAN; HEXANE; N-HEXANE; N-HEXANE; HEXANEN; HEXYL HYDRIDE; NORMAL HEXANE; NORMAL-HEXANE; SKELLYSOLVE-B; SKELLYSOLVE B
General Use: An incidental component of many aliphatic solvent mixes used as lacquer, paint and enamel thinners, also in ink reducers and cleaning solvents.
Also used for solvent extraction of oil seeds and in pesticide residue analysis and gas chromatography.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
n-hexane	110-54-3	> 95

OSHA PEL
TWA: 500 ppm; 1800 mg/m^3.

NIOSH REL
TWA: 50 ppm (180 mg/m^3).

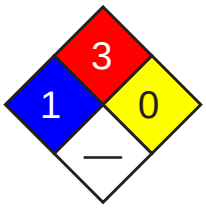
DFG (Germany) MAK
TWA: 50 ppm; PEAK: 400 ppm.

ACGIH TLV
TWA: 50 ppm; skin.

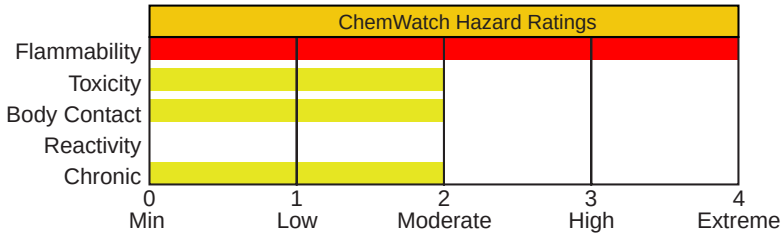
IDLH Level
1100 ppm (10% LEL).

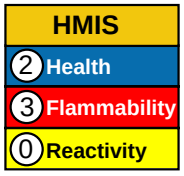
EU OEL
TWA: 72 mg/m^3 (20 ppm).

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word
Danger!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless, volatile liquid; sweet/gasoline odor. Irritating to eyes/skin/respiratory tract. Other Acute Effects: dizziness, fatigue, muscle weakness, hallucinations. Chronic Effects: muscle weakness, motor loss, sensory disturbances. Flammable.

Potential Health Effects

Target Organs: eyes, skin, respiratory system, central nervous system (CNS), peripheral nervous system
Primary Entry Routes: inhalation, skin contact/absorption, eyes, ingestion
Acute Effects
Inhalation: The vapor is discomforting and harmful to the upper respiratory tract.
Acute effects from inhalation of high concentrations of vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination.
If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.
Eye: The liquid is highly discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/or other transient eye damage/ulceration.

The vapor is irritating to the eyes and may cause smarting, painand redness.
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Skin: The liquid is discomforting to the skin and is capable of causing skin reactions which may lead to dermatitis.
Toxic effects may result from skin absorption.

Ingestion: The liquid is highly discomforting and harmful if swallowed.
Ingestion may result in nausea, pain, vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.
Considered an unlikely route of entry in commercial/industrial environments.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Chronic inhalation or skin exposure to n-hexane may cause peripheral neuropathy, which is damage to nerve ends in extremities, e.g. fingers, with loss of sensation and characteristic thickening. Nerve damage has been documented with chronic exposures of greater than 500 ppm.
Improvement in condition does not immediately follow removal from exposure and symptoms may progress for two or three months. Recovery may take a year or more depending on severity of exposure, and may not always be complete.
Exposure to n-hexane with methyl ethyl ketone (MEK) will accelerate the appearance of damage, but MEK alone will not cause the nerve damage.
Other isomers of hexane do not cause nerve damage.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Lay patient down. Keep warm and rested.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor.

See DOT ERG

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately remove all contaminated clothing, including footwear (after rinsing with water).
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center.
Do NOT induce vomiting. Give a glass of water.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Following acute or short-term repeated exposures to n-hexane:
1.Large quantities of n-hexane are expired by the lungs after vapor exposure (50-60%). Humans exposed to 100 ppm demonstrate an n-hexane biological half life of 2 hours.
2. Initial attention should be directed towards evaluation and support of respiration. Cardiac dysrhythmias are a potential complication.
INGESTION:
1.Ipecac syrup should be considered for ingestion of pure hexane exceeding 2-3 mL/kg. Extreme caution must be taken to avoid aspiration since small amounts of n-hexane intratracheally, produce a severe chemical pneumonitis
BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

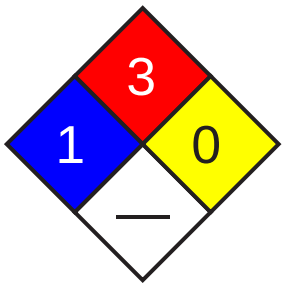
Determinant	Index	Sampling Time	Comments
2,5-hexanedione in urine	5 mg/gm creatinine	End of shift	NS
n-Hexane in end-exhaled air			SQ

NS: Non-specific determinant; Metabolite observed following exposure to other materials.
SQ: Semi-quantitative determinant; Interpretation may be ambiguous - should be used as a screening test or confirmatory test.

Section 5 - Fire-Fighting Measures

Flash Point: -22 °C
Autoignition Temperature: 225 °C
LEL: 1.1% v/v
UEL: 7.5% v/v
Extinguishing Media: Dry chemical powder. Foam.
Carbon dioxide.
General Fire Hazards/Hazardous Combustion Products: Liquid and vapor are highly flammable.
Severe fire hazard when exposed to heat, flame and/or oxidizers.
Vapor forms an explosive mixture with air.
Severe explosion hazard, in the form of vapor, when exposed to flame or spark. Vapor may travel a considerable distance to source of ignition.
Heating may cause expansion/decomposition with violent rupture of containers.
On combustion, may emit toxic fumes of carbon monoxide (CO). May emit clouds of acrid smoke.
Fire Incompatibility: Avoid reaction with oxidizing agents.
Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
Fight fire from a safe distance, with adequate cover.
If safe, switch off electrical equipment until vapor fire hazard removed.
Use water delivered as a fine spray to control the fire and cool adjacent area. Avoid spraying water onto liquid pools.
Do not approach containers suspected to be hot.
Cool fire-exposed containers with water spray from a protective location.
If safe to do so, remove containers from path of fire.

See DOT ERG



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: Remove all ignition sources. Clean up all spills immediately.
Avoid breathing vapors and contact with skin and eyes.
Control personal contact by using protective equipment.
Contain and absorb small quantities with vermiculite or other absorbent material. Wipe up. Collect residues in a flammable waste container.
Large Spills: Pollutant - clear area of personnel and move upwind.
Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways.
No smoking, bare lights or ignition sources. Increase ventilation.
Stop leak if safe to do so.
Water spray or fog may be used to disperse/absorb vapor.
Contain spill with sand, earth or vermiculite.
Use only spark-free shovels and explosion proof equipment.
Collect recoverable products into labeled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
Collect solid residues and seal in labeled drums for disposal.
Wash area and prevent runoff into drains.
If contamination of drains or waterways occurs, advise emergency services.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

See DOT ERG

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist. Avoid all personal contact, including inhalation.
Wear protective clothing when risk of exposure occurs.
Use in a well-ventilated area. Prevent concentration in hollows and sumps.
DO NOT enter confined spaces until atmosphere has been checked.
Avoid smoking, bare lights, heat or ignition sources.
When handling, DO NOT eat, drink or smoke.
Vapor may ignite on pumping or pouring due to static electricity.
DO NOT use plastic buckets. Ground and secure metal containers when dispensing or pouring product. Use spark-free tools when handling.
Avoid contact with incompatible materials.
Keep containers securely sealed. Avoid physical damage to containers.
Always wash hands with soap and water after handling.

Work clothes should be laundered separately.
Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
Avoid concurrent exposure to materials containing Methyl Ethyl Ketone MEK

Recommended Storage Methods: Metal can; metal drum. Packing as recommended by manufacturer.
Check all containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area.
General exhaust is adequate under normal operating conditions.
Local exhaust ventilation may be required in specific circumstances.
If risk of overexposure exists, wear NIOSH-approved respirator.
Correct fit is essential to obtain adequate protection.
Provide adequate ventilation in warehouse or closed storage areas.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields; or as required, chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Polyethylene gloves. Wear chemical protective gloves, eg. PVC.
Wear safety footwear.
Do NOT use this product to clean the skin.

Respiratory Protection:
Exposure Range >500 to <1100 ppm: Supplied Air, Constant Flow/Pressure Demand, Half Mask
Exposure Range 1100 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face
Note: poor warning properties

Other: Overalls. Eyewash unit. Barrier cream. Skin cleansing cream.

Glove Selection Index:

PE/EVAL/PE	Best selection
PVA	Best selection
SARANEX-23 2-PLY	Best selection
VITON	Best selection
VITON/CHLOROBUTYL	Best selection
TEFLON	Satisfactory; may degrade after 4 hours continuous immersion
NITRILE	Satisfactory; may degrade after 4 hours continuous immersion
NEOPRENE	Poor to dangerous choice for other than short-term immersion
NEOPRENE/NATURAL	Poor to dangerous choice for other than short-term immersion
NITRILE+PVC	Poor to dangerous choice for other than short-term immersion
PVC	Poor to dangerous choice for other than short-term immersion
BUTYL	Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Clear highly flammable liquid with typical paraffinic odor; floats on water. Mixes with most other organic solvents, chloroform, ether, alcohol. A very volatile liquid, it readily forms explosive vapor /air mixes.

Physical State: Liquid
Odor Threshold: 0.076 ppm
Vapor Pressure (kPa): 13.33
Vapor Density (Air=1): 2.97
Formula Weight: 86.17
Specific Gravity (H_2O=1, at 4 °C): 0.6603 at 20 °C
pH: Not applicable
pH (1% Solution): Not applicable
Boiling Point: 68.89 °C (156 °F)
Freezing/Melting Point: -100 °C (-148 °F) to -95 °C (-139 °F)
Volatile Component (% Vol): 100
Water Solubility: 0.002% by weight

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Presence of heat source and ignition source. Hazardous polymerization will not occur.

Storage Incompatibilities: Avoid storage with oxidizers.

Section 11 - Toxicological Information

Toxicity
Oral (rat) LD_{50}: 28710 mg/kg
Inhalation (human) TC_{Lo}: 190 ppm/8W
Inhalation (rat) LD_{50}: 48000 ppm/4h

Irritation
Eye (rabbit): 10 mg - mild

See *RTECS* MN9275000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Photolysis, hydrolysis or bioconcentration are not expected to be an important environmental fate processes. Biodegradation may occur in soil and water; however, volatilization and adsorption are expected to be far more important fate processes. A K_{oc} range of 1250 to 4100 indicates a low to slight mobility class in soil. In aquatic systems it may partition from the water column to organic matter contained in sediments and suspended materials. A Henry's Law constant of 1.81 atm-cu m/mole at 25 °C suggests rapid volatilization from environmental waters. The volatilization half-lives from a model river and a model pond, the latter considers the effect of adsorption, have been estimated to be 2.7 hr and 6.8 days, respectively. It is expected to exist entirely in the vapor-phase in ambient air. Reactions with photochemically produced hydroxyl radicals in the atmosphere have been shown to be important (average estimated half-life of 2.9 days). Data also suggests that nighttime reactions with nitrate radicals may contribute to atmospheric transformation, especially in urban environments.
Ecotoxicity: No data found.
Henry's Law Constant: calculated at 1.81
BCF: estimated at 2.24 to 2.89
Biochemical Oxygen Demand (BOD): theoretical 0%, 7 days
Octanol/Water Partition Coefficient: log K_{ow} = 4.11
Soil Sorption Partition Coefficient: K_{oc} = estimated at 1250 to 4100

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options and recycle where possible.
Follow applicable federal, state, and local regulations.
Incinerate residue at an approved site.
Recycle containers where possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Hexanes
ID: UN1208
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: II - Medium Danger
Symbols:
Label Codes: 3 - Flammable Liquid
Special Provisions: IB2, T4, TP1
Packaging: **Exceptions:** 150 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** E **Other:**

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001 5000 lb (2268 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Hydrochloric Acid
HYD2200

Section 1 - Chemical Product and Company Identification 61

Material Name: Hydrochloric Acid **CAS Number:** 7647-01-0
Chemical Formula: ClH
Structural Chemical Formula: HCl
EINECS Number: 231-595-7
ACX Number: X1002202-3
Synonyms: 4-D BOWL SANITIZER; ACIDE CHLORHYDRIQUE; ACIDO CLORHIDRICO; ACIDO CLORIDRICO; ANHYDROUS HYDROCHLORIC ACID; ANHYDROUS HYDROGEN CHLORIDE; AQUEOUS HYDROGEN CHLORIDE; BOWL CLEANER; CHLOORWATERSTOF; CHLOROHYDRIC ACID; CHLOROWODOR; CHLORURE D'HYDROGENE; CHLORURE D'HYDROGENE ANHYDRE; CHLORURO DE HIDROGENO; CHLORWASSERSTOFF; CLORURO DE HIDROGENO ANHIDRO; EMULSION BOWL CLEANER; EPA PESTICIDE CHEMICAL CODE 045901; HYDROCHLORIC ACID; HYDROCHLORIC ACID GAS; HYDROCHLORIDE; HYDROGEN CHLORIDE; HYDROGEN CHLORIDE (HCL); HYGEIA CREME MAGIC BOWL CLEANER; MURIATIC ACID; MURIATIC ACID); NOW SOUTH SAFTI-SOL BRAND CONCENTRATED BOWL CLEANSE WITHMAGIC ACTIO; PERCLEEN BOWL AND URINAL CLEANER; SPIRITS OF SALT; VARLEY'S OCEAN BLUE SCENTED TOILET BOWL CLEANER; VARLEY POLY-PAK BOWL CREME; WHITE EMULSION BOWL CLEANER; WUEST BOWL CLEANER SUPER CONCENTRATED
General Use: Hydrogen chloride is used to produce pharmaceutical hydrochlorides; vinyl chloride from acetylene; alkyl chlorides from olefins and arsenious chloride from arsenious oxide; electronic grade for etching semiconductor crystals. Used in the chlorination of rubber; in organic reactions involving isomerization, polymerization and alkylation; as a catalyst and condensing agent; for making chlorine where economical; in the separation of cotton from wool and cotton de-linting; as flux in the babbitt type of metal alloy; etching semi-conductor crystals.
Hydrochloric acid is used for pickling and heavy duty cleaning of metal parts; rust and scale removal. The production of chlorides; neutralizing bases; a laboratory reagent. For hydrolyzing starch and proteins in preparations for food. As a catalyst and solvent in organic synthesis. As "spirits of salts" for cleaning of lime and masonry from new brickwork. As flux or flux component for soldering; manufacture of "killed spirits".

Section 2 - Composition / Information on Ingredients

Name	CAS	%
hydrogen chloride	7647-01-0	> 99.0

OSHA PEL
Ceiling: 5 ppm, 7 mg/m^3.

NIOSH REL
Ceiling: 5 ppm (7 mg/m^3).

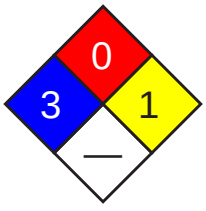
DFG (Germany) MAK
TWA: 5 ppm; PEAK: 5 ppm.

ACGIH TLV
Ceiling: 2 ppm.

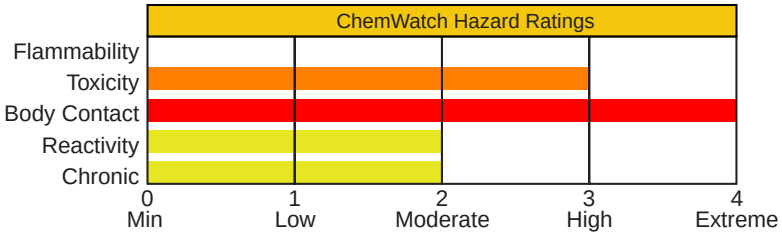
IDLH Level
50 ppm.

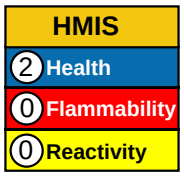
EU OEL
TWA: 5 ppm; STEL: 10 ppm.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Danger!


Corrosive Compressed Gas

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless gas; characteristic suffocating, pungent odor. Corrosive. Stored as compressed gas which may cause frostbite. Chronic Effects: erosion of teeth.

Potential Health Effects

Target Organs: eyes, skin, respiratory system, liver (in animals)
Primary Entry Routes: inhalation, skin contact, eye contact
Acute Effects

Inhalation: The vapor is extremely discomforting to the upper respiratory tract, may cause severe mucous membrane damage and may be harmful if inhaled.
Inhalation of quantities of liquid mist may be extremely hazardous, even lethal due to spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary edema.
A single severe exposure may cause coughing and choking; bleeding of nose, inflammation and occasionally ulceration of the nose, throat and larynx. Fluid on the lungs followed by generalized lung damage may follow.
Breathing of vapor may aggravate asthma and inflammatory or fibrotic pulmonary disease.
High concentrations cause necrosis of the tracheal and bronchial epithelium, pulmonary edema, atelectasis and emphysema and damage to the pulmonary blood vessels and liver.
Inhalation hazard is increased at higher temperatures.
The vapor from heated material is extremely discomforting to the upper respiratory tract and lungs if inhaled.
Continued severe exposure can result in pulmonary edema and corrosion of tissues in the nose and throat.

Eye: Hydrogen Chloride: The vapor is extremely discomforting to the eyes and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
Hydrochloric Acid: Eye contact is extremely painful and may cause rapid corneal damage. The liquid is extremely corrosive to the eyes and is capable of causing severe damage with loss of sight.
The vapor is highly discomforting and may be corrosive to the eyes. The vapor from heated material is extremely discomforting to the eyes.

Skin: The material is corrosive to the skin and may cause chemical burns.
Toxic effects may result from skin absorption. Bare unprotected skin should not be exposed to this material. The material may accentuate any pre-existing skin condition.
The vapor is discomforting to the skin.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.
The liquid is extremely corrosive if swallowed and is capable of causing burns to mouth, throat, esophagus, with extreme discomfort, pain and may be fatal if swallowed in quantity. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Chronic exposure may cause discoloration or erosion of the teeth, bleeding of the nose and gums; and ulceration of the nasal mucous membranes.
Repeated exposures of animals to concentrations of about 34 ppm produced no immediate toxic effects.
Workers exposed to hydrochloric acid suffered from gastritis and a number of cases of chronic bronchitis have also been reported.
Repeated or prolonged exposure to dilute solutions may cause dermatitis. Repeated exposure to low vapor concentrations can cause skin tenderness, bleeding of the nose and gums, chronic bronchitis, gastritis.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Lay patient down. Keep warm and rested.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor.

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately flush body and clothes with large amounts of water, using safety shower if available.
Quickly remove all contaminated clothing, including footwear.
Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor.

Ingestion: Contact a Poison Control Center. Rinse mouth out with plenty of water. Do NOT induce vomiting. Give a glass of water.

After first aid, get appropriate in-plant, paramedic, or community medical support.

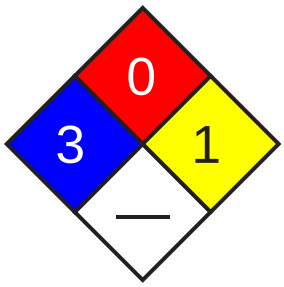
Note to Physicians: For acute or short-term repeated exposures to strong acids:
1.Airway problems may arise from laryngeal edema and inhalation exposure.
Treat with 100% oxygen initially.
2.Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling.

3. Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
4.Strong acids produce a coagulation necrosis characterized by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.
INGESTION:
1.Immediate dilution (milk or water) within 30 minutes post-ingestion is recommended.
2.Do not attempt to neutralize the acid since exothermic reaction may extend the corrosive injury.
3.Be careful to avoid further vomiting since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
4.Charcoal has no place in acid management.
5.Some authors suggest the use of lavage within 1 hour of ingestion.
SKIN:
1.Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
2.Deep second-degree burns may benefit from topical silver sulfadiazine.
EYE:
1.Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. Do not use neutralizing agents or any other additives. Several liters of saline are required.
2.Cycloplegic drops (1% cyclopentolate for short-term use or 5% homatropine for longer term use), antibiotic drops, vasoconstrictive agents, or artificial tears may be indicated dependent on the severity of the injury.
3.Steroid eye drops should only be administered with the approval of a consulting ophthalmologist.

Section 5 - Fire-Fighting Measures

Flash Point: Nonflammable
Autoignition Temperature: Not applicable
LEL: Not applicable
UEL: Not applicable
Extinguishing Media: Water spray or fog; foam; Bromochlorodifluoromethane (BCF) (where regulations permit); Dry agent; Carbon dioxide.

See DOT ERG



Fire Diamond

General Fire Hazards/Hazardous Combustion Products: Noncombustible liquid. Will not burn, but heat produces highly toxic fumes/vapors.
Heating may cause expansion or decomposition leading to violent rupture of containers. Decomposes on heating and produces toxic fumes of hydrogen chloride. Decomposition may produce toxic fumes of chlorine.
Reacts with metals producing flammable/explosive hydrogen gas. Contact with moisture or water may generate heat causing ignition. Reacts vigorously with alkalis. Moderate fire hazard when in contact with reducing agents.
Fire Incompatibility: Reacts with metals producing flammable/explosive hydrogen gas.
Avoid reactions with metals, metal oxides, hydroxides, amines, carbonates, alkaline materials, acetic anhydride, cyanides, sulphides, sulphites, phosphides, acetylides, borides, carbides, silicides, vinyl acetate, formaldehyde and potassium permanganate, unsaturated organics, metal acetylides, sulphuric acid.
Note: Compatibility with plastics should be confirmed prior to use.
Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation. Cool fire-exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use. Water spray or fog may be used to disperse vapor. Do not approach cylinders suspected to be hot. If safe to do so, stop flow of gas.

Section 6 - Accidental Release Measures

Small Spills: DO NOT touch the spill material. Clean up all spills immediately. Wear fully protective PVC clothing and breathing apparatus. Contain and absorb spill with sand, earth, inert material or vermiculite. Use soda ash or slaked lime to neutralize. Collect residues and place in labeled plastic containers with vented lids. Clear area of personnel and move upwind. Avoid breathing vapors and contact with skin and eyes. Do not exert excessive pressure on valve; do not attempt to operate damaged valve. Water spray or fog may be used to disperse vapor.

See DOT ERG

Large Spills: Contact fire department and tell them location and nature of hazard. Clear area of personnel and move upwind. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation. Stop leak if safe to do so. Remove leaking cylinders to a safe place if possible. Release pressure under safe, controlled conditions by opening the valve. Do not exert excessive pressure on valve; do not attempt to operate damaged valve. Shut off all possible sources of ignition and increase ventilation. Water spray or fog may be used to disperse vapor. Use soda ash or slaked lime to neutralize.
Collect and seal in labeled drums for disposal. Wash spill area with large quantities of water. If contamination of

drains or waterways occurs, advise emergency services. After clean-up operations, decontaminate and launder all protective clothing and equipment before storing and reusing. DO NOT touch the spill material. Contain and absorb spill with sand, earth, inert material or vermiculite.
DO NOT USE WATER OR NEUTRALIZING AGENTS INDISCRIMINATELY ON LARGE SPILLS.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist and vapor, breathing vapors and contact with skin and eyes.
Avoid physical damage to containers. Use in a well-ventilated area. Wear protective clothing and gloves when handling containers. Handle and open container with care.
WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material. When handling, DO NOT eat, drink or smoke. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Use good occupational work practices. Observe manufacturer's storing and handling recommendations.
Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Local exhaust ventilation may be required for safe working, i.e. to keep exposures below required standards; otherwise, PPE is required.
Keep dry. Reacts violently with water.
Transport containers on a trolley. Avoid sources of heat. DO NOT transfer gas from one cylinder to another.

Recommended Storage Methods: Packaging as recommended by manufacturer. Check that containers are clearly labeled.
Cylinder. Ensure the use of equipment rated for cylinder pressure. Ensure the use of compatible materials of construction. Valve protection cap to be in place until cylinder is secured, connected. Cylinder must be properly secured either in use or in storage. Cylinder valve must be closed when not in use or when empty. Segregate full from empty cylinders. WARNING: Suckback into cylinder may result in rupture. Use back-flow preventive device in piping.
Hydrochloric acid: Packs of 2.5 litres or less require a child-resistant closure. Glass container or Plastic carboy or Polylined drum.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: If risk of overexposure exists, wear air supplied breathing apparatus. Provide adequate ventilation in warehouse or closed storage areas. Use in a well-ventilated area. Local exhaust ventilation may be required for safe working, i. e. , to keep exposures below required standards; otherwise, PPE is required.
If risk of inhalation or overexposure exists, wear NIOSH-approved respirator or work in fume hood. Hydrogen chloride vapors will not be adequately absorbed by organic vapor respirators.

Personal Protective Clothing/Equipment:

Eyes: Chemical goggles. Full face shield.
DO NOT wear contact lenses. Contact lenses pose a special hazard; soft contact lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Neoprene gloves; rubber gloves. Nitrile gloves.
Safety footwear. Rubber boots.
Hydrochloric acid: Barrier cream and Neoprene gloves or Elbow length PVC gloves. Nitrile gloves.
PVC boots or PVC safety gumboots.

Respiratory Protection:
Exposure Range >5 to <50 ppm: Air Purifying, Negative Pressure, Half Mask
Exposure Range 50 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face
Cartridge Color: white

Other: Ensure there is ready access to a safety shower; Eyewash unit.
Acid-resistant overalls. Full protective suit. Operators should be trained in procedures for safe use of this material.

Glove Selection Index:

BUTYL	Best selection
BUTYL/NEOPRENE	Best selection
HYPALON	Best selection
NEOPRENE	Best selection
NEOPRENE/NATURAL	Best selection
NITRILE+PVC	Best selection
PE/EVAL/PE	Best selection
SARANEX-23	Best selection
VITON/NEOPRENE	Best selection
PVC	Best selection

NITRILE ..... Best selection
NATURAL RUBBER..... Satisfactory; may degrade after 4 hours continuous immersion
NATURAL+NEOPRENE..... Satisfactory; may degrade after 4 hours continuous immersion
NAT+NEOPR+NITRILE ..... Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Hydrogen chloride: Colorless, corrosive gas. Pungent suffocating odor. White fumes in moist air. Soluble in methanol, ethanol, ether and benzene.
Hydrochloric acid: Clear to light yellow (orange tint for inhibited grades) fuming corrosive liquid with sharp, suffocating odor.

Physical State: Hydrogen chloride: Compressed gas; Hydrochloric acid: Liquid
Odor Threshold: 0.26 to 0.3 ppm
Vapor Pressure (kPa): < 24.8 at 25 °C
Vapor Density (Air=1): 1.268 at 20 °C
Formula Weight: 36.461
Specific Gravity (H_2O=1, at 4 °C): < 1.19 at 20 °C
Evaporation Rate: Slow

pH: Hydrochloric acid: < 1
Boiling Point: -85 °C (-121 °F)
Freezing/Melting Point: -114.44 °C (-173.992 °F)
Volatile Component (% Vol): 100
Decomposition Temperature (°C): Not applicable
Water Solubility: 56.1 g/100 cc hot water at 60 °C

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Decomposes in the presence of moisture to produce corrosive acid. May generate sufficient heat to ignite combustible materials. Presence of heat source and direct sunlight (ultra-violet radiation). Product is considered stable under normal handling conditions. Hazardous polymerization will not occur.
Storage Incompatibilities: Hydrogen chloride: Segregate from most common metals and their alloys, alkalis, unsaturated organics, fluorine, metal carbides, metal acetylides, potassium permanganate and sulfuric acid. Compatibility with plastics should be confirmed prior to use.
Hydrochloric acid: Segregate from alkalies, oxidizing agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates. Avoid storage with metals, metal oxides, hydroxides, amines, carbonates, alkaline materials, acetic anhydride, cyanides, sulphides, sulphites, phosphides, acetylides, borides, carbides, silicides, vinyl acetate, formaldehyde and potassium permanganate. Reacts with zinc, brass, galvanized iron, aluminum, copper and copper alloys.

Section 11 - Toxicological Information

Toxicity
Inhalation (human) LC_{Lo}: 1300 ppm/30 m
Inhalation (human) LC_{Lo}: 3000 ppm/5 m
Inhalation (rat) LC_{50}: 3124 ppm/60 m
Inhalation (rat) LC_{50}: 4701 ppm/30 m
Oral (rat) LD_{50}: 900 mg/kg

Irritation
Eye (rabbit): 5 mg/30 s - mild

See *RTECS* MW 4025000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.
Ecotoxicity: TL_m Gambusia affinis (mosquito fish) 282 ppm/96 hr (fresh water) /Conditions of bioassay not specified; Lethal Lepomis macrochirus (bluegill sunfish) 3.6 mg/l/48 hr /Conditions of bioassay not specified; LC_{50} Cockle 330 to 1,000 mg/l/48 hr /Conditions of bioassay not specified; LC_{50} Carassius auratus (goldfish) 178 mg/l (1 to 2 hr survival time) /Conditions of bioassay not specified; LC_{50} Shore crab 240 mg/l/48 hr /Conditions of bioassay not specified; LC_{50} Shrimp 100 to 330 ppm/48 hr (salt water) /Conditions of bioassay not specified; LC_{100} Trout 10 mg/l 24 hr /Conditions of bioassay not specified
Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible. Consult manufacturer for recycling options. Treat and neutralize at an effluent treatment plant. Bury residue in an authorized landfill. Decontaminate empty containers with a lime slurry. Return empty containers to supplier or bury empty containers at an authorized landfill.
Return empty cylinders to supplier.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Hydrogen chloride, anhydrous
ID: UN1050
Hazard Class: 2.3 - Poisonous gas
Packing Group:
Symbols:
Label Codes: 2.3 - Poison Gas, 8 - Corrosive
Special Provisions: 3
Packaging: **Exceptions:** None **Non-bulk:** 304 **Bulk:** None
Quantity Limitations: **Passenger aircraft/rail:** Forbidden **Cargo aircraft only:** Forbidden
Vessel Stowage: **Location:** D **Other:** 40

Shipping Name and Description: Hydrochloric acid
ID: UN1789
Hazard Class: 8 - Corrosive material
Packing Group: II - Medium Danger
Symbols:
Label Codes: 8 - Corrosive
Special Provisions: A3, A6, B3, B15, IB2, N41, T8, TP2, TP12
Packaging: **Exceptions:** 154 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 1 L **Cargo aircraft only:** 30 L
Vessel Stowage: **Location:** C **Other:**

Shipping Name and Description: Hydrochloric acid
ID: UN1789
Hazard Class: 8 - Corrosive material
Packing Group: III - Minor Danger
Symbols:
Label Codes: 8 - Corrosive
Special Provisions: IB3, T4, TP1, TP12
Packaging: **Exceptions:** 154 **Non-bulk:** 203 **Bulk:** 241
Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** C **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4) 5000 lb (2268 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Listed
RQ: 5000 lb
TPQ: 500 lb
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Indeno[1,2,3-cd]pyrene **CAS Number:** 193-39-5
Chemical Formula: $C_{22}H_{12}$
EINECS Number: 205-893-2
ACX Number: X1004975-9
Synonyms: IDENO(1,2,3-CD)PYRENE; INDENO(1,2,3-C,D) PYRENE; INDENO(1,2,3-CD)PYRENE; INDENO[1,2,3-CD]PYRENE; INDENO(1,2,3-C,D)PYRENE; INDENOPYRENE; IP; 1,10-(1,2-PHENYLENE)PYRENE; 1,10-(O-PHENYLENE)PYRENE; 1,10-(ORTHO-PHENYLENE)PYRENE; 2,3-O-PHENYLENEPYRENE; 2,3-ORTHO-PHENYLENEPYRENE; 2,3-PHENYLENEPYRENE; O-PHENYLENEPYRENE; ORTHO-PHENYLENEPYRENE
General Use: Laboratory standard used in cancer research. Found in automotive and diesel exhaust, cigarette smoke condensate, benzene and pyrene pyrolysis products, soot, coal tar and coal tar pitch and petroleum asphalt.

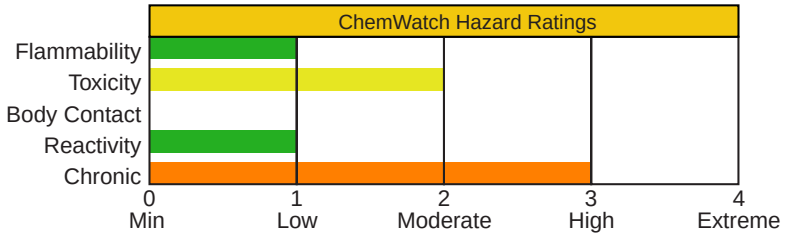
Section 2 - Composition / Information on Ingredients

Name	CAS	%
indeno[1,2,3-cd]pyrene	193-39-5	>98

OSHA PEL **NIOSH REL**

ACGIH TLV

Section 3 - Hazards Identification



☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Yellow plates or needles. May cause irritation to eyes/skin. Also causes: may be harmful by inhalation, ingestion, or skin absorption.

Potential Health Effects

Target Organs: No data found.
Primary Entry Routes: accidental skin and eye contact and inhalation of generated dusts
Acute Effects
Inhalation: The dust is harmful and discomforting to the upper respiratory tract.
Persons with impaired respiratory function, airway diseases, or conditions such as emphysema or chronic bronchitis may incur further disability if excessive concentrations of particulate are inhaled.
Eye: The dust may be discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to windburn), temporary impairment of vision and/ or other transient eye damage/ ulceration.
Skin: The material may be mildly discomforting to the skin. Open cuts and abraded or irritated skin should not be exposed to this material.
Toxic effects may result from skin absorption.
Ingestion: The solid/dust is discomforting to the gastrointestinal tract and harmful if swallowed.
Considered an unlikely route of entry in commercial/industrial environments.
Carcinogenicity: NTP - Listed; IARC - Group 2B, Possibly carcinogenic to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Not listed.

Chronic Effects: The so-called polycyclic aromatic hydrocarbons (PAHs) comprise a large family; some members occur in coal tar, tobacco smoke, petroleum and air pollution. Some substituted derivatives have been identified, in animal studies, as amongst the most highly active carcinogens.

Section 4 - First Aid Measures

Inhalation: • If dust is inhaled, remove to fresh air.
• Encourage patient to blow nose to ensure clear breathing passages.
• Rinse mouth with water. Consider drinking water to remove dust from throat.
• Seek medical attention if irritation or discomfort persist.
• If fumes or combustion products are inhaled, remove to fresh air.
• Lay patient down. Keep warm and rested.
• Other measures are usually unnecessary.

Eye Contact: If this product comes in contact with the eyes:
• Immediately hold the eyes open and flush with fresh running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Seek medical attention if pain persists or recurs.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: If product comes in contact with the skin:
• Immediately remove all contaminated clothing, including footwear (after rinsing with water).
• Wash affected areas thoroughly with water (and soap if available).
• Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center. If swallowed, and if more than 15 minutes from a hospital:
• Induce vomiting with Ipecac syrup, or fingers down the back of the throat, only if conscious. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Note: Wear a protective glove when inducing vomiting by mechanical means.
• Seek medical attention without delay.
• In the meantime, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
• If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
• If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Treat symptomatically.

Section 5 - Fire-Fighting Measures

Extinguishing Media: Foam. Dry chemical powder. BCF (where regulations permit). Carbon dioxide. Water spray or fog - Large fires only.

General Fire Hazards/Hazardous Combustion Products: • Solid which exhibits difficult combustion or is difficult to ignite.
• Avoid generating dust, particularly clouds of dust in a confined or unventilated space, as dust may form an explosive mixture with air and any source of ignition, i.e., flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited
• Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
• Build-up of electrostatic charge may be prevented by bonding and grounding.
• Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Fire Incompatibility: Avoid contamination with oxidizing agents i.e., nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Fire-Fighting Instructions: • Contact fire department and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves for fire only.
• Prevent, by any means available, spillage from entering drains or waterways.
• Use fire fighting procedures suitable for surrounding fire.
• Do not approach containers suspected to be hot.
• Cool fire-exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.
• Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

See DOT ERG

Small Spills: • Clean up all spills immediately.
• Avoid contact with skin and eyes.
• Wear protective clothing, gloves, safety glasses and dust respirator.
• Use dry clean up procedures and avoid generating dust.
• Vacuum up or sweep up.
• Place in clean drum then flush area with water.

Large Spills: • Clear area of personnel and move upwind.
• Contact fire department and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or waterways.
• No smoking, bare lights or ignition sources.
• Increase ventilation.
• Stop leak if safe to do so.
• Water spray or fog may be used to disperse/absorb vapor.
• Contain or absorb spill with sand, earth or vermiculite.
• Collect recoverable product into labeled containers for recycling.
• Collect solid residues and seal in labeled drums for disposal.
• Wash area and prevent runoff into drains.
• After clean up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.
• If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: • Avoid all personal contact, including inhalation.
• Wear protective clothing when risk of overexposure occurs.
• Use in a well-ventilated area.
• Prevent concentration in hollows and sumps.
• Do not enter confined spaces until atmosphere has been checked.
• Do not allow material to contact humans, exposed food or food utensils.
• Avoid smoking, bare lights or ignition sources.
• When handling, do not eat, drink or smoke.
• Avoid contact with incompatible materials.
• Keep containers securely sealed when not in used.
• Avoid physical damage to containers.
• Always wash hands with soap and water after handling.
• Work clothes should be laundered separately. Launder contaminated clothing before reuse.
• Observe manufacturer's storage/handling recommendations.
• Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Glass container. Plastic container. Metal can. Metal drum. Packing as recommended by manufacturer. Check that all containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Supplied-air type respirator may be required in special circumstances. An approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields. Chemical goggles. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear chemical protective gloves, e.g. PVC. Wear safety footwear.

Other: • Overalls.
• PVC Apron.
• PVC protective suit may be required if exposure severe.
• Eyewash unit.
• Ensure there is ready access to a safety shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Off-white powder.
Physical State: yellow plates or needles
Vapor Pressure (kPa): 1.0 $x10^{-1}$ mm Hg
Vapor Density (Air=1): not applicable
Formula Weight: 276.34
Evaporation Rate: not applicable
pH: not applicable
pH (1% Solution): not applicable
Boiling Point: 530 °C (986 °F)
Freezing/Melting Point: 162.5 °C (324.5 °F) to 164 °C (327.2 °F)
Volatile Component (% Vol): negligible
Water Solubility: 0.062 mg/L water

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid reaction with oxidizing agents.

Section 11 - Toxicological Information

Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.

See *RTECS* NK9300000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to soil it will sorb strongly (estimated K_{oc}= 20,146) and hence is not expected to leach. No information was found about volatilization from, hydrolysis in, or biodegradation in soil. Released to water it will sorb strongly to suspended particulate matter, biota and sediments. Although there is a high potential to bioconcentrate in most aquatic organisms, it may not in fish since fish contain microsomal oxidase, which allows polyaromatic hydrocarbons to be metabolized. No information was found about volatilization, photolysis, hydrolysis, or biodegradation in water. It will probably be persistent in the aquatic environment and concentrate in sediments. Almost all released to the atmosphere will be sorbed to particulate matter; thus its atmospheric fate will primarily depend on physical processes such as dry and wet deposition. However, a computer-estimated half-life in the vapor phase is about 20 hours due to reaction with photochemically produced hydroxyl radicals.
Ecotoxicity: No data found.
Henry's Law Constant: 5.89 $x10^{-10}$
BCF: estimated at 5.9407 $x10^{4}$
Octanol/Water Partition Coefficient: log K_{ow} = 6.584
Soil Sorption Partition Coefficient: K_{oc} = 2.0146 $x10^{4}$

Section 13 - Disposal Considerations

Disposal: • Recycle wherever possible or consult manufacturer for recycling options.
• Follow applicable local, state, and federal regulations.
• Bury residue in an authorized landfill.
• Recycle containers if possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: I - Great Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB7
Packaging: **Exceptions:** None **Non-bulk:** 211 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 kg **Cargo aircraft only:** 50 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: II - Medium Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP2, IP4
Packaging: **Exceptions:** None **Non-bulk:** 212 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 25 kg **Cargo aircraft only:** 100 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP3
Packaging: **Exceptions:** 153 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** 100 kg **Cargo aircraft only:** 200 kg
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U137 Toxic Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001, per CWA Section 307(a) 100 lb (45.35 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
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Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Isobutene
CAS Number: 115-11-7
Chemical Formula: C_4H_8
Structural Chemical Formula: $(CH_3)_2C=CH_2$
EINECS Number: 204-066-3
ACX Number: X1003822-9
Synonyms: Isobutene; ISOBUTYLENE; ASYM-DIMETHYLETHYLENE; GAMMA-BUTYLENE; 1,1-DIMETHYLETHYLENE; ISO-BUTENE; ISOBUTENE; ISOPROPYLIDENEMETHYLENE; LIQUEFIED PETROLEUM GAS; 2-METHYL-1-PROPENE; 2-METHYLPROPENE; 2-METHYLPROPYLENE; 1-PROPENE,2-METHYL-; PROPENE,2-METHYL-; UNSYM. DIMETHYLETHYLENE
General Use: Production of butene polymers used as adhesives, tackifiers, oil additives.
Butyl rubbers, copolymer resins with butadiene, acrylates and methacrylates.
Also to produce anti-oxidants for foods, food supplements, plastics and in production of isooctane and high-octane aviation gasoline.
Used in closed pressurized systems, fitted with safety relief valve.
Vented gas is flammable, denser than air and will spread. Vent path must not contain ignition sources, pilot lights, bare flames.

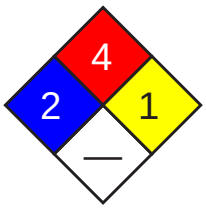
Section 2 - Composition / Information on Ingredients

Name	CAS	%
isobutene	115-11-7	>99

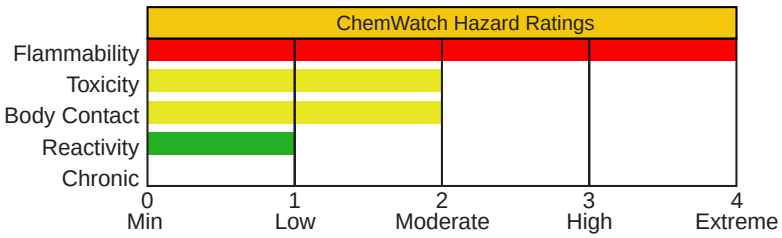
OSHA PEL **NIOSH REL**

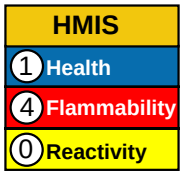
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Danger!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless gas. Acute Effects: Simple asphyxiant which can displace available oxygen; initial symptoms: rapid respiration, air hunger, diminished mental alertness, impaired muscular coordination. Can form explosive mixtures in air. Flammable.

Potential Health Effects

Target Organs: None reported
Primary Entry Routes: inhalation
Acute Effects
Inhalation: The gas is a simple asphyxiant (precludes access to oxygen) and is harmful if exposure is prolonged and inhalation may cause loss of consciousness.

Acute effects from inhalation of high concentrations of gas / vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination.
If exposure to highly concentrated atmosphere of gas is prolonged this may lead to narcosis, unconsciousness, even coma, and unless resuscitated, death.
Iso-butene is a simple asphyxiant and may have a narcotic action.
Material is highly volatile and may quickly form concentrated atmosphere in confined or unventilated area. Vapor is heavier than air and may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.
Hydrocarbons may sensitize the heart to adrenalin and other circulatory catecholamines; as a result cardiac arrhythmias and ventricular fibrillation may occur. Abrupt collapse may produce traumatic injury.
Central nervous system (CNS) depression may be evident early. Symptoms of moderate poisoning may include giddiness, headache, dizziness and nausea.
Serious poisonings may result in respiratory depression and may be fatal.
The paraffin gases C1-4 are practically non-toxic below their lower flammability limits (18000-50000 ppm). Above this level, incidental effects include CNS depression and irritation but these are reversible upon cessation of the exposure. The C3 and iso-C5 hydrocarbons show increasing narcotic properties; branching of the chain also enhances the effect.
The C4 hydrocarbons appear to be more highly neurotoxic than the C3 and C5 members. Several fatalities due to voluntary inhalation of butane have been reported, possibly due to central, respiratory and circulatory effects resulting from anesthesia, laryngeal edema, chemical pneumonia or the combined effects of cardiac toxicity and increased sympathomimetic effects.
Inhalation of petroleum gases may produce narcosis, due in part to olefinic impurities. Displacement of oxygen in the air may cyanosis.
If present in sufficient quantity these gases may reduce the oxygen level to below 18% producing asphyxiation.
Symptoms include rapid respiration, mental dullness, lack of coordination, poor judgement, nausea and vomiting.
The onset of cyanosis may lead to unconsciousness and death.

Eye: The liquid is highly discomforting and may cause severe cold burns and is capable of causing pain and severe conjunctivitis.
Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.
The gas is regarded as non-irritating to the eyes.

Skin: Vaporizing liquid causes rapid cooling and contact may cause cold burns, frostbite.The liquid is discomforting to the skin and may rapidly cause severe cold burns.
Bare unprotected skin should not be exposed to this material.
There is no evidence of skin absorption but contact may cause frostbite,

Ingestion: Overexposure is unlikely in this form.
Considered an unlikely route of entry in commercial/industrial environments.
The liquid is highly discomforting if swallowed and may cause severe cold burns.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Chronic overexposure may produce dermatitis.

Section 4 - First Aid Measures

Inhalation: Avoid becoming a casualty and remove to fresh air.
Lay patient down. If breathing is shallow or has stopped, ensure clear airway and apply resuscitation.
If available, medical oxygen should be administered by trained personnel.
Transport to hospital or doctor, without delay.

See DOT ERG

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: In case of cold burns (frost-bite): Bathe the affected area immediately in cold water for 10 to 15 minutes, immersing if possible and without rubbing.
Do not apply hot water or radiant heat. Apply a clean, dry dressing.
Transport to hospital or doctor.

Ingestion: Contact a Poison Control Center. DO NOT induce vomiting. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. Give water (or milk) to rinse out mouth. Then provide liquid slowly and as much as casualty can comfortably drink. Transport to hospital or doctor without delay.

After first aid, get appropriate in-plant, paramedic, or community medical support.

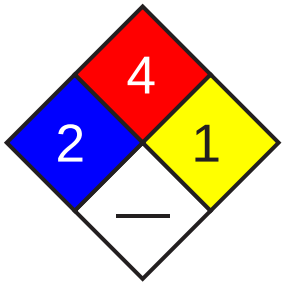
Note to Physicians: For acute or short-term repeated exposures to petroleum distillates or related hydrocarbons:
1.Primary threat to life from pure petroleum distillate ingestion and/or inhalation is respiratory failure.

2.Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO_2 <50 mm Hg or pCO_2 >50 mm Hg) should be intubated.
3.Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
4.A chest x-ray should be taken immediately after stabilization of breathing and circulation to document aspiration and detect the presence of pneumothorax.
5.Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitization to catecholamines.
Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
6.Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients.

Section 5 - Fire-Fighting Measures

Flash Point: -76.111 °C
Autoignition Temperature: 465 °C
LEL: 1.8% v/v
UEL: 9.6% v/v
Extinguishing Media: Water spray or fog; dry chemical powder.
Carbon dioxide.
Foam.

See DOT ERG



Fire Diamond

General Fire Hazards/Hazardous Combustion Products: Flammable gas. Liquid and vapor are highly flammable.
Dangerous hazard when exposed to heat, flame and oxidizers.
Gas may form explosive mixtures with air over a wide area.
Decomposes on heating and produces toxic fumes of carbon monoxide (CO) and carbon dioxide (CO_2).
Fire Incompatibility: Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.
Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
Do not extinguish burning gas. If safe to do so, stop flow of gas.
If flow of gas cannot be stopped, leave gas to burn.
Cool fire-exposed containers with water spray from a protected location.
Do not approach cylinders suspected to be hot.
If safe to do so, remove containers from path of fire.
Fight fire from a safe distance, with adequate cover.

Section 6 - Accidental Release Measures

Small Spills: Avoid breathing vapor and any contact with liquid or gas. Protective equipment including respirator should be used. Do NOT enter confined spaces where gas may have accumulated. Shut of all sources of possible ignition and increase ventilation. Clear area of personnel. Stop leak only if safe to so do. Remove leaking cylinders to safe place. Release pressure under safe controlled conditions by opening valve. Keep area clear of personnel until gas has dispersed.

See DOT ERG

Large Spills: DO NOT touch the spill material. Shut off all possible sources of ignition and increase ventilation. Restrict access to area. Clear area of personnel and move upwind.
May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
Avoid spraying water onto liquid pools.
Use extreme caution to avoid a violent reaction.
Stop leak if safe to do so.
DO NOT enter confined places where gas may have collected. Remove leaking cylinders to a safe place. Fit vent pipes. Release pressure under safe, controlled conditions by opening valve. Burn issuing gas at vent pipes.
Do not exert excessive pressure on valve; do not attempt to operate damaged valve.
Keep area clear of personnel until gas has dispersed
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Use good occupational work practices. Use in a well-ventilated area.

Obtain a work permit before attempting any repairs.
Do not attempt repair work on lines, vessels under pressure.
Atmospheres must be tested and O.K. before work resumes after leakage.
Wear protective clothing and gloves when handling containers.
No smoking, bare lights, heat or ignition sources.
Use spark-free tools when handling. Ground all lines and equipment.
Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked.
Gas may travel a considerable distance to source of ignition.
Vapor may ignite on pumping or pouring due to static electricity.
Avoid physical damage to containers.
DO NOT transfer gas from one cylinder to another.
Natural gases contain a contaminant, radon-222, a naturally occurring radioactive gas. During subsequent processing, radon tends to concentrate in liquified petroleum streams and in product streams having similar boiling points.
Industry experience indicates that the commercial product may contain small amounts of radon-222 and its radioactive decay products (radon daughters). The actual concentration of radon-222 and radioactive daughters in process equipment (IE lines, filters, pumps and reactor units) may reach significant levels and produce potentially damaging levels of gamma radiation. A potential external radiation hazard exists at or near any pipe, valve or vessel containing a radon enriched stream or containing internal deposits of radioactive material. Field studies, however, have not shown that conditions exist that expose the worker to cumulative exposures in excess of general population limits. Equipment containing gamma-emitting decay products should be presumed to be internally contaminated with alpha- emitting decay products which may be hazardous if inhaled or ingested.
During maintenance operations that require the opening of contaminated process equipment, the flow of gas should be stopped and a four hour delay enforced to allow gamma-radiation to drop to background levels. Protective equipment (including high efficiency particulate respirators (P3) suitable for radionucleotides or supplied air) should be worn by personnel entering a vessel or working on contaminated process equipment to prevent skin contamination or inhalation of any residue containing alpha-radiation.
Airborne contamination may be minimized by handling scale and/or contaminated materials in a wet state.

Recommended Storage Methods: Packaging as recommended by manufacturer.
Check that containers are clearly labeled.
Cylinder fitted with valve protector cap.
Ensure the use of equipment rated for cylinder pressure.
Ensure the use of compatible materials of construction.
Cylinder valve must be closed when not in use or when empty.
Cylinder must be properly secured either in use or in storage.
WARNING: Suckback into cylinder may result in rupture.
Use back-flow preventive device in piping.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated areaIf gas concentrations are high: or If risk of overexposure exists, wear NIOSH-approved respirator.
Correct fit is essential to obtain adequate protection.
Used in closed pressurized systems; fitted with temperature and pressure safety relief valves which are vented to allow safe dispersal.
Provide adequate ventilation in warehouse or closed storage areas.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields; or as required, chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Protective gloves eg. leather gloves or gloves with leather facing. Neoprene rubber gloves.
Safety footwear.

Other: Operators should be trained in correct use & maintenance of respirators Ensure that there is ready access to breathing apparatus.
Protective overalls, closely fitted at neck and wrist. Eye-wash unit.
IN CONFINED SPACES:
1. Non-sparking protective boots.
2. Static-free clothing.
3. Ensure availability of lifeline.
Staff should be trained in all aspects of rescue work.
Ensure there is ready access to an emergency shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Easily liquified flammable gas or colorless highly volatile liquid. Packed as liquid under pressure and remains liquid only under pressure. Sudden release of pressure or leakage may result in rapid vaporization with generation of large volume of highly flammable / explosive gas. Strong gasoline odor. Floats and boils on water giving a flammable / explosive, visible cloud. Soluble in alcohol, ether, benzene and sulphuric acid.

Physical State: Liquefied gas
Odor Threshold: 1.3 to 3.0 mg/m^3
Vapor Pressure (kPa): 182 kPa at 10 °C
Vapor Density (Air=1): 2.01
Formula Weight: 56.11
Specific Gravity (H_2O=1, at 4 °C): 0.59
Evaporation Rate: Very rapid
pH: Not applicable
pH (1% Solution): Not applicable.
Boiling Point: -6.9 °C (20 °F)
Freezing/Melting Point: -140.35 °C (-220.63 °F)
Volatile Component (% Vol): 100
Water Solubility: Practically insoluble in water

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid contact with oxidizing agents.

The interaction of alkenes and alkynes with nitrogen oxides and oxygen may produce explosive addition products; these may form at very low temperatures and explode on heating to higher temperatures (the addition products from 1,3-butadiene and cyclopentadiene form rapidly at -150 °C and ignite or explode on warming to -35 to -15 C). These derivatives ("pseudo- nitrosites") were formerly used to characterize terpene hydrocarbons.

Exposure to air must be kept to a minimum so as to limit the build-up of peroxides which will concentrate in bottoms if the product is distilled.

The product must not be distilled to dryness if the peroxide concentration is substantially above 10 ppm (as active oxygen) since explosive decomposition may occur. Distillate must be immediately inhibited to prevent peroxide formation. The effectiveness of the antioxidant is limited once the peroxide levels exceed 10 ppm as active oxygen. Addition of more inhibitor at this point is generally ineffective.

Prior to distillation it is recommended that the product should be washed with aqueous ferrous ammonium sulfate to destroy peroxides; the washed product should be immediately re-inhibited.

A range of exothermic decomposition energies for double bonds is given as 40-90 kJ/mol. The relationship between energy of decomposition and processing hazards has been the subject of discussion; it is suggested that values of energy released per unit of mass, rather than on a molar basis (J/g) be used in the assessment. For example, in "open vessel processes" (with man-hole size openings, in an industrial setting), substances with exothermic decomposition energies below 500 J/g are unlikely to present a danger, whilst those in "closed vessel processes" (opening is a safety valve or bursting disk) present some danger where the decomposition energy exceeds 150 J/g.

Avoid reactions with oxidizing agents, organic acids, inorganic acids halogenated compounds, polymerizable esters, oxygen, cyanohydrins and molten sulphur.

Section 11 - Toxicological Information

Toxicity
Inhalation (rat) LC_{50}: 620000 mg/m^3/4h

Irritation
Nil reported

See *RTECS* UD 0890000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.
Ecotoxicity: No data found.
BCF: no food chain concentration potential
Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options.
Discharge to burning flare. Return empty cylinders to supplier.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Isobutylene *see also* Petroleum gases, liquefied
ID: UN1055
Hazard Class: 2.1 - Flammable gas
Packing Group:
Symbols:
Label Codes: 2.1 - Flammable Gas
Special Provisions: 19, T50
Packaging: **Exceptions:** 306 **Non-bulk:** 304 **Bulk:** 314, 315
Quantity Limitations: **Passenger aircraft/rail:** Forbidden **Cargo aircraft only:** 150 kg
Vessel Stowage: **Location:** E **Other:** 40

Shipping Name and Description: Petroleum gases, liquefied *or* Liquefied petroleum gas
ID: UN1075
Hazard Class: 2.1 - Flammable gas
Packing Group:
Symbols:
Label Codes: 2.1 - Flammable Gas
Special Provisions: T50
Packaging: **Exceptions:** 306 **Non-bulk:** 304 **Bulk:** 314, 315
Quantity Limitations: **Passenger aircraft/rail:** Forbidden **Cargo aircraft only:** 150 kg
Vessel Stowage: **Location:** E **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Not listed
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
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(518) 842-4111

Methanol
MET1440

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Methanol **CAS Number:** 67-56-1
Chemical Formula: CH_4O
Structural Chemical Formula: CH_3OH
EINECS Number: 200-659-6
ACX Number: X1001287-2
Synonyms: ALCOHOL,METHYL; ALCOOL METHYLIQUE; ALCOOL METILICO; CARBINOL; X-CIDE 402 INDUSTRIAL BACTERICIDE; COAT-B1400; COLONIAL SPIRIT; COLONIAL SPIRITS; COLUMBIAN SPIRIT; COLUMBIAN SPIRITS; EPA PESTICIDE CHEMICAL CODE 053801; EUREKA PRODUCTS CRIOSINE DISINFECTANT; EUREKA PRODUCTS,CRIOSINE; FREERS ELM ARRESTER; IDEAL CONCENTRATED WOOD PRESERVATIVE; METANOL; METANOLO; METHANOL; METHYL ALCOHOL; METHYL HYDRATE; METHYL HYDROXIDE; METHYLALKOHOL; METHYLOL; METYLOWY ALKOHOL; MONOHYDROXYMETHANE; PMC REJEX-IT F-40ME; PYROLIGNEOUS SPIRIT; PYROXYLIC SPIRIT; PYROXYLIC SPIRITS; SURFLO-B17; WILBUR-ELLIS SMUT-GUARD; WOOD ALCOHOL; WOOD NAPHTHA; WOOD SPIRIT
Derivation: Prepared by wood pyrolysis; non-catalytic oxidation of hydrocarbons; as a by-product in the fisher-tropsch synthesis; or by reduction of carbon monoxide.
General Use: Used as an industrial solvent; starting material for organic synthesis; antifreeze for windshield washer fluid; in fuel antifreezes; gasoline octane booster; fuel for stoves; extractant for oils; denaturing ethanol; softening agent; food additive; in paint, varnish removers, and embalming fluids; in the manufacture of photographic film, celluloid, textile soap, wood stains, coated fabrics, shatterproof glass, paper coating, waterproofing formulations, artificial leather, dyes.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Methanol	67-56-1	ca 100% vol

Trace Impurities: (Grade A): Acetone and aldehydes < 30 ppm, acetic acid < 30 ppm

OSHA PEL
TWA: 200 ppm; 260 mg/m^3.

ACGIH TLV
TWA: 200 ppm; STEL: 250 ppm; skin.

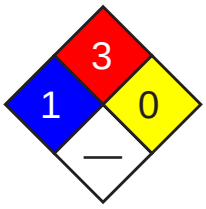
EU OEL
TWA: 260 mg/m^3 (200 ppm).

NIOSH REL
TWA: 200 ppm (260 mg/m^3); STEL: 250 ppm (325 mg/m^3); skin.

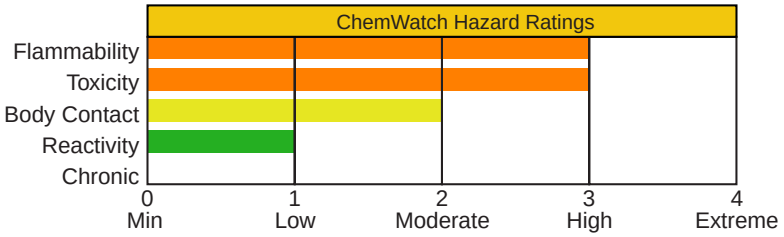
IDLH Level
6000 ppm.

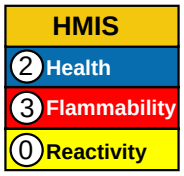
DFG (Germany) MAK
TWA: 200 ppm; PEAK: 800 ppm; skin.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word
Warning!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless liquid; slight alcohol odor when pure or disagreeably pungent odor. Irritating to eyes/skin/respiratory tract. Other Acute Effects: headache, visual disturbance, blindness, respiratory failure. Chronic Effects: reproductive effects reported in animal testing. Flammable; moderate explosion hazard.

Potential Health Effects

Target Organs: Eyes, skin, central nervous system (CNS), gastrointestinal (GI) tract, respiratory system
Primary Entry Routes: Inhalation, ingestion, skin and/or eye contact/absorption
Acute Effects
Inhalation: Irritation, breathing difficulty, headache, drowsiness, vertigo, light-headedness, nausea, vomiting, acidosis (decreased blood alkalinity), visual disturbance, and at high concentrations, CNS damage, convulsions, circulatory collapse, respiratory failure, coma and blindness can result from inhalation of methanol vapor. Concentration >= 200 ppm may cause headache; 50,000 ppm can cause death within 1-2 hrs.
Eye: Contact with liquid may result in irritation, inflamed lids, light sensitization, and superficial lesions.
Skin: Contact may cause irritation, dermatitis, swelling, scaling, and systemic effects.
Ingestion: GI irritation and systemic effects. Symptoms may be delayed 18-48 hours. Fatal dose - 2 to 8 ounces.
Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: None reported.
Chronic Effects: Exposure to methanol vapors has caused conjunctivitis, headache, giddiness, insomnia, GI disturbance, impaired vision. CNS damage is also likely. Methanol is slowly eliminated from the body; exposure is considered cumulative over the short term.

Section 4 - First Aid Measures

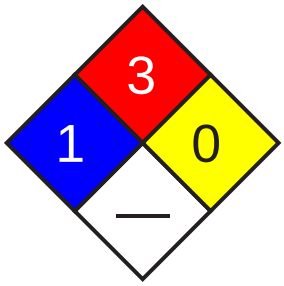
See DOT ERG

Inhalation: Remove exposed person to fresh air and support breathing as needed.
Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 minutes. Consult a physician or ophthalmologist if pain or irritation develops.
Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water, then induce vomiting.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians: Follow emesis with rehydration, correction of acidosis, and folate to enhance formate oxidation. Consider IV administration of ethanol (if blood methanol >20 mg/dL) to show metabolic oxidation of methanol. Assay formic acid in urine, blood pH and plasma bicarbonate.

Section 5 - Fire-Fighting Measures

See DOT ERG

Flash Point: 54 °F (12 °C), Closed Cup
Burning Rate: 1.7 mm/min
Autoignition Temperature: 867 °F (464 °C)
LEL: 6.0% v/v
UEL: 36% v/v
Flammability Classification: OSHA Class IB Flammable Liquid.
Extinguishing Media: Use dry chemical, carbon dioxide, water spray, fog or alcohol-resistant foam. A water spray may be used to cool fire-exposed containers, and flush spills away from ignition sources.
General Fire Hazards/Hazardous Combustion Products: Heating methanol to decomposition can produce carbon oxides (CO_x), formaldehyde, acrid smoke, and irritating fumes. Can form explosive mixtures in the air. The heavier-than-air vapors of methanol may travel along low-lying surfaces to distant sources of ignition and flash back to the material source. Containers may explode in heat of fire.



Fire Diamond

Fire-Fighting Instructions: *Do not* scatter material with any more water than needed to extinguish fire. *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental Release Measures

See DOT ERG

Spill/Leak Procedures: Isolate spill area for at least 330-660 feet (100-200 m) in all directions. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Ground all equipment used when handling this product. *Do not* touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors.
Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Use clean non-sparking tools to collect absorbed material.

Large Spills: Dike far ahead of liquid spill for later disposal. *Do not* release into sewers or waterways. Ground all equipment. Use non-sparking tools.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid vapor inhalation, and skin and eye contact. Use only with ventilation sufficient to reduce airborne concentrations to non-hazardous levels (see Sec. 2). Wear protective gloves, goggles, and clothing (see Sec. 8). Keep away from heat and ignition sources. Ground and bond all containers during transfers to prevent static sparks. Use non-sparking tools to open and close containers.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed container in cool, well-ventilated area, away from heat, ignition sources and incompatibles (see Sec. 10). Equip drums with self-closing valves, pressure vacuum bungs, and flame arrestors.

Regulatory Requirements: Follow applicable OSHA regulations. Also 29 CFR 1910.106 for Class 1B Flammable Liquids.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: To prevent static sparks, electrically ground and bond all containers and equipment used in shipping, receiving, or transferring operations. Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Enclose operations and/or provide local explosion-proof exhaust ventilation at the site of chemical release. Where possible, transfer methanol from drums or other storage containers to process containers. Minimize sources of ignition in surrounding areas.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets of butyl rubber, Teflon, Viton, Saranex, 4H, Responder, Trellchem HPS, or Tychem 10000 (Breakthrough Time (BT) >8 hr) to prevent skin contact. Natural rubber, neoprene, nitrile rubber, polyethylene, polyvinyl alcohol and CPF 3 may degrade after contact and are not recommended. Wear splash-proof chemical safety goggles, and face shield, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/ NIOSH-approved respirator. For concentrations <= 2000 ppm, use a supplied air respirator; <= 5000 ppm, supplied air (SA) respirator in continuous flow mode; <= 6000 ppm, SA respirator with tight-fitting face mask operated in continuous flow mode, or SCBA with full facepiece, or SA respirator with full facepiece; > IDLH/unknown/emergency, SCBA with full facepiece operated in pressure-demand or other positive-pressure mode, or SA respirator with full facepiece operated in pressure-demand or other positive-pressure mode in combination with auxiliary SCBA operated in pressure-demand or other positive-pressure mode. For escape, use an appropriate escape-type SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen- deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless; slight alcohol odor when pure, disagreeably pungent odor when crude.

Physical State: Liquid

Odor Threshold: 13.1150 to 26840 mg/m^3

Vapor Pressure (kPa): 127 mm Hg at 77 °F (25 °C)

Vapor Density (Air=1): 1.11

Bulk Density: 6.59 lbs/gal at 68 F (20 °C)

Formula Weight: 32.04

Density: 0.796 g/mL at 59 °F (15 °C)

Specific Gravity (H_2O=1, at 4 °C): 0.81 at 0 °C/4 °C

Refractive Index: 1.3292 at 68 °F (20 °C)

pH: Slightly acidic

Boiling Point: 148 °F (64.7 °C) at 760 mm Hg

Freezing/Melting Point: -144.04 °F (-97.8 °C)

Viscosity: 0.614 mPa sec

Surface Tension: 22.61 dynes/cm

Ionization Potential (eV): 10.84 eV

Water Solubility: Miscible

Other Solubilities: Ethanol, acetone, benzene, chloroform, DMSO, ether, ketones, most organic solvents.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Methanol is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Vapor inhalation, oxidizers.

Storage Incompatibilities: Include beryllium dihydride, metals (potassium, magnesium), oxidants (barium perchlorate, bromine, chlorine, hydrogen peroxide, sodium hypochlorite, phosphorus trioxide), potassium tertbutoxide, carbon tetrachloride and metals, chloroform and heat, diethyl zinc, alkyl aluminum salts, acetyl bromide, chloroform and sodium hydroxide, cyanuric chloride, nitric acid, chromic anhydride, lead perchlorate.

Hazardous Decomposition Products: Thermal oxidative decomposition of methanol can produce carbon oxides (CO_x), formaldehyde, acrid smoke, and irritating fumes.

Section 11 - Toxicological Information

Acute Oral Effects:

Rat, oral, LD_{50}: 5628 mg/kg.

Human, oral, LD_{Lo}: 428 mg/kg produced toxic effects: behavioral - headache; lungs, thorax, or respiration - other changes.

Human, oral, LD_{Lo}: 143 mg/kg produced optic nerve neuropathy, dyspnea, nausea or vomiting.

Acute Inhalation Effects:

Rat, inhalation, LC_{50}: 64000 ppm/4 hr.

Human, inhalation, TC_{Lo}: 300 ppm produced visual field changes, headache; lungs, thorax, or respiration - other changes.

Acute Skin Effects:

Rabbit, skin, LD_{50}: 15800 mg/kg.

Monkey, skin, LD_{Lo}: 393 mg/kg.

Irritation Effects:

Rabbit, standard Draize test: 100 mg/24 hr resulted in moderate irritation.

Rabbit, standard Draize test: 20 mg/24 hr resulted in moderate irritation.

Other Effects:

Rat, oral: 10 µmol/kg resulted in DNA damage.

Rat, inhalation: 50 mg/m^3/12 hr/13 weeks intermittently produced degenerative changes to brain and coverings; muscle contraction or spasticity.

Rat, inhalation: 2610 ppm/6 hr/4 weeks intermittently produced toxic effects: endocrine - changes in spleen weight.

Multiple Dose Toxicity Effects - Rat, oral: 12 g/kg/8 weeks intermittently produced toxic effects: behavioral - ataxia; behavioral - alteration of operant conditioning.

Human, lymphocyte: 300 mmol/L resulted in DNA inhibition.

Rat (female), oral: 7500 mg/kg, administered during gestational days 17-19 produced effects on newborn - behavioral.

Rat (female), oral: 35295 mg/kg administered during gestational days 1-15 produced effects on the fertility index; pre implantation mortality; and post-implantation mortality.

Rat (female), inhalation: 20000 ppm/7 hr, administered during gestational days 1-22 produced specific developmental abnormalities - musculoskeletal system; cardiovascular (circulatory) system; urogenital system.

Rat (male), oral: 200 ppm/20 hr, 78 weeks prior to mating produced paternal effects - testes, epididymis, sperm duct.

See *RTECS* PC1400000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Bioconcentration (BCF, estimated at 0.2) is not expected to be significant. Physical removal from air can occur via rainfall. Relatively rapid evaporation from dry surfaces is likely to occur. If released to the atmosphere, it degrades via reaction with photochemically produced hydroxyl radicals with an approximate half-life of 17.8 days. If released to water or soil, biodegradation is expected to occur. A low K_{oc} indicates little sorption and high mobility in the soil column.

Ecotoxicity: Trout, LC_{50}: 8,000 mg/L/48 hr; *Pimephales promelas* (fathead minnow) LC_{50}: 29.4 g/L/96 hr.

Henry's Law Constant: 4.55 $x10^{-6}$ atm-m^3/mole at 77 °F (25 °C)

Octanol/Water Partition Coefficient: log K_{ow} = -0.77

Soil Sorption Partition Coefficient: K_{oc} = 0.44

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Methanol
ID: UN1230
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: II - Medium Danger
Symbols: + I

Label Codes: 3 - Flammable Liquid, 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB2, T7, TP2
Packaging: **Exceptions:** 150 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 1 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** B **Other:** 40

Shipping Name and Description: Methanol
ID: UN1230
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: II - Medium Danger
Symbols: D - Domestic transportation

Label Codes: 3 - Flammable Liquid
Special Provisions: IB2, T7, TP2
Packaging: **Exceptions:** 150 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 1 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** B **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U154 Ignitable Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001 5000 lb (2268 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111
Issue Date: 2006-06

2-Methylnaphthalene
MET6180

Section 1 - Chemical Product and Company Identification 61

Material Name: 2-Methylnaphthalene **CAS Number:** 91-57-6
Chemical Formula: $C_{11}H_{10}$
Structural Chemical Formula: $C_{10}H_7CH_3$
EINECS Number: 202-078-3
ACX Number: X1002705-9
Synonyms: 2-METHYLNAPHTHALENE; BETA-METHYLNAPHTHALENE; NAPHTHALENE,2-METHYL-; NAPHTHALENE,BETA-METHYL
Derivation: 2-Methylnaphthalene is derived from coal tar.
General Use: 2-Methylnaphthalene is used in organic synthesis, vitamin K production, and insecticides; as a pesticide adjuvant, a dye carrier, and as a chemical intermediate.

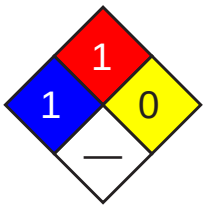
Section 2 - Composition / Information on Ingredients

Name	CAS	%
2-Methylnaphthalene	91-57-6	ca 95% wt (technical)

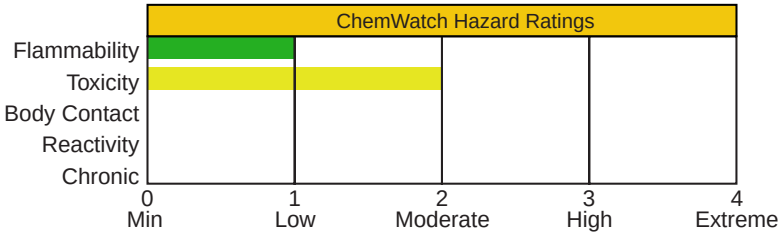
OSHA PEL **NIOSH REL**

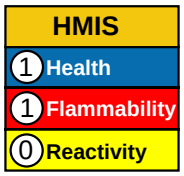
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

White solid. Irritating to eyes/skin/respiratory tract. Harmful by ingestion. Chronic effects: human mutation effects. Combustible.

Potential Health Effects

Target Organs: Eyes, skin, thorax and respiratory system
Primary Entry Routes: Ingestion, Inhalation, and skin/eye contact
Acute Effects
Inhalation: Causes upper respiratory system and mucous membrane irritation.
Eye: Contact causes eye irritation and possible corneal damage.
Skin: Contact causes skin irritation and skin photosensitization.
Ingestion: The toxic effects from ingestion of 2-methylnaphthalene have not been sufficiently investigated. However, naphthalene exposure causes facial flushing, fever, headache, restlessness, lethargy, nausea, vomiting, abdominal pain, anorexia, hemolysis, methemolglobinemia, hemoglobinuria, hyperkalemia, anemia, hepatocellular injury, and acute renal failure. Convulsion and coma may develop following severe exposures.
Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: None reported.
Chronic Effects: None reported.

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed. If breathing is difficult, give oxygen.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 min. Consult a physician or ophthalmologist if pain or irritation persist.

Skin Contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Wash out mouth with water provided person is conscious. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water, then induce vomiting.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Nausea, vomiting, abdominal pain, diarrhea, and anorexia may occur up to 48 hours following acute ingestion. Nausea may also occur after inhalation exposure. There is no specific antidote. Treatment is symptomatic and supportive. Consider GI decontamination with induced emesis or gastric lavage, followed by administration of activated charcoal. Hemolysis may require urinary alkalinization and transfusion; methemoglobinemia may require treatment with methylene or toluidine blue.

Section 5 - Fire-Fighting Measures

Flash Point: 207 °F (97 °C)

Autoignition Temperature: Data not found.

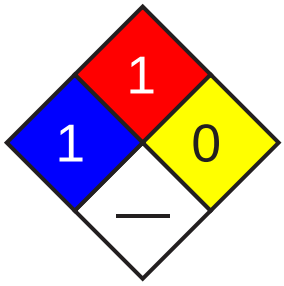
LEL: Data not found

UEL: Data not found

Extinguishing Media: Extinguish with water spray, carbon dioxide, dry chemical or appropriate foam.

General Fire Hazards/Hazardous Combustion Products: Acrid smoke, carbon monoxide, and carbon dioxide may be produced.

Fire-Fighting Instructions: Shut off all ignition sources. *Do not* release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode, rubber boots, and heavy rubber gloves.



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, evacuate all unnecessary personnel, remove heat and ignition sources. Isolate and ventilate area, deny entry, stay upwind. Cleanup personnel should protect against exposure (Sec. 8). Wear an SCBA, rubber boots and heavy rubber gloves.

Small Spills: If in solid form, *do not* sweep! Avoid raising dust. Carefully scoop up or vacuum (with a HEPA filter). Absorb liquid spill with an inert, noncombustible absorbent such as sand or vermiculite. Wash spill site after material pickup is complete.

Large Spills: For large spills, dike far ahead of liquid spill for later disposal. *Do not* release into sewers or waterways.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Wear personal protective clothing and equipment to prevent vapor inhalation and contact with skin or eyes (Sec. 8).

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed containers in a cool, well-ventilated area away from heat, light, ignition sources, and incompatibles.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose and exhaust ventilate operations to avoid vapor dispersion into the work area. Provide general or local exhaust ventilation systems to maintain airborne concentrations below hazardous levels. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Educate workers about the health and safety hazards associated with this material. Train in work practices which minimize exposure.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, rubber boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not protective eye devices. Appropriate eye protection must be worn instead of, or in conjunction with, contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air- purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: White
Physical State: Solid; crystals.
Odor Threshold: Chemically pure 5.00 $x10^{-2}$ ppm
Vapor Pressure (kPa): 6.81 x 10^{-2} mm Hg at 77 °F (25 °C)
Formula Weight: 142.21
Density: 1.0058 g/cm^3 at 20°/ 4°
Specific Gravity (H_2O=1, at 4 °C): 1.000
Refractive Index: 1.6015 at 77 °F (25 °C)
Boiling Point: 466 to 468 °F (241 to 242 °C)
Freezing/Melting Point: 93 to 97 °F (34 to 36 °C)
Ionization Potential (eV): 7.83 eV
Critical Temperature: 910 °F (488 °C)
Critical Pressure: 34.6 atm
Water Solubility: <1 mg/mL at 70 °F (21 °C)
Other Solubilities: Soluble in benzene and ether; at 70 °F (21 °C): >= 100 mg/mL 95% ethanol; >=100 mg/mL acetone; >=100mg/mL DMSO.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: 2-Methylnaphthalene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur. Avoid contact with chemical incompatibles, heat, and sources of ignition.
Storage Incompatibilities: Include strong oxidizing agents.
Hazardous Decomposition Products: Thermal oxidative decomposition of 2-methylnaphthalene can produce acrid smoke and toxic fumes of carbon monoxide and carbon dioxide.

Section 11 - Toxicological Information

Acute Oral Effects:
Rat, oral, LD_{50}: 1630 mg/kg.
Rat, oral: 5.00 mL/kg was lethal to all animals.

Other Effects:
Genetic Effects: Human, lymphocyte, 4 mmol/L induced cytogenetic analysis.
Human, lymphocyte, 250 µmol/L induced sister chromatid exchange.
Mouse, intraperitoneal, LD_{Lo}: 1 g/kg produced toxic effects: lung, thorax, or respiration - structural or functional change in trachea or bronchi; lung, thorax, or respiration - other changes.
Mouse, oral, 28500 mg/kg administered for 81 weeks continuously produced toxic effects: Tumorigenic - equivocal tumorigenic agent by RTECS criteria; lung, thorax ,or respiration - tumors.

See *RTECS* QJ9635000, for additional data.

Section 12 - Ecological Information

Environmental Fate: 2-Methylnaphthalene is a component of crude oil and a product of combustion which is produced and released to the environment during natural fires associated with lightning. Emissions from petroleum refining, coal tar distillation, and gasoline- and diesel-fueled engines are major contributors of 2-methlylnaphthalene to the environment. 2-Methylnephthalene should biodegrade rapidly in the environment where micro-organisms have acclimated to polycyclic aromatic hydrocarbons, and at a moderate rate in unacclimated soils and aquatic systems. Hydrolysis and bioconcentration of 2-methylnaphthalene should not be important fate processes in the environment. Photolysis is also likely to occur in air and on sunlit soil surfaces. 2-Methylnaphthalene is expected to exist entirely in the vapor phase in ambient air. Reactions with photochemically-produced hydroxyl radicals (half-life of 7.4 hours) and ozone (half-life of 28.7 days) in the atmosphere are likely to be important fate processes. A measured K_{oc} of 8500 indicates 2-methylnaphthalene will be immobile in soil. In aquatic systems, 2-methylnapthalene may partition from the water column to organic matter contained in sediments and suspended solids. A Henry's Law constant of 5.18×10^{-4} (calculated) suggests volatilization of 2-methylnaphthalene from environmental waters may be important. log K_{ow}: 3.86

Ecotoxicity: Moderately toxic to crustaceans and fish.

Henry's Law Constant: 5.18×10^{-4} (calculated)

BCF: 2.35×10^{4} (rainbow trout)

Soil Sorption Partition Coefficient: $K_{OC} = 8500$

Section 13 - Disposal Considerations

Disposal: Dissolve or mix 2-methylnaphthalene with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable federal, state, and local regulations. Handle empty containers carefully as hazardous residues may still remain. Triple rinse containers and dispose of wash wastewater appropriately.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Not specifically listed.

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Not listed
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
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Naphthalene
NAP1620

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Naphthalene **CAS Number:** 91-20-3
Chemical Formula: $C_{10}H_8$
EINECS Number: 202-049-5
ACX Number: X1001294-7
Synonyms: ALBOCARBON; CAMPHOR TAR; DEZODORATOR; FAULDING NAPHTHALENE FLAKES; MIGHTY 150; MIGHTY RD1; MOTH BALLS; MOTH FLAKES; MOTHBALLS; NAFTALEN; NAPHTHALENE; NAPHTHALIN; NAPHTHALINE; NAPHTHENE; TAR CAMPHOR; WHITE TAR
Derivation: From coal tar; from petroleum fractions after various catalytic processing operations.
General Use: Used as a moth repellent, an antiseptic, toilet bowl deodorant, heat transfer agent, fungicide, smokeless powder, cutting fluid, lubricant, wood preservative; an intermediate for naphthol, phthalic anhydride, chlorinated naphthalenes, Tertralin, Decalin, naphthyl and naphthol derivatives, and dyes; in synthetic resins, synthetic tanning, textile chemicals, scintillation counters, and emulsion breakers.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Naphthalene	91-20-3	ca 100% wt.

Grade - By melting point, 165 °F (74 °C) min (crude) to greater than 174 °F (79 °C) (refined); scintillation 176-177 °F (80-81 °C)

OSHA PEL
TWA: 10 ppm; 50 mg/m^3.

NIOSH REL
TWA: 10 ppm (50 mg/m^3); STEL: 15 ppm (75 mg/m^3).

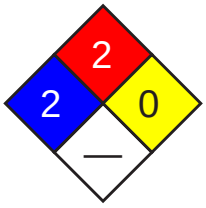
DFG (Germany) MAK
Skin.

ACGIH TLV
TWA: 10 ppm; STEL: 15 ppm; skin.

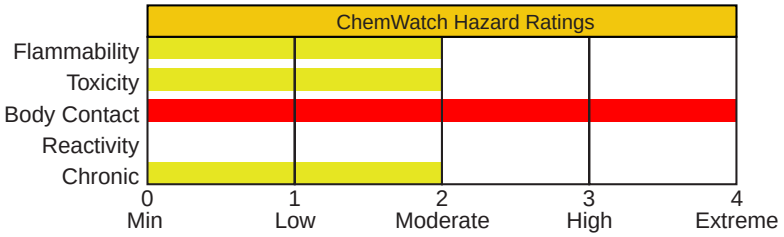
IDLH Level
250 ppm.

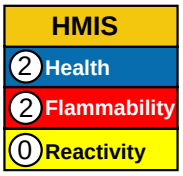
EU OEL
TWA: 10 ppm.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Warning!

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

White crystalline solid; "moth ball" or coal-tar odor. Irritating to eyes/skin/respiratory tract. Toxic by ingestion. Combustible solid. Dust may form explosive mixtures in air.

Potential Health Effects

Target Organs: Blood (red blood cell effects), eyes, skin, central nervous system (CNS), liver and kidneys
Primary Entry Routes: Inhalation, skin absorption, skin and/or eye contact
Acute Effects
Inhalation: Vapor inhalation causes headache, confusion, nausea, sometimes vomiting, loss of appetite, extensive sweating, dysuria (painful urination), hematuria (blood in the urine), and hemolysis (destruction of red blood cells).
Eye: Irritation, conjunctivitis, and corneal injury upon prolonged contact.
Skin: Irritation and hypersensitivity dermatitis.

Ingestion: Unlikely. However, ingestion causes irritation of the mouth and stomach, hemolytic anemia with hepatic and renal lesions and vesical congestion, kidney failure, hematuria, jaundice, depression of CNS, nausea, vomiting, abdominal pain, blue face, lips, or hands, rapid and difficult breathing, headache, confusion, excitement, malaise, fever, perspiration, urinary tract pain, dizziness, convulsions, coma, and death. Symptoms may appear 2 to 4 hours after exposure.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Class A4, Not classifiable as a human carcinogen; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.

Medical Conditions Aggravated by Long-Term Exposure: Diseases of the blood, liver and kidneys; individuals with a hereditary deficiency of the enzyme glucose-6-phosphate dehydrogenase in red blood cells are particularly susceptible to the hemolytic properties of naphthalene metabolites.

Chronic Effects: May cause optical neuritis, corneal injuries, cataracts, kidney damage. There are two reports of naphthalene crossing the placenta in humans.

Section 4 - First Aid Measures

See DOT ERG

Inhalation: Remove exposed person to fresh air and support breathing as needed. Contact a physician immediately if symptoms of systemic poisoning are present.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water for at least 15 min. Consult a physician or ophthalmologist if pain, irritation, swelling, or photophobia persist.

Skin Contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Wash exposed area thoroughly with soap and water. For reddened or blistered skin, consult a physician. Contact a physician immediately if symptoms of systemic poisoning are present.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the conscious and alert person drink 1 to 2 glasses of water, then induce vomiting. Contact a physician immediately.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Obtain baseline CBC, electrolytes, liver and renal function rests, glucose-6-phosphatase dehydrogenase level, urinalysis, and benzidine dipstick to check for hemoglobinuria. Urinary metabolite, 1-naphthol or mercapturic acid, may help confirm the diagnosis.

Section 5 - Fire-Fighting Measures

See DOT ERG

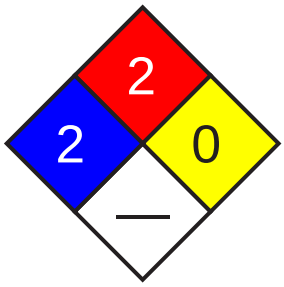
Flash Point: 174 °F (79 °C) OC; 190 °F (88 °C) CC

Autoignition Temperature: 979 °F (526 °C)

LEL: 0.9% v/v

UEL: 5.9% v/v

Flammability Classification: Combustible solid



Fire Diamond

Extinguishing Media: Use dry chemical, foam, carbon dioxide (CO_2), or water spray. Water or foam may cause frothing. Use water spray to keep fire-exposed containers cool.

General Fire Hazards/Hazardous Combustion Products: Toxic vapors including carbon monoxide. Volatile solid that gives off flammable vapors when heated. Dust may explode in air if an ignition source is provided.

Fire-Fighting Instructions: Move containers from the fire area if it can be done without risk. Otherwise cool fire-exposed containers until well after the fire is extinguished. Do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode. Wear full protective clothing. Structural clothing is permeable, remain clear of smoke, water fall out, and water run off.

Section 6 - Accidental Release Measures

See DOT ERG

Spill/Leak Procedures: Notify safety personnel, evacuate all unnecessary personnel, remove heat and ignition sources. Isolate and ventilate area, deny entry, stay upwind. Stop leak if you can do it without risk. Use spark-proof tools and explosion proof equipment. Cleanup personnel should wear personal protective equipment to protect against exposure.

Small Spills: Do not sweep! Carefully scoop up or vacuum (with a HEPA filter). Absorb liquid spill with an inert, noncombustible absorbent such as sand or vermiculite.

Large Spills: For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: To avoid vapor inhalation use only with ventilation sufficient to reduce airborne concentrations to nonhazardous levels. Avoid skin and eye contact. Wear personal protective clothing and equipment to prevent any contact with skin and eyes (see Sec. 8). Practice good personal hygiene procedures to prevent inadvertently ingesting this material.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Recommended Storage Methods: Store in tightly closed, explosion-proof containers in a cool, well-ventilated area away from heat, ignition sources, and incompatibles (see Sec. 10). May be stored under nitrogen gas. Protect containers against physical damage. Use monitoring equipment to measure the extent of vapor present in any storage facility containing naphthalene because of potential fire and explosion hazards.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Where feasible, enclose operations to avoid vapor and dust dispersion into the work area. Ventilate at the site of chemical release. During the fractional distillation of naphthalene and in any operation entailing the heating or volatilization of naphthalene, enclosed apparatus should be employed. Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: Educate workers about the health and safety hazards associated with naphthalene. Train in work practices which minimize exposure. Consider preplacement and periodic medical exams with emphasis on the eyes, skin, liver, kidneys, CBC (RBC count, WBC count, differential count of a stained smear, hemoglobin, and hematocrit), and urinalysis including at a minimum specific gravity, albumin, glucose, and a microscopic examination on centrifuged sediment.

Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent skin contact. Teflon is recommended. *Do not* use butyl rubber, natural rubber, neoprene or polyvinyl chloride. Wear chemical dust-proof safety goggles and face shield, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove naphthalene from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: White volatile flakes, cakes, cubes, spheres, or powder; strong coal-tar or moth ball odor.

Physical State: Crystalline solid

Odor Threshold: < 0.3 ppm

Vapor Pressure (kPa): 0.05 mm Hg at 68 °F (20 °C); 1.0 mm Hg at 127 °F (53 °C)

Formula Weight: 128.2

Density: 1.145 g/cm^3 at 68 °F (20 °C)

Boiling Point: 424 °F (218 °C)

Freezing/Melting Point: 176 °F (80.2 °C)

Water Solubility: Insoluble [31.7 mg/L at 68 °F (20 °C)]

Other Solubilities: Benzene, absolute alcohol; very soluble in ether, chloroform, carbon disulfide, hydronaphthalenes, fixed and volatile oils

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Naphthalene is stable at room temperature in closed containers under normal storage and handling conditions. It volatilizes at room temperature. Hazardous polymerization cannot occur. Exposure to heat and ignition sources, incompatibles.

Storage Incompatibilities: Include aluminum chloride, benzoyl chloride, chromic acid, chromium trioxide, oxidizers. Explosive reaction with dinitrogen pentaoxide. Melted naphthalene will attack some forms of plastics.

Hazardous Decomposition Products: Thermal oxidative decomposition of naphthalene can produce toxic fumes including carbon monoxide.

Section 11 - Toxicological Information

Acute Oral Effects:
Rat, oral, LD_{50}: 490 mg/kg.
Mouse, oral, LD_{50}: 533 mg/kg.
Human (child), oral, LD_{Lo}: 100 mg/kg.

Acute Inhalation Effects:
Rat, inhalation, LC_{50}: >340 mg/m^3 produced lacrimation and somnolence.

Irritation Effects:
Rabbit, eye, standard Draize test: 100 mg produced mild irritation.
Rabbit, skin, open Draize test: 495 mg produced mild irritation.

Other Effects:
Rat, oral: 4500 mg/kg administered on gestational days 6-15 produced fetotoxicity and other developmental abnormalities.
Man, unreported, LD_{Lo}: 74 mg/kg.
Mouse, inhalation: 30 ppm/6 hr/2 yr administered intermittently produced toxic effects: tumorigenic - neoplastic by RTECS criteria; lungs, thorax, or respiration - tumors.
Hamster, ovary: 15 mg/L induced sister chromatid exchange.

See *RTECS* QJ0525000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to the atmosphere, naphthalene rapidly photodegrades with a half-life of 3-8 hr. Volatilization, photolysis, adsorption, and biodegradation are important loss mechanisms for naphthalene discharged into water. Depending on local conditions, the half-lives range from a couple of days to a few months. If released on land, it is adsorbed moderately to soil, undergoes biodegradation; but in some cases biodegradation may still occur if conditions are aerobic. Bioconcentration occurs to a moderate extent, but is a temporary problem since depuration and metabolism readily proceed in aquatic organisms.

Ecotoxicity: *Oncorhynchus gorbuscha* (pink salmon): 1.37 ppm/96 hr at 39 °F (4 °C). *Pimephales promelas* (fathead minnow): 7.76 mg/L/24 hr.

Octanol/Water Partition Coefficient: log K_{ow} = 3.30

Section 13 - Disposal Considerations

Disposal: Consider rotary kiln or fluidized bed incineration. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations. Handle empty containers carefully as hazardous residues may still remain.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Naphthalene, crude *or* Naphthalene, refined
ID: UN1334
Hazard Class: 4.1 - Flammable solid
Packing Group: III - Minor Danger
Symbols:
Label Codes: 4.1 - Flammable Solid
Special Provisions: A1, IB8, IP3
Packaging: **Exceptions:** 151 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** 25 kg **Cargo aircraft only:** 100 kg
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Listed U165 Toxic Waste
CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4), per RCRA Section 3001, per CWA Section 307(a) 100 lb (45.35 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
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Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Nitric Acid **CAS Number:** 7697-37-2
Chemical Formula: HNO_3
Structural Chemical Formula: HNO_3
EINECS Number: 231-714-2
ACX Number: X1002177-5
Synonyms: ACIDE NITRIQUE; ACIDO NITRICO; AQUA FORTIS; AZOTIC ACID; AZOTOWY KWAS; ENGRAVER'S ACID; ENGRAVERS ACID; HYDROGEN NITRATE; KYSELINA DUSICNE; NITAL; NITRIC ACID; NITRIC ACID OTHER THAN RED FUMING WITH >70% NITRIC ACID; NITRIC ACID OTHER THAN RED FUMING WITH NOT >70% NITRICACID; NITROUS FUMES; NITRYL HYDROXIDE; RED FUMING NITRIC ACID (RFNA); SALPETERSAURE; SALPETERZUUROPLOSSINGEN; WHITE FUMING NITRIC ACID (WFNA)
General Use: Manufacture of organic and inorganic nitrates and nitro compounds for fertilizers, dye intermediates and many organic chemicals.
Used for etching and cleaning metals.
Operators should be trained in procedures for safe use of this material.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
nitric acid	7697-37-2	>95

OSHA PEL
TWA: 2 ppm; 5 mg/m^3.

ACGIH TLV
TWA: 2 ppm; STEL: 4 ppm.

EU OEL
STEL: 2.6 mg/m^3 (1 ppm).

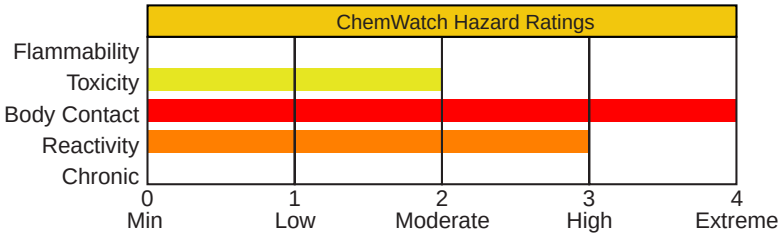
NIOSH REL
TWA: 2 ppm (5 mg/m^3); STEL: 4 ppm (10 mg/m^3).

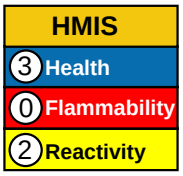
IDLH Level
25 ppm.

DFG (Germany) MAK
TWA: 2 ppm; PEAK: 2 ppm.

Section 3 - Hazards Identification

Fire Diamond





ANSI Signal Word

Danger!


Corrosive

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Clear to yellow fuming liquid; acrid, suffocating odor. Corrosive. Other Acute Effects: lung damage. Chronic Effects: tooth erosion, bronchitis. Strong oxidizer.

Potential Health Effects

Target Organs: eyes, skin, respiratory system, teeth
Primary Entry Routes: inhalation, ingestion, skin contact, eye contact
Acute Effects
Inhalation: The vapor is extremely discomforting and corrosive to the upper respiratory tract and lungs and the material presents a hazard from a single acute exposure or from repeated exposures over long periods.
Inhalation hazard is increased at higher temperatures.
Reactions may occur following a single acute exposure or may only appear after repeated exposures.

Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours later.
The material may produce respiratory tract irritation which produces an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system. Unlike most organs the lung can respond to a chemical insult or agent by first trying to remove or neutralize the irritant and then repairing the damage. The repair process, which initially developed to protect mammalian lungs from foreign matter and antigens, may however, cause further damage the lungs when activated by hazardous chemicals. The result is often the impairment of gas exchange, the primary function of the lungs.
Inhalation of nitric acid mist or fumes at 2 to 25 ppm over an 8 hour period may cause pulmonary irritation and symptoms of lung damage.
Only several minutes of exposure to concentrated atmosphere i.e. 200 ppm may cause severe pulmonary damage and even fatality. Death may be delayed for several days.
Exposure to nitric acid fumes (with concurrent inhalation of nitrogen dioxide and nitric oxide) may elicit prompt irritation of the upper respiratory tract leading to coughing, gagging, chest pain, dyspnea, cyanosis if concentrations are sufficiently high and duration of exposure sufficiently long, pulmonary edema.

Eye: The liquid is extremely corrosive to the eyes and contact may cause rapid tissue destruction and is capable of causing severe damage with loss of sight.
The vapor is extremely discomforting to the eyes and is capable of causing pain and severe conjunctivitis.
Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.
The material may produce moderate eye irritation leading to inflammation.
Repeated or prolonged exposure to irritants may produce conjunctivitis.
Eye contact with concentrated acid may give no pain, whilst diluted solution causes intense pain and both can cause permanent eye damage or blindness. Burns may result in shrinkage of the eyeball, symblepharon (adhesions between tarsal and bulbar conjunctivae), permanent corneal opacification, and visual impairment leading to blindness.

Skin: The liquid is extremely corrosive to the skin and contact may cause tissue destruction with severe burns.
Bare unprotected skin should not be exposed to this material.
The vapor is highly discomforting to the skin.
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.
Skin contact causes yellow discoloration of the skin, blisters and scars that may not heal. The skin may be stained bright-yellow or yellowish brown due to the formation of xanthoproteic acid. Dilute solutions may harden the epithelium without producing overt corrosion.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.
The material is extremely corrosive if swallowed and is capable of causing burns to mouth, throat, esophagus, with extreme discomfort, pain and may be fatal.
Even a small amount causes severe corrosion of the stomach, burning pain, vomiting and shock, possibly causing non-healing scarring of the gastrointestinal tract and stomach. Death may be delayed 12 hours to 14 days or to several months. Such late fatalities are attributed to a chemical lobular pneumonitis secondary to aspiration. Survivors show stricture of the gastric mucosa and subsequent pernicious anemia.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Not listed; MAK - Not listed.

Chronic Effects: Prolonged or repeated overexposure to low concentrations of vapor may cause chronic bronchitis, corrosion of teeth, even chemical pneumonitis.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Lay patient down. Keep warm and rested.
If available, administer medical oxygen by trained personnel.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor, without delay.

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Immediately transport to hospital or doctor. DO NOT delay.

Skin Contact: Immediately flush body and clothes with large amounts of water, using safety shower if available.
Quickly remove all contaminated clothing, including footwear.
Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor. DO NOT delay.

Ingestion: Contact a Poison Control Center.
Do NOT induce vomiting. Give a glass of water.
Immediately transport to hospital or doctor. DO NOT delay.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short-term repeated exposures to strong acids:

1.Airway problems may arise from laryngeal edema and inhalation exposure.
Treat with 100% oxygen initially.
2.Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling.
3. Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
4.Strong acids produce a coagulation necrosis characterized by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

INGESTION:

1.Immediate dilution (milk or water) within 30 minutes post-ingestion is recommended.
2.Do not attempt to neutralize the acid since exothermic reaction may extend the corrosive injury.
3.Be careful to avoid further vomiting since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
4.Charcoal has no place in acid management.
5.Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

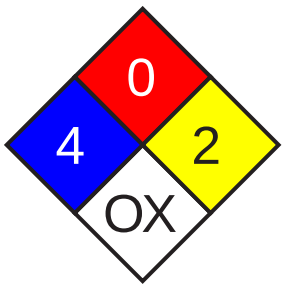
1.Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
2.Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

1.Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. Do not use neutralizing agents or any other additives. Several liters of saline are required.
2.Cycloplegic drops (1% cyclopentolate for short-term use or 5% homatropine for longer term use), antibiotic drops, vasoconstrictive agents, or artificial tears may be indicated dependent on the severity of the injury.
3.Steroid eye drops should only be administered with the approval of a consulting ophthalmologist.

Section 5 - Fire-Fighting Measures

Flash Point: Nonflammable
Autoignition Temperature: Not applicable
LEL: Not applicable
UEL: Not applicable
Extinguishing Media: Water spray or fog; foam, dry chemical powder, or BCF (where regulations permit).
Carbon dioxide.



Fire Diamond

General Fire Hazards/Hazardous Combustion Products: Will not burn but increases intensity of fire.
Heating may cause expansion or decomposition leading to violent rupture of containers.
Heat affected containers remain hazardous.
Contact with combustibles such as wood, paper, oil or finely divided metal may cause ignition, combustion or violent decomposition.
May emit irritating, poisonous or corrosive fumes.
Decomposes on heating and produces toxic fumes of nitrogen oxides (NO_x) and nitric acid.

Fire Incompatibility: Oxidizing agents as a class are not necessarily combustible themselves, but can increase the risk and intensity of fire in many other substances.
Reacts vigorously with water and alkali.
Avoid reaction with organic materials/compounds, powdered metals, reducing agents and hydrogen sulfide (H_2S) as ignition may result.
Reacts with metals producing flammable/explosive hydrogen gas.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
Fight fire from a safe distance, with adequate cover.
Extinguishers should be used only by trained personnel.
Use water delivered as a fine spray to control fire and cool adjacent area.
Avoid spraying water onto liquid pools.
Do not approach containers suspected to be hot.
Cool fire-exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.
If fire gets out of control withdraw personnel and warn against entry.
Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

Small Spills: Dangerous levels of nitrogen oxides may form during spills of nitric acid.
Wear fully protective PVC clothing and breathing apparatus.
Clean up all spills immediately. No smoking, bare lights, ignition sources.
Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
Avoid breathing dust or vapors and all contact with skin and eyes.
Control personal contact by using protective equipment.
Contain and absorb spill with dry sand, earth, inert material or vermiculite. DO NOT use sawdust as fire may result.
Scoop up solid residues and seal in labeled drums for disposal.
Neutralize/decontaminate area.
Use soda ash or slaked lime to neutralize.

See DOT ERG

Large Spills: DO NOT touch the spill material. Restrict access to area.
Clear area of personnel and move upwind. Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
No smoking, flames or ignition sources. Increase ventilation.
Contain spill with sand, earth or other clean, inert materials.
NEVER use organic absorbents such as sawdust, paper, cloth; as fire may result. Avoid any contamination by organic matter.
Use spark-free and explosion-proof equipment.
Collect any recoverable product into labeled containers for possible recycling. DO NOT mix fresh with recovered material.
Collect residues and seal in labeled drums for disposal.
Wash area and prevent runoff into drains. Decontaminate equipment and launder all protective clothing before storage and reuse.
If contamination of drains or waterways occurs advise emergency services.
DO NOT USE WATER OR NEUTRALIZING AGENTS INDISCRIMINATELY ON LARGE SPILLS.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist. Do not allow clothing wet with material to stay in contact with skin.
Avoid all personal contact, including inhalation.
Wear protective clothing when risk of exposure occurs.
Use in a well-ventilated area.
WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.
Avoid smoking, bare lights or ignition sources.
Avoid contact with incompatible materials.
When handling, DO NOT eat, drink or smoke.
Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately.
Launder contaminated clothing before reuse.
Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Stainless steel drum. Check that containers are clearly labeled.
Packaging as recommended by manufacturer.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area.
Local exhaust ventilation may be required for safe working, i. e. , to keep exposures below required standards; otherwise, PPE is required.
If risk of overexposure exists, wear NIOSH-approved respirator.
Correct fit is essential to obtain adequate protection.
In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus.

Personal Protective Clothing/Equipment:

Eyes: Chemical goggles. Full face shield.
DO NOT wear contact lenses. Contact lenses pose a special hazard; soft contact lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Bare unprotected skin should not be exposed to this material. Impervious, gauntlet length gloves i.e., butyl rubber gloves or Neoprene rubber gloves or wear chemical protective gloves, e.g. PVC.

Wear safety footwear or safety gumboots, e.g. Rubber.

Respiratory Protection:

Exposure Range >2 to <25 ppm: Supplied Air, Constant Flow/Pressure Demand, Half Mask

Exposure Range 25 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face

Other: Operators should be trained in procedures for safe use of this material.

Acid-resistant overalls or Rubber apron or PVC apron.

Ensure there is ready access to an emergency shower.

Ensure that there is ready access to eye wash unit.

Ensure that there is ready access to breathing apparatus.

Glove Selection Index:

BUTYL ..... Best selection
HYPALON ..... Best selection
NEOPRENE..... Best selection
NEOPRENE/NATURAL..... Best selection
PE/EVAL/PE ..... Best selection
SARANEX-23 ..... Best selection
NATURAL RUBBER..... Satisfactory; may degrade after 4 hours continuous immersion
NATURAL+NEOPRENE..... Satisfactory; may degrade after 4 hours continuous immersion
PVC..... Poor to dangerous choice for other than short-term immersion
NITRILE+PVC..... Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Clear, colorless to slightly yellow liquid. Sharp strong odor.
CAUTION: exothermic dilution hazard.
HIGHLY CORROSIVE. Corrosive to most metals. Powerful oxidizing agent.
Darkens to brownish color on aging and exposure to light.

Physical State: Liquid
Odor Threshold: 0.75 to 2.50 mg/m^3
Vapor Pressure (kPa): 8.26
Vapor Density (Air=1): 1.5
Formula Weight: 63.02
Specific Gravity (H_2O=1, at 4 °C): 1.3-1.42
pH: < 1

pH (1% Solution): 1
Boiling Point: 83 °C (181 °F) at 760 mm Hg
Freezing/Melting Point: -42 °C (-43.6 °F)
Volatile Component (% Vol): 100 (nominal)
Decomposition Temperature (°C): Not applicable
Water Solubility: Soluble in all proportions

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Presence of heat source and direct sunlight. Storage in unsealed containers. Hazardous polymerization will not occur.

Storage Incompatibilities: Segregate from reducing agents, finely divided combustible materials, combustible materials, sawdust, metals and powdered metals.

Avoid contamination of water, foodstuffs, feed or seed.

Segregate from alkalies, oxidizing agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.

Section 11 - Toxicological Information

Toxicity

Oral (human) LD_{Lo}: 430 mg/kg
Inhalation (rat) LC_{50}: 2500 ppm/1 hr
Unreported (man) LD_{Lo}: 110 mg/kg

Irritation

Nil reported

See *RTECS* QU 5775000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.

Ecotoxicity: LC_{50} Starfish 100-300 mg/l/48 hr /Aerated water conditions; LC_{50} Shore crab 180 mg/l/48 hr /Static, aerated water conditions; LC_{50} Cockle 330-1000 mg/l/48 hr /Aerated water conditions

BCF: no food chain concentration potential

Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible. Special hazards may exist - specialist advice may be required.
Consult manufacturer for recycling options.
Follow applicable federal, state, and local regulations.
Treat and neutralize at an approved treatment plant.
Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.
Puncture containers to prevent reuse and bury at an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Nitric acid *other than red fuming, with more than 70 percent nitric acid*

ID: UN2031
Hazard Class: 8 - Corrosive material
Packing Group: I - Great Danger
Symbols:
Label Codes: 8 - Corrosive, 5.1 - Oxidizer
Special Provisions: B47, B53, T10, TP2, TP12, TP13
Packaging: **Exceptions:** None **Non-bulk:** 158 **Bulk:** 243
Quantity Limitations: **Passenger aircraft/rail:** Forbidden **Cargo aircraft only:** 2.5 L
Vessel Stowage: **Location:** D **Other:** 44, 66, 89, 90, 110, 111

Shipping Name and Description: Nitric acid *other than red fuming, with not more than 70 percent nitric acid*

ID: UN2031
Hazard Class: 8 - Corrosive material
Packing Group: II - Medium Danger
Symbols:
Label Codes: 8 - Corrosive
Special Provisions: B2, B47, B53, IB2, T8, TP2, TP12
Packaging: **Exceptions:** None **Non-bulk:** 158 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** Forbidden **Cargo aircraft only:** 30 L
Vessel Stowage: **Location:** D **Other:**

Shipping Name and Description: Nitric acid, red fuming

ID: UN2032
Hazard Class: 8 - Corrosive material
Packing Group: I - Great Danger
Symbols: + - Override definitions
Label Codes: 8 - Corrosive, 5.1 - Oxidizer, 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: 2, B9, B32, B74, T20, TP2, TP12, TP13, TP38, TP45
Packaging: **Exceptions:** None **Non-bulk:** 227 **Bulk:** 244
Quantity Limitations: **Passenger aircraft/rail:** Forbidden **Cargo aircraft only:** Forbidden
Vessel Stowage: **Location:** D **Other:**

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4) 1000 lb (453.5 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Listed
RQ: 1000 lb
TPQ: 1000 lb
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Phenanthrene **CAS Number:** 85-01-8
Chemical Formula: $C_{14}H_{10}$
Structural Chemical Formula: $(C_6H_4CH)_2$
EINECS Number: 201-581-5
ACX Number: X1001897-8
Synonyms: COAL TAR PITCH VOLATILES: PHENANTHRENE; PHENANTHREN; PHENANTHRENE; PHENANTRIN
Derivation: A polynuclear aromatic hydrocarbon found as a component of coal tar pitch volatiles (products of bituminous coal distillation). Produced from toluene, bibenzil, 9-methyl fluorene or stilbene by passage through red hot tubes or by diene synthesis of 1-vinyl naphthalene and maleic anhydride.
General Use: Used in the manufacture of dyestuffs and explosives; in biological research or drug synthesis.

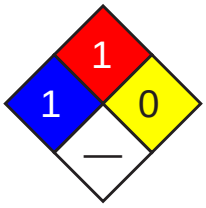
Section 2 - Composition / Information on Ingredients

Name	CAS	%
Phenanthrene	85-01-8	ca 100 % wt

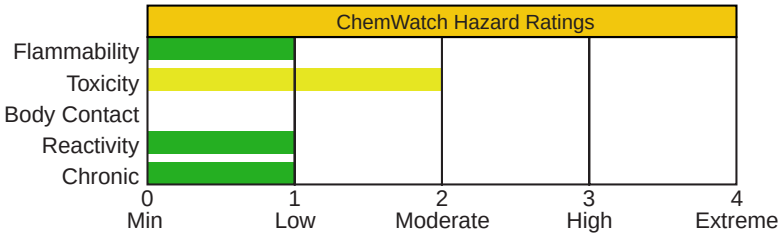
OSHA PEL **NIOSH REL**

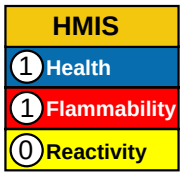
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Shiny crystals; faint, aromatic odor. Acute Effects: skin photosensitization. Combustible. Reacts dangerously with oxidizers.

Potential Health Effects

Target Organs: Skin.
Primary Entry Routes: Skin contact.
Acute Effects
Inhalation: Effects not reported.
Eye: Effects not reported.
Skin: Can cause photosensitization of the skin.
Ingestion: Effects not reported.
Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.
Medical Conditions Aggravated by Long-Term Exposure: Skin disorders.
Chronic Effects: None reported.

Section 4 - First Aid Measures

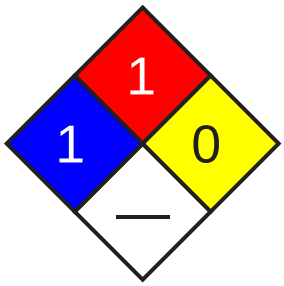
Inhalation: Remove exposed person to fresh air and support breathing as needed.
Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.
Skin Contact: *Quickly* remove contaminated clothing. Rinse exposed area with flooding amounts of water to remove loose material and then move quickly to a soap and water wash. For reddened or blistered skin, consult a physician.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water, then induce vomiting.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians: Treatment is symptomatic and supportive.

See DOT ERG

Section 5 - Fire-Fighting Measures

Flash Point: 340 °F (171 °C), Open Cup
LEL: Not reported.
UEL: Not reported.
Flammability Classification: Class IIIB Combustible liquid
Extinguishing Media: Use dry chemical or carbon dioxide; water spray or foam may cause frothing.
General Fire Hazards/Hazardous Combustion Products: Carbon oxides (CO_x) and acrid smoke
Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

See DOT ERG



Fire Diamond

Section 6 - Accidental Release Measures

Spill/Leak Procedures: Notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Shut off ignition sources. Cleanup personnel should protect against skin contact.
Small Spills: To avoid dust generation, *do not* sweep! Carefully scoop up or vacuum (with appropriate filter). Damp mop residue.
Large Spills: Flush large spill to containment area for later disposal. Do not release into sewers or waterways. Mop up any residue.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

See DOT ERG

Section 7 - Handling and Storage

Handling Precautions: Use nonsparking tools to open containers.
Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.
Recommended Storage Methods: Prevent physical damage to containers. Store in a cool, dry, well-ventilated area away from heat, ignition sources, and strong oxidizers.
Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: To prevent static sparks, electrically ground and bond all equipment used with and around phenanthrene. Provide general or local exhaust ventilation systems to maintain airborne concentrations below the OSHA PEL (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.
Administrative Controls: Consider preplacement and periodic medical exams of exposed workers with emphasis on the skin.
Personal Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. The following respirator recommendation is for *coal-tar pitch volatiles*: For any detectable concentration, use a SCBA or supplied-air respirator (with auxiliary SCBA) with a full facepiece and operated in pressure-demand or other positive pressure mode. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Other: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless, shiny crystals with a faint, aromatic odor.
Physical State: Solid
Odor Threshold: 0.055 to 0.06 mg/m^3
Vapor Pressure (kPa): 1 mm Hg at 244.76 °F (118.2 °C); 400 mm Hg at 586.4 (308 °C)
Formula Weight: 178.22
Density: 1.179 g/L at 77 °F (25 °C)
Refractive Index: 1.59427
Boiling Point: 644 °F (340 °C)
Freezing/Melting Point: 213 °F (101 °C)
Water Solubility: 1.6 mg/L at 59 °F (15 °C)
Other Solubilities: 1 g in: 2.4 mL toluene, 2.4 mL carbon tetrachloride, 2 mL benzene, 1 mL carbon disulfide, 25 mL absolute alcohol, 60 mL cold 95% alcohol, 10 mL boiling 95% alcohol and 3.3 mL anhydrous ether. Also soluble in glacial acetic acid, chloroform, and hot pyridine.

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Phenanthrene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization does not occur. Phenanthrene dust generation and exposure to heat ignition sources, or oxidizers.
Storage Incompatibilities: Strong oxidizers.
Hazardous Decomposition Products: Thermal oxidative decomposition of phenanthrene can produce carbon oxide(s).

Section 11 - Toxicological Information

Acute Oral Effects:
Mouse, oral, LD_{50}: 700 mg/kg.
Other Effects:
Tumorgenicity, mouse, skin: 71 mg/kg produced tumors at site of application.
Genetic Effects - Rat, liver cell: 3 mmol/L caused DNA damage.
Human, lymphocyte: 100 µmol/L caused mutation.

See *RTECS* SF7175000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to soil, some phenanthrene may biodegrade but the majority will bind to the soil without much leaching to groundwater. Volatilization is not expected to be significant. In water, it will adhere to particulates and sediment. Photolysis may occur near the surface producing toxic substances. Photolysis/photooxidation half-life = 8.4 hr. In the air, it will react with photochemically generated hydroxyl radicals (half-life = 1.67 days). Phenanthrene absorbs strongly to soil and sediment in water.
Ecotoxicity: *Neanhes arenaceodentata*, TL_m = 0.6 ppm/96 hr, sea water at 71.6 °F (22 °C)
Octanol/Water Partition Coefficient: log K_{ow} = 4.57

Section 13 - Disposal Considerations

Disposal: For treatment of phenanthrene contaminated water, the particulate bound portion can be removed by sedimentation, flocculation, and filtration. Chlorination is not recommended as it has been shown to produce mutagenic substances. The dissolved portion requires oxidation for partial removal. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Environmentally hazardous substances, solid, n.o.s.
ID: UN3077
Hazard Class: 9 - Miscellaneous hazardous material
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 9 - Class 9
Special Provisions: 8, 146, B54, IB8, N20
Packaging: **Exceptions:** 155 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** No limit **Cargo aircraft only:** No limit
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 5000 lb (2268 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

MATERIAL SAFETY DATA SHEET
FOR ODORIZED PROPANE

1. Chemical Product and Company Identification

Product Name: Odorized Propane

Chemical Name: Propane

Chemical Family: Paraffinic Hydrocarbon

Formula: C3H8

Synonyms: Dimethylmethane, LP-Gas, Liquefied Petroleum Gas (LPG), Propane, Propyl Hydride

Name & Address:	Transportation Emergency Number:	Emergency Number: For Routine Info, Call:

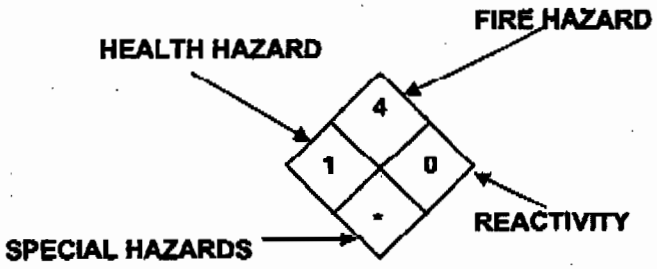
2. Composition/Information on Ingredients

Ingredient Name /CAS Number	Percentage	OSHA PEL	ACGIH TLV
Propane/74-98-6	87.5-100	1,000 ppm	Simple asphyxiant
Ethane/74-84-0	0-5.0		Simple asphyxiant
Propylene/115-07-1	0-10.0		Simple asphyxiant
Butanes/various	0-2.5		Simple asphyxiant
Ethyl Mercaptan/75-08-1	16-25ppm	0.5 ppm	0.5 ppm

3. Hazards Identification

EMERGENCY OVERVIEW

DANGER! Flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and other ignition sources. Vapor replaces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air. Liquid can cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid breathing of vapor. Keep container valve closed when not in use.



4– Severe **1– Slight**

3– Serious **0– Minimal**

2– Moderate *** – Ref. NFPA 704**

POTENTIAL HEALTH EFFECTS INFORMATION:

ROUTES OF EXPOSURE:

Inhalation: Asphyxient. It should be noted that before suffocation could occur, the lower flammability limit of propane in air would be exceeded, possibly causing both an oxygen-deficient and explosive atmosphere. Exposure to concentrations >10% may cause dizziness. Exposure to atmospheres containing 8%-10% or less oxygen will bring about unconsciousness without warning, and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death.

Eye Contact: Contact with liquid can cause freezing of tissue.

Skin Contact: Contact with liquid can cause frostbite.

[Skin Absorption]: None.

[Ingestion]: Liquid can cause freeze burn similar to frostbite. Ingestion not expected to occur in normal use.

CHRONIC EFFECTS: None

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY: Propane is not listed by NTP, OSHA or IARC.

4. First Aid Measures

INHALATION: Persons suffering from lack of oxygen should be removed to fresh air. If victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain prompt medical attention.

EYE CONTACT: Contact with liquid can cause freezing of tissue. Gently flush eyes with lukewarm water. Obtain medical attention immediately.

SKIN CONTACT: Contact with liquid can cause frostbite. Remove saturated clothes, shoes and jewelry. Immerse affected area in lukewarm water not exceeding 105. F. Keep immersed. Get prompt medical attention.

INGESTION: If swallowed, get immediate medical attention.

NOTES TO PHYSICIAN: None.

5. Fire-Fighting Measures

FLASH POINT: -156° F (-104° C) **AUTOIGNITION:** 842° F (432° C)

IGNITION TEMPERATURE IN AIR: 920-1120° F

FLAMMABLE LIMITS IN AIR BY VOLUME: Lower: 2.15% Upper: 9.6%

EXTINGUISHING MEDIA: Dry chemical, CO2, water spray or fog for surrounding area. Do not extinguish fire until propane source is shut off.

SPECIAL FIRE-FIGHTING INSTRUCTIONS: Evacuate personnel from danger area. Immediately cool container with water spray from maximum distance, taking care not to extinguish flames. If flames are accidentally extinguished, explosive re-ignition may occur. Where water is abundant and immediate, the fire should be allowed to burn while the container and area are cooled and the flow of propane is shut off. Where water is scarce, compare the risk of allowing the area to continue to heat from the fire and the alternative of extinguishing the fire without shutting off the propane flow, which may allow for the propane to accumulate and re-ignite explosively.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Propane is easily ignited. It is heavier than air; therefore, it can collect in low areas where an ignition source can be present. Pressure in a container can build up due to heat and container may

rupture if pressure relief devices should fail to function. Propane released from a properly functioning relief valve on an overheated container can also become ignited.

HAZARDOUS COMBUSTION PRODUCTS: None.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Evacuate the immediate area. Eliminate any possible sources of ignition and provide maximum ventilation. Shut off source of propane, if possible. If leaking from container, or valve, contact your supplier.

7. Handling and Storage

HANDLING PRECAUTIONS: Propane vapor is heavier than air and can collect in low areas that are without sufficient ventilation. Leak-check system with a leak detector or solution, never with flame. Make certain the container service valve is shut off prior to connecting or disconnecting. If container valve does not operate properly, discontinue use and contact supplier. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into pressure relief valve or cylinder valve cap openings. Do not drop or abuse cylinders. Never strike an arc on a gas container or make a container part of an electrical circuit. See "16. OTHER INFORMATION" for additional precautions.

STORAGE PRECAUTIONS: Store in a safe, authorized location (outside, detached storage is preferred) with adequate ventilation. Specific requirements are listed in NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*. Isolate from heat and ignition sources. Containers should never be allowed to reach temperature exceeding 125° F (52° C). Isolate from combustible materials. Provide separate storage locations for other compressed and flammable gases. Propane containers should be separated from oxygen cylinders, or other oxidizers, by a minimum distance of 20 feet, or by a barrier of non-combustible material at least 5 feet high having a fire rating of at least 1/2 hour. Full and empty cylinders should be segregated. Store cylinders in upright position, or with pressure relief valve in vapor space. Do not drop or abuse cylinders. Keep container valve closed and plugged or capped when not in use. Install protective caps when cylinders are not connected for use. Empty containers retain some residue and should be treated as if they were full.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS
Ventilation: Provide ventilation adequate to ensure propane does not reach a flammable mixture.

RESPIRATORY PROTECTION (SPECIFY TYPE)
General Use: None.
Emergency Use: If concentrations are high enough to warrant supplied-air or self-contained breathing apparatus, then the atmosphere may be flammable. (See Section 5). Appropriate precautions must be taken regarding flammability.

PROTECTIVE CLOTHING: Avoid skin contact with liquid propane because of possibility of freeze burn. Wear gloves and protective clothing which are impervious to the product for the duration of the anticipated exposure.

EYE PROTECTION: Safety glasses are recommended when handling cylinders.
OTHER PROTECTIVE EQUIPMENT: Safety shoes are recommended when handling cylinders.

9. Physical and Chemical Properties

BOILING POINT: @ 14.7 psia = -44° F

SPECIFIC GRAVITY OF VAPOR (Air = 1) at 60° F: 1.50

SPECIFIC GRAVITY OF LIQUID (Water = 1) at 60° F: 0.504

VAPOR PRESSURE: @ 70° F = 127 psig
@ 105° F = 210 psig

EXPANSION RATIO (From liquid to gas @ 14.7 psia): 1 to 270

SOLUBILITY IN WATER: Slight, 0.1 to 1.0%

APPEARANCE AND ODOR: A colorless and tasteless gas at normal temperature and pressure.
An odorant (ethyl mercaptan) has been added to provide a strong unpleasant odor.
Should a propane-air mixture reach the lower limits of flammability, the ethyl mercaptan concentration will be approximately 0.5 ppm in air.

ODORANT WARNING: Odorant is added to aid in the detection of leaks. One common odorant is ethyl mercaptan, CAS No.75-08-01. Odorant has a foul smell. The ability of people to detect odors varies widely. Also, certain chemical reactions with material in the propane system, or fugitive propane gas from underground leaks passing through certain soils, can reduce the odor level. No odorant will be 100% effective in all circumstances. If odorant appears to be weak, notify propane supplier immediately.

10. Stability and Reactivity

STABILITY: Stable.
Conditions to Avoid: Keep away from high heat, strong oxidizing agents and sources of ignition.

REACTIVITY:
Hazardous Decomposition Products: Under fire conditions, fumes, smoke, carbon monoxide, aldehydes and other decomposition products. When used as an engine fuel, incomplete combustion can cause carbon monoxide, a toxic gas.
Hazardous polymerization: Will not occur.

11. Toxicological Information

Propane is non-toxic and is a simple asphyxiant, however, it does have slight anesthetic properties and higher concentrations may cause dizziness.

[IRRITANCY OF MATERIAL]: None

[SENSITIZATION TO MATERIAL]: None

[REPRODUCTIVE EFFECTS]: None

[TERATOGENICITY]: None

[MUTAGENICITY]: None

[SYNERGISTIC MATERIALS]: None

12. Ecological Information

No adverse ecological effects are expected. Propane does not contain any Class I or Class II ozone-depleting chemicals (40 CFR Part 82). Propane is not listed as a marine pollutant by DOT (49 CFR Part 171).

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused product in the container. Return to supplier for safe disposal.
Residual product within process system may be burned at a controlled rate, if a suitable burning unit (flare stack) is available on site. This shall be done in accordance with federal, state and local regulations.

14. Transport Information

DOT SHIPPING NAME: Liquefied Petroleum Gas
IDENTIFICATION NUMBER: UN 1075
IMO SHIPPING NAME: Propane
IMO IDENTIFICATION NUMBER: UN 1978

HAZARD CLASS: 2.1 (Flammable Gas)
PRODUCT RQ: None **SHIPPING LABEL(S):** Flammable gas
PLACARD (WHEN REQUIRED): Flammable gas
SPECIAL SHIPPING INFORMATION: Container should be transported in a secure, upright position in a well-ventilated vehicle.

15. Regulatory Information

The following information concerns selected regulatory requirements potentially applicable to this product. Not all such requirements are identified. Users of this product are responsible for their own regulatory compliance on a federal, state [provincial] and local level.

U.S. FEDERAL REGULATIONS

EPA Environmental Protection Agency

CERCLA Comprehensive Environmental Response, Compensation and Liability Act of 1980
(40 CFR Parts 117 and 302)
Reportable Quantity (RQ): None

SARA Superfund Amendment and Reauthorization Act
*SECTION 302/304: Requires emergency planning on threshold planning quantities (TPQ) and release reporting based on reportable quantities (RQ) of EPA's extremely hazardous substances (40 CFR Part 355).

Extremely Hazardous Substances: None

Threshold Planning Quantity (TPQ): None

*SECTIONS 311/312: Require submission of material safety data sheets (MSDSs) and chemical inventory reporting with identification of EPA-defined hazard classes (40 CFR Part 370). The hazard classes for this product are:

IMMEDIATE: No PRESSURE: Yes

DELAYED: No REACTIVITY: No FLAMMABLE: Yes

*SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Propane does not require reporting under Section 313.

40 CFR PART 68 **Risk Management for Chemical Accidental Release**

TSCA Toxic Substance Control Act
Propane is listed on the TSCA inventory.

OSHA Occupational Safety and Health Administration

29 CFR 1910.119: Process Safety Management of Highly Hazardous Chemicals.

FDA Food and Drug Administration
21 CFR 184.1655: Generally recognized as safe (GRAS) as a direct human food ingredient when used as a propellant, aerating agent and gas.

16. Other Information

SPECIAL PRECAUTIONS: Use piping and equipment adequately designed to withstand pressure to be encountered.

NFPA 58 *Standard for the Storage and Handling of Liquefied Petroleum Gases* and OSHA 29 CFR 1910.10 require that all persons employed in handling LP-gases be trained in proper handling and operating procedures, which the employer shall document. Contact your propane supplier to arrange for the required training. Allow only trained and qualified persons to install and service propane containers and systems.

WARNING: Be aware that with odorized propane the intensity of ethyl mercaptan stench (its odor) may fade due to chemical oxidation (in the presence of rust, air or moisture), adsorption or absorption. Some people have nasal perception problems and may not be able to smell the ethyl mercaptan stench. Leaking propane from underground gas lines may lose its odor as it passes through certain soils. While ethyl mercaptan may not impart the warning of the presence of propane in every instance, it is generally effective in a majority of situations. Familiarize yourself, your employees and customers with this warning, and other facts associated with the so-called "odor-fade" phenomenon. If you do not already know all the facts, contact your propane supplier for more information about odor, electronic gas alarms and other safety considerations associated with the handling, storage and use of propane.

ISSUE INFORMATION

Issue Date: 01/17/08

This material safety data sheet and the information it contains is offered to you in good faith as accurate. This Supplier does not manufacture this product but is a supplier of the product independently manufactured by others. Much of the information contained in this data sheet was received from sources outside our Company. To the best of our knowledge this information is accurate, but this Supplier does not guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely, comply with all applicable laws and regulations and to assume the risks involved in the use of this product.

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MEMBER OF

NATIONAL PROPANE GAS ASSOCIATION

The purpose of this bulletin is to set forth general safety practices for the installation, operation, and maintenance of LP-Gas equipment. It is not intended to be an exhaustive treatment of the subject, and should not be interpreted as precluding other procedures, which would enhance safe LP-Gas operations. Issuance of this bulletin is not intended to nor should it be construed as an undertaking to perform services on behalf of any party either for their protection of for the protection of third parties. The National Propane Gas Association assumes no liability for reliance on the contents of this bulletin.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Pyrene **CAS Number:** 129-00-0
Chemical Formula: $C_{16}H_{10}$
EINECS Number: 204-927-3
ACX Number: X1001901-7
Synonyms: BENZO(DEF)PHENANTHRENE; BENZO(D,E,F)PHENANTHRENE; COAL TAR PITCH VOLATILES:PYRENE; PYREN; BETA-PYRENE; PYRENE; PYRENE
General Use: Laboratory reference standard.
Occurs in coal tar or in destructive hydrogenation of hard coals.

Section 2 - Composition / Information on Ingredients

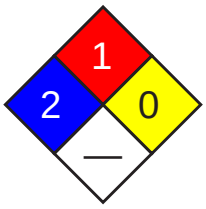
Name	CAS	%
pyrene	129-00-0	>98

OSHA PEL
TWA: 0.2 mg/m^3; as particulate polycyclical aromatic hydrocarbon.

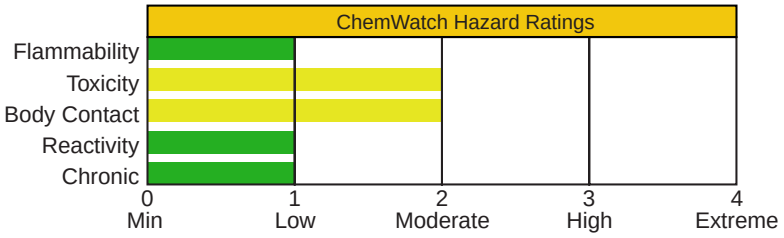
NIOSH REL
TWA: 0.1 mg/m^3, cyclohexane-extractable fraction; as particulate polycyclic aromatic hydrocarbon.

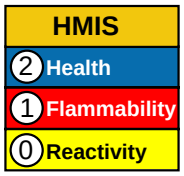
ACGIH TLV

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word

Caution

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless solid. Irritating to eyes/skin/respiratory tract. Also causes: conjunctival irritation, dermal irritation, ingestion may irritate and burn esophagus/gastrointestinal tract.

Potential Health Effects

Target Organs: skin, eyes, respiratory system
Primary Entry Routes: inhalation, ingestion, skin contact
Acute Effects

Inhalation: The dust may be discomforting to the upper respiratory tract and may be fatal if inhaled.
Persons with impaired respiratory function, airway diseases, and conditions such as emphysema or chronic bronchitis may incur further disability if excessive concentrations of particulate are inhaled.
Animal inhalation studies have demonstrated hepatic, pulmonary and intragastric pathologic changes. The levels of neutrophil, leukocyte and erythrocytes decreased.

Eye: The dust may be discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/or other transient eye damage/ulceration.

Skin: The material may be mildly discomforting to the skin.
Open cuts, abraded or irritated skin should not be exposed to this material.
Toxic effects may result from skin absorption.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.
Skin application resulted in hyperemia (blood engorgement), weight loss and hematopoietic (blood cell development) changes. Contact dermatitis was also evident.

Ingestion: The solid/dust is discomforting to the gastrointestinal tract and harmful if swallowed.
Considered an unlikely route of entry in commercial/industrial environments.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.

Chronic Effects: Chronic exposure to pyrene results increase in blood leukocytes (leukocytosis).
The so-called polycyclic aromatic hydrocarbons (PAHs) comprise a large family; some members occur in coal tar, tobacco smoke, petroleum and air pollution. Some substituted derivatives have been identified, in animal studies, as amongst the most highly active carcinogens.
Rodent species are sensitive to some PAHs with skin application producing cancerous growths. Injection produces soft tissue tumors (sarcomas) in rats and mice.
Administration of PAHs to Rhesus monkey on the other hand has not yet proved successful in yielding tumors and there is inadequate date to support the proposition that individual PAHs produce cancer in humans. There are however a number of epidemiology and mortality studies that show increased incidence of cancer in humans exposed to mixtures of PAHs. Evidence exists of lung and genito-urinary cancer mortality amongst coke-oven workers and skin tumors in workers exposed to creosote. Exposures to other chemical mixtures containing PAHs such as cigarette smoke, coal tar, coal tar pitch and bitumens, have been associated with increased incidences of lung cancer in humans. Anthracene, the basic unit on which most PAHs are built, is not carcinogenic whereas benz[a]anthracene appears to have weak carcinogenicity. Additions of other benzene rings to select positions on the benz[a]anthracene skeleton results in agents with powerful carcinogenicity (e.g. dibenz[a,h]anthracene and benz[a]pyrene). Further substitution of methyl groups in position on the rings enhances carcinogenicity (7,12 dimethylbenz[a]anthracene is one of the most powerful PAH carcinogens known). Biotransformation to produce soluble metabolites suitable for excretion appears to transform some PAHs to reactive electrophiles (as epoxides) which bind to DNA. Initiation of carcinogenesis is thought to rely upon such interactions.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Encourage patient to blow nose to ensure clear breathing passages. Rinse mouth with water.
Consider drinking water to remove dust from throat.
Lay patient down. Keep warm and rested.
Seek medical attention if irritation or discomfort persist.

See DOT ERG

Eye Contact: Immediately hold the eyes open and flush with fresh running water.
Ensure irrigation under the eyelids by occasionally lifting upper and lower lids. If pain persists or recurs seek medical attention.
Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately remove all contaminated clothing, including footwear (after rinsing with water).
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center.
If more than 15 minutes from a hospital, induce vomiting, preferably using Ipecac Syrup APF.
Note: DO NOT INDUCE VOMITING in an unconscious person.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Treat symptomatically.

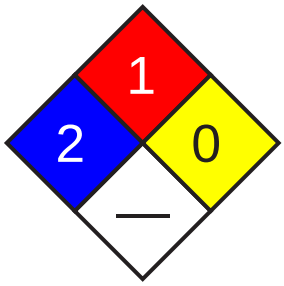
Section 5 - Fire-Fighting Measures

Flash Point: Not available; probably combustible

Extinguishing Media: Foam, dry chemical powder, BCF (where regulations permit), carbon dioxide.
Water spray or fog - Large fires only.

See DOT ERG

General Fire Hazards/Hazardous Combustion Products: Solid which exhibits difficult combustion or is difficult to ignite.
Avoid generating dust, particularly clouds of dust in a confined or unventilated space.
Dust may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion.
Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by bonding and grounding.



Fire Diamond

Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Fire Incompatibility: Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
Wear breathing apparatus plus protective gloves for fire only. Prevent, by any means available, spillage from entering drains or waterways.
Use fire fighting procedures suitable for surrounding area.
Do not approach containers suspected to be hot.
Cool fire-exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.
Equipment should be thoroughly decontaminated after use.

Section 6 - Accidental Release Measures

Small Spills: Clean up all spills immediately. Avoid contact with skin and eyes.
Wear protective clothing, gloves, safety glasses and dust respirator.
Use dry clean-up procedures and avoid generating dust.
Vacuum up or sweep up. Place in clean drum then flush area with water.

See DOT ERG

Large Spills: Clear area of personnel and move upwind.
Contact fire department and tell them location and nature of hazard.
Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways.
No smoking, bare lights or ignition sources. Increase ventilation.
Stop leak if safe to do so.
Water spray or fog may be used to disperse/absorb vapor.
Contain or absorb spill with sand, earth or vermiculite.
Collect recoverable product into labeled containers for recycling.
Collect solid residues and seal in labeled drums for disposal.
Wash area and prevent runoff into drains.
After clean-up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.
If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid all personal contact, including inhalation.
Wear protective clothing when risk of overexposure occurs.
Use in a well-ventilated area. Prevent concentration in hollows and sumps.
DO NOT enter confined spaces until atmosphere has been checked.
DO NOT allow material to contact humans, exposed food or food utensils.
Avoid smoking, bare lights or ignition sources. When handling, DO NOT eat, drink or smoke. Avoid contact with incompatible materials.
Keep containers securely sealed when not in used. Avoid physical damage to containers. Always wash hands with soap and water after handling. Working clothes should be laundered separately.
Launder contaminated clothing before reuse.
Use good occupational work practices. Observe manufacturer's storing/handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Glass container; plastic container.
Metal can; metal drum. Packing as recommended by manufacturer.
Check all containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Local exhaust ventilation usually required.
If risk of overexposure exists, wear NIOSH-approved respirator.
Correct fit is essential to obtain adequate protection. NIOSH-approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields; chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear chemical protective gloves, eg. PVC. Wear safety footwear.

Other: Overalls. PVC apron. PVC protective suit may be required if exposure severe.
Eyewash unit. Ensure there is ready access to a safety shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Colorless crystalline solid when pure. Contamination by tetracene results in slight yellowing. Solid and solutions have slight blue fluorescence.

Physical State: Divided solid
Vapor Pressure (kPa): Negligible
Formula Weight: 202.24
Specific Gravity (H_2O=1, at 4 °C): 1.271
pH: Not applicable
pH (1% Solution): Not applicable
Boiling Point: 393 °C (739 °F) at 760 mm Hg
Freezing/Melting Point: 156 °C (312.8 °F)
Volatile Component (% Vol): Negligible
Water Solubility: 0.135 mg/L (+ or - 0005 mg/L) in water

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid reaction with oxidizing agents.

Section 11 - Toxicological Information

Toxicity
Oral (rat) LD_{50}: 2700 mg/kg
Inhalation (rat) LC_{50}: 170 mg/m^3
Oral (mouse) LD_{50}: 800 mg/kg
Intraperitoneal (mouse) LD_{50}: 514 mg/kg
Conjunctival irritation, excitement and muscle contraction recorded.
NOTE: Substance has been shown to be mutagenic in various assays, or belongs to a family of chemicals producing damage or change to cellular DNA.

Irritation
Skin (rabbit): 500 mg/24h - mild

See *RTECS* UR 2450000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Although environmental concentrations are highest near sources, its presence in places distant from primary sources indicates that it is reasonably stable in the atmosphere and capable of long distance transport. When released to air it may be subject to direct photolysis, although adsorption to particulates apparently can retard this process. Half-lives for reaction of vapor phase with atmospheric pollutants are: O3, 0.67 days, NO2, 14 days; estimated half-life for reaction with photochemically produced hydroxyl radicals is 1.12 days. If released to water, it will adsorb very strongly to sediments and particulate matter, bioconcentrate in aquatic organisms slightly to moderately, but will not hydrolyze. It may be subject to significant biodegradation, and direct photolysis may be important near the surface of waters. Evaporation may be important with a half-life of 4.8 to 39.2 days predicted for evaporation from a river 1 m deep, flowing at 1 m/sec with a wind velocity of 3 m/sec; half-life for evaporation from a model pond was 1176 days. Adsorption to sediments and particulates will limit evaporation. If released to soil it will be expected to adsorb very strongly to the soil and will not be expected to appreciably leach to the groundwater, although its presence in groundwater illustrates that it can be transported there. It will not be expected to hydrolyze or significantly evaporate from soils and surfaces. It may be subject to appreciable biodegradation in soils.
Ecotoxicity: TL_m (Median threshold limit) Mosquito fish 0.0026 mg/l/96 hr at 24-27 °C in a static bioassay
Henry's Law Constant: calculated at 5.42 x10^{-5}
BCF: rainbow trout 72
Octanol/Water Partition Coefficient: log K_{ow} = 4.88
Soil Sorption Partition Coefficient: K_{oc} = soils 57 to 764

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible or consult manufacturer for recycling options.
Follow applicable federal, state, and local regulations.
Bury residue in an authorized landfill.
Recycle containers where possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: I - Great Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB7
Packaging: **Exceptions:** None **Non-bulk:** 211 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 kg **Cargo aircraft only:** 50 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: II - Medium Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP2, IP4
Packaging: **Exceptions:** None **Non-bulk:** 212 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 25 kg **Cargo aircraft only:** 100 kg
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Toxic solids, organic, n.o.s.
ID: UN2811
Hazard Class: 6.1 - Poisonous materials
Packing Group: III - Minor Danger
Symbols: G - Technical Name Required
Label Codes: 6.1 - Poison *or* Poison Inhalation Hazard *if inhalation hazard, Zone A or B*
Special Provisions: IB8, IP3
Packaging: **Exceptions:** 153 **Non-bulk:** 213 **Bulk:** 240
Quantity Limitations: **Passenger aircraft/rail:** 100 kg **Cargo aircraft only:** 200 kg
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Listed per CWA Section 307(a)
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Listed
RQ: 5000 lb
TPQ: 1000/10000 lb
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet

The information presented in these forms is believed to be correct and sufficient to meet the requirements of OSHA Hazard Communication standard (29 CFR 1910.1200) concerning worker's right to know.

The following material safety data sheet covers the hazardous ingredients associated with more than one color aerosol product. As per 29 CFR 1900. 1200 paragraph (g); whenever the hazards associated with similar mixtures are the same, then one MSDS may be prepared to cover several products. This MSDS covers the following Aervoe aerosol products.

PRODUCT NAME: Survey Marking Paint

Non-Fluorescent Colors		Fluorescent Colors	16 oz. I.A.C.		High Delivery	Metallic
201 Red	207 White	220 Red	261S Red	270S Fluorescent Red	281 Red	210 Silver
202 Yellow	208 Hi Visibility Yellow	222 Orange	262S Yellow	272S Fluorescent Orange	282 Yellow	
203 Blue	209 Light Blue	224 Green	263S Blue	274S Fluorescent Green	288 Fluorescent Orange	
204 Green	212 Purple	226 Yellow	265S Orange	275S Fluorescent Red/Orange		
205 Orange		227 Blue	267S White	279S Fluorescent Pink		
206 Black		229 Pink				
		230 Red/Orange				

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Aervoe Industries, Inc.
ADDRESS: 1198 Mark Circle, Gardnerville, NV 89410
INFORMATION PHONE: 775-782-0100
EMERGENCY PHONE: 1-800-424-9300
DATE REVISED: November 8, 2006
REASON REVISED: Updated

SECTION II - HAZARDOUS INGREDIENTS / SARA III INFORMATION
OCCUPATIONAL EXPOSURE LIMITS

HAZARDOUS COMPONENTS	WEIGHT PERCENT	OSHA PEL	ACGIH TLV		LD50 SPECIES & ROUTE	LC50 SPECIES & ROUTE
Hydrocarbon Propellant (CAS 68476-86-8)	10 - 30	1000 ppm	1000 ppm		N / AV	N / AV
Aliphatic Petroleum Distillates (CAS 64742-89-8)	10 - 30	N / AV	300 ppm		N / AV	N / AV
*Hexane (CAS 110-54-3)	7 - 13	500 ppm	50 ppm (skin)		2870 mg / kg (Rat-Oral)	N / AV
Aliphatic Petroleum Distillates (CAS 64742-89-8)	10 - 30	N / AV	300 ppm		N / AV	N / AV
Aliphatic Petroleum Distillates (CAS 64742-88-7)	1 - 5	100 ppm	100 ppm		N / AV	N / AV
Non-Fluorescent Colors Also Contain:						
Acetone (CAS 67-64-1)	5 - 10	1000 ppm	500 ppm		5800 mg / kg (Rat-Oral)	21000 ppm / 8 hr (Rat-Inha)
Metallic Colors Also Contain:						
Acetone (CAS 67-64-1)	30 - 60	1000 ppm	500 ppm		5800 mg / kg (Rat-Oral)	21000 ppm / 8 hr (Rat-Inha)
n-Butyl Acetate (CAS 123-86-4)	1 - 5	150 ppm	150 ppm	200 ppm	N / AV	N / AV
Aliphatic Hydrocarbon (CAS 64742-47-8)	1 - 5	N / AV	N / AV	1200 mg / m^3	N / AV	N / AV

*Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

NOTE: N / AP = Not Applicable N / AV = Not Available

17A

SECTION III - PHYSICAL / CHEMICAL CHARACTERISTICS

BOILING POINT: N / AP
SPECIFIC GRAVITY (H20=1): 0.9
VAPOR DENSITY: Heavier than air
SOLUBILITY IN WATER: Partial
EVAPORATION RATE: Faster than n-Butyl Acetate
APPEARANCE AND ODOR: Opaque liquid with hydrocarbon odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: < 0° F (-18° C) **METHOD USED:** Estimated **FLAMMABLE LIMITS - LEL:** 0.9% **UEL:** 13.0%
EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, water spray.
SPECIAL FIRE FIGHTING PROCEDURES: Use water spray to cool containers exposed to heat or fire to prevent pressure build up. Self-contained breathing apparatus should be used if product is involved in fire.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Treat as cylinders of compressed gas. Closed containers may rupture due to pressure build up from extreme temperature.
FLAMMABILITY: Yes - Flammable aerosol under conditions of sparks, flame, or hot surfaces.
SENSITIVITY TO IMPACT: Do not puncture
SENSITIVITY TO STATIC DISCHARGE: Primarily vapors

SECTION V - REACTIVITY DATA

STABILITY: Stable
CONDITIONS TO AVOID: Open flames, sparks, electrical arcs.
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents.
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Carbon Monoxide, Carbon Dioxide.
HAZARDOUS POLYMERIZATION: Will not occur

SECTION VI - HEALTH HAZARD DATA

INHALATION: Respiratory tract irritant. May cause dizziness, light-headedness and / or headaches. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
SKIN CONTACT: Prolonged or repeated contact may cause irritation and dermatitis.
EYE CONTACT: Painful with slight to moderate irritation.
INGESTION: May be harmful or fatal if swallowed
EFFECTS OF CHRONIC OVEREXPOSURE: Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage. Repeated overexposure can also damage kidneys, lungs, liver, heart and blood.
CARCINOGENICITY: The ingredients are not listed as a human carcinogen by IARC, ACGIH, NTP, or OSHA.
TERATOGENICITY: Not established **MUTAGENICITY:** Not established
MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE: Not established
EMERGENCY AND FIRST AID PROCEDURES: INHALATION - Remove from exposure, seek medical attention if signs/symptoms persist.
SKIN - Wash affected area with soap and water, remove contaminated clothing, seek medical attention if irritation persists.
EYES - Flush immediately with water for 15 minutes, seek medical attention if irritation persists.
INGESTION - Do not induce vomiting. Contact physician or poison control center immediately.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Ventilate area. Prevent from entering a watercourse. Use an inert absorbent material and non-sparking type tools.
WASTE DISPOSAL METHOD: Dispose of in accordance with local, state and federal regulations. Do not incinerate closed containers.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Do not store above 120° F (49° C). Do not store or use near heat, sparks or flame.
OTHER PRECAUTIONS: Avoid contact with eyes and skin. Do not breathe vapors, take internally or smoke while using this product.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: In areas with poor ventilation, use a NIOSH approved Organic Vapor Cartridge Respirator. For concentrations above the TLV (as defined in Section II), use a positive air supplied respirator.
VENTILATION: General ventilation to maintain exposure limits below TLV's as defined in Section II.
PROTECTIVE GLOVES: Chemical resistant gloves such as Neoprene or Nitrile rubber.
EYE PROTECTION: Safety glasses or goggles.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Not established.
WORK / HYGIENIC PRACTICES: Avoid prolonged or repeated contact. Do not breathe vapors. Wash contaminated clothing prior to reuse.

SECTION IX - DISCLAIMER

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
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Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Toluene
CAS Number: 108-88-3
Chemical Formula: C_7H_8
Structural Chemical Formula: $C_6H_5CH_3$
EINECS Number: 203-625-9
ACX Number: X1001512-0
Synonyms: ANTISAL 1A; BENZENE,METHYL-; CP 25; METHACIDE; METHANE,PHENYL-; METHYL BENZENE; METHYL BENZOL; METHYLBENZENE; METHYLBENZOL; PHENYL METHANE; PHENYLMETHANE; TOLUEEN; TOLUEN; TOLUENE; TOLUENO; TOLUOL; TOLUOLO; TOLU-SOL
General Use: Used as a solvent for paint, resins, lacquers inks & adhesives. Component of solvent blends and thinners; in gasoline and aviation fuel. Used in the manufacture of chemicals, dyes, explosives, benzoic acid.
Some grades of toluene may contain traces of xylene and benzene.
Odor threshold: 2 ppm approx. Odor is not a reliable warning property due to olfactory fatigue.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
toluene	108-88-3	> 99.5

OSHA PEL
TWA: 200 ppm; Ceiling: 300 ppm; 500 ppm, 10-minute maximum peak.

ACGIH TLV
TWA: 50 ppm; skin.

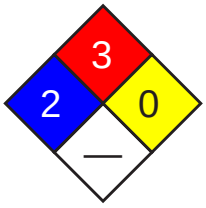
EU OEL
TWA: 192 mg/m^3 (50 ppm); STEL: 384 mg/m^3 (100 ppm).

NIOSH REL
TWA: 100 ppm (375 mg/m^3); STEL: 150 ppm (560 mg/m^3).

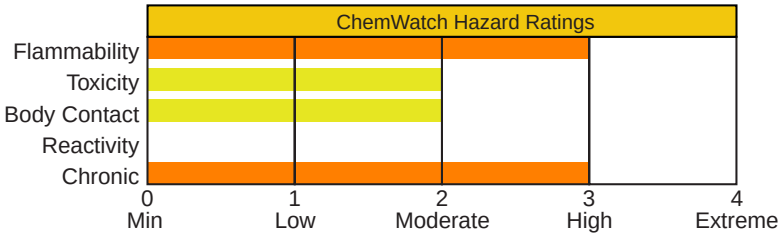
IDLH Level
500 ppm.

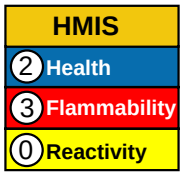
DFG (Germany) MAK
TWA: 50 ppm; PEAK: 200 ppm; skin.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word
Danger!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Colorless liquid; sickly, sweet odor. Irritating to eyes/skin/respiratory tract. Other Acute Effects: weakness, headache, dizziness, confusion, insomnia. Chronic Effects: liver/kidney damage, may cause birth defects. Flammable.

Potential Health Effects

Target Organs: Skin, liver, kidneys, central nervous system.
Primary Entry Routes: Inhalation, skin contact/absorbtion.
Acute Effects
Inhalation: The vapor is highly discomforting to the upper respiratory tract. Inhalation hazard is increased at higher temperatures.

Acute effects from inhalation of high concentrations of vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination.
If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.
Central nervous system (CNS) depression may include nonspecific discomfort, symptoms of giddiness, headache, dizziness, nausea, anesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness.
Serious poisonings may result in respiratory depression and may be fatal.

Eye: The liquid produces a high level of eye discomfort and is capable of causing pain and severe conjunctivitis.
Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.
The vapor is discomforting to the eyes if exposure is prolonged.
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Skin: The liquid may produce skin discomfort following prolonged contact.
Defatting and/or drying of the skin may lead to dermatitis and it is absorbed by skin.
Toxic effects may result from skin absorption.
Open cuts, abraded or irritated skin should not be exposed to this material.
The material may accentuate any pre-existing skin condition.
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.
The liquid may produce gastrointestinal discomfort and may be harmful if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Class A4, Not classifiable as a human carcinogen; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.

Chronic Effects: Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes.
Chronic toluene habituation occurs following intentional abuse (glue-sniffing) or from occupational exposure. Ataxia, incoordination and tremors of the hands and feet (as a consequence of diffuse cerebral atrophy), headache, abnormal speech, transient memory loss, convulsions, coma, drowsiness, reduced color perception, frank blindness, nystagmus (rapid, involuntary eye-movements), decreased hearing leading to deafness and mild dementia have all been associated with chronic abuse.
Peripheral nerve damage, encephalopathy, giant axonopathy, electrolyte disturbances in the cerebrospinal fluid and abnormal computer tomographic (CT) scans are common amongst toluene addicts. Although toluene abuse has been linked with kidney disease, this does not commonly appear in cases of occupational toluene exposures. Cardiac and hematological toxicity are however associated with chronic toluene exposure. Cardiac arrhythmia, multifocal and premature ventricular contractions and supraventricular tachycardia are present in 20% of patients who abused toluene-containing paints.
Previous suggestions that chronic toluene inhalation produced human peripheral neuropathy have largely been discounted. However central nervous system (CNS) depression is well documented where blood toluene levels exceed 2.2 mg%. Toluene abusers can achieve transient circulating concentrations of 6.5 mg%. Amongst workers exposed for a median time of 29 years to toluene no subacute effects on neurasthenic complaints and pyschometric test results could be established.
The prenatal toxicity of very high toluene concentrations has been documented for several animal species and man. Malformations indicative of specific teratogenicity have not generally been found. The toxicity described in the literature takes the form of embryo death or delayed fetal growth and delayed skeletal system development. Permanent damage of children has been seen only when mothers had suffered from chronic intoxication as a result of "sniffing".

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Lay patient down. Keep warm and rested.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor.

See DOT ERG

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately remove all contaminated clothing, including footwear (after rinsing with water).
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center.
Do NOT induce vomiting. Give a glass of water.
After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Following acute or short-term repeated exposures to toluene:
1. Toluene is absorbed across to alveolar barrier, the blood/air mixture being 11.2/15.6 (at 37 °C) The order of toluene, in expired breath, is of the order of 18 ppm following sustained exposure to 100 ppm.
The tissue/blood proportion is 1/3 except in adipose where the proportion is 8/10.
2.Metabolism by microsomal mono-oxygenation, results in the production of hippuric acid. This may be detected in the urine in amounts between 0.5 and 2.5 g/24hr which represents, on average 0.8 gm/gm of creatinine.
The biological half life of hippuric acid is in the order of 1-2 hours.
3.Primary threat to life from ingestion and/or inhalation is respiratory failure.
4.Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO_2 <50 mm Hg or pCO_2 >50 mm Hg) should be intubated.
5.Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
6.A chest x-ray should be taken immediately after stabilization of breathing and circulation to document aspiration and detect the presence of pneumothorax.
7.Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitization to catecholamines.
Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
8.Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients.
BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

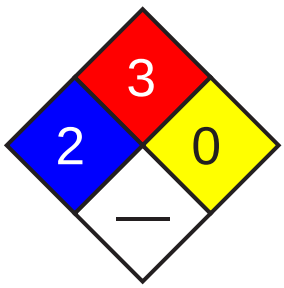
Determinant	Index	Sampling Time	Comments
Hippuric acid in urine	2.5 gm/gm creatinine	End of shift Last 4 hrs of shift	B,NS
Toluene in venous blood	1 mg/L	End of shift	SQ
Toluene in end-exhaled air		End of shift	SQ

NS: Non-specific determinant; also observed after exposure to other material
SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.
B: Background levels occur in specimens collected from subjects NOT exposed.

Section 5 - Fire-Fighting Measures

Flash Point: 4 °C Closed Cup
Autoignition Temperature: 480 °C
LEL: 1.2% v/v
UEL: 7.1% v/v
Extinguishing Media: Foam, dry chemical powder, BCF (where regulations permit), carbon dioxide.
Water spray or fog - Large fires only.
General Fire Hazards/Hazardous Combustion Products: Liquid and vapor are highly flammable.
Severe fire hazard when exposed to heat, flame and/or oxidizers.
Vapor forms an explosive mixture with air.
Severe explosion hazard, in the form of vapor, when exposed to flame or spark. Vapor may travel a considerable distance to source of ignition.
Heating may cause expansion/decomposition with violent rupture of containers.
On combustion, may emit toxic fumes of carbon monoxide (CO) and carbon dioxide (CO_2).

See DOT ERG



Fire Diamond

Fire Incompatibility: Avoid contamination with strong oxidizing agents as ignition may result.
Nitric acid with toluene, produces nitrated compounds which are explosive.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
Fight fire from a safe distance, with adequate cover.
If safe, switch off electrical equipment until vapor fire hazard removed.
Use water delivered as a fine spray to control the fire and cool adjacent area. Avoid spraying water onto liquid pools.
Do not approach containers suspected to be hot.
Cool fire-exposed containers with water spray from a protective location.
If safe to do so, remove containers from path of fire.

Section 6 - Accidental Release Measures

Small Spills: Remove all ignition sources. Clean up all spills immediately.
Avoid breathing vapors and contact with skin and eyes.
Control personal contact by using protective equipment.
Contain and absorb small quantities with vermiculite or other absorbent material. Wipe up. Collect residues in a flammable waste container.

See DOT ERG

Large Spills: Clear area of personnel and move upwind.
Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways. Consider evacuation.
No smoking, bare lights or ignition sources. Increase ventilation.
Stop leak if safe to do so. Water spray or fog may be used to disperse/absorb vapor. Contain spill with sand, earth or vermiculite.
Use only spark-free shovels and explosion proof equipment.
Collect recoverable product into labeled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
Collect solid residues and seal in labeled drums for disposal.
Wash area and prevent runoff into drains.
If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid all personal contact, including inhalation.
Wear protective clothing when risk of exposure occurs.
Use in a well-ventilated area. Prevent concentration in hollows and sumps.
DO NOT enter confined spaces until atmosphere has been checked.
Avoid smoking, bare lights, heat or ignition sources.
When handling, DO NOT eat, drink or smoke.
Vapor may ignite on pumping or pouring due to static electricity.
DO NOT use plastic buckets. Ground and secure metal containers when dispensing or pouring product. Use spark-free tools when handling.
Avoid contact with incompatible materials.
Keep containers securely sealed. Avoid physical damage to containers.
Always wash hands with soap and water after handling.
Work clothes should be laundered separately.
Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

Recommended Storage Methods: Metal can; Metal drum; Metal safety cans. Packing as supplied by manufacturer.
Plastic containers may only be used if approved for flammable liquid.
Check that containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area; local exhaust ventilation may be required for safe working, i. e. , to keep exposures below required standards; otherwise, PPE is required.
General exhaust is adequate under normal operating conditions.
Local exhaust ventilation may be required in special circumstances.
If risk of overexposure exists, wear NIOSH-approved respirator. Correct fit is essential to ensure adequate protection.
Provide adequate ventilation in warehouses and enclosed storage areas.

In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields; chemical goggles. Full face shield.
DO NOT wear contact lenses. Contact lenses pose a special hazard; soft contact lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Wear chemical protective gloves, eg. PVC. Wear safety footwear.

Respiratory Protection:

Exposure Range >200 to <500 ppm: Air Purifying, Negative Pressure, Half Mask
Exposure Range 500 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face
Cartridge Color: black

Other: Overalls. Barrier cream. Eyewash unit.

Glove Selection Index:

PE/EVAL/PE ..... Best selection
VITON/CHLOROBUTYL ..... Best selection
VITON ..... Best selection
PVA ..... Best selection
TEFLON ..... Satisfactory; may degrade after 4 hours continuous immersion
SARANEX-23 2-PLY..... Poor to dangerous choice for other than short-term immersion
CPE ..... Poor to dangerous choice for other than short-term immersion
VITON/NEOPRENE ..... Poor to dangerous choice for other than short-term immersion
SARANEX-23 ..... Poor to dangerous choice for other than short-term immersion
NEOPRENE/NATURAL..... Poor to dangerous choice for other than short-term immersion
NITRILE+PVC ..... Poor to dangerous choice for other than short-term immersion
NITRILE ..... Poor to dangerous choice for other than short-term immersion
BUTYL ..... Poor to dangerous choice for other than short-term immersion
PVC..... Poor to dangerous choice for other than short-term immersion
NEOPRENE..... Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Clear highly flammable liquid with a strong aromatic odor; floats on water. Mixes with most organic solvents.

Physical State: Liquid
Odor Threshold: 2.14 ppm
Vapor Pressure (kPa): 2.93 at 20 °C
Vapor Density (Air=1): 3.2
Formula Weight: 92.14
Specific Gravity (H_2O=1, at 4 °C): 0.87 at 20 °C
Evaporation Rate: 2.4 (BuAc=1)

pH: Not applicable
pH (1% Solution): Not applicable.
Boiling Point: 111 °C (232 °F) at 760 mm Hg
Freezing/Melting Point: -95 °C (-139 °F)
Volatile Component (% Vol): 100
Water Solubility: < 1 mg/mL at 18 °C

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Segregate from strong oxidizers.

Section 11 - Toxicological Information

Toxicity

Oral (human) LD_{Lo}: 50 mg/kg
Oral (rat) LD_{50}: 636 mg/kg
Inhalation (human) TC_{Lo}: 100 ppm
Inhalation (man) TC_{Lo}: 200 ppm
Inhalation (rat) LC_{50}: > 26700 ppm/1h
Dermal (rabbit) LD_{50}: 12124 mg/kg
Reproductive effector in rats

Irritation

Skin (rabbit): 20 mg/24h-moderate
Skin (rabbit): 500 mg - moderate
Eye (rabbit): 0.87 mg - mild
Eye (rabbit): 2 mg/24h - SEVERE
Eye (rabbit): 100 mg/30sec - mild

See *RTECS* XS 5250000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released to soil, it will be lost by evaporation from near-surface soil and by leaching to the groundwater. Biodegradation occurs both in soil and groundwater, but it is apt to be slow especially at high concentrations, which may be toxic to microorganisms. The presence of acclimated microbial populations may allow rapid biodegradation. It will not significantly hydrolyze in soil or water under normal environmental conditions. If released into water, its concentration will decrease due to evaporation and biodegradation. This removal can be rapid or take several weeks, depending on temperature, mixing conditions, and acclimation of microorganisms. It will not significantly adsorb to sediment or bioconcentrate in aquatic organisms. If released to the atmosphere, it will degrade by reaction with photochemically produced hydroxyl radicals (half-life 3 hr to slightly over 1 day) or be washed out in rain. It will not be subject to direct photolysis.

Ecotoxicity: LC_{50} Aedes aegypti-4th instar (mosquito larvae) 22 mg/l /Conditions of bioassay not specified; LC_{50} Cyprinodon variegatus (sheepshead minnow) 277-485 mg/l 96 hr /Conditions of bioassay not specified; LC_{50} Calandra granaria (grain weevil) 210 mg/l /in air; LC_{50} Cancer magister (crab larvae stage I) 28 ppm/96 hr /Conditions of bioassay not specified; LC_{50} Crangon franciscorum (shrimp) 4.3 ppm 96 hr /Conditions of bioassay not specified; LC_{50} Artemia salina (brine shrimp) 33 mg/l 24 hr /Conditions of bioassay not specified; LC_{50} Morone saxatilis (striped bass) 7.3 mg/l 96 hr /Conditions of bioassay not specified; LC_{50} Pimephales promelas (fathead minnows) 55-72 mg/l (embryos), 25-36 mg/l (1-day posthatch protolarvae), and 26-31 mg/l (30-day-old minnows)/ 96 hour /Conditions of bioassay not specified

Henry's Law Constant: 0.0067

BCF: eels 13.2

Biochemical Oxygen Demand (BOD): 0%, 5 days

Octanol/Water Partition Coefficient: log K_{ow} = 2.69

Soil Sorption Partition Coefficient: K_{oc} = silty loam 37

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options and recycle where possible.
Follow applicable federal, state, and local regulations.
Incinerate residue at an approved site.
Recycle containers where possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: Toluene
ID: UN1294
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: II - Medium Danger
Symbols:
Label Codes: 3 - Flammable Liquid
Special Provisions: IB2, T4, TP1
Packaging: **Exceptions:** 150 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** B **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U220 Toxic Waste

CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4), per RCRA Section 3001, per CWA Section 307(a) 1000 lb (453.5 kg)

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Material Safety Data Sheet Collection
Genium group inc.
1171 RiverFront Center, Amsterdam, NY 12010
(518) 842-4111

Issue Date: 2006-06

Section 1 - Chemical Product and Company Identification 61

Material Name: Xylene **CAS Number:** 1330-20-7
Chemical Formula: C_8H_{10}
Structural Chemical Formula: $C_6H_4(CH_3)_2$
EINECS Number: 215-535-7
ACX Number: X1001166-8
Synonyms: BENZENE,DIMETHYL-; COMPONENT 1 (83%): XYLENES; COMPONENT 2 (17%): ETHYL BENZENE; DIMETHYLBENZENE; DIMETHYLBENZENES; EPA PESTICIDE CHEMICAL CODE 086802; KSYLEN; METHYL TOLUENE; METHYLTOLUENE; VIOLET 3; XILOLI; XYLENE; XYLENEN; XYLOL; XYLOLE
General Use: A strong solvent for general use in the manufacture of paints, varnishes, lacquers, thinners, inks, rubber, pesticides, herbicides and paint strippers.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
xylene	1330-20-7	> 95

OSHA PEL
TWA: 100 ppm; 435 mg/m^3.

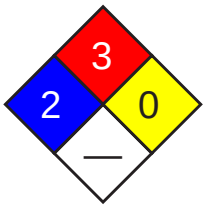
NIOSH REL
TWA: 100 ppm, 435 mg/m^3; STEL: 150 ppm, 655 mg/m^3.

DFG (Germany) MAK
TWA: 100 ppm; PEAK: 200 ppm; skin.

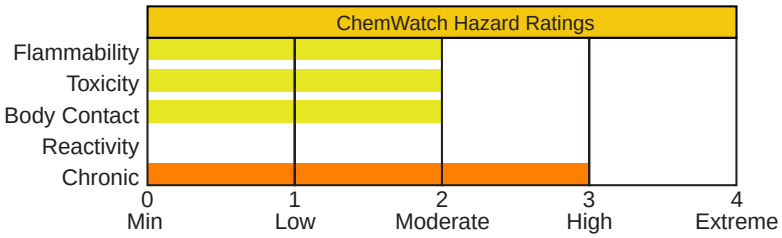
ACGIH TLV
TWA: 100 ppm; STEL: 150 ppm.

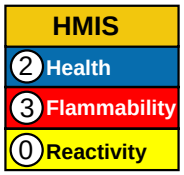
EU OEL
TWA: 50 ppm; STEL: 100 ppm.

Section 3 - Hazards Identification



Fire Diamond





ANSI Signal Word
Warning!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Clear, sweet smelling liquid. Irritating to eyes/skin/respiratory tract. Other Acute Effects: dizziness, nausea, drowsiness. Chronic Effects: dermatitis, kidney/liver/peripheral nerve damage. May cause birth defects (animal data). Flammable.

Potential Health Effects

Target Organs: central nervous system (CNS), eyes, gastrointestinal (GI) tract, liver, kidneys, skin
Primary Entry Routes: inhalation, skin absorption (slight), eye contact, ingestion
Acute Effects
Inhalation: Xylene is a central nervous system depressant. The vapor is discomforting to the upper respiratory tract and may be harmful if inhaled.
Inhalation hazard is increased at higher temperatures.
Toxic effects are increased by consumption of alcohol.
Acute effects from inhalation of high concentrations of vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination.

If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.
Headache, fatigue, lassitude, irritability and gastrointestinal disturbances (e.g., nausea, anorexia and flatulence) are the most common symptoms of xylene overexposure. Injury to the heart, liver, kidneys and nervous system has also been noted among workers. Transient memory loss, renal impairment, temporary confusion and some evidence of disturbance of liver function was reported in three workers overcome by gross exposure to xylene (10000 ppm). One worker died and autopsy revealed pulmonary congestion, edema, and focal alveolar hemorrhage.
Volunteers inhaling xylene at 100 ppm for 5 to 6 hours showed changes in manual coordination, reaction time and slight ataxia. Tolerance developed during the workweek but was lost over the weekend. Physical exercise may antagonize this effect. Xylene body burden in humans exposed to 100 or 200 ppm xylene in air depends on the amount of body fat with 4% to 8% of total absorbed xylene accumulating in human adipose tissues.

Eye: The liquid is highly discomforting to the eyes and is capable of causing a mild, temporary redness of the conjunctiva (similar to wind-burn), temporary impairment of vision and/or other transient eye damage/ulceration.
The vapor is highly discomforting to the eyes.
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
Corneal changes have been reported in furniture polishers exposed to xylene.

Skin: The liquid is highly discomforting to the skin and may cause drying of the skin, which may lead to dermatitis and it is absorbed by the skin.
Toxic effects may result from skin absorption.
Open cuts, abraded or irritated skin should not be exposed to this material.
The material may accentuate any pre-existing skin condition.
The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterized by skin redness (erythema) and swelling (edema) which may progress to vesiculation, scaling and thickening of the epidermis. Histologically there may be intercellular edema of the spongy layer (spongiosis) and intracellular edema of the epidermis.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.
The liquid may produce gastrointestinal discomfort and may be harmful if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

Carcinogenicity: NTP - Not listed; IARC - Group 3, Not classifiable as to carcinogenicity to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.

Chronic Effects: Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes.
Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following.
Small excess risks of spontaneous abortion and congenital malformation was reported amongst women exposed to xylene in the first trimester of pregnancy. In all cases however the women had also been exposed to other substances.
Evaluation of workers chronically exposed to xylene has demonstrated a lack of genotoxicity. Exposure to xylene has been associated with increased risks of hemopoietic malignancies but, again simultaneous exposure to other substances (including benzene) complicate the picture. A long-term gavage study of mixed xylenes (containing 17% ethyl benzene) found no evidence of carcinogenic activity in rats and mice of either sex.
Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.
Lay patient down. Keep warm and rested.
If available, administer medical oxygen by trained personnel.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor, without delay.

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.
Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately remove all contaminated clothing, including footwear (after rinsing with water).
Wash affected areas thoroughly with water (and soap if available).
Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center.
Do NOT induce vomiting. Give a glass of water.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short-term repeated exposures to xylene:
1.Gastrointestinal absorption is significant with ingestions.

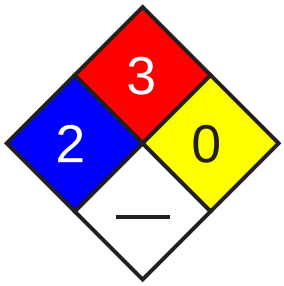
For ingestions exceeding 1-2 mL (xylene)/kg, intubation and lavage with cuffed endotracheal tube is recommended. The use of charcoal and cathartics is equivocal.
2.Pulmonary absorption is rapid with about 60-65% retained at rest.
3.Primary threat to life from ingestion and/or inhalation is respiratory failure.
4.Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO_2 <50 mm Hg or pCO_2 >50 mm Hg) should be intubated.
5.Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
6.A chest x-ray should be taken immediately after stabilization of breathing and circulation to document aspiration and detect the presence of pneumothorax.
7.Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitization to catecholamines.
Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
BIOLOGICAL EXPOSURE INDEX - BEI
These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
Methylhippuric acids in urine	1.5 gm/gm creatinine	End of shift	
	2 mg/min	Last 4 hrs of shift.	

Section 5 - Fire-Fighting Measures

Flash Point: 25.6 °C
Autoignition Temperature: 241 °C
LEL: 1.0% v/v
UEL: 7.0% v/v
Extinguishing Media: Alcohol stable foam; dry chemical powder; carbon dioxide.
Water spray or fog - Large fires only.
General Fire Hazards/Hazardous Combustion Products: Liquid and vapor are flammable.
Moderate fire hazard when exposed to heat or flame.
Vapor forms an explosive mixture with air.
Moderate explosion hazard when exposed to heat or flame.
Vapor may travel a considerable distance to source of ignition.
Heating may cause expansion or decomposition leading to violent rupture of containers.
On combustion, may emit toxic fumes of carbon monoxide (CO).
Other combustion products include carbon dioxide (CO_2).
Fire Incompatibility: Avoid contamination with strong oxidizing agents as ignition may result.
Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways.
If safe, switch off electrical equipment until vapor fire hazard removed.
Use water delivered as a fine spray to control fire and cool adjacent area.
Avoid spraying water onto liquid pools.
Do not approach containers suspected to be hot.
Cool fire-exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.

See DOT ERG



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: Remove all ignition sources. Clean up all spills immediately.
Avoid breathing vapors and contact with skin and eyes.
Control personal contact by using protective equipment.
Contain and absorb small quantities with vermiculite or other absorbent material. Wipe up. Collect residues in a flammable waste container.
Large Spills: Clear area of personnel and move upwind.
Contact fire department and tell them location and nature of hazard.
May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways.
No smoking, bare lights or ignition sources. Increase ventilation.

See DOT ERG

Stop leak if safe to do so. Water spray or fog may be used to disperse/absorb vapor. Contain spill with sand, earth or vermiculite.
Use only spark-free shovels and explosion proof equipment.
Collect recoverable product into labeled containers for recycling.
Absorb remaining product with sand, earth or vermiculite.
Collect solid residues and seal in labeled drums for disposal.
Wash area and prevent runoff into drains.
If contamination of drains or waterways occurs, advise emergency services.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid all personal contact, including inhalation.
Wear protective clothing when risk of overexposure occurs.
Use in a well-ventilated area. Prevent concentration in hollows and sumps.
DO NOT enter confined spaces until atmosphere has been checked.
Avoid smoking, bare lights or ignition sources.
Avoid generation of static electricity. DO NOT use plastic buckets.
Ground all lines and equipment. Use spark-free tools when handling.
Avoid contact with incompatible materials.
When handling, DO NOT eat, drink or smoke.
Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling.
Work clothes should be laundered separately.
Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
Recommended Storage Methods: Metal can; metal drum. Packing as recommended by manufacturer.
Check all containers are clearly labeled and free from leaks.
Plastic containers may only be used if approved for flammable liquids.
Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use in a well-ventilated area. Local exhaust ventilation may be required for safe working, i. e. , to keep exposures below required standards; otherwise, PPE is required.
CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build-up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear.
General exhaust is adequate under normal operating conditions.
Local exhaust ventilation may be required in specific circumstances.
If risk of overexposure exists, wear NIOSH-approved respirator.
Correct fit is essential to obtain adequate protection.
Provide adequate ventilation in warehouse or closed storage areas.
In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus.
Personal Protective Clothing/Equipment:
Eyes: Safety glasses with side shields; or as required, chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.
Hands/Feet: Barrier cream with polyethylene gloves; Butyl rubber gloves or Neoprene gloves or PVC gloves.
Safety footwear.
Do NOT use this product to clean the skin.
Other: Overalls. Impervious protective clothing.
Eyewash unit.
Ensure there is ready access to an emergency shower.
Glove Selection Index:

PE/EVAL/PE	Best selection
PVA	Best selection
VITON	Best selection
TEFLON	Best selection
PVDC/PE/PVDC	Poor to dangerous choice for other than short-term immersion
NATURAL+NEOPRENE	Poor to dangerous choice for other than short-term immersion
NEOPRENE/NATURAL	Poor to dangerous choice for other than short-term immersion
NITRILE+PVC	Poor to dangerous choice for other than short-term immersion
HYPALON	Poor to dangerous choice for other than short-term immersion
NAT+NEOPR+NITRILE	Poor to dangerous choice for other than short-term immersion
BUTYL	Poor to dangerous choice for other than short-term immersion
BUTYL/NEOPRENE	Poor to dangerous choice for other than short-term immersion

NITRILE..... Poor to dangerous choice for other than short-term immersion
NEOPRENE..... Poor to dangerous choice for other than short-term immersion
PVC..... Poor to dangerous choice for other than short-term immersion

Section 9 - Physical and Chemical Properties

Appearance/General Info: Clear colorless flammable liquid with a strong aromatic odor; floats on water. Mixes with most organic solvents.

Physical State: Liquid
Odor Threshold: 5.00 x10^{-5} ppm
Vapor Pressure (kPa): 0.5 at 15 °C
Vapor Density (Air=1): 3.66 at 15 °C
Formula Weight: 106.18
Specific Gravity (H_2O=1, at 4 °C): 0.87 at 15 °C
Evaporation Rate: 0.7 Bu Ac=1

pH: Not applicable
pH (1% Solution): Not applicable.
Boiling Point: 137 °C (279 °F) to 140 °C (284 °F)
Freezing/Melting Point: -47 °C (-53 °F)
Volatile Component (% Vol): 100
Water Solubility: Practically insoluble in water

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Product is considered stable. Hazardous polymerization will not occur.
Storage Incompatibilities: Avoid storage with oxidizers.

Section 11 - Toxicological Information

Toxicity

Oral (human) LD_{Lo}: 50 mg/kg
Oral (rat) LD_{50}: 4300 mg/kg
Inhalation (human) TC_{Lo}: 200 ppm
Inhalation (man) LC_{Lo}: 10000 ppm/6h
Inhalation (rat) LC_{50}: 5000 ppm/4h
Reproductive effector in rats

Irritation

Skin (rabbit):500 mg/24h moderate
Eye (human): 200 ppm irritant
Eye (rabbit): 87 mg mild
Eye (rabbit): 5 mg/24h SEVERE

See *RTECS* ZE 2100000, for additional data.

Section 12 - Ecological Information

Environmental Fate: Most of the xylenes are released into the atmosphere where they may photochemically degrade by reaction with hydroxyl radicals (half-life 1-18 hr). The dominant removal process in water is volatilization. Xylenes are moderately mobile in soil and may leach into groundwater where they are known to persist for several years, despite some evidence that they biodegrade in both soil and groundwater. Bioconcentration is not expected to be significant.

Ecotoxicity: LC_{50} Rainbow trout 13.5 mg/l/96 hr /Conditions of bioassay not specified; LD_{50} Goldfish 13 mg/l/24 hr /Conditions of bioassay not specified

Henry's Law Constant: 0.22

BCF: estimated at 2.14 to 2.20

Octanol/Water Partition Coefficient: log K_{ow} = 3.12 to 3.20

Soil Sorption Partition Coefficient: K_{OC} = 48 to 68

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options and recycle where possible.
Follow applicable federal, state, and local regulations.
Incinerate residue at an approved site.
Recycle containers where possible, or dispose of in an authorized landfill.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Note: This material has multiple possible HMT entries. Choose the appropriate one based on state and condition of specific material when shipped.

Shipping Name and Description: Xylenes
ID: UN1307
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: II - Medium Danger
Symbols:
Label Codes: 3 - Flammable Liquid
Special Provisions: IB2, T4, TP1
Packaging: **Exceptions:** 150 **Non-bulk:** 202 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 5 L **Cargo aircraft only:** 60 L
Vessel Stowage: **Location:** B **Other:**

Shipping Name and Description: Xylenes
ID: UN1307
Hazard Class: 3 - Flammable and combustible liquid
Packing Group: III - Minor Danger
Symbols:
Label Codes: 3 - Flammable Liquid
Special Provisions: B1, IB3, T2, TP1
Packaging: **Exceptions:** 150 **Non-bulk:** 203 **Bulk:** 242
Quantity Limitations: **Passenger aircraft/rail:** 60 L **Cargo aircraft only:** 220 L
Vessel Stowage: **Location:** A **Other:**

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed U239 Ignitable Waste
CERCLA 40 CFR 302.4: Listed per CWA Section 311(b)(4), per RCRA Section 3001 100 lb (45.35 kg)
SARA 40 CFR 372.65: Listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Appendix J

Real-Time Exposure Monitoring
Data Collection Form

ARCADIS

Real Time Exposure Monitoring Data Collection Form

Document all air monitoring conducted on the Site below. Keep this form with the project file.

Site Name: _____ Date: _____

Instrument: _____ Model: _____ Serial #: _____

Calibration Method: (Material used settings, etc.)	
Calibration Results:	
Calibrated By:	

Activity Being Monitored	Compounds/Hazards Monitored	Time	Reading	Action Required? Y/N

Describe Any Actions Taken as a Result of this Air Monitoring and Why (does it match Table 3):

_____

_____

Appendix K

Shipping Determination Form

SHIPPING/TRANSPORTATION DETERMINATION

(Rev.4, 8/10)

General Information *(Need Help?)*

Revision Number	
Project Name	Ilion (East Street) Former MGP Site
Project Number	B0036713.0000.00002
City of Shipment	
City of Destination	
Analytical/MSDS/Hazard Information Attached?	

Description of Material to be Shipped/Transported

Determination

	Not Restricted/Regulated
	Hazardous Material

Complete for Hazardous Materials (Refer to 49 CFR 172.101 or IATA DGR section 4.2)

Proper Shipping Name	
UN or ID Number	
Hazard Class	
Packing Group	

"X"	*How Do You Want to Ship/Transport This Material?*	*24/7 Emergency Number Required? (FedEx criteria)*	*Packing Instruction / Shipping Guide / Support Package*
	Materials of Trade Exception	No	
	Excepted Quantity	No	
	Limited Quantity (Ltd Qty)	Ground –Yes Air - No	
	Special Permit/49 CFR 173.13	Ltd Qty Ground –Yes Ltd Qty Air – No Non-Ltd Qty- Yes	
	UN Specification Ground, Non-Bulk	Yes	
	UN Specification Ground, Bulk	Yes	
	UN Specification Air, Passenger or Cargo Aircraft	Yes	
	UN Specification Air, Cargo Aircraft Only	Yes	
	Other:	Yes/No	
	Batteries (Excepted)	No	ARCADIS Guide US050
	Compressed Gases (Non-flammable)	Yes	ARCADIS Guide US020
	Dry Ice	No	ARCADIS Guide US015
	Radioactive Material, Excepted Package, Limited Quantity of Material	No	ARCADIS Guide US016
	Sample Coolers (Print Guide and provide to field staff)	NA	ARCADIS Guide US001

Other Determinations

	This material is a Hazardous Waste (being offered under a Hazardous Waste Manifest)
	This material is a Hazardous Substance (49 CFR 172.101 appendix A)
	This material is a Marine Pollutant or Severe Marine Pollutant (49 CFR 172.101 appendix B)

Method of Shipment/Transportation

	FedEx Freight		Ground (FedEx)		Air (FedEx)		Lab Courier
	FedEx Custom Critical		Ground (UPS)		Air (UPS)		Rail
	Freight Other		ARCADIS Transport		Non DOT Spec.		Other
Comments:							

Special Instructions

☐

Rationale for Determination

Regulatory Reference/Interpretation

Determination Performed By

Name Printed	Signature	Date

QA/QC Check Performed By

Name Printed	Signature	Date

Appendix L

Subcontractor Memorandum of Acknowledgement

Memorandum of Acknowledgement

To: ARCADIS

From "Subcontractor": *{Insert Subcontractor's Name}*

Date: *{Insert Date}*

Re: Subcontractor Health and Safety Plan

Pursuant to its obligations under the referenced Site and Project, Subcontractor submits the following **as the** Subcontractor's Health and Safety Plan ("HASP") for the following project and client:

Client:	National Grid	Site Name:	Ilion (East Street) Former MGP Site
Project Name:		ARCADIS Project Number:	B0036713
Start Date:		End Date:	

Subcontractor acknowledges that it is responsible for the health and safety of its workers and others relating to the Subcontractor's Work and Site. The Subcontractor is required to submit its Health and Safety Plan for its Work. To comply with its requirements, the Subcontractor represents that its Health and Safety Plan for its Work shall include the Subcontractor's compliance (including compliance by Subcontractor's employees, officers, agents, representatives, invitees, and sub-subcontractors) with the ARCADIS Health and Safety Plan, together with any further amendments to such plan particular to the Subcontractor's Work and Site deemed necessary and appropriate by the Subcontractor.

Subcontractor agrees and understands that ARCADIS claims no responsibility for the use of the HASP and ARCADIS does not represent that the HASP is sufficient to address the Work or Site conditions of the Subcontractor. Subcontractor shall not hold ARCADIS responsible for any claims arising from the Subcontractor's use of the HASP and agrees to indemnify, defend and hold harmless ARCADIS from any claims for personal injury or property damages arising from or related to the compliance with, utilization or application, or any alleged deficiencies of the HASP. Nothing herein, including the use by Subcontractor of the HASP or acknowledgment of the Subcontractor's HASP shall create any duty, obligation, liability, or responsibility of ARCADIS for any act or failure to act in respect to any safety provision of the HASP and the Subcontractor shall remain solely responsible for the health and safety of Subcontractor, its employees or any person entering the Subcontractor's Work Site.

Signed: *{Insert Subcontractor Name}*

By: _____

Name: _____

Title: _____

Date: _____

Attachment F

Appendix 1A of DER-10

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009