

DRUM DISPOSAL PLAN

**ONONDAGA DRUM SITE
NEDROW, NEW YORK**

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ONONDAGA DRUM SITE NEDROW, NEW YORK

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CONESTOGA-ROVERS & ASSOCIATES

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 PROJECT ORGANIZATION	4
3.0 SITE PREPARATION.....	5
3.1 SECURITY	5
3.2 PERSONNEL SUPPORT AND HYGIENE FACILITIES.....	5
3.3 WEIGH SCALE.....	5
4.0 MATERIALS HANDLING PLAN.....	6
4.1 DRUM HANDLING PROTOCOLS	6
4.1.1 General.....	6
4.1.2 Equipment.....	6
4.1.3 Drum Handling.....	8
4.2 DRUM MANAGEMENT	9
4.3 STORAGE OF DRUMMED WASTE.....	10
4.4 PREPARATION OF OFF-SITE TRANSPORT VEHICLES	11
4.5 OFF-SITE WASTE TRANSPORTATION AND DISPOSAL.....	11
4.5.1 Manifesting and Labeling.....	11
4.5.2 Authorized Transporters	12
4.5.3 Transportation Routes.....	13
4.5.4 Off-Site Disposal.....	13
4.6 SITE SECURITY.....	14
4.7 ENVIRONMENTAL CONTROL.....	16
4.7.1 Surface Water Control.....	16
4.7.2 General Housekeeping	16
4.8 SPILL CONTROL AND RESPONSE	17
4.8.1 Scope.....	17
4.8.2 Material Handling	17
4.8.3 On-Site Contingency Plan.....	19
4.8.4 Off-Site Contingency Plan.....	21
4.9 PROJECT CLOSEOUT.....	22
4.9.1 General.....	22
4.9.2 Final Cleanup	22
5.0 CONTAINERIZED WASTE SAMPLING.....	23
5.1 GENERAL.....	23
5.2 SAMPLE COLLECTION PROTOCOLS.....	23
5.2.1 Drummed Material Sampling	23
5.3.2 Sample Shipment.....	27
5.3.3 Chain-Of-Custody	28

TABLE OF CONTENTS

	<u>Page</u>
6.0 WASTE CHARACTERIZATION.....	30
7.0 SAMPLING EQUIPMENT CLEANING PROTOCOL.....	32
8.0 REPORTING	33
9.0 PROJECT SCHEDULE.....	34

LIST OF FIGURES

FIGURE 1.1	SITE LOCATION
FIGURE 1.2	SITE PLAN
FIGURE 2.1	ORGANIZATIONAL DIAGRAM DRUM REMOVAL PROJECT
FIGURE 3.1	DRUM STAGING MAP
FIGURE 9.1	PROPOSED PROJECT SCHEDULE

LIST OF TABLES

TABLE 6.1	DRUMMED WASTE CLASSIFICATIONS
TABLE 6.2	WASTE CHARACTERIZATION ANALYSIS

LIST OF APPENDICES

APPENDIX A	USEPA ANALYTICAL DATA
APPENDIX B	HEALTH AND SAFETY PLAN

1.0 INTRODUCTION

The Onondaga Drum Site (Site) is situated west of the intersection of Route 11 and Quarry Road on the Onondaga Nation Territory in the Town of Nedrow, New York. The Site location is presented on Figure 1.1.

The Site is approximately 25 acres in a sparsely populated rural area which is used for both residential and agricultural purposes. During the mid 1950s to the early 1980s waste materials including industrial waste was disposed of at the Site.

To date, the EPA has collected approximately 1,300 surficial and partially buried drums at the Site, of which 1,046 were found to be empty and were subsequently sent to a disposal facility for recycling. Waste material contained in the remaining drums was bulked according to compatible waste streams into a total of sixty new drums. The sixty drums have been staged at the Site pending disposal.

In January and February 1992, composite samples of the sixty drums were collected by EPA for disposal characteristics and target compound list parameters in order to determine the proper disposal or treatment method.

This Drum Disposal Plan has been prepared to address Paragraph 17 of the Administrative Order on Consent (Consent Order) (Index

Number II-CERCLA-2022) effective October 2, 1992 for the characterization and disposal of sixty staged drums at the Site.

This Work Plan has been prepared in accordance with the requirements of the Consent Order and includes the following:

- (a) detailed procedures and methods to be followed during the implementation of the Drum Disposal Plan;
- (b) EPA-approved procedures for additional sampling and analysis of drum contents if required for determination of disposal and/or treatment methods;
- (c) all disposal and treatment activities will be performed in compliance with all requirements of CERCLA, RCRA, TSCA and all applicable Federal and New York State laws and regulations as specified in Paragraph 59 of the Consent Order;
- (d) all work contained in this Drum Disposal Plan will be conducted in compliance with applicable Occupational Safety and Health Administration (OSHA) standards; and
- (e) all hazardous materials that will be removed from the Site will be weighed prior to removal and upon arrival at the treatment/disposal facility. Waste profile forms will be completed for all hazardous materials leaving the Site.

The Consent Order requires that all sampling and analysis will conform to EPA Quality Assurance/Quality Control (QA/QC) data Quality Objectives for Remedial Response Activities - Development Process - EPA/540/G-87/003, Data Quality Objectives for Remedial Response Activities - EPA/540/G-87/004, and Chain of Custody procedures as directed by the EPA and in conformance with the EPA publication entitled "Test Methods for Evaluating Solid Waste" (SW-846).

A drum waste characterization was performed by EPA during the first quarter of 1992. The analytical results are presented in Appendix A. Further characterization is only deemed necessary if the waste disposal facility(ies) selected for receipt of this waste require confirmatory samples for their records or for Regulatory compliance. The protocols for collection of these samples, if required, are presented in Section 4.2.

Appendix B presents the Site Health and Safety Plan (HSP) for the program.

2.0 PROJECT ORGANIZATION

The project organization chart is presented in Figure 2.1.

ICI Americas Inc. will provide a Field Engineer to supervise all activities required for sampling and removal of the staged drums at the Site.

3.0 SITE PREPARATION

Site preparation will include all activities necessary to prepare the Site prior to commencing the drum disposal activities.

3.1 SECURITY

The existing snow fence around the drum staging area will be maintained until all of the drums are removed.

3.2 PERSONNEL SUPPORT AND HYGIENE FACILITIES

The following personnel support and hygiene facilities will be established at the Site during drum removal or sampling operations:

- i) emergency shower/eyewash facility,
- ii) portable lavatory, and
- iii) separate tankage for potable waste.

3.3 WEIGH SCALE

A portable weigh scale will be brought to the Site to weigh the contents of all materials prior to loading the drums for off-site transportation.

4.0 MATERIALS HANDLING PLAN

4.1 DRUM HANDLING PROTOCOLS

4.1.1 General

All drum handling and, if required, waste sampling, activities will be conducted in accordance with the health and safety provisions presented the HSP (see Appendix B). All activities will be conducted in accordance with the protocols contained in 29 CFR Part 1910.120, Hazardous Waste Operations and Emergency Response; Final Rule.

This section applies to all activities involved in the handling of drums that may have contained, or do contain, potentially hazardous waste materials in both solid and liquid state. The procedures described within this section specify the minimum requirements that will be implemented to minimize the potential for migration of waste constituents to the surrounding environment.

4.1.2 Equipment

a) Safety Equipment

During the handling of drums or containers, safety apparel and equipment as specified in the HSP, will be worn or used at all times. The contents of fifty-nine of the staged drums have been characterized

by EPA analyses. The remaining drum contains aqueous waste generated during decontamination activities conducted during previous EPA Site activities. The personnel protective equipment requirements specified in the HSP have been developed accordingly.

b) Handling Equipment

The 60 drums at the Site are currently staged on wooden pallets with a maximum of four drums to a pallet. The drums will be loaded onto a truck for on-Site transportation using a front end loader, non-metallic slings or a fork lift truck to minimize potential damage to the containers and release of contents.

Portions of equipment that contact drums will preferably be constructed of non-ferrous metals. Should steel equipment be used, contact portions will be coated or lined to preclude spark generation in accordance with 29 CFR § 1910.120(j)(2). Portable pumps, if used, will be intrinsically safe.

All handling and transport vehicles will be equipped with Class ABC fire extinguishers and shall comply with 29 CFR § 1910.157. All equipment used for the handling and transport of drums or containers will be regularly maintained. In particular, the ignition, manifold and exhaust components will be maintained to prevent backfiring or generation of sparks within the exhaust gases.

4.1.3 Drum Handling

a) Working Groups

During the sampling and handling of the drums, a team of personnel specifically trained in the handling of containerized waste will be designated to perform this task. This team will contain no fewer than two people. During the handling of drummed waste, visual contact will be maintained between members of the working team at all times. All team members will be able to communicate with ease between themselves and will comply with HSP requirements as set out in Appendix B. All communications will be transmitted via hand signals (during activities requiring supplied air respirators) or verbal (during all other activities) in accordance with the protocols presented in the HSP (per 40 CFR § 1910.120(j)(5)(iv)).

b) Drum Staging and Handling

The sixty staged drums at the Site will be handled using the equipment discussed in Section 4.1.2(b). All drums are placed on pallets and oriented to permit sampling of each individual drum. Sufficient area to permit vehicular access to the drums will be maintained. If required, drums will be opened and sampled at the staging area.

The handling and transport of drummed waste will be, at all times, conducted in a controlled and safe manner which will minimize damage to structurally sound drums, repacks or overpacks. Section 4.1.2

addresses drum handling procedures and equipment to be used which provides protection for the handling of explosive and/or shock sensitive waste.

Extreme care will be exercised in opening drums or other sealed containers in which the contents may be harmful to sampling personnel. When practical, a drum will not be moved or opened unless the drum appears to be structurally sound.

Drums will be opened in such a manner that excess interior pressure, as evidenced by bulging or swelling, has been safely relieved. If pressure cannot be relieved from a remote location, appropriate shielding will be placed between sampling personnel and the drums to reduce the risks of injury.

4.2 DRUM MANAGEMENT

All drums are placed on pallets and orientated to permit sampling of each individual drum. Sufficient area to permit vehicular access to the drums will be maintained. Material handling operations at the staging area will consist of:

- i) assignment of a unique container number, if one has not been assigned, to each drum clearly labelled on both the top and side of each drum; and

- ii) notation of approximate volume of contents, condition of drum, pertinent labeling information, visual appearance of contents and physical state.

There are currently twelve empty overpack drums also staged at the drum staging area. These drums will be inspected and if deemed necessary, will be triple rinsed using a solvent capable of removing waste residue. The drums will then be considered as empty, pursuant to 40 CFR § 261.7(3)(i) and will be left on-Site for potential future use.

The handling and packaging of all drums will be conducted in accordance with the requirements of the HSP.

Any rinsate generated during drum removal operations will be collected, containerized and disposed of off site, at a RCRA compliant facility.

4.3 STORAGE OF DRUMMED WASTE

The drums will continue to remain stored within the drum staging area until loaded for transportation to an off-Site disposal facility.

4.4 PREPARATION OF OFF-SITE TRANSPORT VEHICLES

All off-Site transport vehicles will be prepared as appropriate prior to receiving drummed waste. Drummed wastes will be loaded and secured in a manner which will prevent damage to the containerized materials and which will meet all applicable DOT transport requirements (49 CFR 177, 178 and 179).

A weatherproof tarp will be provided and secured over each shipment leaving the Site. Exceptions will only be made for enclosed transport units.

Transport drivers will remain in their vehicle cabs while they are in the Contaminant Reduction Zone and the Exclusion Zone as specified in the HSP.

4.5 OFF-SITE WASTE TRANSPORTATION AND DISPOSAL

4.5.1 Manifesting and Labeling

All drums designated for off-Site disposal will be labelled and manifested (if RCRA hazardous waste) prior to leaving the Site for off-Site disposal facilities. The existing analytical results presented in Appendix A will be used for manifesting purposes and for determining the necessary placarding of vehicles. The manifest forms and records will be consistent with 40 CFR Part 262 "Standards Applicable to Generators of

Hazardous Waste", 40 CFR Part 263 "Standards Applicable to Transporters of Hazardous Waste", and 6 NYCRR Part 372 "New York Hazardous Waste Manifest System Regulations".

An EPA hazardous waste generator number, obtained prior to shipping wastes off Site, will be used on all manifests. All waste leaving the Site will be weighed prior to removal and again upon arrival at the disposal/treatment facility.

4.5.2 Authorized Transporters

Only transporters which are licensed by EPA, DOT and the State of New York will be used for the transport of hazardous waste. Transporters will be in compliance with applicable state and federal hazardous waste transportation requirements (i.e. 40 CFR Part 263 and 6 NYCRR Chapter 364). If drums are scheduled for facilities outside of the State of New York, transporters will be required to be licensed in the appropriate State(s) as well as comply with other applicable Federal laws including DOT requirements.

Any non-hazardous wastes will be transported by a transporter licensed for general transportation of sanitary wastes or as required by the State of New York for the transport of Special Waste. These wastes will be disposed of in an appropriate sanitary landfill.

4.5.3 Transportation Routes

All transportation routes to off-Site facilities will be predetermined prior to commencing off-Site transport of waste materials. A primary and secondary route to each facility will be identified. The secondary route will be used only if the primary route becomes impassable due to weather and road conditions or blockage from traffic accidents. The appropriate State and interstate officials will be consulted as to whether any proposed routes are scheduled for construction or seasonal closures which will occur during implementation of this project.

All applicable DOT requirements will be complied with during transportation (i.e. 24-hour notification hotline). The coordinator of the Emergency Management Division, Onondaga County (315)-434-2525 will be notified of waste shipment prior to transport.

4.5.4 Off-Site Disposal

a) Approved Disposal Facilities

Off-Site facilities for the treatment, incineration, or disposal, as appropriate, of drummed wastes, will be approved by the EPA prior to commencing transport to these facilities. All facilities identified for hazardous waste disposal will be in compliance with RCRA, in addition to being RCRA permitted, and will comply with the requirements specified hereafter.

Any wastes deemed to be non-hazardous will be transported to a sanitary landfill and/or Publicly Owned Treatment Works: Municipal Sewerage System, as applicable, for disposal.

b) Letter of Agreement

Each designated disposal facility will provide a letter of agreement. This agreement will specify the total estimated quantities of wastes and the intended method of disposal for each waste stream. Each Letter of Agreement will provide the facility name and EPA identification number, facility locations, name of responsible contact for facility, telephone number for the contact, signed letter of agreement to accept wastes as specified, the unit of measure utilized at the facility for costing purposes, waste characterization requirements, and expected schedule for shipment. A copy of all letters of Agreement will be provided to EPA and the environmental agency of the accepting state, if shipped to a facility outside the State of New York, a minimum of five (5) business days prior to shipment of the waste.

4.6 SITE SECURITY

The existing snow fence will be maintained around the drum staging area to restrict access to this area.

During active waste handling, security shall be provided by the Contractor. The Contractor's duties shall include:

- i) Limit vehicular access to the Site to authorized vehicles and personnel only.
- ii) Provide initial screening of all Site personnel and visitors. A list of authorized personnel and the name of their employer will be available at the Site.
- iii) Maintain a security log in which documentation is provided of all Site personnel, visitors and deliveries and any security incidents. This log will include the date, name, address, company, time in and time out for each employee and visitor. If unauthorized personnel are observed on Site and refuse to vacate the premises, appropriate law enforcement officials will be contacted for appropriate legal actions.
- iv) Maintain a visitor log at the Site. Visitors will not be allowed to enter without the knowledge of the contractor and approval of the Field Engineer. All visitors will be required to complete training in accordance with the HSP prior to gaining access to the secured areas of the Site (e.g. staging area).

4.7 ENVIRONMENTAL CONTROL

4.7.1 Surface Water Control

All waste handling operations will be carried out at the staging area under dry conditions to the maximum extent possible. Surface water will be prevented from contacting drummed waste by use of pallets to elevate the drums.

4.7.2 General Housekeeping

Daily accumulations of solid waste material such as discarded safety equipment, debris and rubbish will be collected in garbage bags and disposed of in accordance with Federal and State regulations.

Sanitary refuse will be contained in a designated area in the general support area. Trash removal services will be provided on a weekly basis for uncontaminated solid waste during active work.

The Site will not be allowed to become littered with general non-hazardous refuse and/or waste materials from the working areas, but will be maintained in a neat and orderly condition throughout the program.

4.8 SPILL CONTROL AND RESPONSE

4.8.1 Scope

During all active work at the Site involving the transport and handling of drums, an on-Site and off-Site Spill Control and Response Plan will be implemented and maintained in accordance with 29 CFR § 1910.120(L). This plan, as presented herein, will provide contingency measures for potential releases of material from drummed or other wastes handled on Site.

4.8.2 Material Handling

a) Drummed Waste/Spill Control

The handling and transport of drummed waste will be, at all times, conducted in a controlled and safe manner to minimize damage to the containers and prevent release of the contents.

Drums that cannot be moved without rupture, leakage, or spillage will be emptied into a DOT approved 85-gallon salvage drum, using a portable hand pump (for liquid wastes) or a hand shovel (for sludges). Drums shall be moved by grappler, non-metallic slings, or front-end loader or by other means that will minimize damage to containers and release of contents therefrom. Overpack units will be provided on Site adjacent to the staging area.

In the event that a drum or container of liquid is spilled, the drum handling team will immediately respond to the spill. The spilled liquids will be confined to the immediate area of the spill and the liquids will be pumped, with the use of a portable hand pump, into a repack drum. The spilled liquids will be confined by diking around the spill with native material or with an inert absorbent. Any residual liquids which cannot be pumped will be absorbed with a sufficient quantity of inert absorbent to ensure that no free liquids remain. If the spill occurred on soil, the visibly affected soil will be treated as contaminated material based on a visual determination of spill contamination. This material will be excavated and placed in drums within the staging area for ultimate off-Site disposal.

b) Equipment

The following equipment will be available on Site and used for any unexpected spills:

- i) sand, fill or other non-combustible absorbent;
- ii) overpack drums (85 gallons); and
- iii) shovels.

Hand tools which are used will generally be discarded with the waste material unless it is determined appropriate to decontaminate the tools. If tools are decontaminated, they will receive a detergent wash in addition to steam cleaning or hot water washing.

4.8.3 On-Site Contingency Plan

If release of hazardous material occurs on Site, the protocols presented in Section B.10.1 will be followed and the following actions will immediately be taken:

- i) The individual that observes the release will immediately notify the Field Engineer and Site Safety Officer;
- ii) Take immediate action to control and contain the release;
- iii) Keep unnecessary personnel away, isolate the area of release, and deny entry;
- iv) Do not allow anyone to touch released material;
- v) Stay upwind; keep out of low areas; and
- vi) Keep combustibles away from the released material.

If human health or the environment are threatened, the Field Engineer will notify the National Response Center (NRC) (800) 438-2427 as soon as possible. NRC will be notified of any release of reportable quantities including all releases which threaten human health or the environment. The EPA will be notified of all releases within 24 hours and will determine if releases other than those noted above require notification to the NRC.

An employee alarm system to signify a major release or an emergency will consist of three short blasts using an air horn. An air horn

will always be maintained at the staging area during active work hours and will be immediately available to all personnel handling drums.

Upon implementing the above procedures, the immediate areas of the release, including downwind areas, will be scanned with the HNu to identify the level of protection required for personnel safety equipment to clean up the released material. As a minimum, personnel will wear all protective clothing specified in the HSP including supplied air respiratory protection as required. Air monitoring will determine if the level of respiratory protection can be downgraded. The air monitoring action levels as presented in the HSP will be followed during any clean-up of a release.

Should releases occur from drums containing solid wastes, the released material will be placed into containers and covered. Each container will be labelled as to contents.

Liquid and/or sludge spills will be first covered with an absorbent to absorb any free liquids to minimize the amount that may infiltrate into the ground. The absorbent material and soils contacted by the spill will be excavated and placed in containers. These containers will be labelled to indicate contents.

An assessment will then be made to determine the need to conduct post-cleanup soil sampling and analysis. EPA will be provided a copy of the assessment report. Collected samples will be analyzed for the waste constituents previously identified on Site. If analytical data are

available for the released materials, these data will be used to determine the analytes of concern.

A release report will be prepared by ICI submitted to the EPA, summarizing the release and response action.

4.8.4 Off-Site Contingency Plan

Only authorized transporters, as discussed in Section 4.5.2, will be used for the transportation of hazardous waste. If a release of material from a transport vehicle occurs while in transit, the following actions will be taken by the transport operator to reduce potential migration of the waste material.

- i) Immediately notify the Contractor, who will in turn notify the ICI Project Manager (Mr. Bob Shay (302)-886-4001), and the EPA On-Site Coordinator (OSC). In the event of a release of a reportable quantity, the National Response Center ((800) 438-2427) will also be notified;
- ii) Take immediate measures within the capabilities of the transport driver to control the release, if necessary;
- iii) Contain and eliminate the release, if possible;
- iv) The driver must remain within a safe distance of the vehicle, and will keep unnecessary people away, isolate the area of the release and deny entry to unauthorized personnel;
- v) Stay upwind, keeping out of low areas, and do not allow contact with the released material;

- vi) Contact the appropriate local authorities (police, fire department, traffic control, etc.) and local hazardous materials response unit; and,
- vii) Other actions, as advised by the local spill response authorities.

Upon implementing these procedures, the same action to clean up the release will be implemented as described in Section 4.8.3.

4.9 PROJECT CLOSEOUT

4.9.1 General

All closeout activities will be coordinated and performed in such a manner that no waste materials scheduled for off-Site disposal remain at the Site upon completion of this program. Constructed facilities (i.e. staging area, snow fence) will be left in place for potential future use at the Site. These facilities will be removed from the Site if it is determined that they will not be utilized.

4.9.2 Final Cleanup

Final cleanup will involve cleaning the Site of litter and trash resulting from the work and leaving the Site in a neat and orderly condition. Litter and trash resulting from the work will be disposed of at a local sanitary landfill.

5.0 CONTAINERIZED WASTE SAMPLING

5.1 GENERAL

Initially, each drum will be opened to verify the contents and quantity of materials in the drum. If required by the selected disposal facility, additional waste sampling and analyses will also be conducted. The following sections describe the procedures which will be implemented during any drum sampling activities.

5.2 SAMPLE COLLECTION PROTOCOLS

5.2.1 Drummed Material Sampling

This section describes the general procedures that will be followed when opening and sampling drummed waste containers in the drum staging area. All drums will be sampled on the staging area to mitigate spillage onto the ground surface.

a) Safety Equipment

During the sampling of drummed materials, personal protective equipment as specified within the HSP, will be worn or used at all times.

Appropriate respiratory protection, as required by the HSP, will be worn at all times while sampling any drummed waste or while cleaning and sampling spilled materials.

b) Sampling Equipment

Materials and equipment required for sampling are as follows:

1. 500 mL wide mouth glass bottle with teflon cap liner.
2. A uniquely numbered sample identification label affixed to sample container.
3. Chain-of-Custody data sheets.
4. 4-foot by 3/4-inch I.D. glass sampling thieves.
5. Stainless steel trowel, spoon or trier for collection of solid or sludge samples, if applicable.
6. Bung wrench.

c) Presampling Safety Considerations

Extreme care will be exercised in opening drums or other sealed containers in which the contents may be harmful to sampling personnel. When practical, a drum will not be moved or opened unless the drum appears to be structurally sound.

Drums will be opened in such a manner that excess interior pressure, as evidenced by bulging or swelling, has been safely

relieved. If pressure cannot be relieved from a remote location, appropriate shielding will be placed between sampling personnel and the drums to reduce the risks of injury.

d) Drum Entry

All drums will be grounded prior to sampling. A metal grounding rod will be driven into the ground adjacent to the drum staging area. A wire, leading from the rod, will then be clipped to the drum. All drums within the staging area will be kept closed at all times except during sampling activities.

e) Sampling Procedures

The following procedures will be adhered to during sampling of drummed liquid waste.

1. A new pair of disposable elastomeric (e.g. latex rubber) gloves shall be used for the collection of each composite sample.
2. Remove cover from sample container.
3. Insert sampling thief almost to the bottom of the drum or until a solid layer is encountered. About one foot of tubing should extend above the drum. If more than one phase of material is identified in liquid or solid drums, each phase will be sampled. If no phasing is apparent,

then the sample will be collected from the entire column of the drummed waste.

4. Allow the waste in the drum to reach its natural level in the tube.
5. Cap the top of the sampling tube with a double-gloved thumb or stopper, ensuring liquids do not come into contact with the sampler's thumb or stopper.
6. Carefully remove the capped tube from the drum and insert the uncapped end in the sample container. Do not spill liquid on outside of bottle.
7. Release the thumb or stopper and allow the glass thief to drain completely and fill the sample container. Repeat the above steps until sufficient volume has been collected for analysis.
8. Remove tube from the sample container, break in two pieces and place the tube in the drum.
9. Cap the sample container tightly and place prelabeled sample container in a carrier.
10. Replace the bung or place plastic over the drum.
11. Transport the sample to the laboratory for analysis.

Sampling of drummed solids or sludges, if encountered, will, in general, conform to the preceding procedures with the following exceptions:

1. Sample collection will be accomplished using a stainless steel trowel, spoon or trier. All sampling equipment will be cleaned prior to use. Reusable sampling equipment will be cleaned between subsequent drums using the protocol presented in Section 7.0.
2. A representative sample of drummed solids or sludges will be collected, if practical.
3. The sample collected will be a composite of a minimum of four 25 gram samples, collected from representative locations throughout the drummed solids or sludges.

5.3.2 Sample Shipment

All samples will be placed on ice or cooler packs in laboratory supplied coolers after labeling. Samples will be shipped together at the completion of sampling to the project laboratory by overnight courier or delivered directly by sampling personnel. All sample shipment will conform to 49 CFR § 172.101 DOT regulations for shipping high hazard samples. Samples will be maintained at 4°C at the laboratory until completion of all analytical work.

Each cooler will be sealed with two transportation security seals containing the sampler's initials. The cooler will then be sealed with packing tape.

5.3.3 Chain-Of-Custody

Samples will remain under the control of sampling personnel in the field until relinquished to the laboratory. Chain-of-custody documents will be completed for each cooler and enclosed within the cooler. In addition, a sample log of all samples collected and shipped off Site will be maintained on Site by the sampling personnel. Copies of these daily logs and copies of the completed chain-of-custody documents will be maintained by the Field Engineer on a daily basis.

Alternate forms provided by the laboratory or the Contractor will be approved for use by ICI provided the form is functionally equivalent. Upon receipt of samples at the laboratory, the cooler and the seal will be inspected for signs of tampering by the designated sample custodian. The conditions of the cooler and seal will be noted on the chain-of-custody form by the sample custodian and the chain-of-custody form will be signed by the sample custodian.

The laboratory will employ chain-of-custody procedures throughout the handling of the samples in the laboratory from the time of receipt to the completion of analysis. Completed chain-of-custody forms describing the transport to and receipt at the laboratory, are required to be

returned to the appropriate Quality Control Manager with the hard copy of the analytical report. Testament to the proper chain-of-custody handling procedures employed in the laboratory will be supplied by the laboratory upon request.

6.0 WASTE CHARACTERIZATION

The existing waste classification and compatibility database for the drummed waste materials (see Appendix A) will be used to the maximum extent practicable for the purpose of characterizing and classifying materials for manifesting and disposal. Based upon these data, the drummed waste has been classified as presented on Table 6.1. Additional sampling and analysis requirements, if any, will be identified by the selected disposal facilities.

The physical and chemical testing protocols which may be required to meet the general testing requirements of various disposal facilities may include the analyses listed in Table 6.2. Additional or fewer tests may be required to meet the specific requirements of a particular disposal facility. The waste characterization requirements will be confirmed following selection of the contractor and identification of disposal facilities.

Any additional sampling and analysis of drummed materials, as required by the disposal facilities, will be performed on representative composite samples of each group of materials (same waste characteristics). Where disposal facilities identify waste constituent limitations imposed by their acceptance criteria or operating licenses, a "lab scale" composite of compatible materials proposed for consolidation will be prepared.

The on-Site EPA Field Representative will be provided with split samples, upon request, and will be informed of the laboratories being used prior to shipping the samples taken for analysis.

7.0 SAMPLING EQUIPMENT CLEANING PROTOCOL

Prior to the collection of any samples designated for chemical analysis, all sampling equipment and tools will be decontaminated with the following procedure:

- i) clean water wash with non-phosphate detergent to remove all visible foreign matter,
- ii) tap water rinse,
- iii) rinse with pesticide-grade isopropanol/hexane/isopropanol,
- iv) rinse with deionized water. The volume of water used must be at least five times the volume of solvent used in step (iii), and
- v) air dry for 15 minutes.

Fluids used for cleaning will not be recycled. All wash water, rinse water and decontamination fluids will be transferred to clearly labeled drums pending final disposal.

Following final rinse, sampling equipment will be visually inspected to verify that they are free of particulates and other solid material which may contribute to possible sample cross-contamination.

All cleaned equipment will be placed on polyethylene sheeting or covered with aluminum foil to avoid contact with a contaminated surface prior to use.

8.0 REPORTING

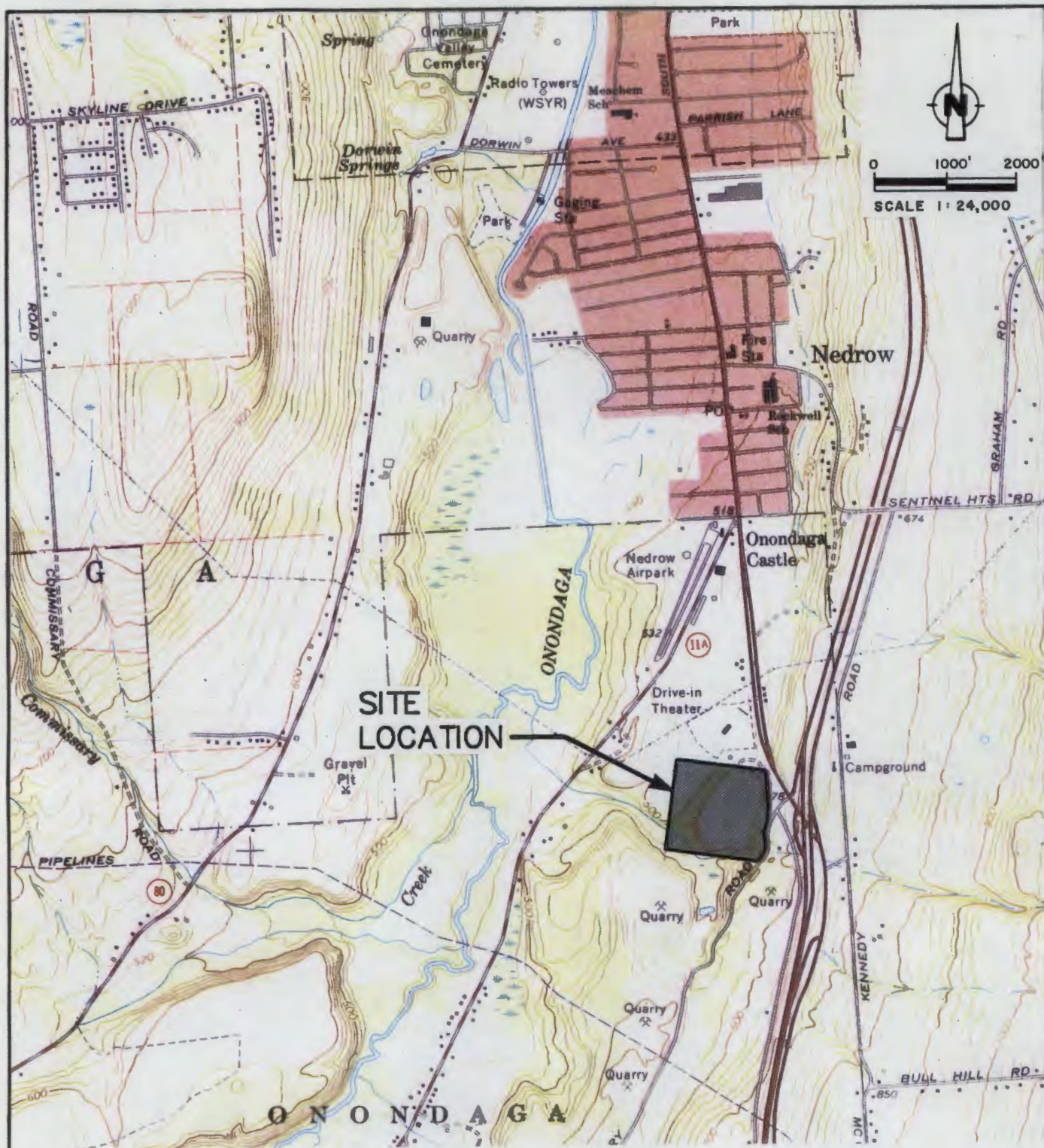
A Drum Removal Report will be prepared and submitted to the EPA following completion of the drum removal activities.

Documentation of the final disposition of the waste will be appended to the final report upon receipt of copies of all manifests for the waste materials removed from the Site. The work will be deemed complete when all drummed waste and all Contractor provided equipment and mobile construction facilities have been removed from the Site and the final report identified herein has been submitted. The report will provide complete documentation of the activities undertaken and will include:

- i) a chronology and description of all activities performed;
- ii) identification of any variances from the work plan;
- iii) identification of problems encountered and how they were resolved;
- iv) an inventory of quantities and types of materials removed and their ultimate disposal;
- v) a compilation of all analytical data collected and supporting QA/QC analytical data;
- vi) air monitoring records and air sampling results;
- vii) a list of all laboratories, transporters and disposal/treatment/recycling facilities used during the cleanup;
- viii) copies of all waste profiles, analytical data, manifests and bills of lading generated in connection with the transportation/disposal of materials off Site; and
- ix) copies of all "certificates of destruction" for all hazardous substances/materials disposed or treated off Site.

9.0 PROJECT SCHEDULE

The proposed schedule for the Drum Disposal Plan is presented on Figure 9.1. This schedule is based on the assumption that a total of sixty containers will be disposed of off Site.

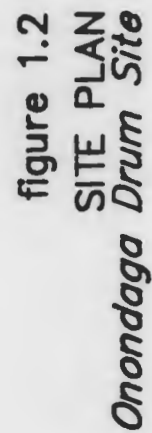


MAP SOURCE: SOUTH ONONDAGA, N.Y.
QUADRANGLE USGS 7.5 SERIES

figure 1.1
SITE LOCATION
Onondaga Drum Site

CRA

5067(1)-OCT. 26/92-REV.0



MAP SOURCE: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

5067(1)-NOV.16/92-REV.0

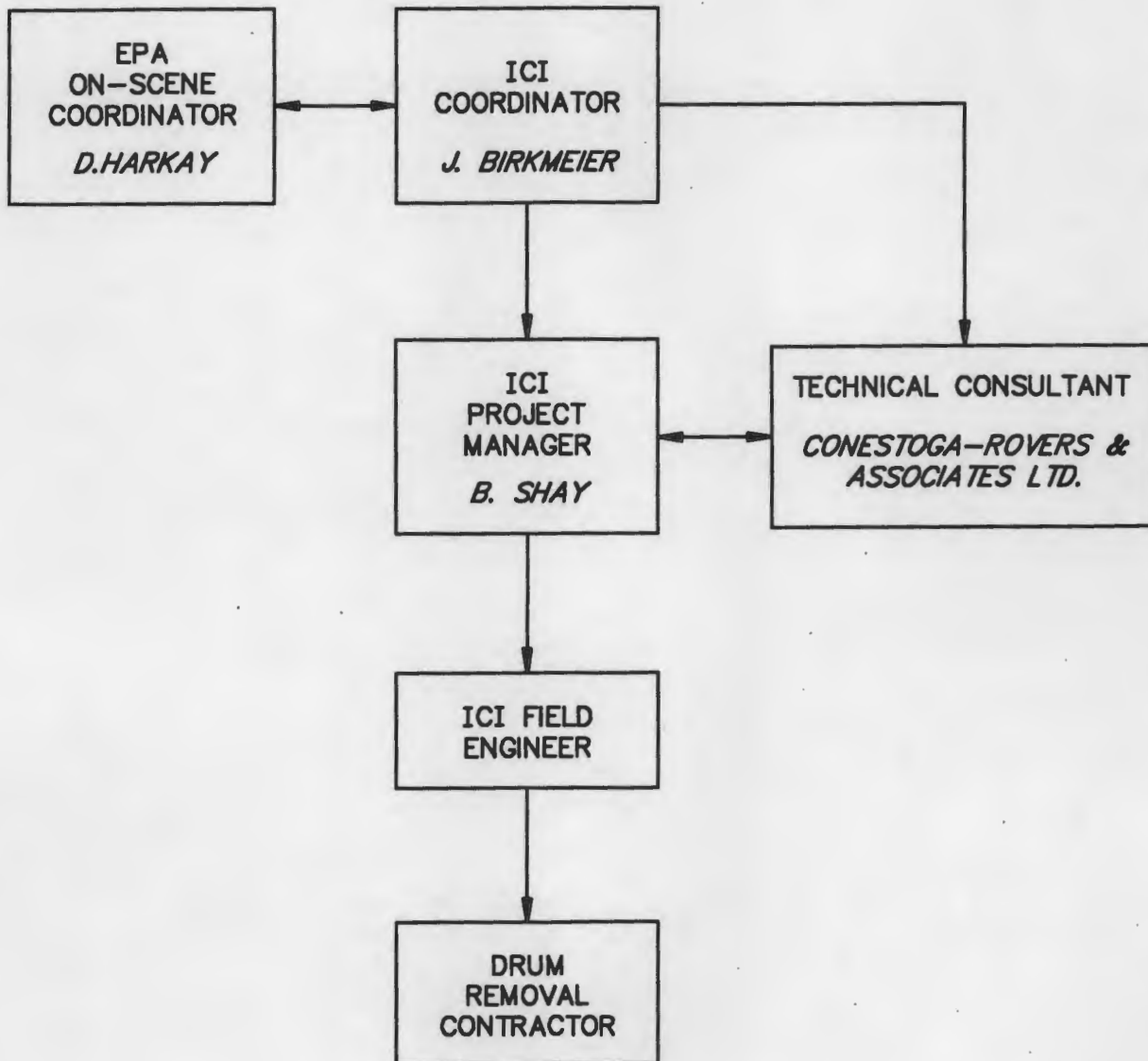


figure 2.1
ORGANIZATIONAL DIAGRAM
REMOVAL PROJECT
Onandaga Drum Site



All Organic Solids All Organic Solids

○ ○ BG 001
4 drums



○ ○ BG 002
3 drums



○ BG 003
1 drum



○ ○ BG 004
8 drums



○ ○ BG 010
4 drums
○ ○ Tar Scrape



○ ○ 8 Empty
Overpacks
○ ○ Phase I



○ BG 001
1 drum

○ BG 002
3 drums



○ ○ BG 003
4 drums



○ ○ BG 004
5 drums



○ ○ BG 010
7 drums
○ ○ Tar Scrape



○ ○ 4 Empty
Overpacks
○ ○ Phase I

○ ○ BG 007
4 drums
○ ○ Flammable Solids

○ BG 009
1 drum
Aqueous Liquid



○ ○ BG 008
9 drums
○ ○ Organic Liquids



○ ○ BG 010
6 drums
○ ○ Tar Scrapings



DRUM INVENTORY
AS OF 2/11/92

CRA

figure 3.1
DRUM STAGING MAP
Onondaga Drum Site

	AC						
	24	25	26	27	28	29	30
1.) USEPA APPROVAL							
2.) DEVELOP REMOVAL SELECT CONTRACT CONTRACT							
3.) CONTRACTOR MOB							
4.) SITE PREPARATION							
5.) SAMPLING / ANAL CHARACTERIZATION							
6.) DISPOSAL FACILITY							
7.) WASTE LOADING A							
8.) SITE RESTORATION							
9.) FINAL REPORT PR SUBMITTAL							

ACTUAL TIME DEPENDENT

LEG

*

MILE

—

CON

figure 9.1

PROPOSED PROJECT SCHEDULE
Onondaga Drum Site

CRA

TABLE 6.1

DRUMMED WASTE CLASSIFICATIONS

<i>Waste I.D.</i>	<i>Number of Drums</i>	<i>Description</i>	<i>Waste Classification</i>
BG001	5	Brown Solid	D009
BG002	6	Brown Solid	D009
BG003	5	Brown Solid	D009
BG004	13	Brown Solid	D009
BG007	4	Brown Solid	D009
BG008	9	Black Liquid	D009
BG009	1	Aqueous Liquid	To be determined
BG010	17	Black Tar	D018, D026

Notes:

(1) Hazardous Waste classification codes are based on 40CFR261 regulations:

D009 - characteristically toxic for mercury based on TCLP results

D018 - characteristically toxic for benzene based on TCLP results

D026 - characteristically toxic for cresol based on TCLP results

TABLE 6.2

WASTE CHARACTERIZATION ANALYSIS

Physical Characteristics

Physical State	Sample inspection
Free Liquids	Sample inspection
Specific Gravity	Volume and weight measurement
pH	EPA SW-846(1), Method 9040
Flash Point	EPA SW-846, Method 1010
Solids	ASTM-D-3977-80
Ash Content	ASTM E-830-87
BTU	ASTM E-711-87

Chemical Composition

Metals	EPA SW-846, Method 6010/7000 series for TAL (2) metals
Organic	
TCL (3)	
Volatiles	EPA SW-846, Method 8240
Organochlorine	
Pesticides and PCBs	EPA SW-846, Method 8080
TCL Semi-volatiles	EPA SW-846, Method 8270
Total Organic Halides	EPA SW-846, Method 9020

Other Components

Cyanides	EPA SW-846, Method 9010/9012
Sulfides	EPA SW-846, Method 9030
Phenols	EPA SW-846, Method 8040
Sulfur	ASTM E-775-87
Chlorine	ASTM E-776-87
TOC	EPA SW-846, Method 9060

Hazardous Characteristics

Reactivity	EPA SW-846, Section 7.3, Chapter 7
Corrosivity	EPA SW-846, Method 1110
TCLP	40 CFR Part 268, Appendix II

Notes:

- (1) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, 1986.
- (2) TAL = Target Analyte List
- (3) TCL = Target Compound List

APPENDIX A

USEPA ANALYTICAL DATA



OHM Corporation

CHAIN-OF-CUSTODY RECORD

Form 0019
Field Technical Services
Rev. 08/89

No. 87376

O.H. MATERIALS CORP.		P.O. BOX 551	FINDLAY, OH 45839-0551	419-423-3526					
PROJECT NAME <i>Onondaga Nation</i>		PROJECT LOCATION <i>Onondaga Nation N.Y.</i>							
PROJ. NO. <i>9519E</i>	PROJECT CONTACT <i>CHM</i>	PROJECT TELEPHONE NO. <i>315 441-2211</i>							
CLIENT'S REPRESENTATIVE <i>US EPA Dan Harkay</i>		PROJECT MANAGER/SUPERVISOR <i>Joe Overend</i>							
ITEM NO.	WASTE SAMPLE NUMBER STREAM NO.	DATE	TIME	GRAB	COMP	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS)	REMARKS
1	001-	1/24/92	1400	X		Brown solid	1 x 32oz	X	Composite of 25 drums
2	002	1/27/92	1300	X		Brown solid	1 x 32oz	X	Composite of 25 drums
3	003	1/27/92	1500	X		Brown solid	1 x 32oz	X	Composite of 27 drums
4	004	1/27/92	1100	X		Brown solid	1 x 32oz	X	Composite of 19 drums
5	007	1/27/92	1400	X		Black Liquid	1 x 32oz	X	Composite of 16 drums
6	008	1/27/92	1000	X		Black Tar	1 x 32oz	X	
7	010	3/14/92	1500	X					
8									
9									
10									
ITEM NUMBER		TRANSFERS RELINQUISHED BY <i>CAC/Harkay</i>		TRANSFERS ACCEPTED BY <i>Joe Overend</i>		DATE		TIME	REMARKS <i>10 day turn around time</i>
1-7						2/1		11:00	
SAMPLER'S SIGNATURE <i>Joe Overend</i>									

TRANSFER 1

Onondaga Nation Drum Site Drum Staging Map



All Organic Solids All Organic Solids

○ ○ BG 001
4 drums



○ ○ BG 002
3 drums



○ BG 003
1 drum



○ ○ BG 004
8 drums



○ ○ BG 010
4 drums
Tar Scrape



○ ○ 8 Empty
Overpacks
Phase I



○ BG 001
1 drum

○ BG 002
3 drums



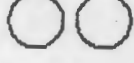
○ ○ BG 003
4 drums



○ ○ BG 004
5 drums



○ ○ BG 010
7 drums
Tar Scrape



○ ○ 4 Empty
Overpacks
Phase I



○ ○ BG 007
4 drums
Flammable Solids



○ BG 009
1 drum
Aqueous Liquid



○ ○ BG 008
9 drums
Organic Liquids



○ ○ BG 010
6 drums
Tar Scrapings



60 drums

As Of 2/11/92

Bulk Group 001



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992
Sample Information: Name: US EPA Dan Harkay
Address: 001; Onondaga Nation; #9519E
Collection Point: 001; Brown Solid; Comp of 19 Drums
Collected By: P. Gravatt ON: Jan 21, 1992 AT: 2:00 pm

Sample Characteristics:

- A. PHASE LAYERS [] bilayered [] multilayered [] none
B. PHYSICAL STATE at 70F [] solid [] liquid [] other.....
C. pH RANGE [] <2 [] 2-4 [] 4-6 [] 6-8 [] 8-10 [] 10-12 [] >12

TEST DESIRED: [] Metals [] Inorganics [] Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4977	Color	SM204A	1.0	Brn	units
4977	Free Liquids, P.F.	EPA9095		<1.0	%
4977	Total Solids	SM209A	0.1	41.36	%
4977	Cyanide, Amenable	SM412B	0.1	0.57	mg/kg
4977	Sulfides, Reactive	EPA376.1	0.01	52.7	mg/kg
4977	pH	EPA150.1		10.5	units
4977	Flash Point	EPA1010		66	oC
4977	Antimony	EPA7040	0.2	0.21	ppm
4977	Arsenic	EPA7061	0.001	0.054	ppm
4977	Barium	EPA7080	0.1	<0.1	ppm
4977	Beryllium	EPA7090	0.005	<0.005	ppm
4977	Cadmium	EPA7130	0.005	1.22	mg/kg
4977	Chromium	EPA7191	0.05	77.0	mg/kg
4977	Copper	EPA7210	0.02	0.55	ppm
4977	Iron	EPA7380	0.03	33.77	ppm
4977	Manganese	EPA7460	0.01	0.34	ppm
4977	Mercury	EPA7470	0.0002	0.089	ppm
4977	Molybdenum	EPA246.1	0.002	0.04	ppm
4977	Nickel	EPA7520		0.068	ppm
4977	Potassium	EPA7610	0.01	1.14	ppm
4977	Selenium	EPA7740	0.002	0.023	ppm

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Limitations of Liability- Due diligence was used in approving the release of professional results, but in an instance where it should fail, the liability will be to the extent of that particular fee. By acceptance of this report, the client agrees to hold harmless and release Alfred Analytical Laboratory from and against all liability, claims and demands of any kind which have any relation with the performance of the work referred to herein.

David Schwert, Ph.D.
Laboratory Director



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STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cl
Address: ONONDAGA NATION DRUM SITE, PO BOXNEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 001; Onondaga Nation; #9519E

Collection Point: 001; Brown Solid; Comp of 19 Drums

Collected By: P. Gravatt

ON: Jan 21, 1992

AT: 2:00 pm

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
978	Silver	EPA272.1	0.01	<0.01	ppm
4978	Sodium	EPA7770	0.002	6.01	ppm
4978	Thallium			0.08	ppm
4978	Vanadium	EPA7911	0.004	0.084	ppm
4978	Zinc	EPA7950	0.005	1.484	ppm
4978	Lead	EPA7420	0.1	0.4	ppm
4978	Cyanide	EPA335.2	0.1	0.57	mg/kg
4978	Phenol	SM510C	0.1	217.7	mg/kg
4978	% Ash	SM209F		44.13	%
4978	BTU	ASTM D2015-77		8183.8	BTU/lb
4978	T.Org.Halides	EPA9020	0.1		
4978	Sulfur	EPA375.3	0.01	0.99	%
4978	Oxidizer			No	
4978	Peroxide	ASTM2180-81	0.01	<0.01	mg/kg
4978	Phasing			Solid	
4978	Density			1.25	units
4978	Flame			Pos	

4978

4978

4978

4978

4978

4978

4978 The provided results are for the exclusive use of the client to whom they are addressed to. The provided results are the name of the Alfred Analytical Laboratory in any form may not be used in any circumstances in advertising to the general public without prior written approval from the laboratory director. The results apply specifically to the sample being tested and are not necessarily indicative of the quantities of apparently identical or similar products.

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David Schwert, Ph.D.
Laboratory Director



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STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607)587-3698/3691

REPORT ON [x] WASTE ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
(315)469-5881/Curtis Clifford

Phone:

Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 001; Onondaga Nation; #9519E...

Sampling POINT: 001; Brown Solid; Comp of 19 Drums...

Collected By: P. Gravatt ON: Jan 21, 1992 AT: 2:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4978	Acenaphthene	EPA8250	<0.050	mg/Kg (ppm)
4978	Acenaphthylene	EPA8250	<0.050	mg/Kg
4978	Acetophenone	EPA8250	<0.050	mg/Kg
4978	Aldrin	EPA8250	<0.050	mg/Kg
4978	4-Aminobiphenyl	EPA8250	<0.050	mg/Kg
4978	Aniline	EPA8250	<0.050	mg/Kg
4978	Anthracene	EPA8250	<0.050	mg/Kg
4978	Aroclor-1016	EPA8250	<0.050	mg/Kg
4978	Aroclor-1221	EPA8250	<0.050	mg/Kg
4978	Aroclor-1232	EPA8250	<0.050	mg/Kg
4978	Aroclor-1242	EPA8250	<0.050	mg/Kg
4978	Aroclor-1248	EPA8250	<0.050	mg/Kg
4978	Aroclor-1254	EPA8250	<0.050	mg/Kg
4978	Aroclor-1260	EPA8250	<0.050	mg/Kg
4978	Benzidine	EPA8250	<0.050	mg/Kg
4978	Benzoic acid	EPA8250	<0.050	mg/Kg
4978	Benzo(a)anthracene	EPA8250	<0.050	mg/Kg
4978	Benzo(b)fluoranthene	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4978 Benzo(k)fluoranthene	EPA8250	<0.050	mg/Kg
4978 Benzo(g,h,i)perylene	EPA8250	<0.050	mg/Kg
4978 Benzo(a)pyrene	EPA8250	<0.050	mg/Kg
4978 Benzyl alcohol	EPA8250	<0.050	mg/Kg
4978 alpha-BHC	EPA8250	<0.050	mg/Kg
4978 beta-BHC	EPA8250	<0.050	mg/Kg
4978 delta-BHC	EPA8250	<0.050	mg/Kg
4978 gamma-BHC	EPA8250	<0.050	mg/Kg
4978 Bis(2-chloroethoxy)methane	EPA8250	<0.050	mg/Kg
4978 Bis(2-chloroethyl)ether	EPA8250	<0.050	mg/Kg
4978 Bis(2-chloroisopropyl)ether	EPA8250	<0.050	mg/Kg
4978 Bis(2-ethylhexyl)phthalate	EPA8250	<0.050	mg/Kg
4978 4-Bromophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4978 Butyl benzyl phthalate	EPA8250	<0.050	mg/Kg
4978 Chlordane	EPA8250	<0.050	mg/Kg
4978 4-Chloroaniline	EPA8250	<0.050	mg/Kg
4978 1-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4978 2-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4978 4-Chloro-3-methylphenol	EPA8250	<0.050	mg/Kg
4978 2-Chlorophenol	EPA8250	<0.050	mg/Kg
4978 4-Chlorophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4978 Chrysene	EPA8250	<0.050	mg/Kg
4978 4,4'-DDD	EPA8250	<0.050	mg/Kg
4978 4,4'-DDT	EPA8250	<0.050	mg/Kg
4978 Dibenz(a,j)acridine	EPA8250	<0.050	mg/Kg
4978 Dibenzo(a,h)anthracene	EPA8250	<0.050	mg/Kg
4978 Dibenzofuran	EPA8250	<0.050	mg/Kg
4978 Di-n-butylphthalate	EPA8250	<0.050	mg/Kg
4978 1,2-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4978 1,3-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4978 1,4-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4978 3,3'-Dichlorobenzidine	EPA8250	<0.050	mg/Kg
4978 2,4-Dichlorophenol	EPA8250	<0.050	mg/Kg
4978 2,6-Dichlorophenol	EPA8250	<0.050	mg/Kg
4978 Dieldrin	EPA8250	<0.050	mg/Kg
4978 Diethylphthalate	EPA8250	<0.050	mg/Kg
4978 p-Dimethylaminoazobenzene	EPA8250	<0.050	mg/Kg
4978 7,12-Dimethylbenz(a)-anthracene	EPA8250	<0.050	mg/Kg

continued on next sheet.

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY

REPORT ON PURGEABLE ORGANICS ANALYSIS

ALFRED, NY 14802
(607) 587-3698/3691

Name: OHM CORPORATION/JOE OVEREND
(315) 469-5881/Curtis Clifford

Phone:

Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 24, 1992

Sampling address: 001; Onondaga Nation; #9519E...

Sampling POINT: 001; Brown Solid; Comp of 19 Drums...

Collected By: P. Gravatt ON: Jan 21, 1992 AT: 2:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: VOLATILE ORGANICS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4978	acetone	8240	<0.01	mg/L (ppm)
4978	acetonitrile	8240	<0.01	mg/L
4978	acrolein	8240	<0.01	mg/L
4978	acrylonitrile	8240	<0.01	mg/L
4978	allyl alcohol	8240	<0.01	mg/L
4978	allyl chloride	8240	<0.01	mg/L
4978	benzene	8240	<0.01	mg/L
4978	benzyl chloride	8240	<0.01	mg/L
4978	Bromoacetone	8240	<0.01	mg/L
4978	bromochloromethane	8240	<0.01	mg/L
4978	bromodichloromethane	8240	<0.01	mg/L
4978	4-bromofluorobenzene	8240	<0.01	mg/L
4978	bromoform	8240	<0.01	mg/L
4978	bromomethane	8240	<0.01	mg/L
4978	2-butanone	8240	<0.01	mg/L
4978	carbon disulfide	8240	<0.01	mg/L
4978	carbon tetrachloride	8240	<0.01	mg/L
4978	chlorobenzene	8240	<0.01	mg/L
4978	chlorobenzene-d5	8240	<0.01	mg/L

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP* 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607) 587-3698/3691

4978 alpha-,alpha-Dimethylphenethylamine	EPA8250	<0.050	mg/Kg
4978 2,4-Dimethylphenol	EPA8250	<0.050	mg/Kg
4978 Dimethylphthalate	EPA8250	<0.050	mg/Kg
4978 4,6-Dinitro-2-methylphenol	EPA8250	<0.050	mg/Kg
4978 2,4-Dinitrophenol	EPA8250	<0.050	mg/Kg
4978 2,4-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4978 2,6-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4978 Diphenylamine	EPA8250	<0.050	mg/Kg
4978 1,2-Diphenylhydrazine	EPA8250	<0.050	mg/Kg
4978 Di-n-octylphthalate	EPA8250	<0.050	mg/Kg
4978 Endosulfan I	EPA8250	<0.050	mg/Kg
4978 Endosulfan II	EPA8250	<0.050	mg/Kg
4978 Endosulfan sulfate	EPA8250	<0.050	mg/Kg
4978 Endrin	EPA8250	<0.050	mg/Kg
4978 Endrin aldehyde	EPA8250	<0.050	mg/Kg
4978 Endrin ketone	EPA8250	<0.050	mg/Kg
4978 Ethyl methanesulfonate	EPA8250	<0.050	mg/Kg
4978 Fluoranthene	EPA8250	<0.050	mg/Kg
4978 Fluorene	EPA8250	<0.050	mg/Kg
4978 Heptachlor	EPA8250	<0.050	mg/Kg
4978 Heptachlor epoxide	EPA8250	<0.050	mg/Kg
4978 Hexachlorobenzene	EPA8250	<0.050	mg/Kg
4978 Hexachlorobutadiene	EPA8250	<0.050	mg/Kg
4978 Hexachlorocyclopentadiene	EPA8250	<0.050	mg/Kg
4978 Hexachloroethane	EPA8250	<0.050	mg/Kg
4978 Indeno(1,2,3-cd)pyrene	EPA8250	<0.050	mg/Kg
4978 Isophorone	EPA8250	<0.050	mg/Kg
4978 Methoxychlor	EPA8250	<0.050	mg/Kg
4978 3-Methylcholanthrene	EPA8250	<0.050	mg/Kg
4978 Methyl methanesulfonate	EPA8250	<0.050	mg/Kg
4978 2-Methylnaphthalene	EPA8250	<0.050	mg/Kg
4978 2-Methylphenol	EPA8250	<0.050	mg/Kg
4978 4-Methylphenol	EPA8250	<0.050	mg/Kg
4978 Naphthalene	EPA8250	<0.050	mg/Kg
4978 1-Naphthylamine	EPA8250	<0.050	mg/Kg
4978 2-Naphthylamine	EPA8250	<0.050	mg/Kg
4978 2-Nitroaniline	EPA8250	<0.050	mg/Kg

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David Schwert, Ph.D.
Laboratory Director



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4978 3-Nitroaniline	EPA8250	<0.050	mg/Kg
4978 4-Nitroaniline	EPA8250	<0.050	mg/Kg
4978 Nitrobenzene	EPA8250	<0.050	mg/Kg
4978 2-Nitrophenol	EPA8250	<0.050	mg/Kg
4978 4-Nitrophenol	EPA8250	<0.050	mg/Kg
4978 N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4978 N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4978 N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4978 N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4978 N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4978 Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4978 Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4978 Pentachlorophenol	EPA8250	<0.050	mg/Kg
4978 Phenacetin	EPA8250	<0.050	mg/Kg
4978 Phenanthrene	EPA8250	<0.050	mg/Kg
4978 Phenol	EPA8250	<0.050	mg/Kg
4978 2-Picoline	EPA8250	<0.050	mg/Kg
4978 Pronamide	EPA8250	<0.050	mg/Kg
4978 Pyrene	EPA8250	<0.050	mg/Kg
4978 1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4978 2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4978 Toxaphene	EPA8250	<0.050	mg/Kg
4978 2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4978 1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4978 2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4978 2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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David Schwert, Ph.D.
Laboratory Director



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NYDOH ELAP* 10729

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ALFRED, NY 14802
(607)587-3698/3691

REPORT ON PURGEABLE ORGANICS ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
(315)469-5881/Curtis Clifford

Phone:

Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY13120

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 001; Onondaga Nation; #9519E...

Sampling POINT: 001; Brown Solid; Comp of 19 Drums...

Collected By: P. Gravatt ON: Jan 21, 1992 AT: 2:00 pm

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: VOLATILE ORGANICS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4978	acetone	8240	<0.01	mg/L (ppm)
4978	acetonitrile	8240	<0.01	mg/L
4978	acrolein	8240	<0.01	mg/L
4978	acrylonitrile	8240	<0.01	mg/L
4978	allyl alcohol	8240	<0.01	mg/L
4978	allyl chloride	8240	<0.01	mg/L
4978	benzene	8240	<0.01	mg/L
4978	benzyl chloride	8240	<0.01	mg/L
4978	Bromoacetone	8240	<0.01	mg/L
4978	bromochloromethane	8240	<0.01	mg/L
4978	bromodichloromethane	8240	<0.01	mg/L
4978	4-bromofluorobenzene	8240	<0.01	mg/L
4978	bromoform	8240	<0.01	mg/L
4978	bromomethane	8240	<0.01	mg/L
4978	2-butanone	8240	<0.01	mg/L
4978	carbon disulfide	8240	<0.01	mg/L
4978	carbon tetrachloride	8240	<0.01	mg/L
4978	chlorobenzene	8240	<0.01	mg/L
4978	chlorobenzene-d5	8240	<0.01	mg/L

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David Schwert, Ph.D.
Laboratory Director



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4978	chlorodibromomethane	8240	<0.01	mg/L
4978	chloroethane	8240	<0.01	mg/L
4978	2-chloroethanol	8240	<0.01	mg/L
4978	2-chloroethyl vinyl ether	8240	<0.01	mg/L
4978	chloroform	8240	<0.01	mg/L
4978	chloromethane	8240	<0.01	mg/L
4978	chloroprene	8240	<0.01	mg/L
4978	3-chloropropionitrile	8240	<0.01	mg/L
4978	1,2-dibromo-3-chloropropane	8240	<0.01	mg/L
4978	1,2-dibromoethane	8240	<0.01	mg/L
4978	dibromomethane	8240	<0.01	mg/L
4978	1,4-dichloro-2-butene	8240	<0.01	mg/L
4978	dichlorodifluoromethane	8240	<0.01	mg/L
4978	1,1-dichloroethane	8240	<0.01	mg/L
4978	1,2-dichloroethane	8240	<0.01	mg/L
4978	1,1-dichloroethene	8240	<0.01	mg/L
4978	trans-1,2-dichloroethene	8240	<0.01	mg/L
4978	1,2-dichloropropane	8240	<0.01	mg/L
4978	1,3-dichloro-2-propanol	8240	<0.01	mg/L
4978	cis-1,3-dichloropropene	8240	<0.01	mg/L
4978	trans 1,3-dichloropropene	8240	<0.01	mg/L
4978	1,2:3,4-diepoxybutane	8240	<0.01	mg/L
4978	1,4-dioxane	8240	<0.01	mg/L
4978	epichlorohydrin	8240	<0.01	mg/L
4978	ethanol	8240	<0.01	mg/L
4978	ethylbenzene	8240	<0.01	mg/L
4978	ethylene oxide	8240	<0.01	mg/L
4978	ethyl methacrylate	8240	<0.01	mg/L
4978	2-hexanone	8240	<0.01	mg/L
4978	2-hydroxypropionitrile	8240	<0.01	mg/L
4978	iodomethane	8240	<0.01	mg/L
4978	isobutyl alcohol	8240	<0.01	mg/L
4978	malononitrile	8240	<0.01	mg/L
4978	methacrylonitrile	8240	<0.01	mg/L
4978	methylene chloride	8240	<0.01	mg/L
4978	methyl iodide	8240	<0.01	mg/L
4978	methyl methacrylate	8240	<0.01	mg/L

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David Schwert, Ph.D.
Laboratory Director



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4978 4-methyl-2-pentanone	8240	<0.01	mg/L
4978 pentachloroethane	8240	<0.01	mg/L
4978 2-picoline	8240	<0.01	mg/L
4978 propargyl alcohol	8240	<0.01	mg/L
4978 b-propiolactone	8240	<0.01	mg/L
4978 propionitrile	8240	<0.01	mg/L
4978 n-propylamine	8240	<0.01	mg/L
4978 pyridine	8240	<0.01	mg/L
4978 styrene	8240	<0.01	mg/L
4978 1,1,1,2-tetrachloroethane	8240	<0.01	mg/L
4978 1,1,2,2-tetrachloroethane	8240	<0.01	mg/L
4978 tetrachloroethene	8240	<0.01	mg/L
4978 toluene	8240	12,070.0	mg/L
4978 1,1,1-trichloroethane	8240	<0.01	mg/L
4978 1,1,2-trichloroethane	8240	<0.01	mg/L
4978 trichloroethene	8240	<0.01	mg/L
4978 trichlorofluoromethane	8240	<0.01	mg/L
4978 1,2,3-trichloropropane	8240	<0.01	mg/L
4978 vinyl acetate	8240	<0.01	mg/L
4978 vinyl chloride	8240	<0.01	mg/L
4978 xylene	8240	109,830.0	mg/L

Date analyzed:

Remarks: USEPA methods for V.O. GC/MS

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Laboratory Director



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COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON [x] WASTE ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
(315) 469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

Phone:

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 001; Onondaga Nation; #9519E...
Sampling POINT: 001; Brown Solid; Comp of 19 Drums...
Collected By: P. Gravatt ON: Jan 21, 1992 AT: 2:00 pm
Sample Characteristics:

- A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.
B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)
C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4978	Acenaphthene	EPA8250	<0.050	mg/Kg (ppm)
4978	Acenaphthylene	EPA8250	<0.050	mg/Kg
4978	Acetophenone	EPA8250	<0.050	mg/Kg
4978	Aldrin	EPA8250	<0.050	mg/Kg
4978	4-Aminobiphenyl	EPA8250	<0.050	mg/Kg
4978	Aniline	EPA8250	<0.050	mg/Kg
4978	Anthracene	EPA8250	<0.050	mg/Kg
4978	Aroclor-1016	EPA8250	<0.050	mg/Kg
4978	Aroclor-1221	EPA8250	<0.050	mg/Kg
4978	Aroclor-1232	EPA8250	<0.050	mg/Kg
4978	Aroclor-1242	EPA8250	<0.050	mg/Kg
4978	Aroclor-1248	EPA8250	<0.050	mg/Kg
4978	Aroclor-1254	EPA8250	<0.050	mg/Kg
4978	Aroclor-1260	EPA8250	<0.050	mg/Kg
4978	Benzidine	EPA8250	<0.050	mg/Kg
4978	Benzoic acid	EPA8250	<0.050	mg/Kg
4978	Benzo(a)anthracene	EPA8250	<0.050	mg/Kg
4978	Benzo(b)fluoranthene	EPA8250	<0.050	mg/Kg

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David Schwert, Ph.D.
Laboratory Director



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4978 Benzo(k)fluoranthene	EPAB250	<0.050	mg/Kg
4978 Benzo(g,h,i)perylene	EPAB250	<0.050	mg/Kg
4978 Benzo(a)pyrene	EPAB250	<0.050	mg/Kg
4978 Benzyl alcohol	EPAB250	<0.050	mg/Kg
4978 alpha-BHC	EPAB250	<0.050	mg/Kg
4978 beta-BHC	EPAB250	<0.050	mg/Kg
4978 delta-BHC	EPAB250	<0.050	mg/Kg
4978 gamma-BHC	EPAB250	<0.050	mg/Kg
4978 Bis(2-chloroethoxy)methane	EPAB250	<0.050	mg/Kg
4978 Bis(2-chloroethyl)ether	EPAB250	<0.050	mg/Kg
4978 Bis(2-chloroisopropyl)ether	EPAB250	<0.050	mg/Kg
4978 Bis(2-ethylhexyl)phthalate	EPAB250	<0.050	mg/Kg
4978 4-Bromophenyl phenyl ether	EPAB250	<0.050	mg/Kg
4978 Butyl benzyl phthalate	EPAB250	<0.050	mg/Kg
4978 Chlordane	EPAB250	<0.050	mg/Kg
4978 4-Chloroaniline	EPAB250	<0.050	mg/Kg
4978 1-Chloronaphthalene	EPAB250	<0.050	mg/Kg
4978 2-Chloronaphthalene	EPAB250	<0.050	mg/Kg
4978 4-Chloro-3-methylphenol	EPAB250	<0.050	mg/Kg
4978 2-Chlorophenol	EPAB250	<0.050	mg/Kg
4978 4-Chlorophenyl phenyl ether	EPAB250	<0.050	mg/Kg
4978 Chrysene	EPAB250	<0.050	mg/Kg
4978 4,4'-DDD	EPAB250	<0.050	mg/Kg
4978 4,4'-DDT	EPAB250	<0.050	mg/Kg
4978 Dibenz(a,j)acridine	EPAB250	<0.050	mg/Kg
4978 Dibenzo(a,h)anthracene	EPAB250	<0.050	mg/Kg
4978 Dibenzofuran	EPAB250	<0.050	mg/Kg
4978 Di-n-butylphthalate	EPAB250	<0.050	mg/Kg
4978 1,2 Dichlorobenzene	EPAB250	<0.050	mg/Kg
4978 1,3-Dichlorobenzene	EPAB250	<0.050	mg/Kg
4978 1,4-Dichlorobenzene	EPAB250	<0.050	mg/Kg
4978 3,3'-Dichlorobenzidine	EPAB250	<0.050	mg/Kg
4978 2,4-Dichlorophenol	EPAB250	<0.050	mg/Kg
4978 2,6-Dichlorophenol	EPAB250	<0.050	mg/Kg
4978 Dieldrin	EPAB250	<0.050	mg/Kg
4978 Diethylphthalate	EPAB250	<0.050	mg/Kg
4978 p-Dimethylaminoazobenzene	EPAB250	<0.050	mg/Kg
4978 7,12-Dimethylbenz(a)-anthracene	EPAB250	<0.050	mg/Kg

.....continued on next sheet.....

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4978 alpha-,alpha-Dimethylphenethylamine	EPA8250	<0.050	mg/Kg
4978 2,4-Dimethylphenol	EPA8250	<0.050	mg/Kg
4978 Dimethylphthalate	EPA8250	<0.050	mg/Kg
4978 4,6-Dinitro-2-methylphenol	EPA8250	<0.050	mg/Kg
4978 2,4-Dinitrophenol	EPA8250	<0.050	mg/Kg
4978 2,4-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4978 2,6-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4978 Diphenylamine	EPA8250	<0.050	mg/Kg
4978 1,2-Diphenylhydrazine	EPA8250	<0.050	mg/Kg
4978 Di-n-octylphthalate	EPA8250	<0.050	mg/Kg
4978 Endosulfan I	EPA8250	<0.050	mg/Kg
4978 Endosulfan II	EPA8250	<0.050	mg/Kg
4978 Endosulfan sulfate	EPA8250	<0.050	mg/Kg
4978 Endrin	EPA8250	<0.050	mg/Kg
4978 Endrin aldehyde	EPA8250	<0.050	mg/Kg
4978 Endrin ketone	EPA8250	<0.050	mg/Kg
4978 Ethyl methanesulfonate	EPA8250	<0.050	mg/Kg
4978 Fluoranthene	EPA8250	<0.050	mg/Kg
4978 Fluorene	EPA8250	<0.050	mg/Kg
4978 Heptachlor	EPA8250	<0.050	mg/Kg
4978 Heptachlor epoxide	EPA8250	<0.050	mg/Kg
4978 Hexachlorobenzene	EPA8250	<0.050	mg/Kg
4978 Hexachlorobutadiene	EPA8250	<0.050	mg/Kg
4978 Hexachlorocyclopentadiene	EPA8250	<0.050	mg/Kg
4978 Hexachloroethane	EPA8250	<0.050	mg/Kg
4978 Indeno(1,2,3-cd)pyrene	EPA8250	<0.050	mg/Kg
4978 Isophorone	EPA8250	<0.050	mg/Kg
4978 Methoxychlor	EPA8250	<0.050	mg/Kg
4978 3-Methylcholanthrene	EPA8250	<0.050	mg/Kg
4978 Methyl methanesulfonate	EPA8250	<0.050	mg/Kg
4978 2-Methylnaphthalene	EPA8250	<0.050	mg/Kg
4978 2-Methylphenol	EPA8250	<0.050	mg/Kg
4978 4-Methylphenol	EPA8250	<0.050	mg/Kg
4978 Naphthalene	EPA8250	<0.050	mg/Kg
4978 1-Naphthylamine	EPA8250	<0.050	mg/Kg
4978 2-Naphthylamine	EPA8250	<0.050	mg/Kg
4978 2-Nitroaniline	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director

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	Nitroaniline	EPA8250	<0.050	mg/Kg
	Nitroaniline	EPA8250	<0.050	mg/Kg
49	Nitrobenzene	EPA8250	<0.050	mg/Kg
	2-Nitrophenol	EPA8250	<0.050	mg/Kg
4978	4-Nitrophenol	EPA8250	<0.050	mg/Kg
4978	N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4978	N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4978	N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4978	N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4978	N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4978	Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4978	Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4978	Pentachlorophenol	EPA8250	<0.050	mg/Kg
4978	Phenacetin	EPA8250	<0.050	mg/Kg
4978	Phenanthrene	EPA8250	<0.050	mg/Kg
4978	Phenol	EPA8250	<0.050	mg/Kg
4978	2-Picoline	EPA8250	<0.050	mg/Kg
4978	Pronamide	EPA8250	<0.050	mg/Kg
4978	Pyrene	EPA8250	<0.050	mg/Kg
4978	1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4978	2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4978	Toxaphene	EPA8250	<0.050	mg/Kg
4978	2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4978	1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4978	2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4978	2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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David Schwert, Ph.D.
Laboratory Director



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NYDOH ELAP* 10729

COLLEGE OF TECHNOLOGY

ALFRED, NY 14802

(607)587-3693/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND

Phone: (315)469-5881/Curtis Cliff

Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992

Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 001; Onondaga Nation; #9519E

Collection Point: 001; Brown Solid; Comp of 19 Drums

Collected By: P. Gravatt

ON: Jan 21, 1992

AT: 2:00 pm

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4979	TCLP	EPA1311			
4979	Arsenic	EPA7061	0.001	0.073	ppm
4979	Barium	EPA208.1	0.1	<0.1	ppm
4979	Cadmium	EPA7130	0.005	0.026	ppm
4979	Chromium	EPA7191	0.05	<0.05	ppm
4979	Lead	EPA7420	0.1	0.2	ppm
4979	Mercury			1.041	ppm
4979	Selenium	EPA7740	0.002	0.111	ppm
4979	Silver	EPA7761	0.01	<0.01	ppm
4979					
4979					
4979					
4979					

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David Schwert, Ph.D.
Laboratory Director



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REPORT ON 4979

COLLEGE OF TECHNOLOGY

ALFRED, NY 14802
(607) 587-3698/3691

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) ANALYSIS

Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 001; Onondaga Nation; #9519E.....
Sampling POINT: 001; Brown Solid; Comp of 19 Drums.....

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ semi-solid ☐ liquid
☒ sludge ☐ powder ☐ granules

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: PESTICIDE /HERBICIDE /VOC /ACID BASE NEUTRAL ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4979	Endrin	EPAB080	<6.0	ug/L (ppb)
4979	Lindane	EPAB080	<4.0	ug/L
4979	Methoxychlor	EPAB080	<176.0	ug/L
4979	Toxaphene	EPAB080	<240.0	ug/L
4979	Chlordane	EPAB080	<14.0	ug/L
4979	Heptachlor	EPAB080	<3.0	ug/L
4979	2,4-D	EPAB150	<1200.0	ug/L
4979	Silvex	EPAB150	<170.0	ug/L
4979	Benzene	EPAB260	<40.0	ug/L
4979	Carbon Tetrachloride	EPAB260	<200.0	ug/L
4979	Chlorobenzene	EPAB260	<40.0	ug/L
4979	1,4-Dichlorobenzene	EPAB260	<30.0	ug/L
4979	1,2-Dichloroethane	EPAB260	<60.0	ug/L
4979	Tetrachloroethylene	EPAB260	<50.0	ug/L
4979	Trichloroethylene	EPAB260	<20.0	ug/L
4979	Vinyl Chloride	EPAB260	<170.0	ug/L

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David Schwert, Ph.D.
Laboratory Director



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4979 o-Cresol	EPAB240	<5.0	ug/L
4979 m-Cresol	EPAB240	<5.0	ug/L
4979 p-Cresol	EPAB240	<5.0	ug/L
4979 Cresol	EPAB270	<10.0	ug/L
4979 1,1-Dichloroethylene	EPAB270	<0.05	ug/L
4979 2,4-Dinitrotoluene	EPAB270	<10.0	ug/L
4979 Hexachloro-1,3-Butadiene	EPAB270	<10.0	ug/L
4979 Hexachlorobenzene	EPAB270	<10.0	ug/L
4979 Hexachloroethane	EPAB270	<10.0	ug/L
4979 Methyleneethylketone	EPAB270	<10.0	ug/L
4979 Nitrobenzene	EPAB270	<10.0	ug/L
4979 Pentachlorophenol	EPAB270	<50.0	ug/L
4979 Pyridine	EPAB270	<10.0	ug/L
4979 2,4,5-Trichlorophenol	EPAB270	<10.0	ug/L
4979 2,4,6-Trichlorophenol	EPAB270	<10.0	ug/L

Date analyzed: Mar 3, 1992

Date extracted: 02/26/92

Remarks: USEPA methods

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David Schwert, Ph.D.
Laboratory Director

Bulk Group 002



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COLLEGE OF TECHNOLOGY

ALFRED, NY 14802

(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 002; Onondaga Nation; #9519E

Collection Point: 002; Brown Solid; Comp of 25 Drums

Collected By: P. Gravatt

ON: Jan 22, 1992

AT: 1:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4980	Color	SM204A	1.0	Brn	units
4980	Free Liquids, P.F.	EPA9095		<1	%
4980	Total Solids	SM209A	0.1	45	%
4980	Cyanide, Amenable	SM412B	0.1	<0.1	mg/kg
4980	Sulfides, Reactive	EPA376.1	0.01	32.06	mg/kg
4980	pH	EPA150.1		6.2	units
4980	Flash Point	EPA1010		61	oC
4980	Antimony	EPA7040	0.2	<0.2	ppm
4980	Arsenic	EPA7061	0.001	0.030	ppm
4980	Barium	EPA7080	0.1	<0.1	ppm
4980	Beryllium	EPA7090	0.005	<0.005	ppm
4980	Cadmium	EPA7130	0.005	1.85	mg/kg
4980	Chromium	EPA7191	0.05	12.0	mg/kg
4980	Copper	EPA7210	0.02	0.52	ppm
4980	Iron	EPA7380	0.03	9.23	ppm
4980	Manganese	EPA7460	0.01	0.09	ppm
4980	Mercury	EPA7470	0.0002	0.140	ppm
4980	Molybdenum	EPA246.1	0.002	0.41	ppm
4980	Nickel	EPA7520		0.064	ppm
4980	Potassium	EPA7610	0.01	0.13	ppm
4980	Selenium	EPA7740	0.002	0.026	ppm

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David Schwert, Ph.D.
Laboratory Director



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STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992
Sample Information: Name: US EPA Dan Harkay
Address: 002; Onondaga Nation; #9519E
Collection Point: 002; Brown Solid; Comp of 25 Drums
Collected By: P. Gravatt ON: Jan 22, 1992 AT: 1:00 pm

Sample Characteristics:

- A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
981	Silver	EPA7761	0.01	<0.01	ppm
981	Sodium	EPA7770	0.002	5.65	ppm
4981	Thallium			0.02	ppm
981	Vanadium			0.015	ppm
981	Zinc	EPA7950	0.005	7.667	ppm
4981	Lead	EPA7420	0.1	0.1	ppm
981	Cyanide	EPA335.2	0.1	<0.1	mg/kg
981	Phenol	SM510C	0.1	408.4	mg/kg
4981	% Ash			19.3	%
4981	BTU	ASTM D2015-77		11808	BTU/lb
981	T.Org.Halides				
981	Sulfur	EPA375.3	0.01	0.08	%
4981	Oxidizer			Yes	
981	Peroxide	ASTM2180-81	0.01	<0.01	mg/kg
981	Phasing			Solid	
4981	Density			1.11	units
4981	Flame			Pos	
981					
4981					
4981					
981					
981					
4981					

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Laboratory Director



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ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON [x] WASTE ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
(315) 469-5881/Curtis Clifford

Phone:

Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 002; Onondaga Nation; #9519E...

Sampling POINT: 002; Brown Solid; Comp of 25 Drums...

Collected By: P. Gravatt ON: Jan 22, 1992 AT: 1:00 pm

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4981	Acenaphthene	EPAB250	<0.050	mg/Kg (ppm)
4981	Acenaphthylene	EPAB250	<0.050	mg/Kg
4981	Acetophenone	EPAB250	<0.050	mg/Kg
4981	Aldrin	EPAB250	<0.050	mg/Kg
4981	4-Aminobiphenyl	EPAB250	<0.050	mg/Kg
4981	Aniline	EPAB250	<0.050	mg/Kg
4981	Anthracene	EPAB250	<0.050	mg/Kg
4981	Aroclor-1016	EPAB250	<0.050	mg/Kg
4981	Aroclor-1221	EPAB250	<0.050	mg/Kg
4981	Aroclor-1232	EPAB250	<0.050	mg/Kg
4981	Aroclor-1242	EPAB250	<0.050	mg/Kg
4981	Aroclor-1248	EPAB250	<0.050	mg/Kg
4981	Aroclor-1254	EPAB250	<0.050	mg/Kg
4981	Aroclor-1260	EPAB250	<0.050	mg/Kg
4981	Benzidine	EPAB250	<0.050	mg/Kg
4981	Benzoic acid	EPAB250	<0.050	mg/Kg
4981	Benzo(a)anthracene	EPAB250	<0.050	mg/Kg
4981	Benzo(b)fluoranthene	EPAB250	<0.050	mg/Kg

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4981 Benzo(k)fluoranthene	EPA8250	<0.050	mg/Kg
4981 Benzo(g,h,i)perylene	EPA8250	<0.050	mg/Kg
4981 Benzo(a)pyrene	EPA8250	<0.050	mg/Kg
4981 Benzyl alcohol	EPA8250	<0.050	mg/Kg
4981 alpha-BHC	EPA8250	<0.050	mg/Kg
4981 beta-BHC	EPA8250	<0.050	mg/Kg
4981 delta-BHC	EPA8250	<0.050	mg/Kg
4981 gamma-BHC	EPA8250	<0.050	mg/Kg
4981 Bis(2-chloroethoxy)methane	EPA8250	<0.050	mg/Kg
4981 Bis(2-chloroethyl)ether	EPA8250	<0.050	mg/Kg
4981 Bis(2-chloroisopropyl)ether	EPA8250	<0.050	mg/Kg
4981 Bis(2-ethylhexyl)phthalate	EPA8250	<0.050	mg/Kg
4981 4-Bromophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4981 Butyl benzyl phthalate	EPA8250	<0.050	mg/Kg
4981 Chlordane	EPA8250	<0.050	mg/Kg
4981 4-Chloroaniline	EPA8250	<0.050	mg/Kg
4981 1-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4981 2-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4981 4-Chloro-3-methylphenol	EPA8250	<0.050	mg/Kg
4981 2-Chlorophenol	EPA8250	<0.050	mg/Kg
4981 4-Chlorophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4981 Chrysene	EPA8250	<0.050	mg/Kg
4981 4,4'-DDD	EPA8250	<0.050	mg/Kg
4981 4,4'-DDT	EPA8250	<0.050	mg/Kg
4981 Dibenz(a,j)acridine	EPA8250	<0.050	mg/Kg
4981 Dibenzo(a,h)anthracene	EPA8250	<0.050	mg/Kg
4981 Dibenzofuran	EPA8250	<0.050	mg/Kg
4981 Di-n-butylphthalate	EPA8250	<0.050	mg/Kg
4981 1,2-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4981 1,3-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4981 1,4-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4981 3,3'-Dichlorobenzidine	EPA8250	<0.050	mg/Kg
4981 2,4-Dichlorophenol	EPA8250	<0.050	mg/Kg
4981 2,6-Dichlorophenol	EPA8250	<0.050	mg/Kg
4981 Dieldrin	EPA8250	<0.050	mg/Kg
4981 Diethylphthalate	EPA8250	<0.050	mg/Kg
4981 p-Dimethylaminoazobenzene	EPA8250	<0.050	mg/Kg
4981 7,12-Dimethylbenz(a)-anthracene	EPA8250	<0.050	mg/Kg

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David Schwert, Ph.D.
Laboratory Director



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4981 alpha-,alpha-Dimethylphenethylamine	EPA8250	<0.050	mg/Kg
4981 2,4-Dimethylphenol	EPA8250	<0.050	mg/Kg
4981 Dimethylphthalate	EPA8250	<0.050	mg/Kg
4981 4,6-Dinitro-2-methylphenol	EPA8250	<0.050	mg/Kg
4981 2,4-Dinitrophenol	EPA8250	<0.050	mg/Kg
4981 2,4-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4981 2,6-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4981 Diphenylamine	EPA8250	<0.050	mg/Kg
4981 1,2-Diphenylhydrazine	EPA8250	<0.050	mg/Kg
4981 Di-n-octylphthalate	EPA8250	<0.050	mg/Kg
4981 Endosulfan I	EPA8250	<0.050	mg/Kg
4981 Endosulfan II	EPA8250	<0.050	mg/Kg
4981 Endosulfan sulfate	EPA8250	<0.050	mg/Kg
4981 Endrin	EPA8250	<0.050	mg/Kg
4981 Endrin aldehyde	EPA8250	<0.050	mg/Kg
4981 Endrin ketone	EPA8250	<0.050	mg/Kg
4981 Ethyl methanesulfonate	EPA8250	<0.050	mg/Kg
4981 Fluoranthene	EPA8250	<0.050	mg/Kg
4981 Fluorene	EPA8250	<0.050	mg/Kg
4981 Heptachlor	EPA8250	<0.050	mg/Kg
4981 Heptachlor epoxide	EPA8250	<0.050	mg/Kg
4981 Hexachlorobenzene	EPA8250	<0.050	mg/Kg
4981 Hexachlorobutadiene	EPA8250	<0.050	mg/Kg
4981 Hexachlorocyclopentadiene	EPA8250	<0.050	mg/Kg
4981 Hexachloroethane	EPA8250	<0.050	mg/Kg
4981 Indeno(1,2,3-cd)pyrene	EPA8250	<0.050	mg/Kg
4981 Isophorone	EPA8250	<0.050	mg/Kg
4981 Methoxychlor	EPA8250	<0.050	mg/Kg
4981 3-Methylcholanthrene	EPA8250	<0.050	mg/Kg
4981 Methyl methanesulfonate	EPA8250	<0.050	mg/Kg
4981 2-Methylnaphthalene	EPA8250	<0.050	mg/Kg
4981 2-Methylphenol	EPA8250	<0.050	mg/Kg
4981 4-Methylphenol	EPA8250	<0.050	mg/Kg
4981 Naphthalene	EPA8250	<0.050	mg/Kg
4981 1-Naphthylamine	EPA8250	<0.050	mg/Kg
4981 2-Naphthylamine	EPA8250	<0.050	mg/Kg
4981 2-Nitroaniline	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4981	3-Nitroaniline	EPA8250	<0.050	mg/Kg
4981	4-Nitroaniline	EPA8250	<0.050	mg/Kg
4981	Nitrobenzene	EPA8250	<0.050	mg/Kg
4981	2-Nitrophenol	EPA8250	<0.050	mg/Kg
4981	4-Nitrophenol	EPA8250	<0.050	mg/Kg
4981	N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4981	N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4981	N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4981	N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4981	N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4981	Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4981	Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4981	Pentachlorophenol	EPA8250	<0.050	mg/Kg
4981	Phenacetin	EPA8250	<0.050	mg/Kg
4981	Phenanthrene	EPA8250	<0.050	mg/Kg
4981	Phenol	EPA8250	<0.050	mg/Kg
4981	2-Picoline	EPA8250	<0.050	mg/Kg
4981	Pronamide	EPA8250	<0.050	mg/Kg
4981	Pyrene	EPA8250	<0.050	mg/Kg
4981	1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4981	2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4981	Toxaphene	EPA8250	<0.050	mg/Kg
4981	2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4981	1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4981	2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4981	2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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David Schwert, Ph.D.
Laboratory Director



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COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607)587-3698/3691

REPORT ON PURGEABLE ORGANICS ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120
Phone: (315)469-5881/Curtis Clifford

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 002; Onondaga Nation; #9519E...
Sampling POINT: 002; Brown Solid; Comp of 25 Drums...
Collected By: P. Gravatt ON: Jan 22, 1992 AT: 1:00 pm
Sample Characteristics:

- A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.
B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)
C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: VOLATILE ORGANICS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4981	acetone	8240	<0.01	mg/L (ppm)
4981	acetonitrile	8240	<0.01	mg/L
4981	acrolein	8240	<0.01	mg/L
4981	acrylonitrile	8240	<0.01	mg/L
4981	allyl alcohol	8240	<0.01	mg/L
4981	allyl chloride	8240	<0.01	mg/L
4981	benzene	8240	<0.01	mg/L
4981	benzyl chloride	8240	<0.01	mg/L
4981	Bromoacetone	8240	<0.01	mg/L
4981	bromochloromethane	8240	<0.01	mg/L
4981	bromodichloromethane	8240	<0.01	mg/L
4981	4-bromofluorobenzene	8240	<0.01	mg/L
4981	bromoform	8240	<0.01	mg/L
4981	bromomethane	8240	<0.01	mg/L
4981	2-butanone	8240	<0.01	mg/L
4981	carbon disulfide	8240	<0.01	mg/L
4981	carbon tetrachloride	8240	<0.01	mg/L

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4981	chlorobenzene	8240	<0.01	mg/L
4981	chlorobenzene-d5	8240	<0.01	mg/L
4981	chlorodibromomethane	8240	<0.01	mg/L
4981	chloroethane	8240	<0.01	mg/L
4981	2-chloroethanol	8240	<0.01	mg/L
4981	2-chloroethyl vinyl ether	8240	<0.01	mg/L
4981	chloroform	8240	<0.01	mg/L
4981	chloromethane	8240	<0.01	mg/L
4981	chloroprene	8240	<0.01	mg/L
4981	3-chloropropionitrile	8240	<0.01	mg/L
4981	1,2-dibromo-3-chloropropane	8240	<0.01	mg/L
4981	1,2-dibromoethane	8240	<0.01	mg/L
4981	dibromomethane	8240	<0.01	mg/L
4981	1,4-dichloro-2-butene	8240	<0.01	mg/L
4981	dichlorodifluoromethane	8240	<0.01	mg/L
4981	1,1-dichloroethane	8240	<0.01	mg/L
4981	1,2-dichloroethane	8240	<0.01	mg/L
4981	1,1-dichloroethene	8240	<0.01	mg/L
4981	trans-1,2-dichloroethene	8240	<0.01	mg/L
4981	1,2-dichloropropane	8240	<0.01	mg/L
4981	1,3-dichloro-2-propanol	8240	<0.01	mg/L
4981	cis-1,3-dichloropropene	8240	<0.01	mg/L
4981	trans 1,3-dichloropropene	8240	<0.01	mg/L
4981	1,2:3,4-diepoxybutane	8240	<0.01	mg/L
4981	1,4-dioxane	8240	<0.01	mg/L
4981	epichlorohydrin	8240	<0.01	mg/L
4981	ethanol	8240	<0.01	mg/L
4981	ethylbenzene	8240	<0.01	mg/L
4981	ethylene oxide	8240	<0.01	mg/L
4981	ethyl methacrylate	8240	<0.01	mg/L
4981	2-hexanone	8240	<0.01	mg/L
4981	2-hydroxypropionitrile	8240	<0.01	mg/L
4981	iodomethane	8240	<0.01	mg/L
4981	isobutyl alcohol	8240	<0.01	mg/L
4981	malononitrile	8240	<0.01	mg/L
4981	methacrylonitrile	8240	<0.01	mg/L
4981	methylene chloride	8240	<0.01	mg/L

.....continued on next sheet.....

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4981 methyl iodide	8240	<0.01	mg/L
4981 methyl methacrylate	8240	<0.01	mg/L
4981 4-methyl-2-pentanone	8240	<0.01	mg/L
4981 pentachloroethane	8240	<0.01	mg/L
4981 2-picoline	8240	<0.01	mg/L
4981 propargyl alcohol	8240	<0.01	mg/L
4981 b-propiolactone	8240	<0.01	mg/L
4981 propionitrile	8240	<0.01	mg/L
4981 n-propylamine	8240	<0.01	mg/L
4981 pyridine	8240	<0.01	mg/L
4981 styrene	8240	<0.01	mg/L
4981 1,1,1,2-tetrachloroethane	8240	<0.01	mg/L
4981 1,1,2,2-tetrachloroethane	8240	<0.01	mg/L
4981 tetrachloroethene	8240	<0.01	mg/L
4981 toluene	8240	2,210.0	mg/L
4981 1,1,1-trichloroethane	8240	<0.01	mg/L
4981 1,1,2-trichloroethane	8240	<0.01	mg/L
4981 trichloroethene	8240	<0.01	mg/L
4981 trichlorofluoromethane	8240	<0.01	mg/L
4981 1,2,3-trichloropropane	8240	<0.01	mg/L
4981 vinyl acetate	8240	<0.01	mg/L
4981 vinyl chloride	8240	<0.01	mg/L
4981 xylene	8240	39,450.0	mg/L

Date analyzed:

Remarks: USEPA methods for V.O. GC/MS

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Laboratory Director



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COLLEGE OF TECHNOLOGY

REPORT ON WASTE

ALFRED, NY 14802
(607)587-3698/3691

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 002; Onondaga Nation; #9519E

Collection Point: 002; Brown Solid; Comp of 25 Drums

Collected By: P. Gravatt

ON: Jan 22, 1992

AT: 1:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4982	TCLP	EPA1311			
4982	Arsenic	EPA7061	0.001	0.118	ppm
4982	Barium			0.44	ppm
4982	Cadmium	EPA7130	0.005	0.018	ppm
4982	Chromium	EPA7191	0.05	<0.05	ppm
4982	Lead	EPA7420	0.1	<0.1	ppm
4982	Mercury			0.607	ppm
4982	Selenium	EPA7740	0.002	0.130	ppm
4982	Silver	EPA7761	0.01	<0.01	ppm
4982					

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David Schwert, Ph.D.
Laboratory Director



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ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON 4982

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) ANALYSIS

Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Clifford
Address: .ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 002; Onondaga Nation; #9519E.....
Sampling POINT: 002; Brown Solid; Comp of 25 Drums.....

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ semi-solid ☐ liquid
☒ sludge ☐ powder ☐ granules

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: PESTICIDE /HERBICIDE /VOC /ACID BASE NEUTRAL ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4982	Endrin	EP8080	<6.0	ug/L (ppb)
4982	Lindane	EP8080	<4.0	ug/L
4982	Methoxychlor	EP8080	<176.0	ug/L
4982	Toxaphene	EP8080	<240.0	ug/L
4982	Chlordane	EP8080	<14.0	ug/L
4982	Heptachlor	EP8080	<3.0	ug/L
4982	2,4-D	EP8150	<1200.0	ug/L
4982	Silvex	EP8150	<170.0	ug/L
4982	Benzene	EP8260	<40.0	ug/L
4982	Carbon Tetrachloride	EP8260	<200.0	ug/L
4982	Chlorobenzene	EP8260	<40.0	ug/L
4982	1,4-Dichlorobenzene	EP8260	<30.0	ug/L
4982	1,2-Dichloroethane	EP8260	<60.0	ug/L
4982	Tetrachloroethylene	EP8260	<50.0	ug/L
4982	Trichloroethylene	EP8260	<20.0	ug/L
4982	Vinyl Chloride	EP8260	<170.0	ug/L

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David Schwert, Ph.D.
Laboratory Director



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4982 o-Cresol	EPAB240	<5.0	ug/L
4982 m-Cresol	EPAB240	<5.0	ug/L
4982 p-Cresol	EPAB240	<5.0	ug/L
4982 Cresol	EPAB270	<10.0	ug/L
4982 1,1-Dichloroethylene	EPAB270	<0.05	ug/L
4982 2,4-Dinitrotoluene	EPAB270	<10.0	ug/L
4982 Hexachloro-1,3-Butadiene	EPAB270	<10.0	ug/L
4982 Hexachlorobenzene	EPAB270	<10.0	ug/L
4982 Hexachloroethane	EPAB270	<10.0	ug/L
4982 Methyleneethylketone	EPAB270	<10.0	ug/L
4982 Nitrobenzene	EPAB270	<10.0	ug/L
4982 Pentachlorophenol	EPAB270	<50.0	ug/L
4982 Pyridine	EPAB270	<10.0	ug/L
4982 2,4,5-Trichlorophenol	EPAB270	<10.0	ug/L
4982 2,4,6-Trichlorophenol	EPAB270	<10.0	ug/L

Date analyzed: Feb 28, 1992

Date extracted: 02/26/92

Remarks: USEPA methods

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David Schwert, Ph.D.
Laboratory Director

Bulk Group 003



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(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOXNEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay
Address: 003; Onondaga Nation; #9519E
Collection Point: 003; Brown Solid; Comp of 25 Drums
Collected By: P. Gravatt ON: Jan 23, 1992 AT: 3:00 pm

Sample Characteristics:
A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12
TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
983	Color	SM204A	1.0	Brn	units
4983	Free Liquids, P.F. EPA9095			<1	%
4983	Total Solids	SM209A	0.1	22.2	%
4983	Cyanide, Amenable	SM412B	0.1	<0.1	mg/kg
4983	Sulfides, Reactive	EPA376.1	0.01	36.4	mg/kg
4983	pH	EPA150.1		7.0	units
4983	Flash Point	EPA1010		72	oC
4983	Antimony	EPA7040	0.2	<0.2	ppm
4983	Arsenic	EPA7061	0.001	0.019	ppm
4983	Barium	EPA7080	0.1	0.42	ppm
4983	Beryllium	EPA7090	0.005	<0.005	ppm
4983	Cadmium	EPA7130	0.005	3274	mg/kg
4983	Chromium	EPA7191	0.05	17.2	mg/kg
4983	Copper	EPA7210	0.02	0.82	ppm
4983	Iron	EPA7380	0.03	19.03	ppm
4983	Manganese	EPA7460	0.01	0.35	ppm
4983	Mercury	EPA7470	0.0002	0.151	ppm
4983	Molybdenum	EPA246.1	0.002	0.60	ppm
4983	Nickel	EPA7520		0.124	ppm
4983	Potassium	EPA7610	0.01	0.53	ppm
4983	Selenium	EPA7740	0.002	0.008	ppm

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David Schwert, Ph.D.
Laboratory Director



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NYDOH ELAP* 10729

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ALFRED, NY 14802
(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOXNEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay
Address: 003; Onondaga Nation; #9519E
Collection Point: 003; Brown Solid; Comp of 25 Drums
Collected By: P. Gravatt ON: Jan 23, 1992 AT: 3:00 pm

Sample Characteristics;
A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12
TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4984	Silver	EPA7761	0.01	0.03	ppm
4984	Sodium	EPA7770	0.002	3.37	ppm
4984	Thallium			0.01	ppm
4984	Vanadium	EPA7911	0.004	<0.004	ppm
4984	Zinc	EPA7950	0.005	0.203	ppm
4984	Lead	EPA7420	0.1	0.2	ppm
4984	Cyanide	EPA335.2	0.1	<0.1	mg/kg
4984	Phenol	SM510C	0.1	355.7	mg/kg
4984	% Ash			54.85	%
4984	BTU	ASTM D2015-77		5637.4	BTU/lb
4984	T.Org.Halides				
4984	Sulfur	EPA375.3	0.01	0.19	%
4984	Oxidizer			Yes	
4984	Peroxide	ASTM2180-81	0.01	<0.01	mg/kg
4984	Phasing			Solid	
4984	Density			1.21	units
4984	Flame			Pos	
4984					
4984					
4984					
4984					
4984					
4984					

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON [x] WASTE ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
(315) 469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

Phone:

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 003; Onondaga Nation; #9519E...
Sampling POINT: 003; Brown Solid; Comp of 25 Drums...
Collected By: P. Gravatt ON: Jan 23, 1992 AT: 3:00 pm
Sample Characteristics;

- A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.
B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)
C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4984	Acenaphthene	EPA8250	<0.050	mg/Kg (ppm)
4984	Acenaphthylene	EPA8250	<0.050	mg/Kg
4984	Acetophenone	EPA8250	<0.050	mg/Kg
4984	Aldrin	EPA8250	<0.050	mg/Kg
4984	4-Aminobiphenyl	EPA8250	<0.050	mg/Kg
4984	Aniline	EPA8250	<0.050	mg/Kg
4984	Anthracene	EPA8250	<0.050	mg/Kg
4984	Aroclor-1016	EPA8250	<0.050	mg/Kg
4984	Aroclor-1221	EPA8250	<0.050	mg/Kg
4984	Aroclor-1232	EPA8250	<0.050	mg/Kg
4984	Aroclor-1242	EPA8250	<0.050	mg/Kg
4984	Aroclor-1248	EPA8250	<0.050	mg/Kg
4984	Aroclor-1254	EPA8250	<0.050	mg/Kg
4984	Aroclor-1260	EPA8250	<0.050	mg/Kg
4984	Benzidine	EPA8250	<0.050	mg/Kg
4984	Benzoic acid	EPA8250	<0.050	mg/Kg
4984	Benzo(a)anthracene	EPA8250	<0.050	mg/Kg
4984	Benzo(b)fluoranthene	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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Laboratory Director



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4984 Benzo(k)fluoranthene	EPA8250	<0.050	mg/Kg
4984 Benzo(g,h,i)perylene	EPA8250	<0.050	mg/Kg
4984 Benzo(a)pyrene	EPA8250	<0.050	mg/Kg
4984 Benzyl alcohol	EPA8250	<0.050	mg/Kg
4984 alpha-BHC	EPA8250	<0.050	mg/Kg
4984 beta-BHC	EPA8250	<0.050	mg/Kg
4984 delta-BHC	EPA8250	<0.050	mg/Kg
4984 gamma-BHC	EPA8250	<0.050	mg/Kg
4984 Bis(2-chloroethoxy)methane	EPA8250	<0.050	mg/Kg
4984 Bis(2-chloroethyl)ether	EPA8250	<0.050	mg/Kg
4984 Bis(2-chloroisopropyl)ether	EPA8250	<0.050	mg/Kg
4984 Bis(2-ethylhexyl)phthalate	EPA8250	<0.050	mg/Kg
4984 4-Bromophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4984 Butyl benzyl phthalate	EPA8250	<0.050	mg/Kg
4984 Chlordane	EPA8250	<0.050	mg/Kg
4984 4-Chloroaniline	EPA8250	<0.050	mg/Kg
4984 1-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4984 2-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4984 4-Chloro-3-methylphenol	EPA8250	<0.050	mg/Kg
4984 2-Chlorophenol	EPA8250	<0.050	mg/Kg
4984 4-Chlorophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4984 Chrysene	EPA8250	<0.050	mg/Kg
4984 4,4'-DDD	EPA8250	<0.050	mg/Kg
4984 4,4'-DDT	EPA8250	<0.050	mg/Kg
4984 Dibenz(a,j)acridine	EPA8250	<0.050	mg/Kg
4984 Dibenzo(a,h)anthracene	EPA8250	<0.050	mg/Kg
4984 Dibenzofuran	EPA8250	<0.050	mg/Kg
4984 Di-n-butylphthalate	EPA8250	<0.050	mg/Kg
4984 1,2-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4984 1,3-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4984 1,4-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4984 3,3'-Dichlorobenzidine	EPA8250	<0.050	mg/Kg
4984 2,4-Dichlorophenol	EPA8250	<0.050	mg/Kg
4984 2,6-Dichlorophenol	EPA8250	<0.050	mg/Kg
4984 Dieldrin	EPA8250	<0.050	mg/Kg
4984 Diethylphthalate	EPA8250	<0.050	mg/Kg
4984 p-Dimethylaminoazobenzene	EPA8250	<0.050	mg/Kg
4984 7,12-Dimethylbenz(a)-anthracene	EPA8250	<0.050	mg/Kg

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4984 Benzo(k)fluoranthene	EPA8250	<0.050	mg/Kg
4984 Benzo(g,h,i)perylene	EPA8250	<0.050	mg/Kg
4984 Benzo(a)pyrene	EPA8250	<0.050	mg/Kg
4984 Benzyl alcohol	EPA8250	<0.050	mg/Kg
4984 alpha-BHC	EPA8250	<0.050	mg/Kg
4984 beta-BHC	EPA8250	<0.050	mg/Kg
4984 delta-BHC	EPA8250	<0.050	mg/Kg
4984 gamma-BHC	EPA8250	<0.050	mg/Kg
4984 Bis(2-chloroethoxy)methane	EPA8250	<0.050	mg/Kg
4984 Bis(2-chloroethyl)ether	EPA8250	<0.050	mg/Kg
4984 Bis(2-chloroisopropyl)ether	EPA8250	<0.050	mg/Kg
4984 Bis(2-ethylhexyl)phthalate	EPA8250	<0.050	mg/Kg
4984 4-Bromophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4984 Butyl benzyl phthalate	EPA8250	<0.050	mg/Kg
4984 Chlordane	EPA8250	<0.050	mg/Kg
4984 4-Chloroaniline	EPA8250	<0.050	mg/Kg
4984 1-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4984 2-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4984 4-Chloro-3-methylphenol	EPA8250	<0.050	mg/Kg
4984 2-Chlorophenol	EPA8250	<0.050	mg/Kg
4984 4-Chlorophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4984 Chrysene	EPA8250	<0.050	mg/Kg
4984 4,4'-DDD	EPA8250	<0.050	mg/Kg
4984 4,4'-DDT	EPA8250	<0.050	mg/Kg
4984 Dibenz(a,j)acridine	EPA8250	<0.050	mg/Kg
4984 Dibenzo(a,h)anthracene	EPA8250	<0.050	mg/Kg
4984 Dibenzofuran	EPA8250	<0.050	mg/Kg
4984 Di-n-butylphthalate	EPA8250	<0.050	mg/Kg
4984 1,2-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4984 1,3-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4984 1,4-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4984 3,3'-Dichlorobenzidine	EPA8250	<0.050	mg/Kg
4984 2,4-Dichlorophenol	EPA8250	<0.050	mg/Kg
4984 2,6-Dichlorophenol	EPA8250	<0.050	mg/Kg
4984 Dieldrin	EPA8250	<0.050	mg/Kg
4984 Diethylphthalate	EPA8250	<0.050	mg/Kg
4984 p-Dimethylaminoazobenzene	EPA8250	<0.050	mg/Kg
4984 7,12-Dimethylbenz(a)-anthracene	EPA8250	<0.050	mg/Kg

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4984	alpha-,alpha-Dimethylphenethylamine	EPAB250	<0.050	mg/Kg
4984	2,4-Dimethylphenol	EPAB250	<0.050	mg/Kg
4984	Dimethylphthalate	EPAB250	<0.050	mg/Kg
4984	4,6-Dinitro-2-methylphenol	EPAB250	<0.050	mg/Kg
4984	2,4-Dinitrophenol	EPAB250	<0.050	mg/Kg
4984	2,4-Dinitrotoluene	EPAB250	<0.050	mg/Kg
4984	2,6-Dinitrotoluene	EPAB250	<0.050	mg/Kg
4984	Diphenylamine	EPAB250	<0.050	mg/Kg
4984	1,2-Diphenylhydrazine	EPAB250	<0.050	mg/Kg
4984	Di-n-octylphthalate	EPAB250	<0.050	mg/Kg
4984	Endosulfan I	EPAB250	<0.050	mg/Kg
4984	Endosulfan II	EPAB250	<0.050	mg/Kg
4984	Endosulfan sulfate	EPAB250	<0.050	mg/Kg
4984	Endrin	EPAB250	<0.050	mg/Kg
4984	Endrin aldehyde	EPAB250	<0.050	mg/Kg
4984	Endrin ketone	EPAB250	<0.050	mg/Kg
4984	Ethyl methanesulfonate	EPAB250	<0.050	mg/Kg
4984	Fluoranthene	EPAB250	<0.050	mg/Kg
4984	Fluorene	EPAB250	<0.050	mg/Kg
4984	Heptachlor	EPAB250	<0.050	mg/Kg
4984	Heptachlor epoxide	EPAB250	<0.050	mg/Kg
4984	Hexachlorobenzene	EPAB250	<0.050	mg/Kg
4984	Hexachlorobutadiene	EPAB250	<0.050	mg/Kg
4984	Hexachlorocyclopentadiene	EPAB250	<0.050	mg/Kg
4984	Hexachloroethane	EPAB250	<0.050	mg/Kg
4984	Indeno(1,2,3-cd)pyrene	EPAB250	<0.050	mg/Kg
4984	Isophorone	EPAB250	<0.050	mg/Kg
4984	Methoxychlor	EPAB250	<0.050	mg/Kg
4984	3-Methylcholanthrene	EPAB250	<0.050	mg/Kg
4984	Methyl methanesulfonate	EPAB250	<0.050	mg/Kg
4984	2-Methylnaphthalene	EPAB250	<0.050	mg/Kg
4984	2-Methylphenol	EPAB250	<0.050	mg/Kg
4984	4-Methylphenol	EPAB250	<0.050	mg/Kg
4984	Naphthalene	EPAB250	<0.050	mg/Kg
4984	1-Naphthylamine	EPAB250	<0.050	mg/Kg
4984	2-Naphthylamine	EPAB250	<0.050	mg/Kg
4984	2-Nitroaniline	EPAB250	<0.050	mg/Kg

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4984	3-Nitroaniline	EPA8250	<0.050	mg/Kg
4984	4-Nitroaniline	EPA8250	<0.050	mg/Kg
4984	Nitrobenzene	EPA8250	<0.050	mg/Kg
4984	2-Nitrophenol	EPA8250	<0.050	mg/Kg
4984	4-Nitrophenol	EPA8250	<0.050	mg/Kg
4984	N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4984	N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4984	N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4984	N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4984	N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4984	Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4984	Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4984	Pentachlorophenol	EPA8250	<0.050	mg/Kg
4984	Phenacetin	EPA8250	<0.050	mg/Kg
4984	Phenanthrene	EPA8250	<0.050	mg/Kg
4984	Phenol	EPA8250	<0.050	mg/Kg
4984	2-Picoline	EPA8250	<0.050	mg/Kg
4984	Pronamide	EPA8250	<0.050	mg/Kg
4984	Pyrene	EPA8250	<0.050	mg/Kg
4984	1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4984	2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4984	Toxaphene	EPA8250	<0.050	mg/Kg
4984	2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4984	1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4984	2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4984	2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON PURGEABLE ORGANICS ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
Address: ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY 13120
Phone: (315) 469-5881/Curtis Clifford

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 003; Onondaga Nation; #9519E...

Sampling POINT: 003; Brown Solid; Comp of 25 Drums...

Collected By: P. Gravatt ON: Jan 23, 1992 AT: 3:00 pm

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: VOLATILE ORGANICS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4984	acetone	8240	<0.01	mg/L (ppm)
4984	acetonitrile	8240	<0.01	mg/L
4984	acrolein	8240	<0.01	mg/L
4984	acrylonitrile	8240	<0.01	mg/L
4984	allyl alcohol	8240	<0.01	mg/L
4984	allyl chloride	8240	<0.01	mg/L
4984	benzene	8240	<0.01	mg/L
4984	benzyl chloride	8240	<0.01	mg/L
4984	Bromoacetone	8240	<0.01	mg/L
4984	bromochloromethane	8240	<0.01	mg/L
4984	bromodichloromethane	8240	<0.01	mg/L
4984	4-bromofluorobenzene	8240	<0.01	mg/L
4984	bromoform	8240	<0.01	mg/L
4984	bromomethane	8240	<0.01	mg/L
4984	2-butanone	8240	<0.01	mg/L
4984	carbon disulfide	8240	<0.01	mg/L
4984	carbon tetrachloride	8240	<0.01	mg/L

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4984	chlorobenzene	8240	<0.01	mg/L
4984	chlorobenzene-d5	8240	<0.01	mg/L
4984	chlorodibromomethane	8240	<0.01	mg/L
4984	chloroethane	8240	<0.01	mg/L
4984	2-chloroethanol	8240	<0.01	mg/L
4984	2-chloroethyl vinyl ether	8240	<0.01	mg/L
4984	chloroform	8240	<0.01	mg/L
4984	chloromethane	8240	<0.01	mg/L
4984	chloroprene	8240	<0.01	mg/L
4984	3-chloropropionitrile	8240	<0.01	mg/L
4984	1,2-dibromo-3-chloropropane	8240	<0.01	mg/L
4984	1,2-dibromoethane	8240	<0.01	mg/L
4984	dibromomethane	8240	<0.01	mg/L
4984	1,4-dichloro-2-butene	8240	<0.01	mg/L
4984	dichlorodifluoromethane	8240	<0.01	mg/L
4984	1,1-dichloroethane	8240	<0.01	mg/L
4984	1,2-dichloroethane	8240	<0.01	mg/L
4984	1,1-dichloroethene	8240	<0.01	mg/L
4984	trans-1,2-dichloroethene	8240	<0.01	mg/L
4984	1,2-dichloropropane	8240	<0.01	mg/L
4984	1,3-dichloro-2-propanol	8240	<0.01	mg/L
4984	cis-1,3-dichloropropene	8240	<0.01	mg/L
4984	trans 1,3-dichloropropene	8240	<0.01	mg/L
4984	1,2:3,4-diepoxybutane	8240	<0.01	mg/L
4984	1,4-dioxane	8240	<0.01	mg/L
4984	epichlorohydrin	8240	<0.01	mg/L
4984	ethanol	8240	<0.01	mg/L
4984	ethylbenzene	8240	<0.01	mg/L
4984	ethylene oxide	8240	<0.01	mg/L
4984	ethyl methacrylate	8240	<0.01	mg/L
4984	2-hexanone	8240	<0.01	mg/L
4984	2-hydroxypropionitrile	8240	<0.01	mg/L
4984	iodomethane	8240	<0.01	mg/L
4984	isobutyl alcohol	8240	<0.01	mg/L
4984	malononitrile	8240	<0.01	mg/L
4984	methacrylonitrile	8240	<0.01	mg/L
4984	methylene chloride	8240	<0.01	mg/L

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4984	methyl iodide	8240	<0.01	mg/L
4984	methyl methacrylate	8240	<0.01	mg/L
4984	4-methyl-2-pentanone	8240	<0.01	mg/L
4984	pentachloroethane	8240	<0.01	mg/L
4984	2-picoline	8240	<0.01	mg/L
4984	propargyl alcohol	8240	<0.01	mg/L
4984	b-propiolactone	8240	<0.01	mg/L
4984	propionitrile	8240	<0.01	mg/L
4984	n-propylamine	8240	<0.01	mg/L
4984	pyridine	8240	<0.01	mg/L
4984	styrene	8240	<0.01	mg/L
4984	1,1,1,2-tetrachloroethane	8240	<0.01	mg/L
4984	1,1,2,2-tetrachloroethane	8240	<0.01	mg/L
4984	tetrachloroethene	8240	<0.01	mg/L
4984	toluene	8240	2,330.0	mg/L
4984	1,1,1-trichloroethane	8240	<0.01	mg/L
4984	1,1,2-trichloroethane	8240	<0.01	mg/L
4984	trichloroethene	8240	<0.01	mg/L
4984	trichlorofluoromethane	8240	<0.01	mg/L
4984	1,2,3-trichloropropane	8240	<0.01	mg/L
4984	vinyl acetate	8240	<0.01	mg/L
4984	vinyl chloride	8240	<0.01	mg/L
4984	xylene	8240	47,630.0	mg/L

Date analyzed:

Remarks: USEPA methods for V.O. GC/MS

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REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND

Phone: (315)469-5881/Curtis Cliff

Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992

Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 003; Onondaga Nation; #9519E

Collection Point: 003; Brown Solid; Comp of 25 Drums

Collected By: P. Gravatt

ON: Jan 23, 1992

AT: 3:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4985	TCLP	EPA1311			
4985	Arsenic	EPA7061	0.001	0.088	ppm
4985	Barium			0.21	ppm
4985	Cadmium	EPA7130	0.005	0.019	ppm
4985	Chromium	EPA7191	0.05	0.12	ppm
4985	Lead	EPA7420	0.1	0.2	ppm
4985	Mercury			1.291	ppm
4985	Selenium	EPA7740	0.002	0.117	ppm
4985	Silver	EPA7761	0.01	<0.01	ppm
4985					

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David Schwert, Ph.D.
Laboratory Director



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REPORT ON 4985

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) ANALYSIS

Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Clifford
Address: .ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 003; Onondaga Nation; #9519E.....
Sampling POINT: 003; Brown Solid; Comp of 25 Drums.....

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ semi-solid ☐ liquid
☒ sludge ☐ powder ☐ granules

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: PESTICIDE /HERBICIDE /VOC /ACID BASE NEUTRAL ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4985	Endrin	EPAB080	<6.0	ug/L (ppb)
4985	Lindane	EPAB080	<4.0	ug/L
4985	Methoxychlor	EPAB080	<176.0	ug/L
4985	Toxaphene	EPAB080	<240.0	ug/L
4985	Chlordane	EPAB080	<14.0	ug/L
4985	Heptachlor	EPAB080	<3.0	ug/L
4985	2,4-D	EPAB150	<1200.0	ug/L
4985	Silvex	EPAB150	<170.0	ug/L
4985	Benzene	EPAB260	<40.0	ug/L
4985	Carbon Tetrachloride	EPAB260	<200.0	ug/L
4985	Chlorobenzene	EPAB260	<40.0	ug/L
4985	1,4-Dichlorobenzene	EPAB260	<30.0	ug/L
4985	1,2-Dichloroethane	EPAB260	<60.0	ug/L
4985	Tetrachloroethylene	EPAB260	<50.0	ug/L
4985	Trichloroethylene	EPAB260	<20.0	ug/L
4985	Vinyl Chloride	EPAB260	<170.0	ug/L

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David Schwert, Ph.D.
Laboratory Director



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4985 o-Cresol	EPAB240	<5.0	ug/L
4985 m-Cresol	EPAB240	<5.0	ug/L
4985 p-Cresol	EPAB240	<5.0	ug/L
4985 Cresol	EPAB270	<10.0	ug/L
4985 1,1-Dichloroethylene	EPAB270	<0.05	ug/L
4985 2,4-Dinitrotoluene	EPAB270	<10.0	ug/L
4985 Hexachloro-1,3-Butadiene	EPAB270	<10.0	ug/L
4985 Hexachlorobenzene	EPAB270	<10.0	ug/L
4985 Hexachloroethane	EPAB270	<10.0	ug/L
4985 Methyleneethylketone	EPAB270	<10.0	ug/L
4985 Nitrobenzene	EPAB270	<10.0	ug/L
4985 Pentachlorophenol	EPAB270	<50.0	ug/L
4985 Pyridine	EPAB270	<10.0	ug/L
4985 2,4,5-Trichlorophenol	EPAB270	<10.0	ug/L
4985 2,4,6-Trichlorophenol	EPAB270	<10.0	ug/L

Date analyzed: Mar 2, 1992

Date extracted: 02/26/92

Remarks: USEPA methods

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David Schwert, Ph.D.
Laboratory Director

Bulk Group 004

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(607) 587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992
Sample Information: Name: US EPA Dan Harkay
Address: 004; Onondaga Nation; #9519E
Collection Point: 004; Brown Solid; Comp of 27 Drums
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 11:00 am

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4986	Color	SM204A	1.0	Blk	units
4986	Free Liquids, P.F.	EPA9095		5	%
4986	Total Solids	SM209A	0.1	45.15	%
4986	Cyanide, Amenable	SM412B	0.1	<0.1	mg/kg
4986	Sulfides, Reactive	EPA376.1	0.01	47.8	mg/kg
4986	pH	EPA150.1		5.1	units
4986	Flash Point	EPA1010		83	oC
4986	Antimony	EPA7040	0.2	0.26	ppm
4986	Arsenic	EPA7061	0.001	0.041	ppm
4986	Barium	EPA7080	0.1	<0.1	ppm
4986	Beryllium	EPA7090	0.005	<0.005	ppm
4986	Cadmium	EPA7130	0.005	23.82	mg/kg
4986	Chromium	EPA7191	0.05	11.3	mg/kg
4986	Copper	EPA7210	0.02	0.88	ppm
4986	Iron	EPA7380	0.03	27.43	ppm
4986	Manganese	EPA7460	0.01	0.48	ppm
4986	Mercury	EPA7470	0.0002	0.124	ppm
4986	Molybdenum	EPA246.1	0.002	<0.002	ppm
4986	Nickel	EPA7520		0.106	ppm
4986	Potassium	EPA7610	0.01	1.26	ppm
4986	Selenium	EPA7740	0.002	0.010	ppm

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David Schwert, Ph.D.
Laboratory Director



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REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992
Sample Information: Name: US EPA Dan Harkay
Address: 004; Onondaga Nation; #9519E
Collection Point: 004; Brown Solid; Comp of 27 Drums
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 11:00 am

Sample Characteristics:
A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12
TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics
CONFIRMATORY:

D#	analyte	method code	method detection limit	result	unit
987	Silver	EPA7761	0.01	<0.01	ppm
987	Sodium	EPA7770	0.002	9.66	ppm
4987	Thallium			0.04	ppm
987	Vanadium	EPA7911	0.004	0.036	ppm
987	Zinc	EPA7950	0.005	7.859	ppm
4987	Lead	EPA7420	0.1	0.8	ppm
987	Cyanide	EPA335.2	0.1	<0.1	mg/kg
987	Phenol	SM510C	0.1	332.2	mg/kg
4987	% Ash			40.3	%
4987	BTU	ASTM D2015-77		8886.1	BTU/lb
987	T.Org.Halides				
987	Sulfur	EPA375.3	0.01	<0.01	%
4987	Oxidizer			Yes	
987	Peroxide	ASTM2180-81	0.01	<0.01	mg/kg
987	Phasing			Solid	
4987	Density			1.17	units
4987	Flame			Pos	
987					
987					
4987					
987					
987					

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ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON [x] WASTE ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
(315) 469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

Phone:
NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 004; Onondaga Nation; #9519E...
Sampling POINT: 004; Brown Solid; Comp of 27 Drums...
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 11:00 am
Sample Characteristics;

- A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.
B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)
C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4987	Acenaphthene	EPAB250	<0.050	mg/Kg (ppm)
4987	Acenaphthylene	EPAB250	<0.050	mg/Kg
4987	Acetophenone	EPAB250	<0.050	mg/Kg
4987	Aldrin	EPAB250	<0.050	mg/Kg
4987	4-Aminobiphenyl	EPAB250	<0.050	mg/Kg
4987	Aniline	EPAB250	<0.050	mg/Kg
4987	Anthracene	EPAB250	<0.050	mg/Kg
4987	Aroclor-1016	EPAB250	<0.050	mg/Kg
4987	Aroclor-1221	EPAB250	<0.050	mg/Kg
4987	Aroclor-1232	EPAB250	<0.050	mg/Kg
4987	Aroclor-1242	EPAB250	<0.050	mg/Kg
4987	Aroclor-1248	EPAB250	<0.050	mg/Kg
4987	Aroclor-1254	EPAB250	<0.050	mg/Kg
4987	Aroclor-1260	EPAB250	<0.050	mg/Kg
4987	Benzidine	EPAB250	<0.050	mg/Kg
4987	Benzoic acid	EPAB250	<0.050	mg/Kg
4987	Benzo(a)anthracene	EPAB250	<0.050	mg/Kg
4987	Benzo(b)fluoranthene	EPAB250	<0.050	mg/Kg

.....continued on next sheet.....

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Laboratory Director



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4987 Benzo(k)fluoranthene	EPA8250	<0.050	mg/Kg
4987 Benzo(g,h,i)perylene	EPA8250	<0.050	mg/Kg
4987 Benzo(a)pyrene	EPA8250	<0.050	mg/Kg
4987 Benzyl alcohol	EPA8250	<0.050	mg/Kg
4987 alpha-BHC	EPA8250	<0.050	mg/Kg
4987 beta-BHC	EPA8250	<0.050	mg/Kg
4987 delta-BHC	EPA8250	<0.050	mg/Kg
4987 gamma-BHC	EPA8250	<0.050	mg/Kg
4987 Bis(2-chloroethoxy)methane	EPA8250	<0.050	mg/Kg
4987 Bis(2-chloroethyl)ether	EPA8250	<0.050	mg/Kg
4987 Bis(2-chloroisopropyl)ether	EPA8250	<0.050	mg/Kg
4987 Bis(2-ethylhexyl)phthalate	EPA8250	<0.050	mg/Kg
4987 4-Bromophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4987 Butyl benzyl phthalate	EPA8250	<0.050	mg/Kg
4987 Chlordane	EPA8250	<0.050	mg/Kg
4987 4-Chloroaniline	EPA8250	<0.050	mg/Kg
4987 1-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4987 2-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4987 4-Chloro-3-methylphenol	EPA8250	<0.050	mg/Kg
4987 2-Chlorophenol	EPA8250	1,092.0	mg/Kg
4987 4-Chlorophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4987 Chrysene	EPA8250	<0.050	mg/Kg
4987 4,4'-DDD	EPA8250	<0.050	mg/Kg
4987 4,4'-DDT	EPA8250	<0.050	mg/Kg
4987 Dibenz(a,j)acridine	EPA8250	<0.050	mg/Kg
4987 Dibenzo(a,h)anthracene	EPA8250	<0.050	mg/Kg
4987 Dibenzofuran	EPA8250	<0.050	mg/Kg
4987 Di-n-butylphthalate	EPA8250	<0.050	mg/Kg
4987 1,2-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4987 1,3-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4987 1,4-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4987 3,3'-Dichlorobenzidine	EPA8250	<0.050	mg/Kg
4987 2,4-Dichlorophenol	EPA8250	<0.050	mg/Kg
4987 2,6-Dichlorophenol	EPA8250	<0.050	mg/Kg
4987 Dieldrin	EPA8250	<0.050	mg/Kg
4987 Diethylphthalate	EPA8250	<0.050	mg/Kg
4987 p-Dimethylaminoazobenzene	EPA8250	<0.050	mg/Kg
4987 7,12-Dimethylbenz(a)-anthracene	EPA8250	<0.050	mg/Kg

continued on next sheet.

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Laboratory Director



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4987 alpha-,alpha-Dimethylphenethylamine	EPA8250	<0.050	mg/Kg
4987 2,4-Dimethylphenol	EPA8250	<0.050	mg/Kg
4987 Dimethylphthalate	EPA8250	<0.050	mg/Kg
4987 4,6-Dinitro-2-methylphenol	EPA8250	<0.050	mg/Kg
4987 2,4-Dinitrophenol	EPA8250	<0.050	mg/Kg
4987 2,4-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4987 2,6-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4987 Diphenylamine	EPA8250	<0.050	mg/Kg
4987 1,2-Diphenylhydrazine	EPA8250	<0.050	mg/Kg
4987 Di-n-octylphthalate	EPA8250	<0.050	mg/Kg
4987 Endosulfan I	EPA8250	<0.050	mg/Kg
4987 Endosulfan II	EPA8250	<0.050	mg/Kg
4987 Endosulfan sulfate	EPA8250	<0.050	mg/Kg
4987 Endrin	EPA8250	<0.050	mg/Kg
4987 Endrin aldehyde	EPA8250	<0.050	mg/Kg
4987 Endrin ketone	EPA8250	<0.050	mg/Kg
4987 Ethyl methanesulfonate	EPA8250	<0.050	mg/Kg
4987 Fluoranthene	EPA8250	<0.050	mg/Kg
4987 Fluorene	EPA8250	<0.050	mg/Kg
4987 Heptachlor	EPA8250	<0.050	mg/Kg
4987 Heptachlor epoxide	EPA8250	<0.050	mg/Kg
4987 Hexachlorobenzene	EPA8250	<0.050	mg/Kg
4987 Hexachlorobutadiene	EPA8250	<0.050	mg/Kg
4987 Hexachlorocyclopentadiene	EPA8250	<0.050	mg/Kg
4987 Hexachloroethane	EPA8250	<0.050	mg/Kg
4987 Indeno(1,2,3-cd)pyrene	EPA8250	<0.050	mg/Kg
4987 Isophorone	EPA8250	<0.050	mg/Kg
4987 Methoxychlor	EPA8250	<0.050	mg/Kg
4987 3-Methylcholanthrene	EPA8250	<0.050	mg/Kg
4987 Methyl methanesulfonate	EPA8250	<0.050	mg/Kg
4987 2-Methylnaphthalene	EPA8250	<0.050	mg/Kg
4987 2-Methylphenol	EPA8250	<0.050	mg/Kg
4987 4-Methylphenol	EPA8250	<0.050	mg/Kg
4987 Naphthalene	EPA8250	<0.050	mg/Kg
4987 1-Naphthylamine	EPA8250	<0.050	mg/Kg
4987 2-Naphthylamine	EPA8250	<0.050	mg/Kg
4987 2-Nitroaniline	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4987 3-Nitroaniline	EPA8250	<0.050	mg/Kg
4987 4-Nitroaniline	EPA8250	<0.050	mg/Kg
4987 Nitrobenzene	EPA8250	<0.050	mg/Kg
4987 2-Nitrophenol	EPA8250	<0.050	mg/Kg
4987 4-Nitrophenol	EPA8250	<0.050	mg/Kg
4987 N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4987 N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4987 N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4987 N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4987 N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4987 Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4987 Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4987 Pentachlorophenol	EPA8250	<0.050	mg/Kg
4987 Phenacetin	EPA8250	<0.050	mg/Kg
4987 Phenanthrene	EPA8250	<0.050	mg/Kg
4987 Phenol	EPA8250	<0.050	mg/Kg
4987 2-Picoline	EPA8250	<0.050	mg/Kg
4987 Pronamide	EPA8250	<0.050	mg/Kg
4987 Pyrene	EPA8250	<0.050	mg/Kg
4987 1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4987 2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4987 Toxaphene	EPA8250	<0.050	mg/Kg
4987 2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4987 1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4987 2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4987 2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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David Schwert, Ph.D.
Laboratory Director



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COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON PURGEABLE ORGANICS ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
Address: .ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY 13120
Phone: (315) 469-5881/Curtis Clifford

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 004; Onondaga Nation; #9519E...
Sampling POINT: 004; Brown Solid; Comp of 27 Drums...
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 11:00 am
Sample Characteristics:

- A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.
B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)
C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: VOLATILE ORGANICS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4987	acetone	8240	<0.01	mg/L (ppm)
4987	acetonitrile	8240	<0.01	mg/L
4987	acrolein	8240	<0.01	mg/L
4987	acrylonitrile	8240	<0.01	mg/L
4987	allyl alcohol	8240	<0.01	mg/L
4987	allyl chloride	8240	<0.01	mg/L
4987	benzene	8240	2,140.0	mg/L
4987	benzyl chloride	8240	<0.01	mg/L
4987	Bromoacetone	8240	<0.01	mg/L
4987	bromochloromethane	8240	<0.01	mg/L
4987	bromodichloromethane	8240	<0.01	mg/L
4987	4-bromofluorobenzene	8240	<0.01	mg/L
4987	bromoform	8240	<0.01	mg/L
4987	bromomethane	8240	<0.01	mg/L
4987	2-butanone	8240	<0.01	mg/L
4987	carbon disulfide	8240	<0.01	mg/L
4987	carbon tetrachloride	8240	<0.01	mg/L

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4987 chlorobenzene	8240	<0.01	mg/L
4987 chlorobenzene-d5	8240	<0.01	mg/L
4987 chlorodibromomethane	8240	<0.01	mg/L
4987 chloroethane	8240	<0.01	mg/L
4987 2-chloroethanol	8240	<0.01	mg/L
4987 2-chloroethyl vinyl ether	8240	<0.01	mg/L
4987 chloroform	8240	<0.01	mg/L
4987 chloromethane	8240	<0.01	mg/L
4987 chloroprene	8240	<0.01	mg/L
4987 3-chloropropionitrile	8240	<0.01	mg/L
4987 1,2-dibromo-3-chloropropane	8240	<0.01	mg/L
4987 1,2-dibromoethane	8240	<0.01	mg/L
4987 dibromomethane	8240	<0.01	mg/L
4987 1,4-dichloro-2-butene	8240	<0.01	mg/L
4987 dichlorodifluoromethane	8240	<0.01	mg/L
4987 1,1-dichloroethane	8240	<0.01	mg/L
4987 1,2-dichloroethane	8240	<0.01	mg/L
4987 1,1-dichloroethene	8240	<0.01	mg/L
4987 trans-1,2-dichloroethene	8240	<0.01	mg/L
4987 1,2-dichloropropane	8240	<0.01	mg/L
4987 1,3-dichloro-2-propanol	8240	<0.01	mg/L
4987 cis-1,3-dichloropropene	8240	<0.01	mg/L
4987 trans 1,3-dichloropropene	8240	<0.01	mg/L
4987 1,2:3,4-diepoxybutane	8240	<0.01	mg/L
4987 1,4-dioxane	8240	<0.01	mg/L
4987 epichlorohydrin	8240	<0.01	mg/L
4987 ethanol	8240	<0.01	mg/L
4987 ethylbenzene	8240	<0.01	mg/L
4987 ethylene oxide	8240	<0.01	mg/L
4987 ethyl methacrylate	8240	<0.01	mg/L
4987 2-hexanone	8240	<0.01	mg/L
4987 2-hydroxypropionitrile	8240	<0.01	mg/L
4987 iodomethane	8240	<0.01	mg/L
4987 isobutyl alcohol	8240	<0.01	mg/L
4987 malononitrile	8240	<0.01	mg/L
4987 methacrylonitrile	8240	<0.01	mg/L
4987 methylene chloride	8240	<0.01	mg/L

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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4987 methyl iodide	8240	<0.01	mg/L
4987 methyl methacrylate	8240	<0.01	mg/L
4987 4-methyl-2-pentanone	8240	<0.01	mg/L
4987 pentachloroethane	8240	<0.01	mg/L
4987 2-picoline	8240	<0.01	mg/L
4987 propargyl alcohol	8240	<0.01	mg/L
4987 b-propiolactone	8240	<0.01	mg/L
4987 propionitrile	8240	<0.01	mg/L
4987 n-propylamine	8240	<0.01	mg/L
4987 pyridine	8240	<0.01	mg/L
4987 styrene	8240	<0.01	mg/L
4987 1,1,1,2-tetrachloroethane	8240	<0.01	mg/L
4987 1,1,2,2-tetrachloroethane	8240	<0.01	mg/L
4987 tetrachloroethene	8240	<0.01	mg/L
4987 toluene	8240	71,600.0	mg/L
4987 1,1,1-trichloroethane	8240	<0.01	mg/L
4987 1,1,2-trichloroethane	8240	<0.01	mg/L
4987 trichloroethene	8240	<0.01	mg/L
4987 trichlorofluoromethane	8240	<0.01	mg/L
4987 1,2,3-trichloropropane	8240	<0.01	mg/L
4987 vinyl acetate	8240	<0.01	mg/L
4987 vinyl chloride	8240	<0.01	mg/L
4987 xylene	8240	200,000.0	mg/L

Date analyzed:

Remarks: USEPA methods for V.O. GC/MS

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Laboratory Director



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REPORT ON WASTE

ALFRED, NY 14802
(607)587-3698/3691

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOXNEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 004; Onondaga Nation; #9519E

Collection Point: 004; Brown Solid; Comp of 27 Drums

Collected By: P. Gravatt ON: Jan 29, 1992 AT: 11:00 am

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4988	TCLP	EPA1311			
4988	Arsenic	EPA7061	0.001	0.267	ppm
4988	Barium			0.22	ppm
4988	Cadmium	EPA7130	0.005	0.033	ppm
4988	Chromium	EPA7191	0.05	0.030	ppm
4988	Lead	EPA7420	0.1	1.1	ppm
4988	Mercury			1.669	ppm
4988	Selenium	EPA7740	0.002	0.182	ppm
4988	Silver	EPA7761	0.01	<0.01	ppm
4988					

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David Schwert, Ph.D.
Laboratory Director



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ALFRED, NY 14802
(607)587-3698/3691

REPORT ON 4988

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) ANALYSIS

Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 004; Onondaga Nation; #9519E.....
Sampling POINT: 004; Brown Solid; Comp of 27 Drums.....

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ semi-solid ☐ liquid
☒ sludge ☐ powder ☐ granules

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: PESTICIDE /HERBICIDE /VOC /ACID BASE NEUTRAL ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4988	Endrin	EPA8080	<6.0	ug/L (ppb)
4988	Lindane	EPA8080	<4.0	ug/L
4988	Methoxychlor	EPA8080	<176.0	ug/L
4988	Toxaphene	EPA8080	<240.0	ug/L
4988	Chlordane	EPA8080	<14.0	ug/L
4988	Heptachlor	EPA8080	<3.0	ug/L
4988	2,4-D	EPA8150	<1200.0	ug/L
4988	Silvex	EPA8150	<170.0	ug/L
4988	Benzene	EPA8260	<40.0	ug/L
4988	Carbon Tetrachloride	EPA8260	<200.0	ug/L
4988	Chlorobenzene	EPA8260	<40.0	ug/L
4988	1,4-Dichlorobenzene	EPA8260	<30.0	ug/L
4988	1,2-Dichloroethane	EPA8260	<60.0	ug/L
4988	Tetrachloroethylene	EPA8260	<50.0	ug/L
4988	Trichloroethylene	EPA8260	<20.0	ug/L
4988	Vinyl Chloride	EPA8260	<170.0	ug/L

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David Schwert, Ph.D.
Laboratory Director



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4988 o-Cresol	EPA8240	<5.0	ug/L
4988 m-Cresol	EPA8240	<5.0	ug/L
4988 p-Cresol	EPA8240	<5.0	ug/L
4988 Cresol	EPA8270	<10.0	ug/L
4988 1,1-Dichloroethylene	EPA8270	<0.05	ug/L
4988 2,4-Dinitrotoluene	EPA8270	<10.0	ug/L
4988 Hexachloro-1,3-Butadiene	EPA8270	<10.0	ug/L
4988 Hexachlorobenzene	EPA8270	<10.0	ug/L
4988 Hexachloroethane	EPA8270	<10.0	ug/L
4988 Methyleneethylketone	EPA8270	<10.0	ug/L
4988 Nitrobenzene	EPA8270	<10.0	ug/L
4988 Pentachlorophenol	EPA8270	<50.0	ug/L
4988 Pyridine	EPA8270	<10.0	ug/L
4988 2,4,5-Trichlorophenol	EPA8270	<10.0	ug/L
4988 2,4,6-Trichlorophenol	EPA8270	<10.0	ug/L

Date analyzed: Feb 28, 1992

Date extracted: 02/26/92

Remarks: USEPA methods

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David Schwert, Ph.D.
Laboratory Director

Bulk Group 007



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ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992
Sample Information: Name: US EPA Dan Harkay
Address: 007; Onondaga Nation; #9519E
Collection Point: 007; Brown Solid; Comp of 7 Drums
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 2:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4989	Color	SM204A	1.0	Brn	units
4989	Free Liquids, P.F.	EPA9095		<1.0	%
4989	Total Solids	SM209A	0.1	68.6	%
4989	Cyanide, Amenable	SM412B	0.1	0.14	mg/kg
4989	Sulfides, Reactive	EPA376.1	0.01	33.6	mg/kg
4989	pH	EPA150.1		5.2	units
4989	Flash Point	EPA1010		>100	oC
4989	Antimony	EPA7040	0.2	0.4	ppm
4989	Arsenic	EPA7061	0.001	0.159	ppm
4989	Barium	EPA7080	0.1	0.32	ppm
4989	Beryllium	EPA7091	0.0002	<0.005	ppm
4989	Cadmium	EPA7130	0.005	2.33	mg/kg
4989	Chromium	EPA7191	0.05	262	mg/kg
4989	Copper	EPA7210	0.02	0.64	ppm
4989	Iron	EPA7380	0.03	115.30	ppm
4989	Manganese	EPA7460	0.01	2.22	ppm
4989	Mercury	EPA7470	0.0002	0.142	ppm
4989	Molybdenum	EPA246.1	0.002	0.27	ppm
4989	Nickel	EPA7520		0.166	ppm
4989	Potassium	EPA7610	0.01	2.84	ppm
4989	Selenium	EPA7740	0.002	0.123	ppm

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David Schwert, Ph.D.
Laboratory Director



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NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY

ALFRED, NY 14802

(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOXNEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay
Address: 007; Onondaga Nation; #9519E
Collection Point: 007; Brown Solid; Comp of 7 Drums
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 2:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

D#	analyte	method code	method detection limit	result	unit
4990	Silver	EPA7761	0.01	0.04	ppm
4990	Sodium	EPA7770	0.002	6.85	ppm
4990	Thallium			0.14	ppm
4990	Vanadium	EPA7911	0.004	0.075	ppm
4990	Zinc	EPA7950	0.005	2.351	ppm
4990	Lead	EPA7420	0.1	4.0	ppm
4990	Cyanide	EPA335.2	0.1	0.14	mg/kg
4990	Phenol	SM510C	0.1	63.6	mg/kg
4990	% Ash			61.3	%
4990	BTU	ASTM D2015-77		10494	BTU/lb
4990	T.Org.Halides				
4990	Sulfur	EPA375.3	0.01	<0.01	%
4990	Oxidizer			No	
4990	Peroxide	ASTM2180-81	0.01	<0.01	mg/kg
4990	Phasing			Solid	
4990	Density			1.22	units
4990	Flame			Neg	
4990					
4990					
4990					
4990					
4990					

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY

ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON [x] WASTE ANALYSIS

Name: OHM CORPORATION/JOE OVEREND

Phone:

(315) 469-5881/Curtis Clifford

Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 007; Onondaga Nation; #9519E...

Sampling POINT: 007; Brown Solid; Comp of 7 Drums...

Collected By: P. Gravatt ON: Jan 29, 1992 AT: 2:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4990	Acenaphthene	EPA8250	<0.050	mg/Kg (ppm)
4990	Acenaphthylene	EPA8250	<0.050	mg/Kg
4990	Acetophenone	EPA8250	<0.050	mg/Kg
4990	Aldrin	EPA8250	<0.050	mg/Kg
4990	4-Aminobiphenyl	EPA8250	<0.050	mg/Kg
4990	Aniline	EPA8250	<0.050	mg/Kg
4990	Anthracene	EPA8250	<0.050	mg/Kg
4990	Aroclor-1016	EPA8250	<0.050	mg/Kg
4990	Aroclor-1221	EPA8250	<0.050	mg/Kg
4990	Aroclor-1232	EPA8250	<0.050	mg/Kg
4990	Aroclor-1242	EPA8250	<0.050	mg/Kg
4990	Aroclor-1248	EPA8250	<0.050	mg/Kg
4990	Aroclor-1254	EPA8250	<0.050	mg/Kg
4990	Aroclor-1260	EPA8250	<0.050	mg/Kg
4990	Benzidine	EPA8250	<0.050	mg/Kg
4990	Benzoic acid	EPA8250	<0.050	mg/Kg
4990	Benzo(a)anthracene	EPA8250	<0.050	mg/Kg
4990	Benzo(b)fluoranthene	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY

ALFRED, NY 14802
(607) 587-3698/3691

4990 Benzo(k)fluoranthene	EPA8250	<0.050	mg/Kg
4990 Benzo(g,h,i)perylene	EPA8250	<0.050	mg/Kg
4990 Benzo(a)pyrene	EPA8250	<0.050	mg/Kg
4990 Benzyl alcohol	EPA8250	<0.050	mg/Kg
4990 alpha-BHC	EPA8250	<0.050	mg/Kg
4990 beta-BHC	EPA8250	<0.050	mg/Kg
4990 delta-BHC	EPA8250	<0.050	mg/Kg
4990 gamma-BHC	EPA8250	<0.050	mg/Kg
4990 Bis(2-chloroethoxy)methane	EPA8250	<0.050	mg/Kg
4990 Bis(2-chloroethyl)ether	EPA8250	<0.050	mg/Kg
4990 Bis(2-chloroisopropyl)ether	EPA8250	<0.050	mg/Kg
4990 Bis(2-ethylhexyl)phthalate	EPA8250	<0.050	mg/Kg
4990 4-Bromophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4990 Butyl benzyl phthalate	EPA8250	<0.050	mg/Kg
4990 Chlordane	EPA8250	<0.050	mg/Kg
4990 4-Chloroaniline	EPA8250	<0.050	mg/Kg
4990 1-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4990 2-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4990 4-Chloro-3-methylphenol	EPA8250	<0.050	mg/Kg
4990 2-Chlorophenol	EPA8250	<0.050	mg/Kg
4990 4-Chlorophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4990 Chrysene	EPA8250	<0.050	mg/Kg
4990 4,4'-DDD	EPA8250	<0.050	mg/Kg
4990 4,4'-DDT	EPA8250	<0.050	mg/Kg
4990 Dibenz(a,j)acridine	EPA8250	<0.050	mg/Kg
4990 Dibenzo(a,h)anthracene	EPA8250	<0.050	mg/Kg
4990 Dibenzofuran	EPA8250	<0.050	mg/Kg
4990 Di-n-butylphthalate	EPA8250	<0.050	mg/Kg
4990 1,2-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4990 1,3-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4990 1,4-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4990 3,3'-Dichlorobenzidine	EPA8250	<0.050	mg/Kg
4990 2,4-Dichlorophenol	EPA8250	<0.050	mg/Kg
4990 2,6-Dichlorophenol	EPA8250	<0.050	mg/Kg
4990 Dieldrin	EPA8250	<0.050	mg/Kg
4990 Diethylphthalate	EPA8250	<0.050	mg/Kg
4990 p-Dimethylaminoazobenzene	EPA8250	<0.050	mg/Kg
4990 7,12-Dimethylbenz(a)-anthracene	EPA8250	<0.050	mg/Kg

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NYDOH ELAP# 10729

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ALFRED, NY 14802
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4990 alpha-,alpha-Dimethylphenethylamine	EPA8250	<0.050	mg/Kg
4990 2,4-Dimethylphenol	EPA8250	<0.050	mg/Kg
4990 Dimethylphthalate	EPA8250	<0.050	mg/Kg
4990 4,6-Dinitro-2-methylphenol	EPA8250	<0.050	mg/Kg
4990 2,4-Dinitrophenol	EPA8250	<0.050	mg/Kg
4990 2,4-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4990 2,6-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4990 Diphenylamine	EPA8250	<0.050	mg/Kg
4990 1,2-Diphenylhydrazine	EPA8250	<0.050	mg/Kg
4990 Di-n-octylphthalate	EPA8250	<0.050	mg/Kg
4990 Endosulfan I	EPA8250	<0.050	mg/Kg
4990 Endosulfan II	EPA8250	<0.050	mg/Kg
4990 Endosulfan sulfate	EPA8250	<0.050	mg/Kg
4990 Endrin	EPA8250	<0.050	mg/Kg
4990 Endrin aldehyde	EPA8250	<0.050	mg/Kg
4990 Endrin ketone	EPA8250	<0.050	mg/Kg
4990 Ethyl methanesulfonate	EPA8250	<0.050	mg/Kg
4990 Fluoranthene	EPA8250	<0.050	mg/Kg
4990 Fluorene	EPA8250	<0.050	mg/Kg
4990 Heptachlor	EPA8250	<0.050	mg/Kg
4990 Heptachlor epoxide	EPA8250	<0.050	mg/Kg
4990 Hexachlorobenzene	EPA8250	<0.050	mg/Kg
4990 Hexachlorobutadiene	EPA8250	<0.050	mg/Kg
4990 Hexachlorocyclopentadiene	EPA8250	<0.050	mg/Kg
4990 Hexachloroethane	EPA8250	<0.050	mg/Kg
4990 Indeno(1,2,3-cd)pyrene	EPA8250	<0.050	mg/Kg
4990 Isophorone	EPA8250	<0.050	mg/Kg
4990 Methoxychlor	EPA8250	<0.050	mg/Kg
4990 3-Methylcholanthrene	EPA8250	<0.050	mg/Kg
4990 Methyl methanesulfonate	EPA8250	<0.050	mg/Kg
4990 2-Methylnaphthalene	EPA8250	<0.050	mg/Kg
4990 2-Methylphenol	EPA8250	<0.050	mg/Kg
4990 4-Methylphenol	EPA8250	<0.050	mg/Kg
4990 Naphthalene	EPA8250	<0.050	mg/Kg
4990 1-Naphthylamine	EPA8250	<0.050	mg/Kg
4990 2-Naphthylamine	EPA8250	<0.050	mg/Kg
4990 2-Nitroaniline	EPA8250	<0.050	mg/Kg

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4990 3-Nitroaniline	EPA8250	<0.050	mg/Kg
4990 4-Nitroaniline	EPA8250	<0.050	mg/Kg
4990 Nitrobenzene	EPA8250	<0.050	mg/Kg
4990 2-Nitrophenol	EPA8250	<0.050	mg/Kg
4990 4-Nitrophenol	EPA8250	<0.050	mg/Kg
4990 N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4990 N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4990 N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4990 N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4990 N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4990 Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4990 Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4990 Pentachlorophenol	EPA8250	<0.050	mg/Kg
4990 Phenacetin	EPA8250	<0.050	mg/Kg
4990 Phenanthrene	EPA8250	<0.050	mg/Kg
4990 Phenol	EPA8250	<0.050	mg/Kg
4990 2-Picoline	EPA8250	<0.050	mg/Kg
4990 Pronamide	EPA8250	<0.050	mg/Kg
4990 Pyrene	EPA8250	<0.050	mg/Kg
4990 1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4990 2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4990 Toxaphene	EPA8250	<0.050	mg/Kg
4990 2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4990 1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4990 2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4990 2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP* 10729

COLLEGE OF TECHNOLOGY

REPORT ON PURGEABLE ORGANICS ANALYSIS

ALFRED, NY 14802
(607) 587-3698/3691

Name: OHM CORPORATION/JOE OVEREND
Address: ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY 13120
Phone: (315) 469-5881/Curtis Clifford

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 007; Onondaga Nation; #9519E...
Sampling POINT: 007; Brown Solid; Comp of 7 Drums...
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 2:00 pm
Sample Characteristics:

- A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.
B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)
C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: VOLATILE ORGANICS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4990	acetone	8240	<0.01	mg/L (ppm)
4990	acetonitrile	8240	<0.01	mg/L
4990	acrolein	8240	<0.01	mg/L
4990	acrylonitrile	8240	<0.01	mg/L
4990	allyl alcohol	8240	<0.01	mg/L
4990	allyl chloride	8240	<0.01	mg/L
4990	benzene	8240	<0.01	mg/L
4990	benzyl chloride	8240	<0.01	mg/L
4990	Bromoacetone	8240	<0.01	mg/L
4990	bromochloromethane	8240	<0.01	mg/L
4990	bromodichloromethane	8240	<0.01	mg/L
4990	4-bromofluorobenzene	8240	<0.01	mg/L
4990	bromoform	8240	<0.01	mg/L
4990	bromomethane	8240	<0.01	mg/L
4990	2-butanone	8240	<0.01	mg/L
4990	carbon disulfide	8240	<0.01	mg/L
4990	carbon tetrachloride	8240	<0.01	mg/L

.....continued on next sheet.....

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Laboratory Director



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ALFRED, NY 14802
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4990 chlorobenzene	8240	<0.01	mg/L
4990 chlorobenzene-d5	8240	<0.01	mg/L
4990 chlorodibromomethane	8240	<0.01	mg/L
4990 chloroethane	8240	<0.01	mg/L
4990 2-chloroethanol	8240	<0.01	mg/L
4990 2-chloroethyl vinyl ether	8240	<0.01	mg/L
4990 chloroform	8240	<0.01	mg/L
4990 chloromethane	8240	<0.01	mg/L
4990 chloroprene	8240	<0.01	mg/L
4990 3-chloropropionitrile	8240	<0.01	mg/L
4990 1,2-dibromo-3-chloropropane	8240	<0.01	mg/L
4990 1,2-dibromoethane	8240	<0.01	mg/L
4990 dibromomethane	8240	<0.01	mg/L
4990 1,4-dichloro-2-butene	8240	<0.01	mg/L
4990 dichlorodifluoromethane	8240	<0.01	mg/L
4990 1,1-dichloroethane	8240	<0.01	mg/L
4990 1,2-dichloroethane	8240	<0.01	mg/L
4990 1,1-dichloroethene	8240	<0.01	mg/L
4990 trans-1,2-dichloroethene	8240	<0.01	mg/L
4990 1,2-dichloropropane	8240	<0.01	mg/L
4990 1,3-dichloro-2-propanol	8240	<0.01	mg/L
4990 cis-1,3-dichloropropene	8240	<0.01	mg/L
4990 trans 1,3-dichloropropene	8240	<0.01	mg/L
4990 1,2:3,4-diepoxybutane	8240	<0.01	mg/L
4990 1,4-dioxane	8240	<0.01	mg/L
4990 epichlorohydrin	8240	<0.01	mg/L
4990 ethanol	8240	<0.01	mg/L
4990 ethylbenzene	8240	<0.01	mg/L
4990 ethylene oxide	8240	<0.01	mg/L
4990 ethyl methacrylate	8240	<0.01	mg/L
4990 2-hexanone	8240	<0.01	mg/L
4990 2-hydroxypropionitrile	8240	<0.01	mg/L
4990 iodomethane	8240	<0.01	mg/L
4990 isobutyl alcohol	8240	<0.01	mg/L
4990 malononitrile	8240	<0.01	mg/L
4990 methacrylonitrile	8240	<0.01	mg/L
4990 methylene chloride	8240	<0.01	mg/L

.....continued on next sheet.....

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Laboratory Director



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STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY

ALFRED, NY 14802

(607)587-3698/3691

4990 methyl iodide	8240	<0.01	mg/L
4990 methyl methacrylate	8240	<0.01	mg/L
4990 4-methyl-2-pentanone	8240	<0.01	mg/L
4990 pentachloroethane	8240	<0.01	mg/L
4990 2-picoline	8240	<0.01	mg/L
4990 propargyl alcohol	8240	<0.01	mg/L
4990 b-propiolactone	8240	<0.01	mg/L
4990 propionitrile	8240	<0.01	mg/L
4990 n-propylamine	8240	<0.01	mg/L
4990 pyridine	8240	<0.01	mg/L
4990 styrene	8240	<0.01	mg/L
4990 1,1,1,2-tetrachloroethane	8240	<0.01	mg/L
4990 1,1,2,2-tetrachloroethane	8240	<0.01	mg/L
4990 tetrachloroethene	8240	<0.01	mg/L
4990 toluene	8240	9,720.0	mg/L
4990 1,1,1-trichloroethane	8240	<0.01	mg/L
4990 1,1,2-trichloroethane	8240	<0.01	mg/L
4990 trichloroethene	8240	<0.01	mg/L
4990 trichlorofluoromethane	8240	<0.01	mg/L
4990 1,2,3-trichloropropane	8240	<0.01	mg/L
4990 vinyl acetate	8240	<0.01	mg/L
4990 vinyl chloride	8240	<0.01	mg/L
4990 xylene	8240	70,840.0	mg/L

Date analyzed:

Remarks: USEPA methods for V.O. GC/MS

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NYDOH ELAP* 10729

COLLEGE OF TECHNOLOGY

REPORT ON WASTE

ALFRED, NY 14802
(607) 587-3698/3691

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay
Address: 007; Onondaga Nation; #9519E
Collection Point: 007; Brown Solid; Comp of 7 Drums
Collected By: P. Gravatt ON: Jan 29, 1992 AT: 2:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4991	TCLP	EPA1311			
4991	Arsenic	EPA7061	0.001	0.110	ppm
4991	Barium	EPA7080	0.1	1.59	ppm
4991	Cadmium	EPA7130	0.005	0.033	ppm
4991	Chromium	EPA7191	0.05	0.13	ppm
4991	Lead	EPA7420	0.1	0.3	ppm
4991	Mercury			0.229	ppm
4991	Selenium	EPA7740	0.002	0.112	ppm
4991	Silver	EPA7761	0.01	<0.01	ppm
4991					

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607)587-3698/3691

REPORT ON 4991

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) ANALYSIS

Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Clifford
Address: .ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 007; Onondaga Nation; #9519E.....
Sampling POINT: 007; Brown Solid; Comp of 7 Drums.....

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ semi-solid ☐ liquid
☒ sludge ☐ powder ☐ granules

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: PESTICIDE /HERBICIDE /VOC /ACID BASE NEUTRAL ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4991	Endrin	EPAB080	<6.0	ug/L (ppb)
4991	Lindane	EPAB080	<4.0	ug/L
4991	Methoxychlor	EPAB080	<176.0	ug/L
4991	Toxaphene	EPAB080	<240.0	ug/L
4991	Chlordane	EPAB080	<14.0	ug/L
4991	Heptachlor	EPAB080	<3.0	ug/L
4991	2,4-D	EPAB150	<1200.0	ug/L
4991	Silvex	EPAB150	<170.0	ug/L
4991	Benzene	EPAB260	<40.0	ug/L
4991	Carbon Tetrachloride	EPAB260	<200.0	ug/L
4991	Chlorobenzene	EPAB260	<40.0	ug/L
4991	1,4-Dichlorobenzene	EPAB260	<30.0	ug/L
4991	1,2-Dichloroethane	EPAB260	<60.0	ug/L
4991	Tetrachloroethylene	EPAB260	<50.0	ug/L
4991	Trichloroethylene	EPAB260	<20.0	ug/L
4991	Vinyl Chloride	EPAB260	<170.0	ug/L

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David Schwart, Ph.D.
Laboratory Director



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4991 o-Cresol	EPAB240	<5.0	ug/L
4991 m-Cresol	EPAB240	<5.0	ug/L
4991 p-Cresol	EPAB240	<5.0	ug/L
4991 Cresol	EPAB270	<10.0	ug/L
4991 1,1-Dichloroethylene	EPAB270	<0.05	ug/L
4991 2,4-Dinitrotoluene	EPAB270	<10.0	ug/L
4991 Hexachloro-1,3-Butadiene	EPAB270	<10.0	ug/L
4991 Hexachlorobenzene	EPAB270	<10.0	ug/L
4991 Hexachloroethane	EPAB270	<10.0	ug/L
4991 Methyleneethylketone	EPAB270	<10.0	ug/L
4991 Nitrobenzene	EPAB270	<10.0	ug/L
4991 Pentachlorophenol	EPAB270	<50.0	ug/L
4991 Pyridine	EPAB270	<10.0	ug/L
4991 2,4,5-Trichlorophenol	EPAB270	<10.0	ug/L
4991 2,4,6-Trichlorophenol	EPAB270	<10.0	ug/L

Date analyzed: Mar 2, 1992

Date extracted: 02/26/92

Remarks: USEPA methods

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David Schwert, Ph.D.
Laboratory Director

Bulk Group 008



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ALFRED, NY 14802

(607)587-3698/3691

REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND

Phone: (315)469-5881/Curtis Cliff

Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992

Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 008; Onondaga Nation; #9519E

Collection Point: 008; Black Liquid; Comp of 16 Drums

Collected By: P. Gravatt

ON: Jan 30, 1992

AT: 10:00 am

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4992	Color			brown	units
4992	Viscosity			medium	
4992	Moisture			67.2	%
4992	Total Solids			32.8	%
4992	% Ash			9.6	%
4992	BTU	ASTM D2015-77		12867	BTU/lb
4992	T.Org.Halides				
4992	Sulfur	EPA375.3		63.5	mg/kg
4992	pH	EPA150.1		6.2	units
4992	Flash Point	EPA1010		78	oC
4992	Antimony	EPA7040	0.2	<0.2	ppm
4992	Arsenic	EPA7061	0.001	0.060	ppm
4992	Barium			<0.1	ppm
4992	Beryllium	EPA7090	0.005	0.009	ppm
4992	Cadmium	EPA7130	0.005	579.6	mg/kg
4992	Chromium	EPA7191	0.05	6.73	mg/kg
4992	Copper	EPA7210	0.02	0.64	ppm
4992	Iron	EPA7380	0.02	10.80	ppm
4992	Lead	EPA7420	0.1	0.6	ppm

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David Schwert, Ph.D.
Laboratory Director



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REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOXNEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 008; Onondaga Nation; #9519E

Collection Point: 008; Black Liquid; Comp of 16 Drums

Collected By: P. Gravatt

ON: Jan 30, 1992

AT: 10:00 am

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4993	Manganese	EPA7460	0.01	0.59	ppm
4993	Mercury			0.099	ppm
4993	Molybdenum			0.25	ppm
4993	Nickel	EPA7520	0.04	0.045	ppm
4993	Potassium	EPA7610	0.01	0.92	ppm
4993	Selenium	EPA7740	0.002	0.017	ppm
4993	Silver	EPA7761	0.01	0.07	ppm
4993	Sodium	EPA7770	0.002	25.46	ppm
4993	Thallium			0.04	ppm
4993	Vanadium	EPA7911	0.004	0.007	ppm
4993	Zinc	EPA7950	0.005	2.764	ppm
4993	Phasing			SL/S	
4993	Density			1.11	units
4993	Oxidizer			No	
4993	Peroxide	ASTM2180-81	0.01	<0.01	mg/kg
4993					
4993					
4993					
4993					

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REPORT ON [x] WASTE ANALYSIS

Name: OHM CORPORATION/JOE OVEREND

Phone:

(315) 469-5881/Curtis Clifford

Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 008; Onondaga Nation; #9519E...

Sampling POINT: 008; Black Liquid; Comp of 16 Drums...

Collected By: P. Gravatt ON: Jan 30, 1992 AT: 10:00 am

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4993	Acenaphthene	EP8250	<0.050	mg/Kg (ppm)
4993	Acenaphthylene	EP8250	<0.050	mg/Kg
4993	Acetophenone	EP8250	<0.050	mg/Kg
4993	Aldrin	EP8250	<0.050	mg/Kg
4993	4-Aminobiphenyl	EP8250	<0.050	mg/Kg
4993	Aniline	EP8250	<0.050	mg/Kg
4993	Anthracene	EP8250	<0.050	mg/Kg
4993	Aroclor-1016	EP8250	<0.050	mg/Kg
4993	Aroclor-1221	EP8250	<0.050	mg/Kg
4993	Aroclor-1232	EP8250	<0.050	mg/Kg
4993	Aroclor-1242	EP8250	<0.050	mg/Kg
4993	Aroclor-1248	EP8250	<0.050	mg/Kg
4993	Aroclor-1254	EP8250	<0.050	mg/Kg
4993	Aroclor-1260	EP8250	<0.050	mg/Kg
4993	Benzidine	EP8250	<0.050	mg/Kg
4993	Benzoic acid	EP8250	<0.050	mg/Kg
4993	Benzo(a)anthracene	EP8250	<0.050	mg/Kg
4993	Benzo(b)fluoranthene	EP8250	<0.050	mg/Kg

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David Schwert, Ph.D.
Laboratory Director



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4993 Benzo(k)fluoranthene	EPA8250	<0.050	mg/Kg
4993 Benzo(g,h,i)perylene	EPA8250	<0.050	mg/Kg
4993 Benzo(a)pyrene	EPA8250	<0.050	mg/Kg
4993 Benzyl alcohol	EPA8250	<0.050	mg/Kg
4993 alpha-BHC	EPA8250	<0.050	mg/Kg
4993 beta-BHC	EPA8250	<0.050	mg/Kg
4993 delta-BHC	EPA8250	<0.050	mg/Kg
4993 gamma-BHC	EPA8250	<0.050	mg/Kg
4993 Bis(2-chloroethoxy)methane	EPA8250	<0.050	mg/Kg
4993 Bis(2-chloroethyl)ether	EPA8250	<0.050	mg/Kg
4993 Bis(2-chloroisopropyl)ether	EPA8250	<0.050	mg/Kg
4993 Bis(2-ethylhexyl)phthalate	EPA8250	<0.050	mg/Kg
4993 4-Bromophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4993 Butyl benzyl phthalate	EPA8250	<0.050	mg/Kg
4993 Chlordane	EPA8250	<0.050	mg/Kg
4993 4-Chloroaniline	EPA8250	<0.050	mg/Kg
4993 1-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4993 2-Chloronaphthalene	EPA8250	<0.050	mg/Kg
4993 4-Chloro-3-methylphenol	EPA8250	<0.050	mg/Kg
4993 2-Chlorophenol	EPA8250	<0.050	mg/Kg
4993 4-Chlorophenyl phenyl ether	EPA8250	<0.050	mg/Kg
4993 Chrysene	EPA8250	<0.050	mg/Kg
4993 4,4'-DDD	EPA8250	<0.050	mg/Kg
4993 4,4'-DDT	EPA8250	<0.050	mg/Kg
4993 Dibenz(a,j)acridine	EPA8250	<0.050	mg/Kg
4993 Dibenzo(a,h)anthracene	EPA8250	<0.050	mg/Kg
4993 Dibenzofuran	EPA8250	<0.050	mg/Kg
4993 Di-n-butylphthalate	EPA8250	<0.050	mg/Kg
4993 1,2 Dichlorobenzene	EPA8250	<0.050	mg/Kg
4993 1,3-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4993 1,4-Dichlorobenzene	EPA8250	<0.050	mg/Kg
4993 3,3'-Dichlorobenzidine	EPA8250	<0.050	mg/Kg
4993 2,4-Dichlorophenol	EPA8250	<0.050	mg/Kg
4993 2,6-Dichlorophenol	EPA8250	<0.050	mg/Kg
4993 Dieldrin	EPA8250	<0.050	mg/Kg
4993 Diethylphthalate	EPA8250	<0.050	mg/Kg
4993 p-Dimethylaminoazobenzene	EPA8250	<0.050	mg/Kg
4993 7,12-Dimethylbenz(a)-anthracene	EPA8250	<0.050	mg/Kg

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4993 alpha-,alpha- Dimethylphenethylamine	EPA8250	<0.050	mg/Kg
4993 2,4-Dimethylphenol	EPA8250	<0.050	mg/Kg
4993 Dimethylphthalate	EPA8250	<0.050	mg/Kg
4993 4,6-Dinitro-2-methylphenol	EPA8250	<0.050	mg/Kg
4993 2,4-Dinitrophenol	EPA8250	<0.050	mg/Kg
4993 2,4-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4993 2,6-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4993 Diphenylamine	EPA8250	<0.050	mg/Kg
4993 1,2-Diphenylhydrazine	EPA8250	<0.050	mg/Kg
4993 Di-n-octylphthalate	EPA8250	<0.050	mg/Kg
4993 Endosulfan I	EPA8250	<0.050	mg/Kg
4993 Endosulfan II	EPA8250	<0.050	mg/Kg
4993 Endosulfan sulfate	EPA8250	<0.050	mg/Kg
4993 Endrin	EPA8250	<0.050	mg/Kg
4993 Endrin aldehyde	EPA8250	<0.050	mg/Kg
4993 Endrin ketone	EPA8250	<0.050	mg/Kg
4993 Ethyl methanesulfonate	EPA8250	<0.050	mg/Kg
4993 Fluoranthene	EPA8250	<0.050	mg/Kg
4993 Fluorene	EPA8250	<0.050	mg/Kg
4993 Heptachlor	EPA8250	<0.050	mg/Kg
4993 Heptachlor epoxide	EPA8250	<0.050	mg/Kg
4993 Hexachlorobenzene	EPA8250	<0.050	mg/Kg
4993 Hexachlorobutadiene	EPA8250	<0.050	mg/Kg
4993 Hexachlorocyclopentadiene	EPA8250	<0.050	mg/Kg
4993 Hexachloroethane	EPA8250	<0.050	mg/Kg
4993 Indeno(1,2,3-cd)pyrene	EPA8250	<0.050	mg/Kg
4993 Isophorone	EPA8250	<0.050	mg/Kg
4993 Methoxychlor	EPA8250	<0.050	mg/Kg
4993 3-Methylcholanthrene	EPA8250	<0.050	mg/Kg
4993 Methyl methanesulfonate	EPA8250	<0.050	mg/Kg
4993 2-Methylnaphthalene	EPA8250	<0.050	mg/Kg
4993 2-Methylphenol	EPA8250	<0.050	mg/Kg
4993 4-Methylphenol	EPA8250	<0.050	mg/Kg
4993 Naphthalene	EPA8250	<0.050	mg/Kg
4993 1-Naphthylamine	EPA8250	<0.050	mg/Kg
4993 2-Naphthylamine	EPA8250	<0.050	mg/Kg
4993 2-Nitroaniline	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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4993 3-Nitroaniline	EPA8250	<0.050	mg/Kg
4993 4-Nitroaniline	EPA8250	<0.050	mg/Kg
4993 Nitrobenzene	EPA8250	<0.050	mg/Kg
4993 2-Nitrophenol	EPA8250	<0.050	mg/Kg
4993 4-Nitrophenol	EPA8250	<0.050	mg/Kg
4993 N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4993 N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4993 N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4993 N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4993 N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4993 Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4993 Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4993 Pentachlorophenol	EPA8250	<0.050	mg/Kg
4993 Phenacetin	EPA8250	<0.050	mg/Kg
4993 Phenanthrene	EPA8250	<0.050	mg/Kg
4993 Phenol	EPA8250	<0.050	mg/Kg
4993 2-Picoline	EPA8250	<0.050	mg/Kg
4993 Pronamide	EPA8250	<0.050	mg/Kg
4993 Pyrene	EPA8250	<0.050	mg/Kg
4993 1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4993 2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4993 Toxaphene	EPA8250	<0.050	mg/Kg
4993 2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4993 1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4993 2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4993 2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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David Schwert, Ph.D.
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NYDOH ELAP* 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607)587-3698/3691

REPORT ON PURGEABLE ORGANICS ANALYSIS

Name: OHM CORPORATION/JOE OVEREND
Address: ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY13120
Phone: (315)469-5881/Curtis Clifford

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 008; Onondaga Nation; #9519E...
Sampling POINT: 008; Black Liquid; Comp of 16 Drums...
Collected By: P. Gravatt ON: Jan 30, 1992 AT: 10:00 am
Sample Characteristics;

- A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.
B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)
C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: VOLATILE ORGANICS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4993	acetone	8240	<0.01	mg/L (ppm)
4993	acetonitrile	8240	<0.01	mg/L
4993	acrolein	8240	<0.01	mg/L
4993	acrylonitrile	8240	<0.01	mg/L
4993	allyl alcohol	8240	<0.01	mg/L
4993	allyl chloride	8240	<0.01	mg/L
4993	benzene	8240	<0.01	mg/L
4993	benzyl chloride	8240	<0.01	mg/L
4993	Bromoacetone	8240	<0.01	mg/L
4993	bromochloromethane	8240	<0.01	mg/L
4993	bromodichloromethane	8240	<0.01	mg/L
4993	4-bromofluorobenzene	8240	<0.01	mg/L
4993	bromoform	8240	<0.01	mg/L
4993	bromomethane	8240	<0.01	mg/L
4993	2-butanone	8240	<0.01	mg/L
4993	carbon disulfide	8240	<0.01	mg/L
4993	carbon tetrachloride	8240	<0.01	mg/L

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David Schwert, Ph.D.
Laboratory Director



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4993	chlorobenzene	8240	<0.01	mg/L
4993	chlorobenzene-d5	8240	<0.01	mg/L
4993	chlorodibromomethane	8240	<0.01	mg/L
4993	chloroethane	8240	<0.01	mg/L
4993	2-chloroethanol	8240	<0.01	mg/L
4993	2-chloroethyl vinyl ether	8240	<0.01	mg/L
4993	chloroform	8240	<0.01	mg/L
4993	chloromethane	8240	<0.01	mg/L
4993	chloroprene	8240	<0.01	mg/L
4993	3-chloropropionitrile	8240	<0.01	mg/L
4993	1,2-dibromo-3-chloropropane	8240	<0.01	mg/L
4993	1,2-dibromoethane	8240	<0.01	mg/L
4993	dibromomethane	8240	<0.01	mg/L
4993	1,4-dichloro-2-butene	8240	<0.01	mg/L
4993	dichlorodifluoromethane	8240	<0.01	mg/L
4993	1,1-dichloroethane	8240	<0.01	mg/L
4993	1,2-dichloroethane	8240	<0.01	mg/L
4993	1,1-dichloroethene	8240	<0.01	mg/L
4993	trans-1,2-dichloroethene	8240	<0.01	mg/L
4993	1,2-dichloropropane	8240	<0.01	mg/L
4993	1,3-dichloro-2-propanol	8240	<0.01	mg/L
4993	cis-1,3-dichloropropene	8240	<0.01	mg/L
4993	trans 1,3-dichloropropene	8240	<0.01	mg/L
4993	1,2:3,4-diepoxybutane	8240	<0.01	mg/L
4993	1,4-dioxane	8240	<0.01	mg/L
4993	epichlorohydrin	8240	<0.01	mg/L
4993	ethanol	8240	<0.01	mg/L
4993	ethylbenzene	8240	<0.01	mg/L
4993	ethylene oxide	8240	<0.01	mg/L
4993	ethyl methacrylate	8240	<0.01	mg/L
4993	2-hexanone	8240	<0.01	mg/L
4993	2-hydroxypropionitrile	8240	<0.01	mg/L
4993	iodomethane	8240	<0.01	mg/L
4993	isobutyl alcohol	8240	<0.01	mg/L
4993	malononitrile	8240	<0.01	mg/L
4993	methacrylonitrile	8240	<0.01	mg/L
4993	methylene chloride	8240	<0.01	mg/L

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4993 methyl iodide	8240	<0.01	mg/L
4993 methyl methacrylate	8240	<0.01	mg/L
4993 4-methyl-2-pentanone	8240	<0.01	mg/L
4993 pentachloroethane	8240	<0.01	mg/L
4993 2-picoline	8240	<0.01	mg/L
4993 propargyl alcohol	8240	<0.01	mg/L
4993 b-propiolactone	8240	<0.01	mg/L
4993 propionitrile	8240	<0.01	mg/L
4993 n-propylamine	8240	<0.01	mg/L
4993 pyridine	8240	<0.01	mg/L
4993 styrene	8240	<0.01	mg/L
4993 1,1,1,2-tetrachloroethane	8240	<0.01	mg/L
4993 1,1,2,2-tetrachloroethane	8240	<0.01	mg/L
4993 tetrachloroethene	8240	<0.01	mg/L
4993 toluene	8240	37,890.0	mg/L
4993 1,1,1-trichloroethane	8240	<0.01	mg/L
4993 1,1,2-trichloroethane	8240	<0.01	mg/L
4993 trichloroethene	8240	<0.01	mg/L
4993 trichlorofluoromethane	8240	<0.01	mg/L
4993 1,2,3-trichloropropane	8240	<0.01	mg/L
4993 vinyl acetate	8240	<0.01	mg/L
4993 vinyl chloride	8240	<0.01	mg/L
4993 xylene	8240	281,580.0	mg/L

Date analyzed:

Remarks: USEPA methods for V.O. GC/MS

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REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay

Address: 008; Onondaga Nation; #9519E

Collection Point: 008; Black Liquid; Comp of 16 Drums

Collected By: P. Gravatt ON: Jan 30, 1992 AT: 10:00 am

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none

B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....

C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4994	TCLP	EPA1311			
4994	Arsenic	EPA7061	0.001	0.167	ppm
4994	Barium	EPA208.1	0.1	<0.1	ppm
4994	Cadmium	EPA7130	0.005	0.024	ppm
4994	Chromium	EPA7191	0.05	<0.05	ppm
4994	Lead	EPA7420	0.1	0.5	ppm
4994	Mercury			1.076	ppm
4994	Selenium	EPA7740	0.002	0.120	ppm
4994	Silver	EPA7761	0.01	<0.01	ppm
4994					

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REPORT ON 4994

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) ANALYSIS

Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 008; Onondaga Nation; #9519E.....

Sampling POINT: 008; Black Liquid; Comp of 16 Drums.....

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ semi-solid ☐ liquid

☒ sludge ☐ powder ☐ granules

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: PESTICIDE /HERBICIDE /VOC /ACID BASE NEUTRAL ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4994	Endrin	EPA8080	<6.0	ug/L (ppb)
4994	Lindane	EPA8080	<4.0	ug/L
4994	Methoxychlor	EPA8080	<176.0	ug/L
4994	Toxaphene	EPA8080	<240.0	ug/L
4994	Chlordane	EPA8080	<14.0	ug/L
4994	Heptachlor	EPA8080	<3.0	ug/L
4994	2,4-D	EPA8150	<1200.0	ug/L
4994	Silvex	EPA8150	<170.0	ug/L
4994	Benzene	EPA8260	<40.0	ug/L
4994	Carbon Tetrachloride	EPA8260	<200.0	ug/L
4994	Chlorobenzene	EPA8260	<40.0	ug/L
4994	1,4-Dichlorobenzene	EPA8260	<30.0	ug/L
4994	1,2-Dichloroethane	EPA8260	<60.0	ug/L
4994	Tetrachloroethylene	EPA8260	<50.0	ug/L
4994	Trichloroethylene	EPA8260	<20.0	ug/L
4994	Vinyl Chloride	EPA8260	<170.0	ug/L

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4994	o-Cresol	EPAB240	<5.0	ug/L
4994	m-Cresol	EPAB240	<5.0	ug/L
4994	p-Cresol	EPAB240	<5.0	ug/L
4994	Cresol	EPAB270	<10.0	ug/L
4994	1,1-Dichloroethylene	EPAB270	<0.05	ug/L
4994	2,4-Dinitrotoluene	EPAB270	<10.0	ug/L
4994	Hexachloro-1,3-Butadiene	EPAB270	<10.0	ug/L
4994	Hexachlorobenzene	EPAB270	<10.0	ug/L
4994	Hexachloroethane	EPAB270	<10.0	ug/L
4994	Methylethylketone	EPAB270	<10.0	ug/L
4994	Nitrobenzene	EPAB270	<10.0	ug/L
4994	Pentachlorophenol	EPAB270	<50.0	ug/L
4994	Pyridine	EPAB270	<10.0	ug/L
4994	2,4,5-Trichlorophenol	EPAB270	<10.0	ug/L
4994	2,4,6-Trichlorophenol	EPAB270	<10.0	ug/L

Date analyzed: Mar 2, 1992

Date extracted: 02/26/92

Remarks: USEPA methods

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Laboratory Director

Bulk Group 010



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REPORT ON WASTE

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315)469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOXNEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay
Address: 010; Onondaga Nation; #9519E
Collection Point: 010; Black Tar
Collected By: P. Gravatt ON: Feb 6, 1992 AT: 3:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4995	Color	SM204A	1.0	Blk	units
4995	Free Liquids, P.F. EPA9095			<1.0	%
4995	Total Solids	SM209A	0.1	79.1	%
4995	Cyanide, Amenable	SM412B	0.1	<0.1	mg/kg
4995	Sulfides, Reactive	EPA376.1	0.01	47.23	mg/kg
4995	pH	EPA150.1		4.1	units
4995	Flash Point	EPA1010		62	oC
4995	Antimony	EPA7040	0.2	0.3	ppm
4995	Arsenic	EPA7061	0.001	0.049	ppm
4995	Barium	EPA7080	0.1	0.35	ppm
4995	Beryllium	EPA7090	0.005	<0.005	ppm
4995	Cadmium	EPA7130	0.005	1.0	mg/kg
4995	Chromium	EPA7191	0.05	235	mg/kg
4995	Copper	EPA7210	0.02	0.44	ppm
4995	Iron	EPA7380	0.03	19.75	ppm
4995	Manganese	EPA7460	0.01	0.38	ppm
4995	Mercury	EPA7470	0.0002	0.105	ppm
4995	Molybdenum	EPA246.1	0.002	0.75	ppm
4995	Nickel	EPA7520		0.454	ppm
4995	Potassium	EPA7610	0.01	1.04	ppm
4995	Selenium	EPA7740	0.002	0.034	ppm

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NYDOH ELAP# 10729

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Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay
Address: 010; Onondaga Nation; #9519E
Collection Point: 010; Black Tar
Collected By: P. Gravatt ON: Feb 6, 1992 AT: 3:00 pm

Sample Characteristics:

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none
B. PHYSICAL STATE at 70F ☐ solid ☐ liquid ☐ other.....
C. pH RANGE ☐ <2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ >12

TEST DESIRED: ☐ Metals ☐ Inorganics ☐ Organics

CONFIRMATORY:

ID#	analyte	method code	method detection limit	result	unit
4996	Silver	EPA7761	0.01	<0.01	ppm
4996	Sodium	EPA7770	0.002	5.88	ppm
4996	Thallium			0.09	ppm
4996	Vanadium	EPA7911	0.004	0.172	ppm
4996	Zinc	EPA7950	0.005	1.114	ppm
4996	Lead	EPA7420	0.1	0.2	ppm
4996	Cyanide	EPA335.2	0.1	<0.1	mg/kg
4996	Phenol	SM510C	0.1	1298.0	mg/kg
4996	% Ash	SM209F		29.0	%
4996	BTU	ASTM D2015-77		13424	BTU/lb
4996	T.Org.Halides				
4996	Sulfur	EPA375.3	0.01	47.23	mg/kg
4996	Oxidizer			No	
4996	Peroxide	ASTM2180-81	0.01	<0.01	mg/kg
4996	Phasing			Solid	
4996	Density			1.04	units
4996	Flame			Pos	
4996					
4996					
4996					
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REPORT ON [x] WASTE ANALYSIS

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(315)469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142
NY 13120

Phone:
NEDROW

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 010; Onondaga Nation; #9519E...

Sampling POINT: 010; Black Tar...

Collected By: P. Gravatt ON: Feb 6, 1992 AT: 3:00 pm

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: BASE, NEUTRAL, AND ACID ANALYSIS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4996	Acenaphthene	EPAB250	7,174.0	mg/Kg (ppm)
4996	Acenaphthylene	EPAB250	4,914.0	mg/Kg
4996	Acetophenone	EPAB250	<0.050	mg/Kg
4996	Aldrin	EPAB250	<0.050	mg/Kg
4996	4-Aminobiphenyl	EPAB250	<0.050	mg/Kg
4996	Aniline	EPAB250	<0.050	mg/Kg
4996	Anthracene	EPAB250	<0.050	mg/Kg
4996	Aroclor-1016	EPAB250	<0.050	mg/Kg
4996	Aroclor-1221	EPAB250	<0.050	mg/Kg
4996	Aroclor-1232	EPAB250	<0.050	mg/Kg
4996	Aroclor-1242	EPAB250	<0.050	mg/Kg
4996	Aroclor-1248	EPAB250	<0.050	mg/Kg
4996	Aroclor-1254	EPAB250	<0.050	mg/Kg
4996	Aroclor-1260	EPAB250	<0.050	mg/Kg
4996	Benzidine	EPAB250	<0.050	mg/Kg
4996	Benzoic acid	EPAB250	<0.050	mg/Kg
4996	Benzo(a)anthracene	EPAB250	<0.050	mg/Kg
4996	Benzo(b)fluoranthene	EPAB250	<0.050	mg/Kg

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4996 Benzo(k)fluoranthene	EPAB250	<0.050	mg/Kg
4996 Benzo(g,h,i)perylene	EPAB250	<0.050	mg/Kg
4996 Benzo(a)pyrene	EPAB250	<0.050	mg/Kg
4996 Benzyl alcohol	EPAB250	<0.050	mg/Kg
4996 alpha-BHC	EPAB250	<0.050	mg/Kg
4996 beta-BHC	EPAB250	<0.050	mg/Kg
4996 delta-BHC	EPAB250	<0.050	mg/Kg
4996 gamma-BHC	EPAB250	<0.050	mg/Kg
4996 Bis(2-chloroethoxy)methane	EPAB250	<0.050	mg/Kg
4996 Bis(2-chloroethyl)ether	EPAB250	<0.050	mg/Kg
4996 Bis(2-chloroisopropyl)ether	EPAB250	<0.050	mg/Kg
4996 Bis(2-ethylhexyl)phthalate	EPAB250	<0.050	mg/Kg
4996 4-Bromophenyl phenyl ether	EPAB250	<0.050	mg/Kg
4996 Butyl benzyl phthalate	EPAB250	<0.050	mg/Kg
4996 Chlordane	EPAB250	<0.050	mg/Kg
4996 4-Chloroaniline	EPAB250	<0.050	mg/Kg
4996 1-Chloronaphthalene	EPAB250	<0.050	mg/Kg
4996 2-Chloronaphthalene	EPAB250	<0.050	mg/Kg
4996 4-Chloro-3-methylphenol	EPAB250	<0.050	mg/Kg
4996 2-Chlorophenol	EPAB250	<0.050	mg/Kg
4996 4-Chlorophenyl phenyl ether	EPAB250	<0.050	mg/Kg
4996 Chrysene	EPAB250	1,196.0	mg/Kg
4996 4,4'-DDD	EPAB250	<0.050	mg/Kg
4996 4,4'-DDT	EPAB250	<0.050	mg/Kg
4996 Dibenz(a,j)acridine	EPAB250	<0.050	mg/Kg
4996 Dibenzo(a,h)anthracene	EPAB250	<0.050	mg/Kg
4996 Dibenzofuran	EPAB250	<0.050	mg/Kg
4996 Di-n-butylphthalate	EPAB250	<0.050	mg/Kg
4996 1,2-Dichlorobenzene	EPAB250	<0.050	mg/Kg
4996 1,3-Dichlorobenzene	EPAB250	<0.050	mg/Kg
4996 1,4-Dichlorobenzene	EPAB250	<0.050	mg/Kg
4996 3,3'-Dichlorobenzidine	EPAB250	<0.050	mg/Kg
4996 2,4-Dichlorophenol	EPAB250	<0.050	mg/Kg
4996 2,6-Dichlorophenol	EPAB250	<0.050	mg/Kg
4996 Dieldrin	EPAB250	<0.050	mg/Kg
4996 Diethylphthalate	EPAB250	<0.050	mg/Kg
4996 p-Dimethylaminoazobenzene	EPAB250	<0.050	mg/Kg
4996 7,12-Dimethylbenz(a)-anthracene	EPAB250	<0.050	mg/Kg

continued on next sheet.

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607) 587-3698/3691

4996 alpha-,alpha-Dimethylphenethylamine	EPA8250	<0.050	mg/Kg
4996 2,4-Dimethylphenol	EPA8250	462.0	mg/Kg
4996 Dimethylphthalate	EPA8250	<0.050	mg/Kg
4996 4,6-Dinitro-2-methylphenol	EPA8250	<0.050	mg/Kg
4996 2,4-Dinitrophenol	EPA8250	<0.050	mg/Kg
4996 2,4-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4996 2,6-Dinitrotoluene	EPA8250	<0.050	mg/Kg
4996 Diphenylamine	EPA8250	<0.050	mg/Kg
4996 1,2-Diphenylhydrazine	EPA8250	<0.050	mg/Kg
4996 Di-n-octylphthalate	EPA8250	<0.050	mg/Kg
4996 Endosulfan I	EPA8250	<0.050	mg/Kg
4996 Endosulfan II	EPA8250	<0.050	mg/Kg
4996 Endosulfan sulfate	EPA8250	<0.050	mg/Kg
4996 Endrin	EPA8250	<0.050	mg/Kg
4996 Endrin aldehyde	EPA8250	<0.050	mg/Kg
4996 Endrin ketone	EPA8250	<0.050	mg/Kg
4996 Ethyl methanesulfonate	EPA8250	<0.050	mg/Kg
4996 Fluoranthene	EPA8250	25,462.0	mg/Kg
4996 Fluorene	EPA8250	15,782.0	mg/Kg
4996 Heptachlor	EPA8250	<0.050	mg/Kg
4996 Heptachlor epoxide	EPA8250	<0.050	mg/Kg
4996 Hexachlorobenzene	EPA8250	<0.050	mg/Kg
4996 Hexachlorobutadiene	EPA8250	<0.050	mg/Kg
4996 Hexachlorocyclopentadiene	EPA8250	<0.050	mg/Kg
4996 Hexachloroethane	EPA8250	<0.050	mg/Kg
4996 Indeno(1,2,3-cd)pyrene	EPA8250	<0.050	mg/Kg
4996 Isophorone	EPA8250	<0.050	mg/Kg
4996 Methoxychlor	EPA8250	<0.050	mg/Kg
4996 3-Methylcholanthrene	EPA8250	<0.050	mg/Kg
4996 Methyl methanesulfonate	EPA8250	<0.050	mg/Kg
4996 2-Methylnaphthalene	EPA8250	<0.050	mg/Kg
4996 2-Methylphenol	EPA8250	<0.050	mg/Kg
4996 4-Methylphenol	EPA8250	<0.050	mg/Kg
4996 Naphthalene	EPA8250	93,334.0	mg/Kg
4996 1-Naphthylamine	EPA8250	<0.050	mg/Kg
4996 2-Naphthylamine	EPA8250	<0.050	mg/Kg
4996 2-Nitroaniline	EPA8250	<0.050	mg/Kg

.....continued on next sheet.....

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ALFRED, NY 14802
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4996	3-Nitroaniline	EPA8250	<0.050	mg/Kg
4996	4-Nitroaniline	EPA8250	<0.050	mg/Kg
4996	Nitrobenzene	EPA8250	<0.050	mg/Kg
4996	2-Nitrophenol	EPA8250	<0.050	mg/Kg
4996	4-Nitrophenol	EPA8250	<0.050	mg/Kg
4996	N-Nitroso-di-n-butylamine	EPA8250	<0.050	mg/Kg
4996	N-Nitrosodimethylamine	EPA8250	<0.050	mg/Kg
4996	N-Nitrosodiphenylamine	EPA8250	<0.050	mg/Kg
4996	N-Nitroso-di-N-propylamine	EPA8250	<0.050	mg/Kg
4996	N-Nitrosopiperidine	EPA8250	<0.050	mg/Kg
4996	Pentachlorobenzene	EPA8250	<0.050	mg/Kg
4996	Pentachloronitrobenzene	EPA8250	<0.050	mg/Kg
4996	Pentachlorophenol	EPA8250	<0.050	mg/Kg
4996	Phenacetin	EPA8250	<0.050	mg/Kg
4996	Phenanthrene	EPA8250	84,788.0	mg/Kg
4996	Phenol	EPA8250	<0.050	mg/Kg
4996	2-Picoline	EPA8250	<0.050	mg/Kg
4996	Pronamide	EPA8250	<0.050	mg/Kg
4996	Pyrene	EPA8250	2,534.0	mg/Kg
4996	1,2,4,5-Tetrachlorobenzene	EPA8250	<0.050	mg/Kg
4996	2,3,4,6-Tetrachlorophenol	EPA8250	<0.050	mg/Kg
4996	Toxaphene	EPA8250	<0.050	mg/Kg
4996	2,4,6-Tribromophenol	EPA8250	<0.050	mg/Kg
4996	1,2,4-Trichlorobenzene	EPA8250	<0.050	mg/Kg
4996	2,4,5-Trichlorophenol	EPA8250	<0.050	mg/Kg
4996	2,4,6-Trichlorophenol	EPA8250	<0.050	mg/Kg

Date analyzed:

Remarks: USEPA methods for ACID, BASE, NEUTRAL BY GC/MS

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David Schwert, Ph.D.
Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY

REPORT ON PURGEABLE ORGANICS ANALYSIS

ALFRED, NY 14802
(607) 587-3698/3691

Name: OHM CORPORATION/JOE OVEREND
Address: .ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY 13120
Phone: (315) 469-5881/Curtis Clifford

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 010; Onondaga Nation; #9519E...

Sampling POINT: 010; Black Tar...

Collected By: P. Gravatt ON: Feb 6, 1992 AT: 3:00 pm

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☒ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ liquid ☐ other (sludge)

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☐ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: VOLATILE ORGANICS

CONFIRMATORY:

ID#	analyte	method code	result	unit
4996	acetone	8240	<0.01	mg/L (ppm)
4996	acetonitrile	8240	<0.01	mg/L
4996	acrolein	8240	<0.01	mg/L
4996	acrylonitrile	8240	<0.01	mg/L
4996	allyl alcohol	8240	<0.01	mg/L
4996	allyl chloride	8240	<0.01	mg/L
4996	benzene	8240	4,010.0	mg/L
4996	benzyl chloride	8240	<0.01	mg/L
4996	Bromoacetone	8240	<0.01	mg/L
4996	bromochloromethane	8240	<0.01	mg/L
4996	bromodichloromethane	8240	<0.01	mg/L
4996	4-bromofluorobenzene	8240	<0.01	mg/L
4996	bromoform	8240	<0.01	mg/L
4996	bromomethane	8240	<0.01	mg/L
4996	2-butanone	8240	<0.01	mg/L
4996	carbon disulfide	8240	<0.01	mg/L
4996	carbon tetrachloride	8240	<0.01	mg/L

.....continued on next sheet.....

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Laboratory Director



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4996 chlorobenzene	8240	<0.01	mg/L
4996 chlorobenzene-d5	8240	<0.01	mg/L
4996 chlorodibromomethane	8240	<0.01	mg/L
4996 chloroethane	8240	<0.01	mg/L
4996 2-chloroethanol	8240	<0.01	mg/L
4996 2-chloroethyl vinyl ether	8240	<0.01	mg/L
4996 chloroform	8240	<0.01	mg/L
4996 chloromethane	8240	<0.01	mg/L
4996 chloroprene	8240	<0.01	mg/L
4996 3-chloropropionitrile	8240	<0.01	mg/L
4996 1,2-dibromo-3-chloropropane	8240	<0.01	mg/L
4996 1,2-dibromoethane	8240	<0.01	mg/L
4996 dibromomethane	8240	<0.01	mg/L
4996 1,4-dichloro-2-butene	8240	<0.01	mg/L
4996 dichlorodifluoromethane	8240	<0.01	mg/L
4996 1,1-dichloroethane	8240	<0.01	mg/L
4996 1,2-dichloroethane	8240	<0.01	mg/L
4996 1,1-dichloroethene	8240	<0.01	mg/L
4996 trans-1,2-dichloroethene	8240	<0.01	mg/L
4996 1,2-dichloropropane	8240	<0.01	mg/L
4996 1,3-dichloro-2-propanol	8240	<0.01	mg/L
4996 cis-1,3-dichloropropene	8240	<0.01	mg/L
4996 trans 1,3-dichloropropene	8240	<0.01	mg/L
4996 1,2:3,4-diepoxybutane	8240	<0.01	mg/L
4996 1,4-dioxane	8240	<0.01	mg/L
4996 epichlorohydrin	8240	<0.01	mg/L
4996 ethanol	8240	<0.01	mg/L
4996 ethylbenzene	8240	<0.01	mg/L
4996 ethylene oxide	8240	<0.01	mg/L
4996 ethyl methacrylate	8240	<0.01	mg/L
4996 2-hexanone	8240	<0.01	mg/L
4996 2-hydroxypropionitrile	8240	<0.01	mg/L
4996 iodomethane	8240	<0.01	mg/L
4996 isobutyl alcohol	8240	<0.01	mg/L
4996 malononitrile	8240	<0.01	mg/L
4996 methacrylonitrile	8240	<0.01	mg/L
4996 methylene chloride	8240	<0.01	mg/L

.....continued on next sheet.....

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David Schwert, Ph.D.
Laboratory Director



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ALFRED, NY 14802
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4996 methyl iodide	8240	<0.01	mg/L
4996 methyl methacrylate	8240	<0.01	mg/L
4996 4-methyl-2-pentanone	8240	<0.01	mg/L
4996 pentachloroethane	8240	<0.01	mg/L
4996 2-picoline	8240	<0.01	mg/L
4996 propargyl alcohol	8240	<0.01	mg/L
4996 b-propiolactone	8240	<0.01	mg/L
4996 propionitrile	8240	<0.01	mg/L
4996 n-propylamine	8240	<0.01	mg/L
4996 pyridine	8240	<0.01	mg/L
4996 styrene	8240	<0.01	mg/L
4996 1,1,1,2-tetrachloroethane	8240	<0.01	mg/L
4996 1,1,2,2-tetrachloroethane	8240	<0.01	mg/L
4996 tetrachloroethene	8240	<0.01	mg/L
4996 toluene	8240	17,360.0	mg/L
4996 1,1,1-trichloroethane	8240	<0.01	mg/L
4996 1,1,2-trichloroethane	8240	<0.01	mg/L
4996 trichloroethene	8240	<0.01	mg/L
4996 trichlorofluoromethane	8240	<0.01	mg/L
4996 1,2,3-trichloropropane	8240	<0.01	mg/L
4996 vinyl acetate	8240	<0.01	mg/L
4996 vinyl chloride	8240	<0.01	mg/L
4996 xylene	8240	57,750.0	mg/L

Date analyzed:

Remarks: USEPA methods for V.O. GC/MS

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Laboratory Director



ALFRED ANALYTICAL LABORATORY

STATE UNIVERSITY OF NEW YORK AT ALFRED

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COLLEGE OF TECHNOLOGY

REPORT ON WASTE

ALFRED, NY 14802
(607) 587-3698/3691

Client Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Cliff
Address: ONONDAGA NATION DRUM SITE, PO BOX NEDROW NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sample Information: Name: US EPA Dan Harkay
Address: 010; Onondaga Nation; #9519E
Collection Point: 010; Black Tar
Collected By: P. Gravatt ON: Feb 6, 1992 AT: 3:00 pm

Sample Characteristics;

- A. PHASE LAYERS [] bilayered [] multilayered [] none
B. PHYSICAL STATE at 70F [] solid [] liquid [] other.....
C. pH RANGE [] <2 [] 2-4 [] 4-6 [] 6-8 [] 8-10 [] 10-12 [] >12

TEST DESIRED: [] Metals [] Inorganics [] Organics

CONFIRMATORY:

D#	analyte	method code	method detection limit	result	unit
997	TCLP	EPA1311			
997	Arsenic	EPA7061	0.001	0.096	ppm
4997	Barium	EPA7080	0.1	<0.1	ppm
4997	Cadmium	EPA7130	0.005	0.006	ppm
4997	Chromium	EPA7191	0.05	<0.05	ppm
4997	Lead	EPA7420	0.1	0.2	ppm
4997	Mercury			0.102	ppm
997	Selenium	EPA7740	0.002	0.172	ppm
997	Silver	EPA7761	0.01	<0.01	ppm
4997					

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David Schwert, Ph.D.
Laboratory Director



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STATE UNIVERSITY OF NEW YORK AT ALFRED

NYDOH ELAP# 10729

COLLEGE OF TECHNOLOGY
ALFRED, NY 14802
(607) 587-3698/3691

REPORT ON 4997

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) ANALYSIS

Name: OHM CORPORATION/JOE OVEREND Phone: (315) 469-5881/Curtis Clifford
Address: ONONDAGA NATION DRUM SITE, PO BOX 142 NEDROW
NY 13120

Date SAMPLE RECEIVED: Feb 7, 1992 Date REPORTED: Mar 25, 1992

Sampling address: 010; Onondaga Nation; #9519E.....
Sampling POINT: 010; Black Tar.....

Sample Characteristics;

A. PHASE LAYERS ☐ bilayered ☐ multilayered ☐ none.

B. PHYSICAL STATE at 70°F ☐ solid ☐ semi-solid ☐ liquid
☒ sludge ☐ powder ☐ granules

C. pH RANGE ☐ >2 ☐ 2-4 ☐ 4-6 ☒ 6-8 ☐ 8-10 ☐ 10-12 ☐ <12

TEST DESIRED: PESTICIDE /HERBICIDE /VOC /ACID BASE NEUTRAL ANALYSIS
CONFIRMATORY:

ID#	analyte	method code	result	unit
4997	Endrin	EPA8080	<6.0	ug/L (ppb)
4997	Lindane	EPA8080	<4.0	ug/L
4997	Methoxychlor	EPA8080	<176.0	ug/L
4997	Toxaphene	EPA8080	<240.0	ug/L
4997	Chlordane	EPA8080	<14.0	ug/L
4997	Heptachlor	EPA8080	<3.0	ug/L
4997	2,4-D	EPA8150	<1200.0	ug/L
4997	Silvex	EPA8150	<170.0	ug/L
4997	Benzene	EPA8260	676,900.0	ug/L
4997	Carbon Tetrachloride	EPA8260	<200.0	ug/L
4997	Chlorobenzene	EPA8260	<40.0	ug/L
4997	1,4-Dichlorobenzene	EPA8260	<30.0	ug/L
4997	1,2-Dichloroethane	EPA8260	<60.0	ug/L
4997	Tetrachloroethylene	EPA8260	<50.0	ug/L
4997	Trichloroethylene	EPA8260	<20.0	ug/L
4997	Vinyl Chloride	EPA8260	<170.0	ug/L

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David Schwert, Ph.D.
Laboratory Director



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STATE UNIVERSITY OF NEW YORK AT ALFRED

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ALFRED, NY 14802
(607)587-3698/3691

4997 o-Cresol	EPA8240	<5.0	ug/L
4997 m-Cresol	EPA8240	<5.0	ug/L
4997 p-Cresol	EPA8240	<5.0	ug/L
4997 Cresol	EPA8270	45,217,800.0	ug/L
4997 1,1-Dichloroethylene	EPA8270	<0.05	ug/L
4997 2,4-Dinitrotoluene	EPA8270	<10.0	ug/L
4997 Hexachloro-1,3-Butadiene	EPA8270	<10.0	ug/L
4997 Hexachlorobenzene	EPA8270	<10.0	ug/L
4997 Hexachloroethane	EPA8270	<10.0	ug/L
4997 Methyleneethylketone	EPA8270	<10.0	ug/L
4997 Nitrobenzene	EPA8270	<10.0	ug/L
4997 Pentachlorophenol	EPA8270	<50.0	ug/L
4997 Pyridine	EPA8270	<10.0	ug/L
4997 2,4,5-Trichlorophenol	EPA8270	<10.0	ug/L
4997 2,4,6-Trichlorophenol	EPA8270	<10.0	ug/L

Date analyzed:

Date extracted: 02/26/92

Remarks: USEPA methods

The provided results are for the exclusive use of the client to whom they are addressed to. The provided results and the name of the Alfred Analytical Laboratory in any form may not be used in any circumstances in advertising to the general public without prior written approval from the laboratory director. The results apply specifically to the sample being tested and are not necessarily indicative of the quality of apparently identical or similar products.

Limitations of Liability- Due diligence was used in approving the release of professional results, but in an instance where it should fail, the liability will be to the extent of that particular fee. By acceptance of this report, the client agrees to hold harmless and release Alfred Analytical Laboratory from and against all liability, claims and demands of any kind which have any relation with the performance of the work referred to herein.

David Schwert, Ph.D.
Laboratory Director

APPENDIX B

HEALTH AND SAFETY PLAN

TABLE OF CONTENTS

	<u>Page</u>
B.1.0 INTRODUCTION	B-1
B.1.1 GENERAL	B-1
B.1.2 MANAGEMENT AND IMPLEMENTATION	B-1
B.1.3 SITE CHARACTERIZATION AND POTENTIALLY HAZARDOUS COMPOUNDS	B-2
B.2.0 BASIS	B-4
B.3.0 SAFETY OFFICER AND SITE SAFETY OFFICER	B-5
B.4.0 MEDICAL SURVEILLANCE	B-8
B.5.0 TRAINING	B-10
B.5.1 VISITOR SAFETY TRAINING PROGRAM	B-13
B.6.0 RESPIRATOR PROGRAM	B-15
B.7.0 WORK AREAS	B-17
B.8.0 COMMUNICATIONS	B-20
B.9.0 EMERGENCY AND FIRST AID EQUIPMENT	B-21
B.10.0 EMERGENCY RESPONSE PLAN	B-22
B.10.1 SITE SECURITY	B-22
B.10.2 On-Site Contingency Plan	B-23
B.10.3 Off-Site Contingency Plan	B-25
B.10.4 PERSONNEL EMERGENCY CONTINGENCY PLAN	B-26
B.10.5 HEALTH AND SAFETY PLAN REVIEW	B-29
B.11.0 PERSONAL SAFETY AND RELATED EQUIPMENT	B-30
B.11.1 NON-HAZARDOUS WORK ACTIVITIES	B-30
B.11.2 GENERAL EXCLUSION ZONE ACTIVITIES	B-31
B.12.0 PROCEDURES FOR DONNING AND DOFFING OF PROTECTIVE CLOTHING AND EQUIPMENT	B-33
B.13.0 HEAT STRESS/COLD STRESS	B-35
B.13.1 HEAT STRESS	B-35
B.13.2 COLD STRESS	B-36
B.14.0 PERSONAL HYGIENE PROTOCOLS	B-37
B.14.1 GENERAL SITE SANITATION	B-38

TABLE OF CONTENTS

	<u>Page</u>
B.15.0 EQUIPMENT AND PERSONNEL DECONTAMINATION.....	B-39
B.15.1 PERSONNEL DECONTAMINATION.....	B-39
B.15.2 EQUIPMENT DECONTAMINATION.....	B-40
B.16.0 AIR MONITORING.....	B-41
B.16.1 GENERAL.....	B-41
B.16.2 BACKGROUND MONITORING.....	B-41
B.16.3 REAL-TIME AIR MONITORING.....	B-41
B.16.4 PERSONAL MONITORING.....	B-43
B.16.5 WIND DIRECTIONAL MONITORING.....	B-44
B.16.6 ANALYSIS CALIBRATION AND DATA REPORTING.....	B-44
B.17.0 EMERGENCY HAND SIGNALS.....	B-46
B.18.0 CONFINED SPACE ENTRY PROCEDURE.....	B-47
B.18.1 DEFINITIONS.....	B-47
B.18.2 GENERAL PROVISIONS.....	B-48
B.18.3 PROCEDURE FOR CONFINED SPACE ENTRY.....	B-50
B.18.4 CONFINED SPACE OBSERVER.....	B-52

LIST OF TABLES

	<u>Following Page</u>
TABLE B.1.1 HAZARD/RISK ANALYSIS FOR THE DRUM DISPOSAL PROGRAM	B-3
TABLE B.11.1 SUMMARY OF PERSONAL PROTECTIVE EQUIPMENT	B-30
TABLE B.16.1 AIR MONITORING AND AIR MONITORING ACTION LEVELS	B-43

LIST OF FIGURES

	<u>Following Page</u>
FIGURE B.10.1 HOSPITAL ROUTE	B-27
FIGURE B.15.1 TYPICAL PERSONNEL DECONTAMINATION PROCEDURES	B-39

LIST OF ATTACHMENTS

- | | |
|----------------|--|
| ATTACHMENT I | TRAINING ACKNOWLEDGEMENT FORM |
| ATTACHMENT II | SAFETY AND HEALTH PLAN ACKNOWLEDGEMENT
FORM |
| ATTACHMENT III | EMERGENCY TELEPHONE NUMBERS |
| ATTACHMENT IV | CONFINED SPACE ENTRY PERMIT |
| ATTACHMENT V | MATERIAL SAFETY DATA SHEETS |

B.1.0 INTRODUCTION

B.1.1 GENERAL

The Health and Safety Plan (HSP) presented herein provides the minimum safety requirements that will be implemented during the drum disposal program at the Onondaga Site to provide for a safe and minimal risk working environment for all on-Site personnel. It also provides for emergency response procedures and corrective procedures based on the results of Site perimeter air monitoring. It is noted that the Contractor will be required to develop a Health and Safety Plan for the Site work that will include, at a minimum, the requirements outlined in this document.

All personnel will receive training specific to this HSP before entering the Site and while on the Site will be required to comply with the provisions of the HSP as applicable to their specific Site duties. Written verification of training will be maintained on Site.

B.1.2 MANAGEMENT AND IMPLEMENTATION

ICI Americas Inc. (ICI) will provide overall project coordination services and field oversight services during the implementation of the drum disposal program. ICI's Project Coordinator will provide managerial oversight regarding the Health and Safety Program and will be represented on Site by a designated Field Engineer.

The implementation and enforcement of the HSP on a daily basis will be the responsibility of the Contractor who will be selected through a competitive bidding process. The Contractor will be required to assign a Safety Officer to develop and oversee the Health and Safety Plan during all on-Site activities. The Contractor will also be required to assign a Site Safety Officer who will report to the Safety Officer and will be responsible for the management of the HSP on a daily basis.

The Site Safety Officer will report all required air monitoring data and other health and safety related information to the Field Engineer. The Field Engineer will be responsible for providing the necessary information for submittal to the Agencies as required.

A project organization chart was presented previously in Figure 2.1 of this Report.

B.1.3 SITE CHARACTERIZATION AND POTENTIALLY HAZARDOUS COMPOUNDS

Section 1.0 of the Drum Disposal Plan provides a description of the Site and previous activities which have been conducted at the Site. The drums which are currently staged on Site have previously been sampled and the analytical results of this sampling are presented in Appendix A of the Drum Disposal Plan. The following compounds have been identified to be present at elevated levels in the drummed waste material: cresol, benzene, toluene, xylene, phenanthrene, pyrene, 2,4-dimethylphenol, fluoranthene, fluorene, naphthalene, chrysene,

acenaphthene, acenaphthylene and 2-chlorophenol. Material Safety Data Sheets for these chemicals are provided in Attachment V. For those chemicals that Material Safety Data Sheets are not available, information is included from the Groundwater Chemicals Desk Reference¹. The Site Respiratory Protection Action Levels as presented in Section B.6.0 follow the United States Environmental Protection Agency (USEPA) guidelines for levels of unknown organic vapours.

Section 3.0, 4.0 and 5.0 of the Drum Disposal Plan describe in detail all work activities which will take place on Site. Table B.1.1 presents the hazards/risks associated with these activities.

¹ Montgomery, J.H., Welkom, L.M., Groundwater Chemicals Desk Reference, Lewis Publishers, Michigan, 1990.

TABLE B.1.1

HAZARD/RISK ANALYSIS FOR THE DRUM DISPOSAL PROGRAM

<i>Work Activity</i>	<i>Anticipated Hazard/Risk</i>	<i>Hazard Control</i>
Site Preparation Activities, Labeling of Drums, Loading of Drums	• slip/trip/fall hazards • potential back injuries from lifting and moving equipment • hazards presented by moving or backing vehicles	• Level D • Adhere to all Site procedures including personnel hygiene procedures • Participate in all required training programs
Drum Sampling Activities and Sampling Equipment Decontamination Activities	• slip/trip/fall hazards • potential contact with waste materials and organic vapors • potential personal injuries from moving or opening drums • Direct contact with decontamination cleaning solvents	Level C or Level B if air monitoring results indicate need • Adhere to all Site procedures including decontamination and personnel hygiene procedures • Participate in all required training programs

B.2.0 BASIS

The Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926 (29 CFR 1910 and 1926) including the amended sections in 29 CFR 1910.120, "Final Rule on Hazardous Waste Operations and Emergency Response" and current TLVs as provided by the American Conference of Governmental Industrial Hygienists (ACGIH) provide the basis for the safety and health program. Some of the specifications within this Health and Safety Plan are in addition to OSHA regulations and reflect the positions of the United States Environmental Protection Agency (USEPA), the National Institute for Occupational Safety and Health (NIOSH), and the United States Coast Guard (USCG) regarding procedures required to ensure safe operations at hazardous waste disposal sites. Additional safety provisions, as required, have also been included in this document.

The safety and health of the public and on-Site personnel and the protection of the environment will take precedence over schedule considerations for all project work. If emergency shut down of operations is necessary, impacts will be considered only after the cause of the problem is resolved and work is resumed. The Field Engineer and the Contractor's Site Safety Officer will be responsible for decisions regarding when work will be stopped for health or safety reasons and when it will be restarted.

B.3.0 SAFETY OFFICER AND SITE SAFETY OFFICER

The Contractor will provide a designated Site Safety Officer who has knowledge of industrial hygiene. The Site Safety Officer will be on Site on a full-time basis and will report directly to the Safety Officer. The qualifications of the Site Safety Officer will be provided to the EPA, upon request, prior to commencing Site mobilization.

The Safety Officer will:

- a) Be responsible for developing the Contractor Safety Plan which will include at a minimum the provisions outlined in this document and which will meet the requirements of 29 CFR 1910.120;
- b) Be responsible for the initial training sessions for all on-Site personnel with regard to this safety plan and other safety requirements to be observed during Site activities, including:
 - i) potential hazards,
 - ii) personal hygiene principles,
 - iii) personnel protective equipment,
 - iv) respiratory protection equipment usage and fit testing, and
 - v) emergency procedures dealing with fire and medical situations;
- c) Be responsible for implementation of the HSP at the initial period of all Site activities;

- d) Review and modify the HSP, in consultation with the Project Coordinator, as more information becomes available concerning the hazardous materials involved, review all monitoring reports and respirator inspection logs, provide the initial qualitative respirator fit test, and prepare sample hazardous substance information forms for known hazardous materials at the Site.
- e) Oversee the Site Safety Officer's activities. The Safety Officer will maintain an appropriate level of contact with the Site Safety Officer to ensure that the HSP is properly implemented.

The Site Safety Officer will:

- a) Be responsible for daily enforcement and monitoring of the HSP;
- b) Be responsible for assisting the Safety Officer in the initial training of all on-Site personnel with regard to this safety plan and other safety requirements to be observed during Site activities, including:
 - i) potential hazards,
 - ii) personal hygiene principles,
 - iii) personnel protective equipment,
 - iv) respiratory protection equipment usage and fit testing, and
 - v) emergency procedures dealing with fire and medical situations;
- c) Be responsible for alerting the Field Engineer prior to the Contractor starting any particularly hazardous work;

- d) Be responsible for the maintenance of separation of any Exclusion Zone and Support Zone areas as described hereafter;
- e) Maintenance of the emergency contingency plan; and
- f) Coordinate all on-Site air monitoring.

The Site Safety Officer will be currently certified in first aid and cardiopulmonary resuscitation.

B.4.0 MEDICAL SURVEILLANCE

In accordance with requirements detailed in 29 CFR 1910.134, and 29 CFR 1910.120, all Site personnel who will be required to work in the Exclusion Zones will receive medical surveillance by a licensed occupational physician or physician's group.

Personnel medical records will be maintained by either the consulting physician or by the Contractor's medical or personnel officer. If the records are kept by the Contractor, they will be filed in locked file cabinets with access limited to the Contractor's designated officer. A record of which tests were performed as part of the medical surveillance program and a copy of the consulting physician's statement regarding the tests and the employee's suitability for work will be kept at the Site. Personnel medical records and the results of the tests performed on each person will not be maintained at the Site. The physician's statement will be provided to the Engineer prior to commencing Site activities. The medical records will be available to the employee or his designated representative upon written request, as outlined in OSHA Regulation 1910.120 (f).

Personnel involved in work with waste materials during the duration of the project must be in the Contractor's medical surveillance program prior to working on Site. All on-Site Contractor personnel who will be required to work in any Exclusion Zones will have been provided a medical exam within one year prior to commencing work on Site.

The Contractor will be responsible to ensure that the necessary medical examinations are conducted on all on-Site Contractor personnel who will be expected to work in the Exclusion Zones prior to commencing work which requires respiratory protection. The Contractor will provide the medical certificates of approval to ICI and will ensure that personnel not obtaining such certificates will not enter or work in the Exclusion Zones. Non-Contractor personnel required to enter or work in the Exclusion Zones will provide proof of medical surveillance prior to their entry into the Contaminant Reduction Zones or Exclusion Zones.

Interim medical surveillance will be completed as required, such as when an individual exhibits poor health or high stress responses due to on-Site activity or when accidental exposure to elevated concentrations of contaminants occur.

Medical surveillance for personnel who will only occasionally enter the Contaminant Reduction Zones or Exclusion Zones will be established in accordance with 29 CFR 1910.120. As stated, medical surveillance will be required for those personnel "who are or may be exposed to hazardous substances or health hazards at or above the established permissible exposure limits for those substances, without regard to the use of respirators, for 30 days or more a year", or "who wear a respirator for 30 days or more a year". Medical surveillance for these personnel will be established on an individual basis.

B.5.0 TRAINING

The Contractor will provide and require that all personnel assigned to or entering the Site complete training or refresher sessions. Training and refresher sessions will ensure that all personnel are capable of and familiar with the use of safety, health, respiratory and protective equipment and with the safety and security procedures required for this Site. Training will meet the requirements of 29 CFR 1910.120 and documentation of successful completion of the training must be provided to ICI for each worker prior to commencing work on Site. At least one of the contractor personnel on Site will have successfully completed supervisor training in accordance with 20 CFR 1910.120 for Hazardous Waste Operations and Emergency Response.

The Contractor's representative will provide and conduct a training program for all Site personnel prior to commencing work within the Exclusion Zones. This training program will address as a minimum the following topics:

- a) Potential hazards,
- b) Biology, chemistry and physics of Site-specific hazardous materials,
- c) Rights and responsibilities of workers under OSHA and related additional legislation of the State of New York,
- d) Task standard safety operating procedures,
- e) Types of monitoring equipment to be used,
- f) Site Safety and Health Plan,
- g) Internal and External Communications,

- h) Medical surveillance program,
- i) Personal protective clothing and equipment,
- j) Respiratory equipment including training and qualitative fit-testing for half-facepiece and full-facepiece respirators and use of self-contained breathing apparatus.
- k) Air monitoring program,
- l) Decontamination procedures,
- m) Evacuation, first aid and emergency procedures dealing with fire and medical situations,
- n) Work zones established at the Site,
- o) Safe work practices associated with employee's work assignment, including dust control measures, hazardous materials recognition, and use of the buddy system,
- p) Basic operational safety, emphasizing hazards expected on Site, and
- q) Prohibitions (general)
 - (i) facial hair such as beards and long sideburns which interfere with respirator fit,
- r) Prohibitions (inside Exclusion and Contaminant Reduction Zones), including:
 - (i) Contact lenses,
 - (ii) Eating, drinking, smoking, chewing in the Exclusion or Contaminant Reduction Zones,
 - (v) Personal articles, e.g. watches, if not protected by appropriate personal protective equipment, and
 - (vi) Working when ill.

All personnel assigned to the Site will receive safety and health training, and upon completion of training will be recorded on Training Acknowledgment Logs which will be submitted to the Field Engineer. The Training Acknowledgment Logs will include provisions for the following information:

- a) Employee or visitor's name.
- b) Verification of topics covered, including:
 - (i) Materials used,
 - (ii) Equipment demonstration,
 - (iii) Hands-on equipment practice for each employee,
 - (iv) Prohibitions covered,
 - (v) Buddy-System Explanation, and
 - (vi) Standard Operating Procedures.
- c) Date and Signature.

A sample of a Training Acknowledgment Log is included in Attachment I. All personnel assigned to the project will receive and be required to read the Site Health and Safety Plan. Following review of the Site Health and Safety Plan, all personnel are required to sign the acknowledgment form, a sample of which is presented in Attachment II.

There will be weekly safety training sessions conducted by the Site Safety Officer. The purpose of this training is to reinforce the proper procedures, to correct any deficiencies noted in the health and safety program, and to prepare the workers for any change in the health and safety program due to changes in the operations or unanticipated problems. Documentation

of this training will be submitted to the Field Engineer. Documentation will include the topic(s) covered and a signed list of attendees.

The Site Safety Officer will be responsible for ensuring that personnel that do not successfully complete the required training are not permitted to enter the Exclusion and Contaminant Reduction Zones.

B.5.1 VISITOR SAFETY TRAINING PROGRAM

All visitors who enter the Contaminant Reduction Zone or Exclusion Zone will be required to undergo a one-hour training program conducted by the Site Safety Officer. In addition to the training required to meet the requirements of 20 CFR 1910.120. This training will be provided if the training does not prevent the Safety Officer from performing his/her designated duties, consequently causing a delay in Site work. If the Site Safety Officer is not available to perform the training, visitors will not be allowed to enter the Exclusion Zone until the necessary training can be performed. The training will consist of at least the following:

- 1) Hazards potentially present at the Site.
- 2) Potential health or safety effects of these hazards.
- 3) Progress of work and the relationship of the present work in regard to the type of hazards that may be encountered.
- 4) Emergency signals and procedures.
- 5) Type, limitations and use of personal protective equipment.
- 6) General safety rules and policies in effect at the Site.

7) Completion of a Training Acknowledgment Log.

If a visitor does not, for any reason, obtain the required training, he/she will not be permitted into these work zones.

B.6.0 RESPIRATOR PROGRAM

All on-Site personnel will receive training in the use of, and be fit tested for a full-facepiece respirator. All on-Site personnel requested to work within the Exclusion Zones will also receive training in supplied air breathing apparatus, and will be required to comply with their employer's specific written respiratory protection program.

Levels of respiratory protection have been chosen to be consistent with the regulations written in OSHA 1910.120 (C)(5)(iii). Level B respiratory protection (supplied air respirators either positive pressure-demand or self contained breathing apparatus) will be worn when sampling waste streams which have not been fully characterized or when sustained organic vapor levels exceed 5 ppm in worker breathing zones. Level C respiratory protection (air purifying respirators) will be worn when sampling drums which have been characterized and when sustained organic vapor levels are below 5 ppm in worker breathing zones. This determination will be based on the potential airborne presence of compounds with the lowest recommended threshold limit value, their concentration levels in on-Site media, and upon the type of work activity being conducted. Table B.11.1 presents the required respiratory protection levels for the specific work activities to be conducted on Site.

Prior to commencing Site activities and regularly during the active operations, both the Contaminant Reduction Zones and the Exclusion Zones will be monitored with appropriate monitoring equipment to determine the presence of any immediate dangers to life and health levels.

Respirator cartridges to be used in the full facepiece air purifying respirators will be made by the same manufacturer as the facepieces in accordance with OSHA regulations. All air purifying respirators will be equipped with combination organic vapor/acid gases and high efficiency particulate air (HEPA) cartridges.

The Site Safety Officer will be responsible for implementing, maintaining and enforcing the respirator program. All respiratory protection devices will be cleaned daily and properly stored.

On-Site personnel unable to pass a respirator fit test will not enter or work in any Exclusion Zones or Contaminant Reduction Zones when hazardous wastes are exposed to the atmosphere.

B.7.0 WORK AREAS

The Contractor will ensure that all personnel entering or exiting the Site will write the following information in an entry/exit log sheet:

- a) Date;
- b) Name;
- c) Name of Firm;
- d) Time In;
- e) Time Out;
- f) Safety Plan Read (Note Yes);
- g) Site Visited or Location;
- h) Protective Equipment Level (A, B, C, D);
- i) Respirator/Medical Paper Work; and
- j) Remarks.

The Contractor will clearly lay out and identify work areas in the field and will limit equipment, operations and personnel in the areas as defined below prior to initiation of Site activities.

- a) Exclusion Zone - This will include all areas in which drums are being handled, and surface areas adjacent to these areas which may be affected during these operations.

The Exclusion Zone will be delineated in the field with a Site control fence (temporary snow fence) at the Support Zone.

Access to the Exclusion Zone will be restricted to personnel who are wearing the proper personal protective equipment, have received the required medical examination, and have undergone the safety and health training. Eating, drinking, or smoking is prohibited in this area. A log of entry to and exit from any Exclusion Zone will be maintained for the purposes of stress monitoring and determining exposure times.

- b) Contaminant Reduction Zone - This zone will occur at the interface of the Exclusion Zone and the Support Zone and will provide for the transfer of any construction materials and equipment, the decontamination of off-Site transport vehicles prior to entering the Support Zone, the decontamination of personnel and clothing prior to entering the Support Zone and for the physical segregation of the Support Zone from the Exclusion Zone.

Access to the Contaminant Reduction Zone will be restricted to personnel who are wearing the proper personal protective equipment, have undergone the medical examination, and have participated in the training program. Eating, drinking, or smoking is prohibited in this area.

- c) Support Zone - This area includes the mobile office area and support facilities located within the Site perimeter fencing. The Support Zone will be clearly delineated and procedures will be implemented to prevent active or passive contamination from other work zones. The function of the Support Zone includes:

- i) An entry area for personnel, material and equipment to the Exclusion Zone;
- ii) An exit area for decontaminated personnel, materials and equipment from the Exclusion Zone;
- iii) The housing of Site special services; and
- iv) A storage area for clean safety and work equipment.

B.8.0 COMMUNICATIONS

The Contractor will provide telephone communication for the Site. Emergency numbers including police, fire, ambulance, hospital, poison control center and appropriate regulatory agencies will be prominently posted near each phone. A list of emergency telephone numbers is presented in Attachment III. In an emergency situation, the Site Safety Officer will be notified immediately. The Site Safety Officer will then be responsible for making the necessary contacts with off-Site emergency facilities.

In addition, key personnel will be equipped with radio communication.

Additional personnel will be provided with radio communication as deemed appropriate by the Contractor's Site Safety Officer.

B.9.0 EMERGENCY AND FIRST AID EQUIPMENT

The safety equipment listed below will be located and maintained within the Contaminant Reduction Zone or within the Exclusion Zone at appropriate locations as directed by the Site Safety Officer. The placement of the equipment will be at the discretion of the Site Safety Officer and will be located close to areas where drums are being handled:

- a) portable emergency eye wash with hand-held shower;
- b) two twenty-pound ABC type dry chemical fire extinguishers;
- c) two Self-Contained Breathing Apparatus (SCBA) units, with a minimum of two spare tanks;
- d) approved industrial First-Aid Kit for a minimum of 25 personnel, complete with buffer solutions for treating acid and caustic burns;
- e) stretcher;
- f) blankets; and
- g) air horn.

B.10.0

EMERGENCY RESPONSE PLAN

B.10.1

SITE SECURITY

The existing snow fence will be maintained around the drum staging area to restrict access to this area.

During active waste handling, security shall be provided by the Contractor. The Contractor's duties shall include:

- i) Limit vehicular access to the Site to authorized vehicles and personnel only.
- ii) Provide initial screening of all Site personnel and visitors. A list of authorized personnel and the name of their employer will be available at the Site.
- iii) Maintain a security log in which documentation is provided of all Site personnel, visitors and deliveries and any security incidents. This log will include the date, name, address, company, time in and time out for each employee and visitor. If unauthorized personnel are observed on Site and refuse to vacate the premises, appropriate law enforcement officials will be contacted for appropriate legal actions.
- iv) Maintain a visitor log at the Site. Visitors will not be allowed to enter without the knowledge of the contractor and approval of the Field Engineer. All visitors will be required to complete training in

accordance with the HSP prior to gaining access to the secured areas of the Site (e.g. staging area).

B.10.2 On-Site Contingency Plan

If release of hazardous material occurs on Site, the protocols presented in Section B.10.4 will be followed and the following actions will immediately be taken:

- i) The individual that observes the release will immediately notify the Field Engineer and Site Safety Officer;
- ii) Take immediate action to control and contain the release;
- iii) Keep unnecessary personnel away, isolate the area of release, and deny entry;
- iv) Do not allow anyone to touch released material;
- v) Stay upwind; keep out of low areas; and
- vi) Keep combustibles away from the released material.

If human health or the environment are threatened, the Field Engineer will notify the National Response Center (NRC) (800) 438-2427 as soon as possible. NRC will be notified of any release of reportable quantities including all releases which threaten human health or the environment. The EPA will be notified of all releases within 24 hours and will determine if releases other than those noted above require notification to the NRC.

An employee alarm system to signify a major release or an emergency will consist of three short blasts using an air horn. An air horn will always be maintained at the staging area during active work hours and will be immediately available to all personnel handling drums.

Upon implementing the above procedures, the immediate areas of the release, including downwind areas, will be scanned with the HNu to identify the level of protection required for personnel safety equipment to clean up the released material. As a minimum, personnel will wear all protective clothing specified in the HSP including supplied air respiratory protection as required. Air monitoring will determine if the level of respiratory protection can be downgraded. The air monitoring action levels as presented in the HSP will be followed during any clean-up of a release.

Should releases occur from drums containing solid wastes, the released material will be placed into containers and covered. Each container will be labelled as to contents.

Liquid and/or sludge spills will be first covered with an absorbent to absorb any free liquids to minimize the amount that may infiltrate into the ground. The absorbent material and soils contacted by the spill will be excavated and placed in containers. These containers will be labelled to indicate contents.

An assessment will then be made to determine the need to conduct post-cleanup soil sampling and analysis. EPA will be provided a

copy of the assessment report. Collected samples will be analyzed for the waste constituents previously identified on Site. If analytical data are available for the released materials, these data will be used to determine the analytes of concern.

A release report will be prepared by ICI submitted to the EPA, summarizing the release and response action.

B.10.3 Off-Site Contingency Plan

Only authorized transporters, as discussed in Section 4.5.2 of the Drum Disposal Plan, will be used for the transportation of hazardous waste. If a release of material from a transport vehicle occurs while in transit, the following actions will be taken by the transport operator to reduce potential migration of the waste material.

- i) Immediately notify the Contractor, who will in turn notify the ICI Project Manager (Mr. Bob Shay (302)-886-4001), and the EPA OSC. In the event of a release of a reportable quantity, the Nation Response Center will also be notified;
- ii) Take immediate measures within the capabilities of the transport driver to control the release, if necessary;
- iii) Contain and eliminate the release, if possible;
- iv) The driver must remain within a safe distance of the vehicle, and will keep unnecessary people away, isolate the area of the release and deny entry to unauthorized personnel;

- v) Stay upwind, keeping out of low areas, and do not allow contact with the released material;
- vi) Contact the appropriate local authorities (police, fire department, traffic control, etc.) and local hazardous materials response unit; and,
- vii) Other actions, as advised by the local spill response authorities.

Upon implementing these procedures, the same action to clean up the release will be implemented as described in Section 4.8.3 of the Drum Disposal Plan.

B.10.4 PERSONNEL EMERGENCY CONTINGENCY PLAN

In the event of serious injury to on-Site personnel or contact with hazardous materials requiring medical attention, the Contractor will ensure that the following protocol will be followed:

- i) in the event of an injury or chemical exposure, notify the Site Safety Officer who shall notify the Field Engineer and the Contractor's Project Manager;
- ii) the Site Safety Officer will be responsible for contacting the necessary off-Site emergency facilities, with the Field Engineer as backup if the State Safety Officer is unavailable;
- iii) decontaminate personnel and administer appropriate first aid as required;

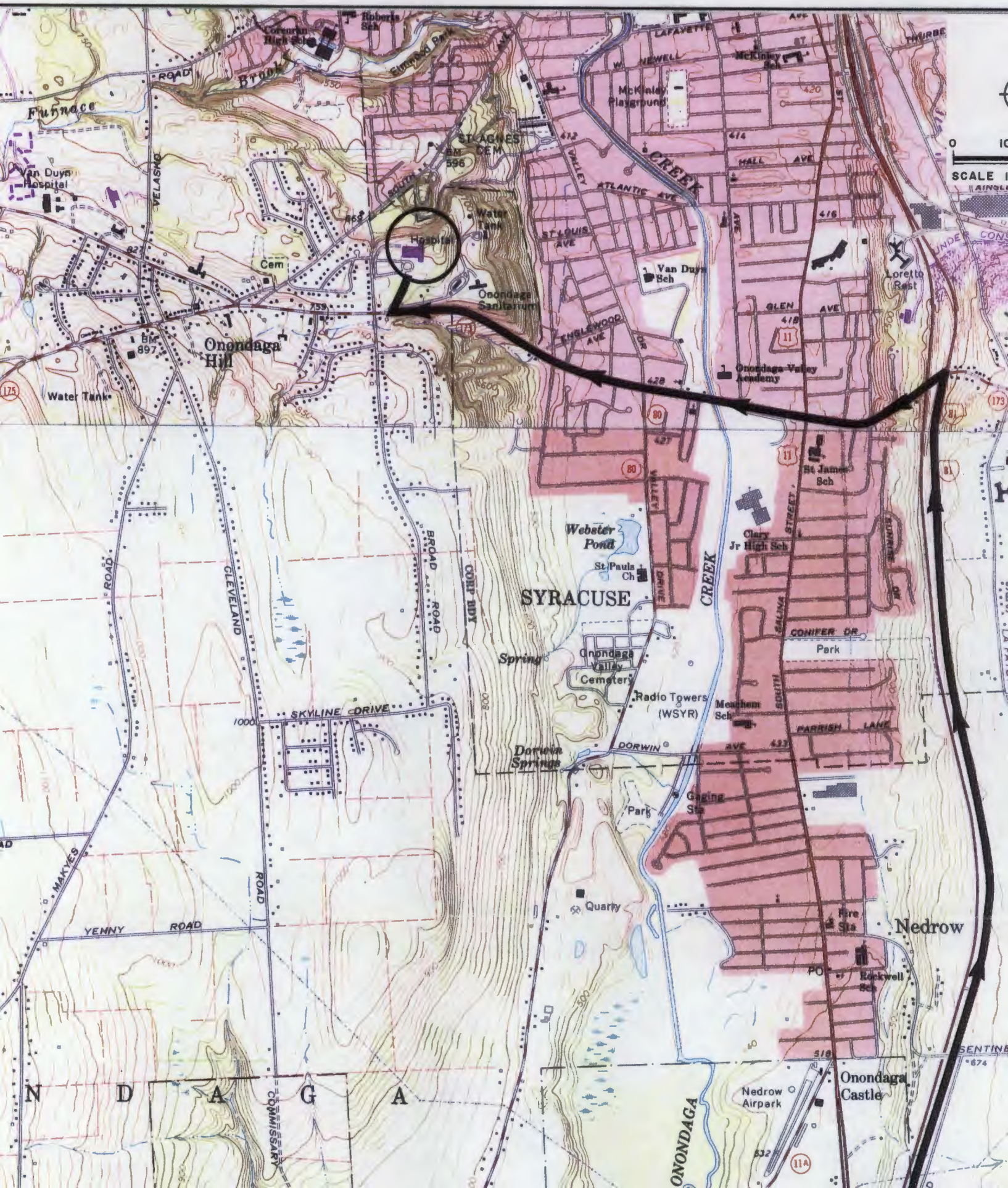
- iv) transport personnel to the designated medical facility. The closest medical facility to the Site is the Community General Hospital. The most direct route to the hospital is presented on Figure B.10.1.

The following directions describe the best route to the Community General Hospital:

- 1) Take Route 11 south to the junction of Route 81.
- 2) Take Route 81 north to the next exit (Rockcut Road Brighton Ave.)
- 3) Get off at this exit and proceed west on Route 173.
- 4) Go approximately 2 miles and Community General is located up on a hill.

Fire fighting equipment (extinguishers) will be maintained in strategic locations within the Site to combat localized fires. The locations will be marked by an appropriate and highly visible sign. The Contractor shall ensure that designated personnel will be available whom are trained in fire fighting procedures and whom will be equipped with self-contained breathing apparatus when involved in fighting fires involving chemical substances which require the use of such respiratory equipment.

In the event of significant release of toxic or hazardous vapors from any source the source of such vapors will be immediately contained by overpacking or covering with fill. Equipment operators will utilize self contained breathing apparatus during such operations. Alternate



plans of contaminant removal will be developed by the Contractor and submitted to the Field Engineer prior to recommencing work in the area.

In the event that an accident or some other incident such as an explosion or an exposure to toxic chemical levels occurs during the course of the project, the Site Safety Officer shall notify the Field Engineer immediately and undertake corrective actions. The Site Safety Officer shall sound the fire alarm should conditions warrant evacuation of the area of the incident. The Site Safety Officer shall provide a written report, within 24 hours, to the Field Engineer. The report will include the following items:

- a) Name, organization, telephone number, and location of the Contractor,
- b) Name and title of the person(s) reporting the incident,
- c) Date and time of accident/incident,
- d) Location of accident/incident giving pertinent details,
- e) Brief summary of accident/incident giving pertinent details including type of operation ongoing at time of accident,
- f) Cause of accident/incident, if known,
- g) Casualties (fatalities, disabling injuries),
- h) Details of any existing chemical hazard of contamination,
- i) Estimated property damage, if applicable,
- j) Nature of damage and effect on contract schedule,
- k) Action taken by the Contractor to ensure safety and security, and
- l) Other damage or injuries sustained (public or private).

Following Site mobilization and prior to commencing Site activities, the Site Safety Officer will establish designated meeting places for personnel in the event that on-Site work zone evacuation is required. The Site Safety Officer will select these locations such that they are upwind of work zones based on wind directional monitoring.

B.10.5 HEALTH AND SAFETY PLAN REVIEW

Periodically or as required, the Site management team will review the emergency response plan and modify any section to account for changing Site conditions.

In the event of any Site emergency, a meeting will be held to discuss and critique the emergency response actions which were undertaken. Amendments to the emergency response plan will be made as necessary based on the findings of the meeting.

B.11.0**PERSONAL SAFETY AND RELATED EQUIPMENT**

The Contractor will ensure that all on-Site personnel are equipped with the proper personal safety equipment and protective clothing appropriate for the hazardous material being handled and the nature of work being completed. The Contractor will ensure that all safety equipment and protective clothing is kept clean and well maintained. The personal protective equipment required for various work activities are summarized on Table B.11.1 and described in the following sections. Respiratory protection will be in accordance with Section B.6.0.

B.11.1**NON-HAZARDOUS WORK ACTIVITIES**

Safety equipment and apparel required for non-hazardous work activities consists of the following standard issue, Level D, work wear:

- a) hardhats,
- b) safety shoes or boots,
- c) eye protection,
- d) hearing protection if applicable,
- e) workgloves,
- f) coveralls and outerwear, and
- g) safety harnesses and other equipment, as required.

Non-hazardous work activities are defined as those activities which would result in neither dermal nor inhalation exposure of

TABLE B.11.1

SUMMARY OF PERSONAL PROTECTIVE EQUIPMENT

<i>Work Activity</i>	<i>Personal Protective Equipment Required</i>
1) Site Preparation Activities	Level D or Level C if air monitoring indicates the need
2) Non-Hazardous Work Activities (no dermal or inhalation exposure to waste materials e.g. handling of sealed drums).	Level D
3) Sampling of Waste Containers	Level C or Level B if air monitoring indicates the need

workers to hazardous substances. The primary hazard to workers are those associated with heavy construction activities, i.e. moving machinery.

Non-hazardous work activities include all Site preparation activities.

B.11.2 GENERAL EXCLUSION ZONE ACTIVITIES

Personnel involved in any sampling of containers will be subject to potential inhalation and dermal hazards from Site chemicals. Any sampling of waste containers will be conducted under Level C with full-face respirators donned. If air monitoring results indicate levels above 5 ppm in the worker breathing zone during these activities then Level B protection must be worn. The handling of sealed overpacked/repacked waste containers during transport to and at staging pads will be conducted under Level D.

All personnel involved in any sampling of waste containers will conform to the following additional personal protective equipment requirements:

- i) Saranex® coveralls will be worn over standard work clothing. The zipper of the outerwear will also be taped,
- ii) Chemical resistant rubber overboots will be worn over standard safety footwear with the outerwear taped to the outside of the overboots,
- iii) Surgical latex inner gloves will be worn and the outerwear will be taped to the outside of the gloves, and

- iv) A rubber outerglove will be worn over the latex gloves and taped to the outerwear.

**B.12.0 PROCEDURES FOR DONNING AND DOFFING OF
PROTECTIVE CLOTHING AND EQUIPMENT**

Donning:

- 1) Personally inspect all equipment to be worn by wearer.
- 2) Adjust hard hat for proper fit.
- 3) While standing or sitting, step into legs of suit; ensure proper placement of legs and feet within suit, then gather suit around the waist.
- 4) Put on boots; tape leg cuff of suit over the tops of the boots using duct tape.
- 5) Don respirator and adjust it.
- 6) Put sleeves of suit over arms.
- 7) Put on inner gloves
- 8) Put on hard hat.
- 9) Secure the suit by closing all fasteners. Tape over fasteners if protective flap is not already provided.
- 10) Put on outer gloves; tape cuff of sleeve to tops of gloves.

- 11) Have an assistant check to determine if all equipment is secure and functioning normally and that there are no other problems.

Doffing:

- 1) Decontaminate the wearer of equipment first. Boots will be washed off in a boot wash with a soapy water solution.
- 2) Remove any extraneous or disposable clothing, boots, outer gloves, hard hat, and tape.
- 3) Remove arms, one at a time, from suit. Be careful not to have any contact between the outer surface of the suit and the wearer's body. Keep the inner gloves on.
- 4) While sitting, remove both legs from suit.
- 5) Remove inner gloves by rolling them off the hand, inside out.
- 6) Remove respirator. Wash respirator in disinfecting solution. Suspend respirator to dry and replace cartridges if wearing air purifying respirators. (Cartridges are to be replaced upon breakthrough or at the beginning of each day.)
- 7) Remove inner clothing, and thoroughly wash the body. (Only necessary at end of work day.)

B.13.0 HEAT STRESS/COLD STRESS

B.13.1 HEAT STRESS

Heat stress is one of the most common hazards encountered at a Site, and there are a number of factors which have an effect in determining the amount of heat stress experienced by an individual worker. These factors include environmental conditions, type of clothing worn, workload, and individual characteristics. Since heat stress is a common hazard and has the potential to become a serious illness, the Contractor will develop a program to protect its employees which meets the following requirements.

All employees will be trained in the following:

- 1) Individual factors which influence an individual's susceptibility to heat.
- 2) Environmental characteristics such as temperature, humidity, wind speed, and cloud cover.
- 3) Body response to heat.
- 4) Effect of personal protective equipment and workload.
- 5) The various types of heat disorders and their associated symptoms.
- 6) Heat stress program - acclimatization, monitoring, work/rest regimen, and fluid intake (balanced electrolytic fluids).

Training for the heat stress program will be included at the time of the initial training.

Drinking water will be supplied to workers on a regular basis as required to prevent dehydration.

B.13.2 COLD STRESS

If work is performed during cold months, workers may be exposed to cold stress during the response program. The Contractor will provide appropriate cold weather clothing and heated shelter for all workers and will monitor for cold stress. Workers who are exposed to temperatures below -10°F with wind speeds greater than 5 mph will be medically certified as suitable for such exposure. All workers certified for exposure will adhere to the work warm-up schedule as specified in the current ACGIH standards as outlined in the booklet entitled "Threshold Limit Values and Biological Exposure Indices". A copy of the ACGIH standard will be available on Site for reference if it is anticipated that implementation of the work warm-up schedule will be required.

All workers who may be subjected to cold stress will receive training during the initial Site training session in the following:

- 1) Environmental characteristics such as temperature, humidity, wind speed, and cloud cover.
- 2) Body response to cold.
- 3) The various types of cold stress and their associated symptoms.
- 4) Cold stress program.

PERSONAL HYGIENE PROTOCOLS

The Contractor will be responsible for, and ensure that all Contractor personnel performing or supervising response actions within the Exclusion Zone, or exposed or subject to exposure to vapors, liquids, or solids containing Site constituents, observe and adhere to the personal hygiene-related provisions of this section. On-Site personnel found to be disregarding the personal hygiene-related provisions of this plan will, at the request of the Field Engineer or Site Safety Officer, be barred from the Site.

The Contractor will ensure that the following equipment/facilities are available for the personal hygiene of all on-Site personnel.

- a) Suitable disposable outerwear (e.g., Saranex® suits, inner and outer gloves, and respirator cartridges), gloves, footwear, and respiratory protection on a daily basis for the use of on-Site personnel;
- b) Contained storage and disposal for used disposable outerwear;
- c) Personnel hygiene facility complete with change area and washbasins with contained storage for all wash waters; and
- d) Lunch area.

The Contractor will also enforce the following regulations for personnel working within the Exclusion Zone:

- a) On-Site personnel will wear disposable outerwear and gloves at all times whenever entering or working in the Exclusion Zone or Contaminant Reduction Zone.
- b) Used disposable outerwear will not be reused if deemed to be unsuitable to provide the necessary protection, and when removed, will be placed inside disposable containers provided for that purpose.
- c) Smoking will be prohibited except in a designated smoking area.
- d) Eating and drinking will be prohibited except in the designated lunch or break area. An exception to this rule will apply to prevent Heat Stress problems as discussed in Section B.13.1, whereby workers will be supplied drinking water on a regular basis.
- e) Disposable outerwear will be removed prior to entering the lunch area, and prior to cleansing hands, face, neck, and other exposed areas.
- f) On-Site personnel will thoroughly cleanse their hands and other exposed areas before entering the smoking or lunch area.

B.14.1 GENERAL SITE SANITATION

General Site sanitation will be implemented pursuant to 29 CFR 1910.120.

B.15.0 EQUIPMENT AND PERSONNEL DECONTAMINATION

B.15.1 PERSONNEL DECONTAMINATION

Any Site personnel entering and working within the Exclusion Zone will be required to follow the personnel decontamination procedures presented below.

Personnel decontamination will consist of:

1. Contaminant Reduction Zone - boot and glove wash with detergent, tape removal, and outer glove removal; removal of boots, gloves, disposable suit, respirator, hard hat, and inner gloves. Personnel decontamination will be conducted at the entrance to the Support Zone away from the equipment decontamination area. Protective clothing which is discarded will be collected and disposed of. Typical personnel decontamination procedures are presented on Figure B.15.1.
2. Support Zone - redress area.

All personnel will have removed their protective clothing prior to entering the wash area. Personnel will wash their hands and face in the wash area before entering the lunch and break areas to eat, drink or smoke. At the end of their work shift, personnel will wash and redress in the wash area prior to leaving the Site.

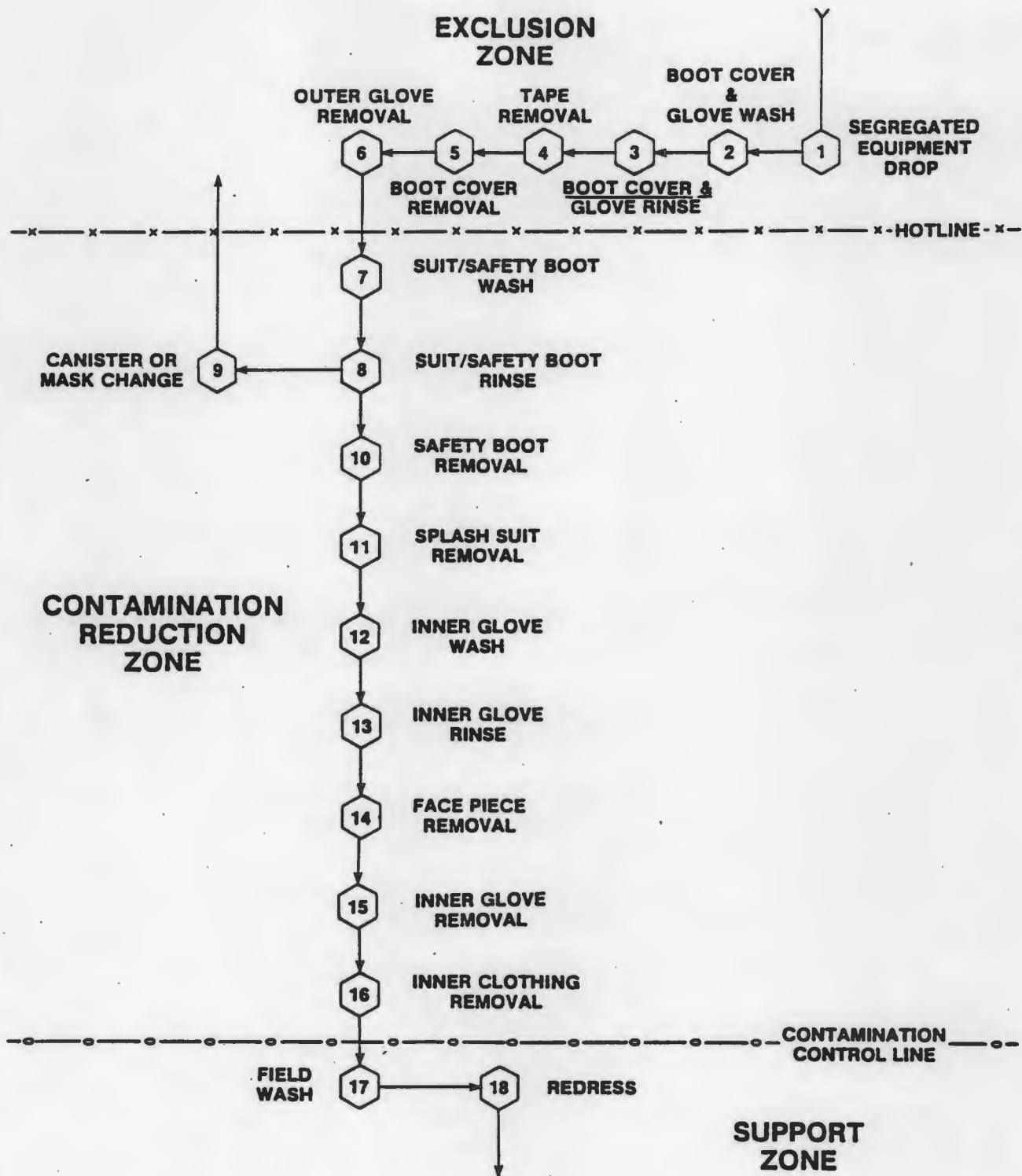


figure B.15.1

TYPICAL PERSONNEL DECONTAMINATION PROCEDURES
Onondaga Drum Site

In accordance with 29 CFR 1910.120 (k)(2)(iv) the Site Safety Officer will monitor the decontamination activities for their effectiveness. The Site Safety Officer will make the appropriate changes to the decontamination protocols in order to correct any observed deficiencies.

B.15.2 EQUIPMENT DECONTAMINATION

It is not expected that any equipment, other than sampling equipment, will come into direct contact with waste materials during implementation of this Drum Disposal Plan. Sampling equipment will either be disposed of with the waste material or cleaned in the Contaminant Reduction Zone in accordance with the protocols presented in Section 7.0 of the Plan. Any cleaning solvents or wash water used in the decontamination process will be collected and disposed of in accordance with State and Federal regulations.

If additional equipment does contact hazardous waste materials (e.g. cleanup of any spilled hazardous wastes), a portable decontamination pad will be constructed and the equipment will be decontaminated with a high pressure wash and detergent prior to leaving the Site.

B.16.0 AIR MONITORING

B.16.1 GENERAL

During the progress of Site activities, the Contractor will complete real-time air monitoring for on-Site air quality. Real-time air monitoring will be conducted for explosive gases, oxygen level and total volatile organic vapors. The Contractor's Site Safety Officer will review all of the air data collected during the course of the project on an ongoing basis and in consultation with the Field Engineer, will modify those work practices as necessary.

B.16.2 BACKGROUND MONITORING

Background monitoring for total organic vapors using real-time monitoring will be conducted prior to initiating Site activities and throughout the period of Site activities. Any departures from general background during this period will be reported to the Field Engineer who will, in conjunction with the Site Safety Officer, determine the cause of the deviation and need to adjust Site operations.

B.16.3 REAL-TIME AIR MONITORING

Real-time air monitoring with an appropriate instrument that has been appropriately calibrated will be conducted by the Contractor on

an hourly basis during any activities which could result in the release of chemicals to the atmosphere (e.g. waste sampling). Monitoring will be conducted within the Exclusion Zone, at two Exclusion Zone perimeter locations downwind of drum handling activities and at one Exclusion Zone perimeter location which is upwind of the activities.

If actual field operations reveal that hourly sampling of the downwind Exclusion Zone perimeter locations is not practical or necessary, adjustments may be made after consultation between the Site Safety Officer and the Field Engineer. Any such modifications shall be memorialized in writing.

If, during the real-time monitoring, an unexplained meter reading of greater than 1 ppm above background ("background" shall mean the readings obtained at an upwind location which is not being impacted by Site activities) is sustained for a duration of thirty seconds at a downwind Exclusion Zone perimeter monitoring location, the Contractor shall review and modify work procedures at the Site to minimize the potential of air emission levels greater than 1 ppm above background at the Exclusion Zone. The Contractor shall notify the Field Engineer of any readings greater than 1 ppm above background recorded at the Exclusion Zone perimeter.

In addition to the Exclusion Zone perimeter monitoring the Contractor shall monitor the immediate area of active work during the opening of each drum or as needed in the breathing zone for organic vapors to document worker exposure levels and to evaluate requirements for any future respiratory use guidelines. This monitoring will be conducted with

either a photoionization detector or flame ionization detector. In addition, monitoring will be conducted for explosive gases and oxygen levels in the Exclusion Zone on an as needed basis. Table B.16.1 presents air monitoring action levels.

B.16.4 PERSONAL MONITORING

In addition to performing real time monitoring for total volatile organics, personal monitoring will be conducted for those employees with the highest potential for exposure to Site contaminants. It is expected that personnel involved in drum sampling, if required, will be the individual(s) on which personal sampling will be performed.

The analytical results of the composite sampling (see Appendix A of the Drum Disposal Plan) conducted by the EPA in January and February 1992 indicate that the primary chemicals of concern with the greatest potential to become airborne are the volatile organic compounds: xylene, toluene and benzene. Although concentrations of several semi-volatile organic compounds were detected for composite sample number 10, obtained from six individual drums; these compounds have a much lower potential to become airborne and, therefore, will not be monitored. Personal monitoring for xylene, toluene and benzene will be conducted during drum sampling activities utilizing either air sampling pumps with charcoal adsorber tubes and/or passive dosimeters. If charcoal tubes are used, the National Institute for Occupational Safety and Health (NIOSH) Method 1501 will be employed.

TABLE B.16.1

AIR MONITORING AND AIR MONITORING ACTION LEVELS

<i>Monitoring Device</i>	<i>Action Level</i>	<i>Action</i>
Combustible Gas Indicator	>1% LEL 10-20% LEL	Limit ignition sources work with caution be prepared to cease operations
	>20% LEL	Cease operations and move to a safe place. Notify the Site Safety Officer. <u>Do not continue working until conditions are constantly below 20% LEL</u>
Oxygen Meter	<19.5%	Workers must be in supplied air respirators
	>23.5%	Shut down activities. Determine the source and take corrective actions. Notify the Site Safety Officer.
Photoionization or Flame Ionization Device	>1 ppm sustained at downwind perimeter of the Exclusion Zone	Shut down activities. Implement engineering controls.

The contractor's health and safety plan will specify the sampling methodology and procedures to be used for conducting the personal monitoring.

The results of the personal monitoring program will be provided to the personnel that were monitored, the Field Engineer and the EPA.

B.16.5 WIND DIRECTIONAL MONITORING

The Contractor will furnish and maintain a wind circulation sock at the drum staging area to provide information to assist in the determination of the direction of any potential emissions migrating from the Site. Perimeter air monitoring locations may be adjusted based upon the wind directional monitoring.

B.16.6 ANALYSIS CALIBRATION AND DATA REPORTING

Calibrations of all monitoring equipment will be completed by the Contractor on a daily basis.

The Field Engineer will be immediately advised when results indicate:

- required modifications to existing Site protocols;
- excessive exposure to employees; and
- possibility of excessive contamination having occurred in off-Site regions.

Results will be reported verbally to the Field Engineer immediately if they require a decision on Site operation or daily when no excursions are reported. Written data sheets detailing monitoring results will be presented to the Field Engineer the following day. The air monitoring report forms will include the following information:

- i) Site Location/Date
- ii) Work Process/Operation Name
- iii) Sampling Method Used
- iv) Instrument Calibration Record at Sample Location
- v) Temperature, Pressure, Humidity at Sample Location
- vi) Area Sampling Location Diagram
- vii) Area Sample Description/Location
- viii) Field Notes
 - Description of Operations and Complaints/Symptoms
 - Chemicals/Materials/Equipment in Use
 - Engineering/Administration Controls in Effect
 - Personal Protective Equipment in Use
 - Sampling Observations/Comments

B.17.0 EMERGENCY HAND SIGNALS

In order to maintain a standard form of communication in the field while wearing protective personnel equipment, the following hand signals will be used:

Hand gripping throat:

Out of air, can't breathe!

Grip partner's wrist or
place both hands around
waist:

Leave area immediately,
no debate!

Hands on top of head:

Need assistance.

Thumbs up:

OK, I'm all right, I understand.

Thumbs down:

No, negative.

B.18.0**CONFINED SPACE ENTRY PROCEDURE**

A confined space provides the potential for unusually high concentrations of contaminants, explosive atmospheres, oxygen deficient atmospheres, limited visibility and restricted movement. This Section establishes requirements for safe entry into, continued work in, and safe exit from confined spaces. Additional information regarding confined space entry can be found in 29 CFR 1926.21, 29 CFR 1910 and NIOSH 80-106.

B.18.1**DEFINITIONS**

Confined Space: A space or work area not designed or intended for normal human occupancy, having limited means of egress and poor natural ventilation; and/or any structure, including buildings or rooms, which have limited means of egress.

Confined Space Entry Permit (CSEP): A document to be initiated by the supervisor of personnel who are to enter into or work in a confined space. The CSEP will be completed by the personnel involved in the entry and approved by the Site Safety Officer before personnel will be permitted to enter the confined space. The CSEP shall be valid only for the performance of the work identified on the permit and for the location and time specified on the permit. The beginning of a new shift with change of personnel will require the issuance of a new CSEP. A copy of a CSEP is provided in Attachment IV.

Confined Space Observer: An individual assigned to monitor the activities of personnel working within a confined space. The confined space observer monitors and provides external assistance to those inside the confined space. The confined space observer summons rescue personnel in the event of emergency and assists the rescue team.

B.18.2 GENERAL PROVISIONS

The following general provisions will apply to confined space entry:

- i) when possible, confined spaces should be identified with a posted sign which reads: Caution - Confined Space;
- ii) only personnel trained and knowledgeable of the requirements of these confined space entry procedures will be authorized to enter a confined space or be a confined space observer;
- iii) a CSEP must be issued prior to the performance of any work within a confined space. The CSEP will become a part of the permanent and official health and safety record for the response action at the Site;
- iv) natural ventilation shall be provided for the confined space prior to initial entry and for the duration of the CSEP. Positive/forced mechanical ventilation may be required. However, care should be taken to not spread contamination outside of the enclosed area;

- v) if flammable liquids are anticipated to be within the confined space, explosion proof equipment will be used. All equipment shall be positively grounded;
- vi) the contents of any confined space shall, where necessary and where possible, be removed prior to entry. All sources of ignition must be disconnected and/or removed prior to entry;
- vii) hand tools used in confined spaces shall be in good repair, explosion proof and spark proof, and selected according to intended use. Where possible, pneumatic power tools are to be used;
- viii) hand-held lights and other illumination utilized in confined spaces shall be equipped with guards to prevent contact with the bulb and must be explosion proof;
- ix) compressed gas cylinders, except cylinders used for self-contained breathing apparatus, shall not be taken into confined spaces. Gas hoses shall be removed from the space and the supply turned off at the cylinder valve when personnel exit from the confined space;
- x) if a confined space requires respiratory equipment or where rescue may be difficult, safety belts, body harnesses, extraction equipment and lifelines will be used. The outside observer shall be provided with the same equipment as those working within the confined space;

- xi) a ladder or extraction device is required in all confined spaces deeper than the employee's shoulders. The ladder shall be secured and not removed until all employees have exited the confined space;
- xii) only SCBA or NIOSH approved airline respirators equipped with a 5-minute emergency air supply (egress bottle) shall be used in untested confined spaces or in any confined space with conditions determined immediately dangerous to life and health;
- xiii) where air-moving equipment is used to provide ventilation, chemicals shall be removed from the vicinity to prevent their introduction into the confined space;
- xiv) vehicles shall not be left running near confined space work or near air-moving equipment being used for confined space ventilation;
- xv) smoking in confined spaces will be prohibited at all times; and
- xvi) any deviation from these confined space entry procedures requires the prior permission of the Site Safety Officer.

B.18.3 PROCEDURE FOR CONFINED SPACE ENTRY

The Site Safety Officer and confined space entry personnel shall adhere to the following confined space entry procedures:

- i) evaluate the job to be done and identify the potential hazards before a job in a confined space is scheduled;
- ii) if possible, ensure removal of any standing fluids that may produce toxic or air displacing gases, vapors or dust;
- iii) initiate a CSEP in concurrence with the Engineer or designated alternative;
- iv) ensure that any hot work (welding, burning, open flames or spark producing operation) that is to be performed in the confined space has been approved by the Engineer and is indicated on the CSEP;
- v) ensure that the confined space is ventilated before starting work in the confined space and for the duration of the time that the work is to be performed in the confined space;
- vi) ensure that the personnel who enter the confined space and the confined space observer helper are familiar with the contents and requirements of this instruction and the CSEP;
- vii) ensure remote atmospheric testing of the confined space prior to and during employee entry and before validation/revalidation of a CSEP to ensure the following requirements:
 - a) oxygen content,

- b) no concentration of combustible gas in the space. Sampling will be done throughout the confined space and specifically at the lowest point in the space, and
 - c) the absence of other atmospheric contaminants if the space has previously contained toxic, corrosive or irritant material,
- viii) designate whether hot or cold work will be allowed. If all tests are satisfactory, complete the CSEP listing any safety precautions, protective equipment or other requirements; and
- ix) ensure that a copy of the CSEP is posted at the work Site, a copy is filed with the work supervisor and a copy is furnished to the Engineer.

The CSEP shall be considered void if work in the confined space does not start within one hour after the tests in Item vii above are performed or if significant changes within the confined space atmosphere or job scope occurs.

The CSEP posted at the work Site shall be removed at the completion of the job or the end of the shift, whichever is first.

B.18.4 CONFINED SPACE OBSERVER

The duties of the confined space observer are as follows:

- i) while personnel are inside the confined space, a confined space observer will monitor the activities and provide external assistance to those in the confined space. The observer will not have other duties which may take his attention away from the work or require him to leave the vicinity of the confined space at any time while personnel are in the confined space;
- ii) the confined space observer shall maintain at least voice contact with all personnel in the confined space. Visual contact is preferred, if possible;
- iii) the confined space observer shall be instructed by his supervisor or the Site Safety Officer in the method for contacting rescue personnel in the event of an emergency;
- iv) if irregularities within the confined space are detected by the observer, personnel within the confined space will be ordered to exit;
- v) in the event of an emergency, the confined space observer must not enter the confined space prior to contacting and receiving assistance from a helper. Prior to this time, he should attempt to remove personnel with the lifeline and to perform all other rescue functions from outside the space; and
- vi) a helper shall be designated to provide assistance to the confined space observer in case the observer must enter the confined space to retrieve personnel.

ATTACHMENT I

TRAINING ACKNOWLEDGEMENT FORM

TRAINING ACKNOWLEDGEMENT FORM

NAME: _____

ADDRESS: _____

SOCIAL SECURITY: _____

EMPLOYER: _____

I have completed and understand the applicable training program, for work to be carried out during site activities at the Onondaga Drum Site, Onondaga, New York, including the following topics:

- a. Work Rules and Safety Requirements,
- b. Personal Protection Equipment,
- c. Potentially Hazardous Chemicals,
- d. Emergency Equipment,
- e. Reporting Injuries and Illnesses,
- f. Emergency Procedures,
- g. Job Assignments,
- h. Personal hygiene,
- i. Medical Tests,
- j. Motor Tests, and
- k. Standard Operating Procedures.

I further confirm that a respirator qualitative fit test was performed and that I have been issued a respirator of the same type.

By signing this form, I relieve ICI and its members and their officers, employees and agents of the liability of consequences related to potential hazards associated with site entry and work.

Site Person

Signature: _____ Date: _____

I certify that this Site Person has received adequate safety training and instruction and that this person is proficient in the use of protective clothing and equipment and knowledgeable in all aspects of this Health and Safety Plan.

Safety Officer

Signature: _____ Date: _____

ATTACHMENT II

SAFETY AND HEALTH PLAN ACKNOWLEDGEMENT FORM

**SAFETY AND HEALTH PLAN
ACKNOWLEDGEMENT FORM**

I have received and read the Site Safety and Health Plan for the Onondaga Drum Site. I agree to abide by these safety rules, regulations, and guidelines while working on site; and understand that any violation of these rules will result in my removal from the work site.

Signature: _____ Date: _____

Print Name: _____

ATTACHMENT III

EMERGENCY TELEPHONE NUMBERS

Emergency Contacts

<u>Emergency</u>	<u>Organization/Agency</u>	<u>Emergency #</u>
General	1. ICI Project Coordinator (Joe Birkmeier)	(302)-886-4252
	2. ICI Project Manager (Bob Shay)	(302)-886-4001
	3. EPA Coordinator (Dan Harkay)	(908)-321-6614
	4. Emergency Management Division, Onondaga County	(315)-434-2525
Injury	1. Ambulance	(315) 425-3333
	2. Community General Hospital	(315) 492-5011
Poison	1. Poison Control Center	(800) 962-1253
Fire/ Explosion	1. Fire Emergency	(315) 425-3333
Hazardous Material Spill or Release	1. USEPA National Response Center	(800) 438-2427
	2. Onondaga County Health Dept.	(315) 425-6955
	3. New York State Police	(315) 457-2600
	4. New York State Department of Environmental Conservation (Albany)	(800) 457-7362
	5. New York State Department of Health (Syracuse)	(315) 428-4802
Natural	1. General Emergency	(315) 425-3333
	2. New York State Police	(315) 457-2600

ATTACHMENT IV

CONFINED SPACE ENTRY PERMIT

CONFINED SPACE ENTRY PERMIT

SITE NAME/LOCATION/REF. NO.: _____

WORK ACTIVITY: _____

Duration: _____ Issue Date: _____ Time: _____ Filled Out by: _____

POTENTIAL HAZARDS:
(System Generated)

(Work Generated)

CONFINED SPACE ENTRY PERMIT

AIR MONITORING: PRE-ENTRY _____ PERIODIC _____ CONTINUOUS _____

DATE/TIME	BY (INIT)	%O ₂	ppm CO	% LEL	OTHER TEST TYPE	RESULT
-----------	--------------	-----------------	-----------	----------	--------------------	--------

ISOLATION:

Purging Required: YES NO | | PURGING CONFIRMED:

Safety Tags Required: YES | | NO | |

VENTILATION REQUIRED: YES | | NO | |

CONTINUOUS _____ OTHER _____

EMERGENCY RESCUE EQUIPMENT REQUIRED:

Communications Device	Winch/Hoist
First Aid Kit	Harness with Lifeline
Stretcher/Backboard	(type)
Fire Extinguisher	PPE (type)
SCBA	Lighting (type)
Other	

CONFINED SPACE ENTRY PERMIT

PERSONAL PROTECTIVE EQUIPMENT REQUIRED:

_____ Hardhat	_____ Respiratory Protection
_____ Safety Glasses	_____ (type)
_____ Face Shield	_____ Coveralls
_____ Ear Plugs/Muff	_____ Chemical Suits
_____ Emergency Escape Pack	_____ Rain Suits
_____ Lanyards	_____ Lifelines
_____ Gloves (type)	
_____ Harnesses (type)	
_____ Other	

ADDITIONAL WORK INSTRUCTIONS:

EMERGENCY CONTACT PHONE NO. _____

PERSONS ENTERING CONFINED SPACE (PRINT NAME)

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

STANDBY PERSON REQUIRED: YES: _____ NO: _____ (PRINT NAMES)

CONFINED SPACE ENTRY PERMIT

I have reviewed and met the requirements of this permit and expect that this work shall be done safely. Entrants have been instructed on the proper confined space entry procedures, requirements and conditions.

ENTRY AUTHORIZED BY: _____ DATE: _____

All work under this permit has been completed and all materials and entrants have been withdrawn from the confined space.

Attendant or Entrant

Date

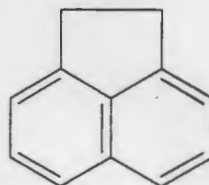
ATTACHMENT V

MATERIAL SAFETY DATA SHEETS

ACENAPHTHENE

Synonyms: 1,2-Dihydroacenaphthylene; Ethylene naphthalene; 1,8-Ethylene naphthalene; 1,8-Hydroacenaphthylene; Periethylene naphthalene.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 83-32-9

DOT Designation: None assigned.

Empirical Formula: C₁₂H₁₀

Formula Weight: 154.21

RTECS Number: AB 1255500

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White crystalline solid.

Boiling Point: 279 °C [1].

Henry's Law Constant: 1.5 x 10⁻⁴ atm·m³/mol [2]; 2.41 x 10⁻⁴ atm·m³/mol [3]; 1.9 x 10⁻⁴ atm·m³/mol [4]; 7.92 x 10⁻⁵ atm·m³/mol at 25 °C [5].

Ionization Potential: No data found.

Log K_{oc}: 1.25 [6].

Log K_{ow}: 3.92 [7]; 4.33 [8].

Melting Point: 96.2 °C [1]; 95 °C [9].

2 Acenaphthene

Solubility in Organics: Soluble in ethanol, toluene, chloroform, benzene, and acetic acid [10].

Solubility in Water: 3.47 mg/L at 25 °C [11]; 3.93 mg/L at 25 °C [12]; 1.84 ppm in seawater at 25 °C, 2.42 ppm [13].

Specific Density: 1.0242 at 90/4 °C [1].

Transformation Products: No data found.

Vapor Pressure: 10 mm at 131.2 °C, 40 mm at 168.2 °C, 100 mm at 197.5 °C, 400 mm at 250 °C, 760 mm at 277.5 °C [1]; 0.001-0.01 mm at 20 °C [13]; 0.00155 mm at 25 °C [14]; 0.149 mm at 65 °C, 0.231 mm at 70 °C, 0.351 mm at 75 °C, 0.529 mm at 80 °C, 0.787 mm at 85 °C, 1.151 mm at 90 °C, 1.388 mm at 92.5 °C, 1.463 mm at 93.195 °C [15].

FIRE HAZARDS

Flash Point: No data found.

Lower Explosive Limit (LEL): No data found.

Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): No data found.

Permissible Exposure Limits (PEL) in Air: No standards set.

MANUFACTURING

Selected Manufacturers:

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Pfaltz & Bauer, Inc.
172 East Aurora St.
Waterbury, CT 06708

2 Acenaphthene

Solubility in Organics: Soluble in ethanol, toluene, chloroform, benzene, and acetic acid [10].

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Flash Point: No data found.

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Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): No data found.

Permissible Exposure Limits (PEL) in Air: No standards set.

MANUFACTURING

Selected Manufacturers:

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Pfaltz & Bauer, Inc.
172 East Aurora St.
Waterbury, CT 06708

Uses: Manufacturing of dye intermediates, pharmaceuticals, insecticides, fungicides, and plastics.

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4 **Acenaphthene**

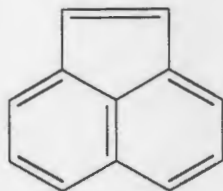
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ACENAPHTHYLENE

Synonym: Cyclopenta[de]naphthalene.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 208-96-8

DOT Designation: None assigned.

Empirical Formula: C₁₂H₈

Formula Weight: 152.20

RTECS Number: AB 1254000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid.

Boiling Point: 280 °C [1].

Henry's Law Constant: 2.8 x 10⁻⁴ atm·m³/mol [2]; 1.14 x 10⁻⁴ atm·m³/mol [3].

Ionization Potential: 8.73 eV [4].

Log K_{oc}: 3.68 using method of Karickhoff and others [5].

Log K_{ow}: 4.07 [6].

Melting Point: 92-93 °C [7].

Solubility in Organics: Soluble in ethanol, ether, and benzene [8].

6 Acenaphthylene

Solubility in Water: 3.93 mg/L at 25 °C [9].

Specific Density: 0.8988 at 16/2 °C [7].

Transformation Products: Based on data for structurally similar compounds, acenaphthylene may undergo photolysis to yield quinones [8].

Vapor Pressure: 0.0290 mm at 20 °C [10].

FIRE HAZARDS

Flash Point: No data found.

Lower Explosive Limit (LEL): No data found.

Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): No data found.

Permissible Exposure Limits (PEL) in Air: No individual standards have been set, however, as a constituent in coal tar pitch volatiles, the following exposure limits have been established: 0.2 mg/m³ (benzene-soluble fraction) [11]; 0.1 mg/m³ 10-hour TWA (cyclohexane-extractable fraction) [12]; 0.2 mg/m³ TWA (benzene solubles) [13].

MANUFACTURING

Uses: Research chemical. Derived from industrial and experimental coal gasification operations where maximum concentrations detected in gas, liquid, and coal tar streams were 28 mg/m³, 4.1 mg/m³, and 18 mg/m³, respectively [14].

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Material Safety Data Sheet

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Product: BENZENE

MSDS No: Genium / 316

Revision: E

Date: August, 1990

National Paint
and Coatings
Association

Hazardous Material
Identification
System

HEALTH HAZARD	3 - Serious
FLAMMABILITY HAZARD	3 - Serious
REACTIVITY HAZARD	0 - Minimal
PERSONAL PROTECTION	SEE SECTION 8

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: BENZENE

Description: Derived by fractional distillation of coal tar, hydrodealkylation of toluene or pyrolysis of gasoline, catalytic reforming of petroleum, and transalkylation of toluene by disproportionation reaction. Used as a fuel; a chemical reagent; a solvent for a large number of materials such as paints, plastics, rubber, inks, oils, and fats; in manufacturing phenol, ethylbenzene (for styrene monomer), and nitrobenzene (for aniline).*

Other Designations: C_6H_6 ; benzol; carbon oil; coal naphtha; cyclohexatriene; mineral naphtha; nitration benzene; phene; phenyl hydride; pyrobenzol.

CAS: 0071-43-2

R 1
T 4
S 2 - Skin absorption
K 4

Manufacturer: Contact your supplier or distributor. Consult the latest Chemicalweek Buyers' Guide⁽⁷³⁾ for a suppliers list.

Cautions: Benzene is a confirmed human carcinogen by the IARC. Chronic low-level exposure may cause cancer (leukemia) and bone marrow damage, with injury to blood-forming tissue. It is also a dangerous fire hazard when exposed to heat or flame.

* Additional manufacturing uses dodecylbenzene (for detergents), cyclohexane (for nylon), chlorobenzene, diphenyl, benzene hexachloride, maleic anhydride, benzene-sulfonic acid, artificial leather, linoleum, oil cloth, varnishes, and lacquers; for printing and lithography; in dry cleaning; in adhesives and coatings; for extraction and rectification; as a degreasing agent; in the tire industry; and in shoe factories. Benzene has been banned as an ingredient in products intended for household use and is no longer used in pesticides.

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SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Benzene	0071-43-2	ca 100*	1989 OSHA PELs (29 CFR 1910.1000, Table Z-1-A) 8-hr TWA: 1 ppm, 3 mg/m³ 15-min STEL: 5 ppm, 15 mg/m³ (Table Z-2) 8-hr TWA: 10 ppm Acceptable Ceiling Concentration: 25 ppm Acceptable Maximum Peak: 50 ppm (10 min) ** 1989-90 ACGIH TLV TLV-TWA: 10 ppm, 32 mg/m³ 1988 NIOSH RELs TWA: 0.1 ppm, 0.3 mg/m³ Ceiling: 1 ppm, 3 mg/m³ 1985-86 Toxicity Data*** Man, oral, LD₅₀: 50 mg/kg; no toxic effect noted Man, inhalation, TC₅₀: 150 ppm inhaled intermittently over 1 yr in a number of discrete, separate doses affects the blood (other changes) and nutritional and gross metabolism (body temperature increase) Rabbit, eye: 2 mg administered over 24 hr produces severe irritation.

* OSHA 29 CFR 1910.1000, Subpart Z, states that the final benzene standard in 29 CFR 1910.1028 applies to all occupational exposures to benzene except in some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil

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INGREDIENTS AND HAZARDS continued from page 2

and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply.

** Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift.

See NIOSH, RTECS (CY1400000), for additional irritative, mutative, reproductive, tumorigenic, and toxicity data.

SECTION III. PHYSICAL DATA

Appearance & Odor: A colorless liquid with a characteristic sweet, aromatic odor. The odor recognition threshold (100% of panel) is approximately 5 ppm (unfatigued) in air. Odor is not an adequate warning of hazard.

Boiling point: 176°F (80°C)

Vapor pressure: 100 mm Hg at 79°F (26.1°C)

Water solubility (%): Slightly (0.180 g/100 g of H₂O at 25°C)

Vapor density (air=1): 2.7

Evaporation rate: 2.8

Specific gravity (H₂O=1): 0.8787

Melting point: 42°F (5.5°C)

% volatile by volume: 100

Molecular weight: 78.11

Viscosity: 06468 mPa at 20°C

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): 12°F (-11.1°C), CC Limits: LEL %: 1.3% v/v UEL %: 7.1% v/v

NFPA Fire Hazard Symbol Codes: Flammability: 3 Health: 2 Reactivity: 0 Special: —

Extinguishing Media: Use dry chemical, foam, or carbon dioxide to extinguish benzene fires. Water may be ineffective as an extinguishing agent since it can scatter and spread the fire. Use water spray to cool fire-exposed containers, flush spills away from exposures, disperse benzene vapor, and protect personnel attempting to stop an unignited benzene leak.

Autoignition Temp:
928°F (498°C)

Unusual fire or explosion hazards: Benzene is a Class 1B flammable liquid. A concentration exceeding 3250 ppm is considered a potential fire explosion hazard. Benzene vapor is heavier than air and can collect in low lying areas or travel to an ignition source and flash back. Explosive and flammable benzene vapor-air mixtures can easily form at room temperature. Eliminate all ignition sources where benzene is used, handled, or stored.

Special fire-fighting procedures: Isolate hazard area and deny entry. Since fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full

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FIRE AND EXPLOSION DATA continued from page 3

facepiece operated in the pressure-demand or positive-pressure mode and full protective equipment. Structural firefighter's protective clothing provides limited protection. Stay out of low areas. Be aware of runoff from fire control methods. Do not release to sewers or waterways. Runoff to sewer can create pollution, fire, and explosion hazard.

SECTION V. REACTIVITY DATA

Chemical incompatibilities: Benzene explodes on contact with diborane, permanganic acid, bromine pentafluoride, peroxodisulfuric acid, and peroxomonosulfuric acid. It ignites on contact with dioxygen difluoride, dioxygenyl tetrafluoroborate, iodine heptafluoride, and sodium peroxide + water. Benzene forms sensitive, explosive mixture with iodine pentafluoride, ozone, liquid oxygen, silver perchlorate, nitryl perchlorate, nitric acid, and arsenic pentafluoride + potassium methoxide (explodes above 30°C). Benzene is incompatible with oxidizing materials.*

Conditions to avoid: Avoid heat and ignition sources.

Hazardous decomposition Products: Thermal oxidative decomposition of benzene can produce toxic gases and vapors such as carbon monoxide.

Stability/Polymerization: Benzene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

* A vigorous or incandescent reaction occurs with bromine trifluoride, uranium hexafluoride, and hydrogen + Raney nickel [above 410°F (210°C)].

SECTION VI. HEALTH HAZARD INFORMATION

Summary of risks: Prolonged skin contact or excessive inhalation of benzene vapor may cause headache, weakness, appetite loss, and fatigue. The most important health hazards are cancer (leukemia) and bone marrow damage with injury to blood-forming tissue from chronic low-level exposure. Higher level exposures may irritate the respiratory tract and cause central nervous system (CNS) depression.

Medical conditions which may be aggravated by contact: Exposure may worsen ailments of the heart, lungs, liver, kidneys, blood, and CNS.

Target organs: Blood, central nervous system, bone marrow, eyes, upper respiratory tract, and skin.

Primary entry route(s): Inhalation, skin contact.

Acute effects: Symptoms of acute overexposure include irritation of the eyes, nose, and respiratory tract, breathlessness, euphoria, nausea, drowsiness, headache, dizziness, and intoxication. Severe exposure may lead to convulsions and unconsciousness. Skin contact may cause a drying rash (dermatitis).

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HEALTH HAZARD INFORMATION continued from page 4

Chronic effect(s): Long-term chronic exposure may result in many blood disorders ranging from aplastic anemia (an inability to form blood cells to leukemia).

First aid:

Eye contact: Gently lift the 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. Immediately rinse with flooding amounts of water for at least 15 min. For reddened or blistered skin, consult a physician. Wash affected area with soap and water.

Inhalation: Remove exposed person to fresh air. Emergency personnel should protect against inhalation exposure. Provide CPR to support breathing or circulation as necessary. Keep awake and transport to a medical facility.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. If ingested, do not induce vomiting since aspiration may be fatal. Call a physician immediately.

Carcinogenicity: The ACGIH, OSHA, and IARC list benzene as, respectively, a suspected human carcinogen, a cancer hazard, and, based on sufficient human and animal evidence, a human carcinogen (Group 1).

After first aid, get appropriate in-plant, paramedic, or community medical attention and support.

Physician's Note: Evaluate chronic exposure with a CBC, peripheral smear, and reticulocyte count for signs of myelotoxicity. Follow up any early indicators of leukemia with a bone marrow biopsy. Urinary phenol conjugates may be used for biological monitoring of recent exposure. Acute management is primarily supportive for CNS depression.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Design and practice a benzene spill control and countermeasure plan (SCCP). Notify safety personnel, evacuate all unnecessary personnel, eliminate all heat and ignition sources, and provide adequate ventilation. Cleanup personnel should protect against vapor inhalation, eye contact, and skin absorption. Absorb as much benzene as possible with an inert, noncombustible material. For large spills, dike far ahead of spill and contain liquid. Use nonsparking tools to place waste liquid or absorbent into closable containers for disposal. Keep waste out of confined spaces such as sewers, watersheds, and waterways because of explosion danger. Follow applicable OSHA regulations (29 CFR 1910.120).

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SPILL, LEAK AND DISPOSAL PROCEDURES continued from page 5

Waste management / Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

OSHA Designations

Listed as an Air Contaminant (29 CFR 1910.1000, Tables Z-1-A and Z-2)

EPA Designations

Listed as a RCRA Hazardous Waste (40 CFR 261.33), Hazardous Waste No. U019

Listed as a CERCLA Hazardous Substance* (40 CFR 302.4), Reportable Quantity (RQ): 1000 lb (454 kg) [* per Clean Water Act, Sec. 307(a), 311 (b)(4), 112; and per RCRA, Sec. 3001]

SARA Extremely Hazardous Substance (40 CFR 355): Not listed

Listed as SARA Toxic Chemical (40 CFR 372.65)

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133).

Respirator: 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 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.

Other: Wear impervious gloves, boots, aprons, and gauntlets to prevent skin contact.

Workplace considerations:

Ventilation: Provide general and local explosion-proof ventilation systems to maintain airborne concentrations below the OSHA PELs (Sec. 2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source. (103)

Safety stations:

Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated equipment:

Never wear contact lenses in the work area: soft lenses may absorb, and all lenses concentrate, irritants. Launder contaminated clothing before wearing. Remove this material from your shoes and equipment.

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.

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SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store in tightly closed containers in a cool, dry, well-ventilated area away from all heat and ignition sources and incompatible materials. Caution! Benzene vapor may form explosive mixtures in air. To prevent static sparks, electrically ground and bond all containers and equipment used in shipping, receiving, or transferring operations in production and storage areas. When opening or closing benzene containers, use nonsparking tools. Keep fire extinguishers readily available.

Engineering controls: Because OSHA specifically regulates benzene (29 CFR 1910.1028), educate workers about its potential hazards and dangers. Minimize all possible exposures to carcinogens. If possible, substitute less toxic solvents for benzene; use this material with extreme caution and only if absolutely essential. Avoid vapor inhalation and skin and eye contact. Use only with adequate ventilation and appropriate personal protective gear. Institute a respiratory protection program that includes regular training, maintenance, inspection, and evaluation. Designate regulated areas of benzene use (see CAPS below Transportation Data) and label benzene containers with "DANGER, CONTAINS BENZENE, CANCER HAZARD."

Other precautions: Provide preplacement and periodic medical examinations with emphasis on a history of blood disease or previous exposure.

Transportation Data (49 CFR 172.101, .102)

DOT Shipping Name: Benzene (benzol)

DOT Hazard Class: Flammable liquid

ID No.: UN1114

DOT Label: Flammable liquid

DOT Packaging Exceptions: 173.118

DOT Packaging Requirements: 173.119

IMO Shipping Name: Benzene

IMO Hazard Class: 3.2

ID No.: UN1114

IMO Label: Flammable liquid

IMDG Packaging Group: II

DANGER

BENZENE

CANCER HAZARD

FLAMMABLE-NO SMOKING

AUTHORIZED PERSONNEL ONLY

RESPIRATOR REQUIRED

Data source code(s): 1, 2, 12, 26, 73, 84-94, 100, 101, 103, 109, 124, 126, 127, 132, 134, 136, 138, 139, 143

Prepared/revised by: MJ Allison, BS

August, 1990

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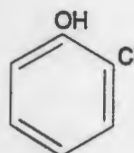
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2-CHLOROPHENOL

Synonyms: 1-Chloro-2-hydroxybenzene; 1-Chloro-*o*-hydroxybenzene; 2-Chlorohydroxybenzene; *o*-Chlorophenol; 1-Hydroxy-2-chlorobenzene; 1-Hydroxy-*o*-chlorobenzene; 2-Hydroxychlorobenzene; RCRA waste number U048; UN 2020; UN 2021.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 95-57-8

DOT Designation: 2020 (liquid); 2021 (solid).

Empirical Formula: C₆H₅ClO

Formula Weight: 128.56

RTECS Number: SK 2625000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Pale amber liquid with a slight phenolic odor.

Boiling Point: 174.9 °C [1].

Dissociation Constant: 8.48 [2].

Henry's Law Constant: 8.28 x 10⁻⁶ atm·m³/mol (calculated) [3]; 5.6 x 10⁻⁷ atm·m³/mol at 25 °C (estimated) [4].

Ionization Potential: 9.28 eV [5].

Log K_{oc}: 2.56 using method of Kenaga and Goring [6].

Log K_{ow}: 2.16 [7]; 2.19 [8]; 2.15 [9].

Melting Point: 9.0 °C [1].

Solubility in Organics: Soluble in ethanol, benzene, and ether [1].

Solubility in Water: 28,500 mg/L at 20 °C [10]; 28,000 mg/L at 25 °C [11]; 11,350 mg/L at 25 °C [12]; 0.2 M at 25 °C [13].

Specific Density: 1.2634 at 20/4 °C [1]; 1.256 at 25/25 °C [14]; 1.257 at 25/4 °C [15]; 1.262 at 20/4 °C [16].

Transformation Products: Monochlorophenols exposed to sunlight (ultraviolet light radiation) produced catechol and other hydroxybenzenes [17].

Vapor Density: 5.25 g/L at 25 °C, 4.44 (air = 1).

Vapor Pressure: 1 mm at 12.1 °C, 10 mm at 51.2 °C, 40 mm at 82.0 °C, 100 mm at 106.0 °C, 400 mm at 149.8 °C, 760 mm at 174.5 °C [1]; 1.42 mm at 25 °C [4].

FIRE HAZARDS

Flash Point: 64 °C [18].

Lower Explosive Limit (LEL): Unknown [19].

Upper Explosive Limit (UEL): Unknown [19].

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): No data found.

Permissible Exposure Limits (PEL) in Air: No standards set.

MANUFACTURING

Selected Manufacturers:

Dow Chemical Co.
Midland, MI 48640

Aldrich Chemical Co.
940 West Saint Paul Ave.
Milwaukee, WI 53233

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Uses: Component of disinfectant formulations; chemical intermediate for phenolic resins; solvent for polyester fibers, antiseptic (veterinarian); organic synthesis.

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Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854
From Genium's collection, to be used as reference

Product: CRESOL*
MSDS No: Genium / 409
Revision: A
Date: August, 1988

National Paint
and Coatings
Association

Hazardous Material
Identification
System

HEALTH HAZARD	3 - Serious
FLAMMABILITY HAZARD	2 - Moderate
REACTIVITY HAZARD	1 - Slight
PERSONAL PROTECTION	SEE SECTION 8

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: CRESOL*

Description: Used as a solvent, disinfectant, fumigant; in photographic developers and explosives; and to make synthetic resins.

Other Designations: Cresylic Acid; $\text{CH}_3\text{C}_6\text{H}_4\text{OH}$

CAS: 1319-77-3

Contact your supplier or distributor. Consult the latest edition of Chemicalweek Buyers' Guide (Genium ref. 73) for list of suppliers.

See Genium Industrial MSDS 560 for data specific to ortho-cresol.

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Cresol	1319-77-3	*	OSHA PEL (Skin**) 8-Hr TWA: 5 ppm, 22 mg/m ³ (All Isomers)
<u>ortho</u> -Cresol	0095-48-7	*	ACGIH TLV (Skin**), 1987-88 TLV-TWA: 5 ppm, 22 mg/m ³
<u>meta</u> -Cresol	0108-39-4	*	Toxicity Data*** Rat, Oral, LD ₅₀ : 1454 mg/kg Mouse, Oral, LD ₅₀ : 760 mg/kg Rabbit, Skin, LD ₅₀ : 2000 mg/kg
<u>para</u> -Cresol	0106-44-5	*	

* Cresol is a commercial mixture of three isomers (ortho, meta, and para). Contact your supplier to determine the percent by weight of each isomer and to determine if hazardous ingredients/contaminants such as phenol, xylene, benzene are present in reportable quantities.

** This material can be absorbed through intact skin, which contributes to overall

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INGREDIENTS AND HAZARDS continued from page 1

Exposure.

** See NIOSH, RTECS (G05950000, mixed cresol; G06125000, meta; G06300000, ortho; G06475000, para), for additional data with references to reproductive, tumorigenic, mutagenic, and irritative effects.

SECTION III. PHYSICAL DATA

Appearance & Odor: A colorless, yellowish, brownish yellow, or pinkish liquid that darkens upon exposure to air and light; phenolic odor. Appearance and odor depend upon the supplier and the exact composition of the purchased cresol.

Boiling point: *	Specific gravity (H ₂ O=1): 1.1
Vapor pressure: *	Molecular weight: 108 Grams/Mole
Water solubility (%): Slight	
pH: Acidic	

Contact your supplier to determine the specific physical properties of the cresol product.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): *	Limits: LEL %: *	UEL %: *
-------------------------	------------------	----------

Extinguishing Media: * Contact your supplier for this data.	Autoignition Temp: *
Cresol burns; treat it as a moderate fire hazard and a slight explosion hazard when exposed to heat or flame. Use foam, dry chemical, carbon dioxide, and water spray to extinguish cresol fires.	

Special fire-fighting procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

NFPA Hazard Ratings

ortho**

F	2
H	3
R	0
S	-

meta and para**

F	1
H	3
R	0
S	-

** Fire diamond for Cresol mixture not found.

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SECTION V. REACTIVITY DATA

Material is stable in closed containers at room temperature under normal storage and handling conditions. Hazardous polymerization cannot occur

Chemical incompatibilities: Cresol reacts dangerously with chlorosulfonic acid, nitric acid, oleum, and strong oxidizing agents.

Conditions to avoid: Hot cresol can attack copper, aluminum, magnesium, zinc, and lead. Stainless steel is recommended for use with cresol. Avoid direct contact with incompatible chemicals or exposure to sources of ignition. Many organic polymers will dissolve or soften when exposed to hot cresol.

Hazardous decomposition Products: Toxic gases such as carbon monoxide and heated cresol and/or cresol derivatives like phenol may be produced during fires.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen by the NTP, IARC, or OSHA.

Summary of risks: Cresol is corrosive to any body tissue it touches. Skin absorption can occur and may lead to delayed, possibly fatal, systemic poisoning. Absorption of cresol causes central nervous system (CNS) depression characterized by mental confusion, depression, dyspnea, irregular and rapid respiration, and weak pulse. Damage to the liver, kidneys, lungs, skin, and eyes are also expected from exposure to cresol. Exposures to cresol are emergencies; immediately consult a qualified physician.

Medical conditions which may be aggravated by contact: Preexisting kidney or hepatic (liver) problems.

Target organs: Central nervous system, respiratory system, skin, eyes, liver, and kidneys.

Primary entry route(s): Skin contact/absorption, inhalation

Acute effects: Skin and eye burns, difficulty in breathing, and respiratory failure.

Chronic effect(s): Infrequently, prolonged skin contact with cresol results in a chronic disorder called ochronosis which is a darkening of the skin, conjunctiva, and cartilage of the nose and ears.

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HEALTH HAZARD INFORMATION continued from page 3

First aid:

Eye contact: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. Treat for eye burns.

Skin contact: Immediately wash the affected area with soap and water because of the increased exposure hazard from skin absorption. Watch for chemical skin burns and treat them accordingly. If contact is gross, remove contaminated clothes and shoes under the safety shower. Further washing of skin with isopropyl alcohol or 20% glycerine in water, followed by a water rinse, may be useful.

Inhalation: Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have trained personnel administer oxygen.

Ingestion: Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing. If he or she responsive, give the exposed person 1 to 2 glasses of milk or water to drink to dilute the material. Induce vomiting with emetic.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid.
NOTE TO PHYSICIAN: Wash the affected skin area with a mixture of polyethylene glycol 300/industrial methylated spirits (PEG 300/IMS-2:1 by volume) or a similar preparation that will absorb the phenolic component. Personnel administering this treatment should wear rubber gloves. Hospitalize persons with serious exposures to monitor acidosis, shock, convulsions, and fluid balance. Thorough cleaning of the exposed person is required, especially matted hair, skin folds, and underneath fingernails, where the cresol may concentrate.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Notify safety personnel, provide ventilation, and eliminate sources of ignition immediately. Limit access to the spill area to necessary personnel only. Cleanup personnel need protection against contact with and inhalation of cresol (see sect. 8). Contain large spills and collect waste. Use water spray to direct cresol away from incompatible chemicals (see sect. 5). Absorb the waste with sand, earth, or vermiculite and place it into containers suitable for eventual disposal or reclamation. Do not flush waste to a sewer.

Waste management / Disposal: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations

Material Safety Data Sheet

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Revision: A

Date: August, 1988

Spill, Leak and Disposal Procedures continued from page 4

Air Contaminant (29 CFR 1910.1000 Subpart Z)

EPA Designations (40 CFR 302.4)

RCRA Hazardous Waste: No. U052

ERCLA Hazardous Substance, Reportable Quantity: 1000 lbs (454 kg), per the Clean Water Act (CWA), Section 311 (b) (4) and the Resource Conservation and Recovery Act (RCRA), Section 3001

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing is possible, wear a full face shield as a supplementary protective measure. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133).

Respirator: Wear a NIOSH-approved respirator per the NIOSH Pocket Guide to Chemical Hazards (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine operations (leaks or cleaning reactor vessels and storage tanks), wear an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode.*

Other: Wear impervious gloves, boots, aprons, gauntlets, etc., to prevent skin contact with cresol.

Workplace considerations:

Ventilation: Install and operate both general and local exhaust-ventilation systems powerful enough to maintain airborne concentrations of cresol below the OSHA PEL standard cited in section 2.

Safety stations:

Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work areas.

Contaminated equipment:

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from shoes and equipment.

Practice good personal hygiene; always wash thoroughly after using this material. Keep it off of your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area.

* Warning: Air-purifying respirators will not protect workers in oxygen-deficient atmospheres.

Material Safety Data Sheet

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From Genium's collection, to be used as reference

Product: CRESOL*

MSDS No: Genium / 409
Revision: A
Date: August, 1988

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store cresol in a cool, dry, well-ventilated area away from incompatible chemicals (see sect. 5) sources of ignition.

Special handling / storage: Preplan for routine use and emergency response. Build all storage facilities of nonflammable materials that are resistant to chemical attack by cresol. Protect containers from physical damage. Avoid using alloys of zinc, copper, or brass in storage and processing equipment that could be in contact with cresol.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Cresol

DOT label: Corrosive

IMO Label: Poison

IMO Class: 6.1

DOT Class: Corrosive Material

UN Register: UN2076

Data source code(s): 1, 2, 26, 38, 84-94, 100, 112, 113, 114.

Prepared/revised by: Genium Publishing Corporation

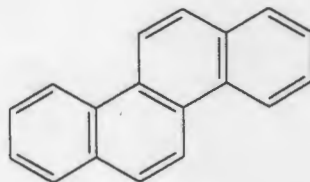
August 26, 1988

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CHRYSENE

Synonyms: Benz[a]phenanthrene; Benzo[a]phenanthrene; Benzo[alpha]-phenanthrene; 1,2-Benzophenanthrene; 1,2-Benzphenanthrene; 1,2-Dibenzonaphthalene; 1,2,5,6-Dibenzonaphthalene; RCRA waste number U050.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 218-01-9

DOT Designation: None assigned.

Empirical Formula: $C_{18}H_{12}$

Formula Weight: 228.30

RTECS Number: GC 0700000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Orthorhombic plates exhibiting strong fluorescence under ultraviolet light.

Boiling Point: 448 °C [1].

Henry's Law Constant: 7.26×10^{-20} atm·m³/mol (calculated).

Ionization Potential: 7.85 ± 0.15 eV [2].

Log K_{oc} : 5.39 using method of Karickhoff and others [3].

Log K_{ow} : 5.60 [4]; 5.61 [5]; 5.91 [6].

Melting Point: 255-256 °C [1].

166 Chrysene

Solubility in Organics: Soluble in ether, ethanol, and acetic acid [7].

Solubility in Water: 0.0015 mg/L at 15 °C, 0.006 mg/L at 25 °C; 0.001-0.05 ppm in seawater at 22 °C, 0.017 mg/L in seawater at 24 °C (practical grade) [8]; 0.0020 mg/L at 25 °C [9]; 0.0018 mg/L at 25 °C, 0.0022 mg/L at 29 °C [10]; 0.0015 mg/L [11]; 0.017 mg/L at 24 °C [12].

Specific Density: 1.274 at 20/4 °C [1].

Transformation Products: Based on structurally related compounds, chrysene may undergo photolysis to yield quinones [7].

Vapor Pressure: 6.3×10^{-9} mm at 25 °C [13]; 6.3×10^{-7} mm at 20 °C [14].

FIRE HAZARDS

Flash Point: No data found.

Lower Explosive Limit (LEL): No data found.

Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): Potential human carcinogen [15].

Permissible Exposure Limits (PEL) in Air: No individual standards have been set, however, as a constituent in coal tar pitch volatiles, the following exposure limits have been established: 0.2 mg/m³ (benzene-soluble fraction) [16]; 0.1 mg/m³ 10-hour TWA (cyclohexane-extractable fraction) [15]; 0.2 mg/m³ TWA (benzene solubles) [17].

MANUFACTURING

Selected Manufacturers:

Aldrich Chemical Co.
940 West Saint Paul Ave.
Milwaukee, WI 53233

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Use: Organic synthesis. Derived from industrial and experimental coal gasification operations where maximum concentrations detected in gas, liquid, and coal tar streams were 7.3 mg/m³, 0.16 mg/m³, and 8.6 mg/m³, respectively [18].

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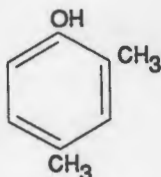
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2,4-DIMETHYLPHENOL

Synonyms: 4,6-Dimethylphenol; 2,4-DMP; 1-Hydroxy-2,4-dimethylbenzene; 4-Hydroxy-1,3-dimethylbenzene; RCRA waste number U101; 1,3,4-Xylenol; 2,4-Xylenol; *m*-Xylenol.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 105-67-9

DOT Designation: None assigned.

Empirical Formula: $C_8H_{10}O$

Formula Weight: 122.17

RTECS Number: ZE 5600000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless solid, slowly turning brown on exposure to air.

Boiling Point: 210 °C [1].

Dissociation Constant: 10.63 [2].

Henry's Law Constant: 6.55×10^{-6} atm·m³/mol at 25 °C (estimated) [3].

Ionization Potential: No data found.

Log K_{oc} : 2.07 (estimated) [4].

Log K_{ow} : 2.42 [5]; 2.50 [6]; 2.30 [7].

Melting Point: 27-28 °C [1].

264 2,4-Dimethylphenol

Solubility in Organics: Freely soluble in ethanol, chloroform, ether, and benzene [8].

Solubility in Water: 4,200 mg/L at 20 °C [9]; 7,868 mg/L at 25 °C [10]; 6.2 g/L at 25 °C [3].

Specific Density: 0.9650 at 20/4 °C [1].

Transformation Products: No data found.

Vapor Pressure: As a supercooled liquid - 0.0621 mm at 20 °C [11]; 1 mm at 51.8 °C, 10 mm at 92.3 °C, 40 mm at 121.5 °C, 100 mm at 143.0 °C, 400 mm at 184.2 °C, 760 mm at 211.5 °C [1]; 0.098 mm at 25.0 °C [3].

FIRE HAZARDS

Flash Point: > 110 °C [12].

Lower Explosive Limit (LEL): No data found.

Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): No data found.

Permissible Exposure Limits (PEL) in Air: No standards set.

MANUFACTURING

Selected Manufacturers:

Aldrich Chemical Co.
940 West Saint Paul Ave.
Milwaukee, WI 53233

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Pfaltz & Bauer, Inc.
172 East Aurora St.
Waterbury, CT 06708

Uses: Wetting agent; dyestuffs; preparation of phenolic antioxidants; plastics, resins, solvent, disinfectant, pharmaceuticals, insecticides, fungicides, and rubber chemicals manufacturing; lubricant and gasoline additive; possibly used a pesticide; plasticizers.

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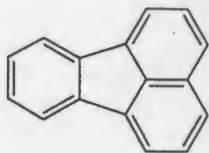
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FLUORANTHENE

Synonyms: 1,2-Benzacenaphthene; Benzo[*jk*]fluorene; Idryl; 1,2-(1,8-Naphthylene)benzene; 1,2-(1,8-Naphthalenediyl)benzene; RCRA waste number U120.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 206-44-0

DOT Designation: None assigned.

Empirical Formula: C₁₆H₁₀

Formula Weight: 202.26

RTECS Number: LL 4025000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless crystals.

Boiling Point: 375 °C [1]; 384 °C [2]; 367 °C [3].

Henry's Law Constant: 0.0169 atm·m³/mol at 25 °C [4].

Ionization Potential: 8.54 eV [5].

Log K_{oc}: 4.62 [6].

Log K_{ow}: 5.22 [6].

Melting Point: 107 °C [7]; 111 °C [8]; 120 °C [3]; 109-110 °C [9].

Solubility in Organics: Soluble in acetic acid, benzene, chloroform, carbon disulfide, ethanol, and ether [10].

314 Fluoranthene

Solubility in Water: 0.265 mg/L at 25 °C [11]; 0.120 mg/L at 24 °C, 0.1 ppm in seawater at 22 °C [7]; 0.26 mg/L at 25 °C [12]; 0.206 mg/L at 25 °C; 0.264 mg/L at 29 °C [13]; 0.236 mg/L at 25 °C [14]; 0.240 mg/L [15]; 0.133, 0.275 mg/L at 15 °C, 0.166 mg/L at 20 °C, 0.222, 0.373 mg/L at 25 °C [16].

Specific Density: 1.252 at 0/4 °C [1].

Transformation Products: No data found.

Vapor Pressure: 0.01 mm at 20 °C [3]; estimated as 10^{-6} - 10^{-4} mm at 20 °C based on data for structurally similar compounds [8]; 5.0×10^{-6} mm at 25 °C [17].

FIRE HAZARDS

Flash Point: No data found.

Lower Explosive Limit (LEL): No data found.

Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): Potential human carcinogen [18].

Permissible Exposure Limits (PEL) in Air: No individual standards have been set, however, as a constituent in coal tar pitch volatiles, the following exposure limits have been established: 0.2 mg/m³ (benzene-soluble fraction) [19]; 0.1 mg/m³ 10-hour TWA (cyclohexane-extractable fraction) [18]; 0.2 mg/m³ TWA (benzene solubles) [20].

MANUFACTURING

Selected Manufacturers:

Aldrich Chemical Co.
940 West Saint Paul Ave.
Milwaukee, WI 53233

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Use: Research chemical.

REFERENCES

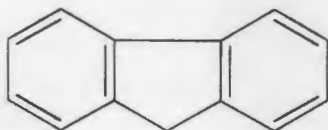
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 20. *Documentation of the Threshold Limit Values and Biological Exposure Indices for 1986-1987* (Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986), 111 p.

FLUORENE

Synonyms: 2,3-Benzindene; *o*-Biphenylenemethane; *o*-Biphenylmethane; Diphenylenemethane; *o*-Diphenylenemethane; 9*H*-Fluorene; 2,2'-Methylenecbiphenyl.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 86-73-7

DOT Designation: None assigned.

Empirical Formula: C₁₃H₁₀

Formula Weight: 166.22

RTECS Number: LL 5670000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Small white leaflets or flakes. Fluorescent when impure.

Boiling Point: 298 °C [1]; 294 °C [2].

Henry's Law Constant: 2.1×10^{-4} atm·m³/mol [3].

Ionization Potential: 8.63 eV [4]; 8.56 eV [5].

Log K_{oc}: 3.70 [6].

Log K_{ow}: 4.12 [7]; 4.18 [8]; 4.38 [9].

318 Fluorene

Melting Point: 116-117 °C [10]; 116 °C [2]; 113-115 °C [11].

Solubility in Organics: Soluble in most solvents [12].

Solubility in Water: 0.8 ppm [13]; 1.69 mg/L at 25 °C [14]; 1.98 mg/L at 25 °C [15]; 0.190 mg/L at 25 °C [16]; 1.6622 mg/L at 25 °C [17].

Specific Density: 1.203 at 0/4 °C [10].

Transformation Products: No data found.

Vapor Pressure: 10 mm at 146 °C, 40 mm at 185.2 °C, 100 mm at 214.7 °C, 400 mm at 268.6 °C, 760 mm at 295 °C [10]; estimated as 0.001-0.01 mm at 20 °C based on data for structurally similar compounds [18]; 7.1×10^{-4} mm [19]; 0.113 mm at 75 °C, 0.167 mm at 80 °C, 0.242 mm at 85 °C, 0.356 mm at 90 °C, 0.512 mm at 95 °C, 0.744 mm at 100 °C, 1.061 mm at 105 °C, 1.500 mm at 110 °C, 1.943 mm at 114 °C [20]; 0.000195 mm at 34.85 °C, 0.000250 mm at 37.20 °C, 0.000164 mm at 33.30 °C, 0.000281 mm at 38.45 °C, 0.000343 mm at 40.30 °C, 0.000543 mm at 45.00 °C, 0.000708 mm at 47.75 °C, 0.000818 mm at 49.25 °C, 0.000833 mm at 49.55 °C [21].

FIRE HAZARDS

Flash Point: No data found.

Lower Explosive Limit (LEL): No data found.

Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): Potential human carcinogen [22].

Permissible Exposure Limits (PEL) in Air: No individual standards have been set, however, as a constituent in coal tar pitch volatiles, the following exposure limits have been established: 0.2 mg/m³ (benzene-soluble fraction) [23]; 0.1 mg/m³ 10-hour TWA (cyclohexane-extractable fraction) [22]; 0.2 mg/m³ TWA (benzene solubles) [24].

MANUFACTURING

Selected Manufacturers:

Aldrich Chemical Co.
940 West Saint Paul Ave.
Milwaukee, WI 53233

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Uses: Chemical intermediate in numerous applications and in the formation of polyradicals for resins; insecticides and dyestuffs. Derived from industrial and experimental coal gasification operations where maximum concentrations detected in gas, liquid, and coal tar streams were 9.1 mg/m³, 0.057 mg/m³, and 8.0 mg/m³, respectively [25].

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11. *Fluka Catalog 1988/89 - Chemika-Biochemika* (Ronkonkoma, NY: Fluka Chemical Corp., 1988), 1536 p.
12. "Chemical, Physical, and Biological Properties of Compounds Present at Hazardous Waste Sites," U.S. EPA Report-530/SW-89-010 (1985), 619 p.
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40 ARMSTRONG AVENUE, GEORGETOWN, ONTARIO, CANADA L7G 4R9

416-877-0101

FAX: 416-877-6666

MATERIAL SAFETY DATA SHEET

HEXANE

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Hexane; Normal Hexane; Hexanes*
Chemical Family: *Aliphatic hydrocarbon*
Chemical Formula: C_6H_{14}
Product Use: *Laboratory Solvent*
Manufacturer's Name: *Caledon Laboratories Ltd.*
Street Address: *40 Armstrong Avenue*
City: *Georgetown*
Province: *Ontario*
Postal Code: *L7G 4R9*
Telephone No.: *(416) 877-0101*
Emergency Telephone No.: *CANUTEC (613) 996-6666*
Poison Control Centre: *1-800-268-9017*

HAZARDOUS INGREDIENTS OF MATERIALS

<u>Ingredients</u>	<u>%</u>	<u>TLV Units</u>	<u>CAS No.</u>
n-Hexane	>85	50 ppm	110-54-3
Methylpentanes, may include 2-methylpentane	<5	not established 500 ppm	107-83-5
Methylcyclopentane	<10	not established	96-37-7
Methylpentanes	3	not established	N/A
Benzene	~200 ppm	5 ppm	71-43-2

PHYSICAL DATA

Physical State: *Liquid*
Odour and Appearance: *Clear liquid, mild odour*
Odour Threshold (ppm): *64-244 ppm*
Vapour Pressure (mm Hg): *132 mm Hg at 37.7°C (100°F)*
Vapour Density (Air = 1): *3*
Evaporation Rate: *0.3 (Ethyl Ether = 1)*
Boiling Point (°C): *67-69°C*
Freezing Point (°C): *-95°C*
pH: *Not Applicable*
Specific Gravity: *0.67 to 0.68*
Coefficient of Water/Oil distribution: *No Data*

SHIPPING DESCRIPTION

PIN: *1208*
T.D.G. Class: *3.1*
Pkg. Group: *II*

REACTIVITY DATA

Chemical Stability: *Stable*
Incompatibility with other substances: *Oxygen and strong oxidizing agents*
Reactivity: *Avoid heat, sparks and open flame*
Hazardous Decomposition Products: *Carbon oxides form when burned*

FIRE AND EXPLOSION DATA

Flammability: *Flammable*
Extinguishing Media: *Dry chemical, foam, or carbon dioxide*
Flash Point (Method Used): *-21°C (TCC)*
Autoignition Temperature: *260°C*
Upper Flammable Limit (% by volume): *7.7*
Lower Flammable Limit (% by volume): *1.2*
Hazardous Combustion Products: *Carbon Oxides*
Sensitivity to Impact: *No Data*
Sensitivity to Static discharge: *No Data*

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

Toxicological Data:

LD₅₀: *(rat, oral) 28,710 mg/kg*
LC₅₀: *(inhalation, mouse) 35,000 ppm/1 hour*

Effects of Acute Exposure to Product:

Inhaled: *Dizziness, headache, excitation, central nervous system depression.*
In contact with skin: *May cause mild irritation. Can be absorbed through skin in harmful amounts.*
In contact with eyes: *May cause mild irritation*
Ingested: *May cause irritation to intestines. May be aspirated into the lungs if swallowed, which may result in pulmonary edema and chemical pneumonitis.*

Effects of Chronic Exposure to Product:

Causes harm to the nervous system producing a lack of feeling in the extremities and more severe nerve damage. Methyl pentanes have produced kidney damage in male rats only, but no comparable health hazard for kidney disease is known to occur in humans.
Carcinogenicity: *Not carcinogenic in animal tests*
Teratogenicity: *Negative*
Reproductive Effects: *Insufficient human data*
Mutagenicity: *Insufficient data*
Synergistic Products: *None known*

PREVENTIVE MEASURES

Engineering Controls: *Local exhaust recommended.*
Respiratory Protection: *Approved air-purifying respirator or self-contained breathing apparatus required for concentrations exceeding TLV*
Eye Protection: *Chemical safety goggles*
Skin Protection: *Neoprene gloves, overalls, apron or protective clothing.*
Other Personal Protective Equipment: *Safety shower and eye wash*
Leak and Spill Procedure: *Evacuate area. Provide maximum ventilation and protect from ignition. Contain spill and collect using absorbent material.*

MSDS**HEXANE**

Waste Disposal: All waste material should be packaged, labelled, transported and disposed of in accordance with federal and local regulations.

Handling Procedures and Equipment: Keep away from heat, sparks and open flame. Bond and ground containers during liquid transfer.

Storage Requirements: Store in cool, dry place.

FIRST AID MEASURES**Specific Measures:**

Eyes: IMMEDIATELY FLUSH EYES with warm running water for a minimum of fifteen (15) minutes. (Using any available clean container, pour water in a gentle steady stream, over the eye(s). Position casualty lying on back, face tilted to one side.) HOLD eyelids open while flushing. REPEAT flushing if irritation persists. Obtain MEDICAL ADVICE immediately. (Flushing may be continued while casualty is transported to medical facility.)

Skin: IMMEDIATELY FLUSH exposed area with large amounts of warm running water WHILE REMOVING contaminated clothing (including rings, watches and shoes). CONTINUE flushing the area up to twenty (20) minutes. If irritation persists, REPEAT FLUSHING. Obtain MEDICAL ADVICE immediately. (Call Poison Control Centre.)

Inhalation: IMMEDIATELY remove casualty from contaminated area to fresh air. (CAUTION must be used by rescuers to avoid exposure to contaminating fumes.) If BREATHING HAS STOPPED give artificial respiration. If BREATHING and PULSE ARE ABSENT, give CPR. IMMEDIATELY OBTAIN MEDICAL ATTENTION. Stay with casualty until medical assistance is reached.

Ingestion: DO NOT INDUCE VOMITING. DANGER OF ASPIRATION WITH EMESIS. If casualty is ALERT and NOT CONVULSING, rinse out mouth with water. Give up to 4 to 8 glasses of water to dilute material. CALL POISON CONTROL CENTRE. (Have all available information at hand.) IMMEDIATELY GET MEDICAL ATTENTION. If SPONTANEOUS VOMITING occurs have casualty lean forward with head down to avoid breathing in of vomitus.

ADDITIONAL INFORMATION AND SOURCES USED**CCINFO disc:**

Date Issued: January 31, 1989

Date Revised: March 31, 1989

Prepared by: The Caledon Safety Committee
(416) 877-0101

MSDS: 5600

Caledon Laboratories Ltd. believes the information contained herein is reliable and accurate. Caledon makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such information is solely for your consideration, investigation, and verification.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854
From Genium's collection, to be used as reference

Product: ISOPROPYL ALCOHOL

MSDS No: Genium / 324

Revision: D

Date: September, 1985

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: ISOPROPYL ALCOHOL

Other Designations: Isopropanol, 2-Propanol, sec-Propyl Alcohol, Dimethyl Carbinol, Isohol, Petrohol, IPA, C_3H_8O

CAS: 0067-63-0

Available from several sources, including:

Manufacturer: Allied Corporation
PO Box 2064R
Morristown, NJ 07960

Phone: (201) 455-4400
(800) 631-8050

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	Percent:	Exposure Limits:
ISOPROPYL ALCOHOL	ca 100	8-hr TWA: 400 ppm or 980 mg/m ³ *
		Human, Eye: 20 ppm Primary irritation dose
		Human, Inhalation: 400 ppm: IRR
		Man, Oral LDLo: 8600 mg/kg
		Rat, Oral: 5840 mg/kg

*Current OSHA PEL and ACGIH TLV (1985-86).

The ACGIH STEL is 500 ppm, 1225 mg/m³.

NIOSH has recommended a 15-minute ceiling of 800 ppm.

NOTE: NTP and IARC list CAS #0067-63-0, "isopropyl alcohol manufacture (strong acid process)" as a human carcinogen. We believe this refers to the process and not necessarily the product. Check with your suppliers.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854
from Genium's collection, to be used as reference

Product: ISOPROPYL ALCOHOL

MSDS No: Genium / 324
Revision: 0
Date: September, 1985

SECTION III. PHYSICAL DATA

Appearance & Odor: Clear, colorless liquid with a slight non-residual alcohol type odor. Threshold odor concentration, 100% recognition by test panel, is 28.2 ppm.

Boiling point: 180°F. (82°C), 1 atm
Vapor pressure: 33 @ 20°C, mmHg
Water solubility (%): Completely soluble
Vapor density (air=1): 2.07

Evaporation rate: 2.6 (CCl₄=1)
Specific gravity (H₂O=1): 0.786
Melting point: -127.3°F
(-88.5°C)
% volatile by volume: ca 100, 20°C
Molecular weight: 60.11

Viscosity, 20°C, cps - 2.4

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): 53°F (11.7°C)
closed cup

Limits: LEL %: 2.0

UEL %: 12.0

Extinguishing Media: Carbon dioxide, dry chemical, alcohol foam. Use water spray to cool fire-exposed tanks/containers. A fine water mist may be used to smother fire or to disperse vapors. Do not use a solid stream of water since the stream will scatter and spread the fire.

Autoignition Temp:
750°F (399°C)

Unusual fire or explosion hazards: Isopropyl alcohol is an OSHA Class IB flammable liquid. It is a dangerous fire hazard and a moderate explosion hazard when exposed to heat, flames or oxidizers. At 20°C, the vapor space (saturated) above isopropyl alcohol contains about 4.3 volume % of vapor. Vapors are heavier than air and may travel a considerable distance to an ignition source and flashback.

Special fire-fighting procedures: Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting fires involving this material.

SECTION V. REACTIVITY DATA

Material is stable in closed containers at room temperature under normal storage and handling conditions. Hazardous polymerization cannot occur

Chemical incompatibilities: Isopropyl alcohol is incompatible with acetaldehyde, chlorine, ethylene oxide, hydrogen-palladium combination, hydrogen peroxide-sulfuric acid combination, potassium tert-butoxide, hypochlorous acid, isocyanates, nitroform, phosgene, oleum, perchloric acid, and strong oxidizing agents.

Do not store isopropyl alcohol in aluminum containers.
Thermal-oxidative degradation products can include carbon monoxide.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854
From Genium's collection, to be used as reference

Product: ISOPROPYL ALCOHOL

MSDS No: Genium / 324

Revision: D

Date: September, 1985

SECTION VI. HEALTH HAZARD INFORMATION

Summary of risks: At 400 ppm, vapors of isopropanol (IPA) may cause mild irritation of the eyes, nose, and throat. Prolonged exposures above the TLV may cause nausea, headache, and mild narcosis. The liquid is irritating to the eyes and produces intense stinging and burning. If not promptly removed, IPA may cause eye damage. Repeated or prolonged contact with the skin may cause irritation and dermatitis. While toxic skin absorption is unlikely, it should be considered in meeting the TLV. Ingestion of IPA will cause burning of the gastrointestinal tract, nausea, vomiting, bleeding, CNS depression, hemolysis, and pulmonary damage. Ingestion of as little as 10 ml may cause serious injury, while ingestion of 100 ml can be fatal. The single lethal dose for an adult is approximately 250 ml. The TLV for this material is set on the basis of eye, nose, and throat irritation. IPA has good warning properties.

First aid:

Eye contact: Flush eyes, including under eyelids, with running water for at least 15 minutes. Get medical attention (In-plant, community, paramedic).

Skin contact: Flush exposed area with water while removing contaminated clothing. Get medical attention if irritation persists.

Inhalation: Remove victim to fresh air. Restore and/or support breathing as required. Get medical help.

Ingestion: Give victim milk or water. Induce vomiting by sticking finger to back of throat. Contact a physician or Poison Control Center. Never give anything by mouth to a person who is unconscious or is having convulsions.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Notify safety personnel of large spills or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Evacuate all personnel from area, except for those involved in cleanup. Remove leaking container to safe place if feasible. Cleanup personnel need protection against liquid contact and vapor inhalation. Absorb small spills with paper towels, evaporate flammable alcohol in exhaust hood and burn dry paper. Contain large spills and collect liquid, if feasible, or absorb with vermiculite or sand. Place waste or absorbent into closed container (using non-sparking tools) for disposal. Water spray can be used to dilute and flush spill if necessary, but do not flush to water course or to sewer or enclosed area.

Waste management / Disposal: Burn waste liquid in an approved incinerator or dispose of via licensed waste disposal company. Absorbed liquid can be landfilled. Follow Federal, state and local regulations.

AQUATIC TOXICITY TLm 96: 1000-100 ppm.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
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Product: ISOPROPYL ALCOHOL

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Revision: D

Date: September, 1985

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Wear safety glasses to prevent contact with the eyes.

Gloves: Wear impervious gloves to prevent contact with the skin.

Respirator: For emergency or nonroutine exposure where the TLV may be exceeded, use an appropriate NIOSH approved respirator.

Other: If repeated or prolonged contact with liquid or mist is likely, wear protective clothing including boots, apron, and face-shield or splash goggles. Remove contaminated clothing immediately and do not reuse until it has been properly laundered.

Workplace considerations:

Ventilation: Provide general and local exhaust ventilation (explosion-proof) to meet TLV requirements. Fume hoods should have a minimum face velocity of 100 fpm.

Safety stations:

Eyewash stations and safety showers should be available in use and handling areas.

Other: All electrical service in use or storage areas should have an explosion-proof design.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants.

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store in closed containers in a cool, dry, well-ventilated area away from oxidizers, heat, sparks, and open flame. Protect containers from physical damage.

Other precautions: Use only with adequate ventilation. Avoid inhalation of vapor and repeated or prolonged contact with the skin. Remove contaminated clothing immediately. Wash thoroughly after handling. Ground and bond containers and equipment when transferring or pouring liquid. Use non-sparking tools. Do not eat or smoke in areas where this material is being used or handled.

DOT Class: Flammable Liquid

UN Register: UN1219

Data source code(s): 1-12,19,20,23,26,31,34,37,39,43,47,59,79. R

Material Safety Data Sheet

Genium Publishing Corporation
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from Genium's collection, to be used as reference

Product: ISOPROPYL ALCOHOL

MSDS No: Genium / 324

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No. 624

NAPHTHALENE

Issued: November 1987

SECTION 1. MATERIAL IDENTIFICATION

24

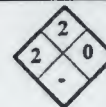
Material Name: NAPHTHALENE

Description (Origin/Uses): Used as a moth repellant and in many industrial processes.

Other Designations: Naphthalin; Naphthene; Tar Camphor; $C_{10}H_8$;
NIOSH RTECS No. QJ0525000; CAS No. 0091-20-3

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the
Chemicalweek Buyer's Guide (Genium ref. 73) for a list of suppliers.

HMIS
H 2
F 2 R 1
R 0 I 4
PPG* S 1
*See sect. 8 K 2



SECTION 2. INGREDIENTS AND HAZARDS

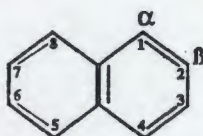
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EXPOSURE LIMITS

Naphthalene, CAS No. 0091-20-3

ca 100

IDLH* Level: 500 ppm



ACGIH TLVs, 1987-88
TLV-TWA: 10 ppm, 50 mg/m³
OSHA PEL
8-Hr TWA: 10 ppm, 50 mg/m³
Toxicity Data**
Child, Oral, LD₅₀: 100 mg/kg
Man, Unknown, LD₅₀: 74 mg/kg
Rat, Oral, LD₅₀: 1250 mg/kg

*Immediately dangerous to life and health

**See NIOSH RTECS for additional data with references to irritative, mutagenic, reproductive, and tumorigenic effects.

SECTION 3. PHYSICAL DATA

Boiling Point: 424°F (218°C)
Vapor Density (Air = 1): 4.4
Vapor Pressure: 0.087 Torr at 77°F (25°C)
Water Solubility: Insoluble

Specific Gravity ($H_2O = 1$): 1.162 at 68°F (20°C)
Melting Point: 176°F (80°C)
Molecular Weight: 128 Grams/Mole
% Volatile by Volume: ca 100

Appearance and Odor: White crystalline flakes; strong coal tar odor.

SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temperature

Flammability Limits in Air

174°F (79°C) OC; 190°F (88°C) CC

979°F (526°C)

% by Volume

0.9

5.9

Extinguishing Media: Use water spray, dry chemical, or carbon dioxide to fight fires involving naphthalene. Caution: Foam or direct water spray applied to molten naphthalene may cause extensive foaming.

Unusual Fire or Explosion Hazards: Naphthalene is a volatile solid that gives off flammable vapor when heated (as in fire situations). This vapor is much denser than air and will collect in enclosed or low-lying areas like sumps. In these areas an explosive air-vapor mixture may form, and extra caution is required to prevent any ignition sources from starting an explosion or fire.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Naphthalene is stable in closed containers at room temperature under normal storage and handling conditions. It does not undergo hazardous polymerization.

Chemical Incompatibilities: Naphthalene is incompatible with strong oxidizing agents, chromic anhydride, and mixtures of aluminum trichloride and benzoyl chloride.

Conditions to Avoid: Ignition sources like open flame, unprotected heaters, excessive heat, lighted tobacco products, and electric sparks must not occur in work areas where naphthalene vapor may become concentrated.

Hazardous Products of Decomposition: Toxic gases like carbon monoxide are produced during fire conditions. Irritating, flammable vapor forms below the melting point because even solid naphthalene has a significant vapor pressure.

SECTION 6. HEALTH HAZARD INFORMATION

Naphthalene is not listed as a carcinogen by the NTP, IARC, or OSHA.

Summary of Risks: Renal shutdown (kidney failure), hemolytic effects (breakdown of red blood cells), hematuria (blood in the urine), oliguria (low volume of urine), jaundice, eye damage, and depression of the central nervous system (CNS) are the primary health concerns associated with exposure to naphthalene. The ACGIH TLVs in section 2 are set to prevent eye damage. These recommended exposure limits may not be low enough to prevent blood changes in genetically hypersensitive individuals.

Medical Conditions Aggravated by Long-Term Exposure: Diseases of the blood, liver, and kidneys. Administer medical exams emphasizing these organs. **Target Organs:** Eyes, skin, kidneys, liver, blood (red blood cell effects), and CNS.

Primary Entry: Inhalation, skin contact. **Acute Effects:** Inhalation of naphthalene vapor causes excitement, confusion, headache, nausea, and loss of appetite. **Chronic Effects:** Increased incidence of cataracts.

FIRST AID

Eye Contact: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes to remove particles.

Skin Contact: Immediately wash the affected area with soap and water.

Inhalation: Remove victim to fresh air; restore and/or support his breathing as needed.

Ingestion: Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing. Administer a gastric lavage followed by saline catharsis. Monitor blood and electrolytic balance. Other sources recommend giving the victim several glasses of water to drink.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, provide ventilation, and eliminate all ignition sources immediately. Cleanup personnel need protection against contact and inhalation of vapor (see sect. 8). Contain large spills and collect waste. Use nonsparking tools to place naphthalene into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways.

Waste Disposal: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations

Air Contaminant (29 CFR 1910.1000, Subpart Z)

EPA Designations (40 CFR 302.4)

RCRA Hazardous Waste, No. U165

CERCLA Hazardous Substance, Reportable Quantity: 100 lbs (45.4 kg)

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Follow the eye- and face-protection guidelines of 29 CFR 1910.133. **Respirator:** Use a NIOSH-approved respirator per the *NIOSH Pocket Guide to Chemical Hazards* (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Respirator usage must be in accordance with the OSHA regulations of 29 CFR 1910.134. IDLH or unknown concentrations require an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres.

Other Equipment: Wear impervious gloves, boots, aprons, gauntlets, etc., as required by the specific work environment to prevent skin contact. **Ventilation:** Install and operate general and local maximum explosion-proof ventilation systems of sufficient power to maintain airborne levels of naphthalene below the OSHA PEL standard cited in section 2. **Safety Stations:** Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove and launder contaminated clothing before wearing it again; clean this material from shoes and equipment.

Comments: Practice good personal hygiene; always wash thoroughly after using this material. Keep this material off of your clothing and equipment. Avoid transferring this material from hands to mouth while eating, drinking, or smoking. Do *not* smoke, eat, or drink in any immediate work area. Avoid inhalation of vapor!

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage Segregation: Store naphthalene in a cool, dry, well-ventilated area away from chemical incompatibles (see sect. 5).

Special Handling/Storage: Protect containers from physical damage. All bulk storage facilities must be built with an explosion-proof design. All containers used in shipping/transferring operations must be electrically grounded to prevent static sparks. Use monitoring equipment to measure the extent of vapor present in any storage facility containing naphthalene because of potential fire and explosion hazards.

Comments: All operations with naphthalene must be done carefully to prevent accidental ignition of its flammable/explosive vapor. If the weather is warm, more naphthalene vapor forms and the potential for explosion increases. Do *not* smoke in any use or storage area!

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Naphthalene

DOT Hazard Class: ORM-A

IMO Class: 4.1

DOT ID No. UN1334

IMO Label: Flammable Solid

DOT Label: None

References: 1, 2, 12, 73, 84-94, 103. PJI

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15

Approvals *[Signature]*

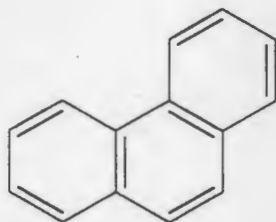
Indust. Hygiene/Safety *[Signature]*

Medical Review *[Signature]*

PHENANTHRENE

Synonyms: Phenanthren; Phenantrin.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 85-01-8

DOT Designation: None assigned.

Empirical Formula: C₁₄H₁₀

Formula Weight: 178.24

RTECS Number: SF 7175000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless, monoclinic crystals.

Boiling Point: 340 °C [1]; 341.2 °C [2].

Henry's Law Constant: 3.9 x 10⁻⁵ atm·m³/mol [3]; 1.3 x 10⁻⁴ atm·m³/mol [4]; 2.56 x 10⁻⁵ atm·m³/mol at 25 °C [5]; 5.48 x 10⁻⁵ atm·m³/mol [6].

Ionization Potential: 8.22 ± 0.29 eV [7].

Log K_{oc}: 3.72 [8]; 4.36 [9]; 4.59 [10].

Log K_{ow}: 4.568 [9]; 4.46 [11]; 4.52 [12]; 4.517 [13]; 4.16 [14].

Melting Point: 100.5 °C [15]; 98-100 °C [16].

468 Phenanthrene

Solubility in Organics: Soluble in acetone, ethanol, ether, benzene, acetic acid [17], benzene, and carbon disulfide [18].

Solubility in Water: 0.423 ppm at 8.5 °C, 1.6 mg/L at 15 °C, 0.816 ppm at 21 °C, 1.277 ppm at 30 °C, 0.6 ppm in seawater at 22 °C [19]; 1.18 mg/L at 25 °C [20]; 1.29 mg/L at 25 °C [21]; 0.994 mg/L at 25 °C [22]; 1.002 mg/L at 25 °C, 1.220 mg/L at 29 °C [23]; 1.07 mg/L at 25 °C [24]; 1.600 mg/L [25]; 0.71 mg/L at 25 °C [26]; 423 µg/L at 8.5 °C, 468 µg/L at 10.0 °C, 512 µg/L at 12.5 °C, 601 µg/L at 15 °C, 816 µg/L at 21.0 °C, 995 µg/L at 24.3 °C, 1,277 µg/L at 29.9 °C [27]; 2.81×10^{-6} M at 8.4 °C, 3.09×10^{-6} M at 11.1 °C, 3.59×10^{-6} M at 14.0 °C, 4.40×10^{-6} M at 17.5 °C, 4.94×10^{-6} M at 20.2 °C, 6.09×10^{-6} M at 23.3 °C, 6.46×10^{-6} M at 25.0 °C, 7.7×10^{-6} M at 29.3 °C, 9.13×10^{-6} M at 31.8 °C [28]; 0.235 ppm at 20-25 °C in Narragansett Bay water (pH = 7.7, dissolved organic carbon = 2.9 mg/L, and salinity = 27 wt%) [29].

Specific Density: 0.9800 at 4/4 °C [1]; 1.179 at 25/4 °C [30].

Transformation Products: Catechol is the central metabolite in the bacterial degradation of phenanthrene. Intermediate byproducts include 1-hydroxy-2-napthoic acid, 1,2-dihydroxynaphthalene, and salicylic acid [31]. It was reported that *Beijerinckia*, under aerobic conditions, degraded phenanthrene to *cis*-3,4-dihydroxy-3,4-dihydro-phenanthracene [32].

Vapor Pressure: 6.80×10^{-4} mm at 25 °C [33]; 2.1×10^{-4} mm at 20 °C [34]; 1 mm at 118.2 °C, 10 mm at 173.0 °C, 40 mm at 215.8 °C, 100 mm at 249.0 °C, 400 mm at 308.0 °C, 760 mm at 340.2 °C [1]; 0.228 mm at 100 °C, 0.309 mm at 105 °C, 0.410 mm at 110 °C, 0.552 mm at 115 °C, 0.720 mm at 120 °C, 0.936 mm at 125 °C, 1.208 mm at 130 °C, 1.554 mm at 135 °C, 1.987 mm at 140 °C, 2.515 mm at 145 °C, 3.156 mm at 150 °C [35]; 0.00349 mm at 51.60 °C, 0.00610 mm at 57.00 °C, 0.00991 mm at 61.85 °C, 0.0159 mm at 67.35 °C, 0.0232 mm at 71.80 °C, 0.0424 mm at 78.90 °C, 0.0667 mm at 83.40 °C, 0.109 mm at 90.3 °C [36]; 0.000064 mm at 36.70 °C, 0.000081 mm at 39.15 °C, 0.000089 mm at 39.85 °C, 0.000111 mm at 42.10 °C, 0.000120 mm at 42.60 °C, 0.000145 mm at 44.62 °C, 0.000185 mm at 46.70 °C, 0.000223 mm at 48.80 °C, 0.000241 mm at 49.65 °C [37].

FIRE HAZARDS

Flash Point: 171 °C (open cup) [38].

Lower Explosive Limit (LEL): No data found.

Upper Explosive Limit (UEL): No data found.

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): Potential human carcinogen [39].

Permissible Exposure Limits (PEL) in Air: No individual standards have been set, however, as a constituent in coal tar pitch volatiles, the following exposure limits have been established: 0.2 mg/m³ (benzene-soluble fraction) [40]; 0.1 mg/m³ 10-hour time weighted average (cyclohexane-extractable fraction) [39]; 0.2 mg/m³ TWA (benzene solubles) [41].

MANUFACTURING

Selected Manufacturers:

Aldrich Chemical Co.
940 West Saint Paul Ave.
Milwaukee, WI 53233

Fluka Chemical Corp.
980 South Second St.
Ronkonkoma, NY 11779

Pfaltz & Bauer, Inc.
172 East Aurora St.
Waterbury, CT 06708

Uses: Explosives; dyestuffs; biochemical research; synthesis of drugs; organic synthesis.

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 40. General Industry Standards for Toxic and Hazardous Substances," U.S. Code of Federal Regulations 1910, Subpart Z Section 1910.1000 (July 1982).
 41. *Documentation of the Threshold Limit Values and Biological Exposure Indices* (Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986), 744 p.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854

From Genium's collection, to be used as reference

Product: PYRENE

MSDS No: Genium / 711

Date: April, 1990

National Paint
and Coatings
Association

Hazardous Material
Identification
System

HEALTH HAZARD	2 - Moderate
FLAMMABILITY HAZARD	1 - Slight
REACTIVITY HAZARD	0 - Minimal
PERSONAL PROTECTION	SEE SECTION 8

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: PYRENE

Description: A condensed ring, polycyclic aromatic hydrocarbon compound derived from coal tar. Also synthesized from o,o'-ditolyl. Used in biochemical research and as starting material for synthesizing benzo(a)pyrene. An ingredient of smoked and broiled meat, tobacco smoke, and air pollution.

Other Designations: C₁₆H₁₀; beta-pyrene; benzo(d,e,f)phenanthrene; benzo(d,e,f)phenanthrene.

AS: 0129-00-0

1
3
2 - Skin absorption
-

Manufacturer: Contact your supplier or distributor. Consult the latest Chemicalweek Buyers' Guide⁽⁷³⁾ for a suppliers list.

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Pyrene	0129-00-0	ca 100	OSHA PEL 8-hr TWA: 0.2 mg/m ³ ACGIH TLV, 1989-90 None established NIOSH REL, 1987 None established Toxicity Data* Rat, oral, LD ₅₀ : 2700 mg/kg ingested produces conjunctiva irritation, excitement, and muscle contraction

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Date: April, 1990

INGREDIENTS AND HAZARDS continued from page 1

Rat, inhalation,
LC₅₀: 170 mg/m³
inhaled produces
conjunctiva
irritation,
excitement, and
muscle contraction
Gene mutation in
mammalian cells;
human cell types: 12
μmol/l

See NIOSH, RTECS (UR2450000), for additional mutative, tumorigenic, and toxicity data.

SECTION III. PHYSICAL DATA

Appearance & Odor: Colorless solid or a slight blue florescent solution. Tetracene impurities give pyrene a yellow color.

Boiling point: 759°F/404°C
Vapor pressure: 6.85×10^{-7} torr at
68°F/20°C

Specific gravity (H₂O=1): 1.271 at
73°F/23°C*

Water solubility (%): Insoluble (0.135 mg/l)

Melting point: 313°F/156°C
Molecular weight: 202.26 g/mol

* Water's specific gravity is 1 at 39°F/4°C.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): None reported

Limits: LEL %: None
reported

UEL %: None
reported

NFPA Fire Hazard Symbol Codes: Flammability: 1 Health: 2 Reactivity: 0 Special: —*

Extinguishing Media: Use foam, dry chemical, and CO₂ to
extinguish fire.

Autoignition Temp:
None reported

Unusual fire or explosion hazards: Pyrene is a flammable and combustible material that heat and ignition sources may ignite. It burns rapidly with a flare-like effect.

Special fire-fighting procedures: Since fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Avoid skin contact. Be aware of runoff from fire control methods. Do not release to sewers or waterways.

Genium determined these hazard values because the NFPA Guidebook did not.

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Date: April, 1990

SECTION V. REACTIVITY DATA

Hazardous decomposition Products: Thermal oxidative decomposition of pyrene can emit irritating fumes and acrid smoke.

Stability/Polymerization: Pyrene is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

SECTION VI. HEALTH HAZARD INFORMATION

Summary of risks: Pyrene is irritating to exposed skin and eyes, moderately toxic by ingestion and intraperitoneal routes, and a poison by inhalation. Experimental studies show pyrene is a tumorigen in animals and a mutagen in humans. Workers exposed to concentrations between 3 and 5 mg/m³ showed some unspecified teratogenic effects. In general, human exposure occurs mainly through inhalation of tobacco smoke and polluted air. Although ingesting smoked and broiled meats may expose humans to pyrene, there is little indication of serious health effects.

Medical conditions which may be aggravated by contact: None reported.

Target organs: Skin, eyes, respiratory tract.

Primary entry route(s): Inhalation, ingestion, skin contact.

Acute effects: Vapor inhalation may irritate the nose mucosa and respiratory tract. Vapors may also cause conjunctival irritation. Pyrene is absorbed through intact skin and causes dermal irritation. Ingestion may irritate and burn the esophagus and gastrointestinal tract.

Chronic effect(s): None reported.

First aid:

Eye contact: Flush immediately, including under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 min.

Skin contact: Quickly remove contaminated clothing. After rinsing affected skin with flooding amounts of water, wash it with soap and water.

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. If ingested, have a conscious person drink 1 to 2 glasses of milk or water. Do not induce vomiting.

Carcinogenicity: Neither the NTP, IARC, nor OSHA lists pyrene as a carcinogen.

After first aid, get appropriate in-plant, paramedic, or community medical attention and support.

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MSDS No: Genium / 711
Date: April, 1990

HEALTH HAZARD INFORMATION continued from page 3

Physician's Note: Observe patients with dermal exposure for systemic poisoning since pyrene is absorbed through intact skin.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Notify safety personnel. evacuate all unnecessary personnel, and remove all heat and ignition sources. Cleanup personnel should protect against vapor inhalation and skin and eye contact. Scoop spilled material into appropriate disposal containers. Absorb liquid with inert, noncombustible material and place waste in appropriate disposal containers. Follow applicable OSHA regulations (29 CFR 1910.120).

Waste management / Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

OSHA Designations

Air Contaminant (29 CFR 1910.1000, Subpart Z): Not listed

EPA Designations

RCRA Hazardous Waste (40 CFR 261.33): Not listed

Listed as a CERCLA Hazardous Substance* (40 CFR 302.4), Reportable Quantity (RQ):

5000 lb (2270 kg) [* per Clean Water Act, Sec. 307(a)]

Listed as SARA Extremely Hazardous Substance (40 CFR 355), Reportable Quantity: 5000

lb, Threshold Planning Quantity (TPQ): 1000/10,000 lb

SARA Toxic Chemical (40 CFR 372.65): Not listed

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133).

Respirator: Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. 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.

Other: Wear impervious gloves, boots, aprons, and gauntlets to prevent skin contact.

Workplace considerations:

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Product: PYRENE

MSDS No: Genium / 711

Date: April, 1990

SPECIAL PROTECTION INFORMATION continued from page 4

Ventilation: Provide general and local explosion-proof ventilation systems to maintain airborne concentrations below the OSHA PEL (Sec. 2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source. (103).

Safety stations:

Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated equipment:

Never wear contact lenses in the work area: soft lenses may absorb, and all lenses concentrate, irritants. Launder contaminated clothing before wearing. Remove this material from your shoes and equipment.

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.

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store in closed containers in a cool, well-ventilated area. Protect containers from physical damage.

Engineering controls: Avoid vapor inhalation and skin contact. Practice good personal hygiene and housekeeping procedures. To prevent static sparks, electrically ground and bond all containers and equipment used in shipping, receiving, or transferring operations in production and storage areas. Provide preplacement and periodic medical examinations, including comprehensive medical histories with emphasis on the oral cavity, respiratory tract, bladder, and kidneys. Examine the skin for premalignant and malignant lesion.

Transportation Data (49 CFR 172.101, .102): Not listed

Data source code(s): 7, 73, 87, 103, 123, 124, 126, 127, 136

Prepared/revised by: MJ Allison, BS

April, 1990

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Material Safety Data Sheet

Genium Publishing Corporation
1145 Barclay Street, Schenectady, NY 12302
(518) 377 8854

From Genium's Collection, to be used as reference

Product: TOLUENE

MSDS No: TOLUENE 317
Revision: 0
Date: April, 1997

National Paint
and Coatings
Association

Hazardous Material
Identification
System

HEALTH HAZARD	2	moderate
FLAMMABILITY HAZARD	3	serious
REACTIVITY HAZARD	0	stable
PERSONAL PROTECTION	SEE SECTION 8	

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: TOLUENE

Other Designations: Methyl Benzene, Methyl Benzol, Phenylmethane, Toluol, C₇H₈

CAS: 0100-66-3

Available from many suppliers, including:

Manufacturers: Allied Corp.
PO Box 2064R
Morristown, NJ 07960

Phone: (201) 455-4400

Ashland Chemical Co.
Industrial Chemicals & Solvents Div.
PO Box 2000
Columbus, OH 43206

Phone: (614) 264-1000

SECTION IV. INGREDIENTS AND HAZARDS

Ingredient Name:

Toluene

Percent: Exposure Limits:

100% 8-hr TWA: 100 ppm,
or 375 mg/m³ (skin)
**

Man. Inhalation,
TLV: 100 ppm:
Psychotropic ***

Rat. Oral, LD₅₀:
5000 mg/kg
Rat. Inhalation,
LCLo: 4000 ppm/4
hrs.

Material Safety Data Sheet

Genium Publishing Corporation
1155 Catalina Street, Schenectady, NY 12303
(518) 377-8894
from Genium's collection, to be used as reference

Product: TOLUENE

MSDS No: Genium / 217
Revision: 0
Date: April, 1986

INGREDIENTS AND HAZARDS continued from page 1

Rabbit, Skin.
LD₅₀: 14 gm/kg

Human, Eye: 300 ppm

* Current (1985-86) ACGIH TLV. The OSHA PEL is 200 ppm with an acceptable ceiling concentration of 300 ppm and an acceptable maximum peak of 500 ppm/10 minutes.

** Skin designation indicates that toluene can be absorbed through intact skin and contribute to overall exposure.

*** Affects the mind.

SECTION III. PHYSICAL DATA

Appearance & Odor: Clear, colorless liquid with a characteristic aromatic odor. The odor is detectable to most individuals in the range of 10 to 15 ppm. Because olfactory fatigue occurs rapidly upon exposure to toluene, odor is not a good warning property.

Boiling point: 231°F (111°C)

Vapor pressure: @ 20°C, mm Hg: 2

Water solubility (%): @ 20°C, wt. %: 0.05

Vapor density (air=1): 3.14

Evaporation rate: (BuAc=1): 2.24

Specific gravity (H₂O=1): 0.866

Melting point: -139°F (-95°C)

% volatile by volume: ca 100

Molecular weight: 92.15

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): 40°F (4°C) CC

Limits: LEL %: 1.27

UEL %: 7.1

Extinguishing Media: Carbon dioxide, dry chemical, alcohol foam. Do not use a solid stream of water because the stream will scatter and spread the fire. Use water spray to cool tanks/containers that are exposed to fire and to disperse vapors.

Autoignition Temp:
896°F (480°C)

Unusual fire or explosion hazards: This OSHA class IB flammable liquid is a dangerous fire hazard. It is a moderate fire hazard when exposed to oxidizers, heat, sparks, or open flame. Vapors are heavier than air and may travel a considerable distance to an ignition source and flash back.

Special fire-fighting procedures: Fire fighters should wear self-contained breathing apparatus with full facepiece operated in a positive-pressure mode when fighting fires involving toluene.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalina Street, Schenectady, NY 12303
(518) 377-8854

From Genium's collection, to be used as reference

Product: TOLUENE

MSDS No: Genium / 017

Revision: 0

Date: April, 1986

SECTION V. REACTIVITY DATA

Material is stable in closed containers at room temperature under normal storage and handling conditions. Hazardous polymerization does not occur.

Chemical incompatibilities: This material is incompatible with strong oxidizing agents, dinitrogen tetroxide, silver perchlorate, tetranitromethane, and uranium hexafluoride. Contact with these materials may cause fire or explosion. Nitric acid and toluene, especially in the presence of sulfuric acid, will produce nitrated compounds that are dangerously explosive.

Conditions to avoid: Avoid exposure to sparks, open flame, hot surfaces, and all sources of heat and ignition. Toluene will attack some forms of plastics, rubber, and coatings. Thermal decomposition or burning produces carbon dioxide and/or carbon monoxide.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen by the NTP, IARC, or OSHA.

Summary of risks: Vapors of toluene may cause irritation of the eyes, nose, upper respiratory tract, and skin. Exposure to 200 ppm for 8 hours causes mild fatigue, weakness, confusion, lacrimation (tearing), and paresthesia (a sensation of prickling, tingling, or creeping on the skin that has no objective cause). Exposure to higher concentrations may cause headache, nausea, dizziness, dilated pupils, and euphoria, and, in severe cases, may cause unconsciousness and death. The liquid is irritating to the eyes and skin. Contact with the eyes may cause transient corneal damage, conjunctival irritation, and burns if not promptly removed. Repeated and/or prolonged contact with the skin may cause drying and cracking. It may be absorbed through the skin in toxic amounts. Ingestion causes irritation of the gastrointestinal tract and may cause effects resembling those from inhalation of the vapor. Chronic overexposure to toluene may cause reversible kidney and liver injury.

First aid:

Eye contact: Immediately flush eyes, including under eyelids, with running water for at least 15 minutes. Get medical attention if irritation persists.*

Skin contact: Immediately flush skin (for at least 15 minutes) while removing contaminated shoes and clothing. Wash exposed area with soap and water. Get medical attention if irritation persists or if a large area has been exposed.*

Inhalation: Remove victim to fresh air. Restore and/or support breathing as required. Keep victim warm and quiet. Get medical help.*

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854
From Genium's collection, to be used as reference

Product: TOLUENE

MSDS No: Genium / 317
Revision: 0
Date: April, 1986

HEALTH HAZARD INFORMATION continued from page 3

Ingestion: Give victim 1 to 2 glasses of water or milk. Contact a poison control center. Do not induce vomiting unless directed to do so. Transport victim to a medical facility. Never give anything by mouth to a person who is unconscious or convulsing.

* GET MEDICAL ASSISTANCE = In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid, if indicated.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Notify safety personnel of large spills or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Limit access to spill area to necessary personnel only. Remove leaking containers to safe place if feasible. Cleanup personnel need protection against contact with liquid and inhalation of vapor (see sect. 8).

Waste management / Disposal: Absorb small spills with paper towel or vermiculite. Contain large spills and collect if feasible, or absorb with vermiculite or sand. Place waste solvent or absorbent into closed containers for disposal using nonsparking tools. Liquid can be flushed with water to an open holding area for handling. Do not flush to sewer, watershed, or waterway.

Place in suitable container for disposal by a licensed contractor or burn in an approved incinerator. Consider reclaiming by distillation. Contaminated absorbent can be buried in a sanitary landfill. Follow all Federal, state, and local regulations. Tlm 96: 100-10 ppm. Toluene is designated as a hazardous waste by the EPA. The EPA (RCRA) HW No. is U220 (40 CFR 261). The reportable quantity (RQ) is 1000 lbs/454 kg (40 CFR 117).

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Safety glasses or splash goggles should be worn in all work areas.

Gloves: Neoprene gloves should be worn.

Respirator: For emergency or nonroutine exposures where the TLV may be exceeded, use an organic chemical cartridge respirator if concentration is less than 200 ppm and an approved canister gas mask or self-contained breathing apparatus with full facepiece if concentration is greater than 200 ppm.

Material Safety Data Sheet

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MSDS No: Genium / 317

Revision: 0

Date: April, 1986

SPECIAL PROTECTION INFORMATION continued from page 4

Other: Apron, face shield, boots, and other appropriate protective clothing and equipment should be available and worn as necessary to prevent skin and eye contact.

Remove contaminated clothing immediately and do not wear it until it has been properly laundered.

Workplace considerations:

Ventilation: Provide general and local exhaust ventilation to meet TLV requirements. Ventilation fans and other electrical service must be nonsparking and have an explosion-proof design. Exhaust hoods should have a face velocity of at least 100 lfm (linear feet per minute) and be designed to capture heavy vapor.

Safety stations:

Eyewash stations and safety showers should be readily available in use and handling areas.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store in a cool, dry, well-ventilated area away from oxidizing agents, heat, sparks, or open flame. Storage areas must meet OSHA requirements for class IB flammable liquids. Use metal safety cans for handling small amounts. Protect containers from physical damage. Use only with adequate ventilation. Avoid contact with eyes, skin, or clothing. Do not inhale or ingest. Use caution when handling this compound because it can be absorbed through intact skin in toxic amounts.

Special handling / storage: Ground and bond metal containers and equipment to prevent static sparks when making transfers. Do not smoke in use or storage areas. Use nonsparking tools.

Engineering controls: Preplacement and periodic medical exams emphasizing the liver, kidneys, nervous system, lungs, heart, and blood should be provided. Workers exposed to concentrations greater than the action level (50 ppm) should be examined at least once a year. Use of alcohol can aggravate the toxic effects of toluene.

Emptied containers contain product residues. Handle accordingly! Toluene is designated as a hazardous substance by the EPA (40 CFR 116).

DOT Class: Flammable liquid

UN Register: UN1204

Data source code(s): 1-9, 12, 16, 20, 21, 24, 26, 34, 81, 82, CR

Prepared/revised by: Genium Publishing Corp.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
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Product: TOLUENE

MSDS No: Genium / 317

Revision: 0

Date: April, 1986

SPECIAL PRECAUTIONS continued from page 5

April, 1986

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Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854

From Genium's collection, to be used as reference

Product: XYLENE (MIXED ISOMERS)

MSDS No: Genium / 318

Revision: D

Date: August, 1988

National Paint
and Coatings
Association

Hazardous Material
Identification
System

HEALTH HAZARD	2 - Moderate
FLAMMABILITY HAZARD	3 - Serious
REACTIVITY HAZARD	0 - Minimal
PERSONAL PROTECTION	SEE SECTION 8

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: XYLENE (MIXED ISOMERS)

Description: Used as a raw material for the production of benzoic acid, phthalic anhydride, isophthalic and terephthalic acids and their dimethyl esters in the manufacture of polyester fibers; in sterilizing catgut; with Canadian balsalm as oil-immersion in microscopy; and as a cleaning agent in microscopic techniques.

Other Designations: Dimethylbenzene; Xylol; C_8H_{10}

CAS: 1330-20-7

R 1
I 3
S 2
K 3

Contact your supplier or distributor. Consult the latest edition of the Chemicalweek Buyers' Guide (Genium ref. 73) for a list of suppliers.

Comments: Although there are three different isomers of xylene (ortho, meta, and para), the health and physical hazards of all three are very similar. This MSDS is written for a xylene mixture of all three isomers, which is usually commercial xylene.

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Xylene (Mixed Isomers)	1330-20-7*	**	IDLH*** Level: 1000 ppm OSHA PEL 8-Hr TWA: 100 ppm, 435 mg/m ³ ACGIH TLVs, 1987-88 TLV-TWA: 100 ppm, 435 mg/m ³ TLV-STEL: 150 ppm, 655 mg/m ³

Material Safety Data Sheet

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Product: XYLENE (MIXED ISOMERS)
MSDS No: Genium / 318
Revision: D
Date: August, 1988

INGREDIENTS AND HAZARDS continued from page 1

Toxicity Data****
Human, Inhalation,
TC_{Lo}: 200 ppm
Man, Inhalation,
LC_{Lo}: 10000 ppm/6
Hrs
Rat, Oral, LD₅₀:
4300 mg/kg

* o-Xylene, CAS No. 0095-47-6
m-Xylene, CAS No. 0108-38-3
p-Xylene, CAS No. 0106-42-3

** Check with your supplier to determine if there are additions, contaminants or impurities (such as benzene) that are present in reportable quantities per 29 CFR 1910.

*** Immediately dangerous to life and health.

**** See NIOSH, RTECS (ZE2100000), for additional data with references to reproductive, irritative, and mutagenic effects.

SECTION III. PHYSICAL DATA

Appearance & Odor: A clear liquid; aromatic hydrocarbon odor.

Boiling point: 275°F to 293°F (135°C to 145°C)*

Evaporation rate: 0.6 Relative to BuAc=1

Vapor pressure: 7 to 9 Torrs at 68°F (20°C)

Specific gravity (H₂O=1): 0.86

Water solubility (%): Insoluble

Melting point: -13°F (-25°C)

Vapor density (air=1): 3.7

% volatile by volume: Ca 100

Molecular weight: 106 Grams/Mole

* Materials with wider and narrower boiling ranges are commercially available.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): 81°F to 90°F (27°C Limits: LEL %: 1 to 32°C)

UEL %: 7

NFPA Fire Hazard Symbol Codes: Flammability: 3 Health: 2 Reactivity: 0 Special: —

Extinguishing Media: Use foam, dry chemical, or carbon dioxide. Use water sprays to reduce the rate of burning and to cool containers.

Autoignition Temp:
867°F (464°C)

Unusual fire or explosion hazards: Xylene vapor is heavier than air and may travel a considerable distance to a low-lying source of ignition and flash back.

Material Safety Data Sheet

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Product: XYLENE (MIXED ISOMERS)

MSDS No: Genium / 318
Revision: D
Date: August, 1988

FIRE AND EXPLOSION DATA continued from page 2

Special fire-fighting procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION V. REACTIVITY DATA

Material is stable in closed containers during routine operations. Hazardous polymerization cannot occur

Chemical incompatibilities: Xylene may react dangerously with strong oxidizers.

Conditions to avoid: Avoid any exposure to sources of ignition and to strong oxidizers.

Hazardous decomposition Products: Carbon monoxide (CO) may be evolved during xylene fires.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen by the NTP, IARC, or OSHA.

Summary of risks: Liquid xylene is a skin irritant and causes erythema, dryness, and defatting; prolonged contact may cause blistering. Inhaling xylene can depress the central nervous system (CNS), and ingesting it can result in gastrointestinal disturbance; and possibly hematemesis (vomiting blood). Effects on the eyes, kidneys, liver, lungs, and the CNS are also reported.

Medical conditions which may be aggravated by contact: Problems with eyes, skin, central nervous system, kidneys, and liver may be worsened by exposure to xylene.

Target organs: CNS, eyes, gastrointestinal tract, blood, liver, kidneys, skin.

Primary entry route(s): Inhalation, skin contact/absorption.

Acute effects: Dizziness; excitement; drowsiness; incoordination; staggering gait, irritation of eyes, nose, and throat; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; and dermatitis.

Chronic effect(s): Reversible eye damage, headache, loss of appetite, nervousness, pale skin, and skin rash.

Material Safety Data Sheet

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Product: XYLENE (MIXED ISOMERS)

MSDS No: Genium / 318

Revision: D

Date: August, 1988

HEALTH HAZARD INFORMATION continued from page 3

First aid:

- Eye contact: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes.
- Skin contact: Immediately wash the affected area with soap and water.
- Inhalation: Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have a trained person administer oxygen.
- Ingestion: Never give anything by mouth to someone who is unconscious or convulsing. Vomiting may occur spontaneously, but do not induce it. If vomiting should occur, keep the exposed person's head below his or her hips to prevent aspiration (breathing the liquid xylene into the lungs). Severe hemorrhagic pneumonitis with grave, possibly fatal, pulmonary injury can occur from aspirating very small quantities of xylene.

Get medical help (in plant, paramedic, community) for all exposures. Seek prompt medical assistance for further treatment, observation, and support after first aid. If exposure is severe, hospitalization for at least 72 hours with careful monitoring for delayed onset of pulmonary edema is recommended.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Notify safety personnel, provide ventilation, and eliminate all sources of ignition immediately. Cleanup personnel need protection against contact with and inhalation of vapor (see sect. 8). Contain large spills and collect waste or absorb it with an inert material such as sand, earth, or vermiculite. Use nonsparking tools to place waste liquid or absorbent into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways.

Waste management / Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations
Air Contaminant (29 CFR 1910.1000 Subpart Z)

EPA Designations (40 CFR 302.4)
RCRA Hazardous Waste, No. U239
CERCLA Hazardous Substance, Reportable Quantity: 1000 lbs (454 kg), per the Clean Water Act (CWA), section 311 (b) (9)

Material Safety Data Sheet

Genium Publishing Corporation
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MSDS No: Genium / 318

Revision: D

Date: August, 1988

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing is possible, wear a full face shield as a supplementary protective measure. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133).

Respirator: Wear a NIOSH-approved respirator per the NIOSH Pocket Guide to Chemical Hazards (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine use (leaks or cleaning reactor vessels and storage tanks), wear an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode.*

Other: Wear impervious gloves, boots, aprons, gauntlets, etc., as required by the specifics of the work operation to prevent prolonged or repeated skin contact with xylene.

Workplace considerations:

Ventilation: Install and operate general and local maximum explosion-proof ventilation systems powerful enough to maintain airborne levels of xylene below the OSHA PEL standard cited in section 2. Local exhaust ventilation is preferred because it prevents dispersion of xylene into general work areas by eliminating it at its source. Consult the latest edition of the Genium reference 103 for detailed recommendations.

Safety stations:

Make eyewash stations, safety/quick-drench showers, and washing facilities available in areas of use and handling.

Contaminated equipment:

Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean xylene from shoes and equipment.

* Warning: Air-purifying respirators will not protect workers in oxygen-deficient atmospheres.

Comments: Practice good personal hygiene; always wash thoroughly after using this material. Keep it off of your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area. Do not inhale xylene vapor.

Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street, Schenectady, NY 12303
(518) 377-8854
from Genium's collection, to be used as reference

Product: XYLENE (MIXED ISOMERS)

MSDS No: Genium / 318

Revision: D

Date: August, 1988

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store xylene in a cool, dry, well-ventilated area away from sources of ignition and strong oxidizers. Protect containers from physical damage.

Engineering controls: Make sure all engineering systems (production, transportation) are of maximum explosion-proof design. Ground and bond all containers, pipelines, etc., used in shipping, transferring, reacting, producing, and sampling operations.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Xylene

DOT Label: Flammable Liquid

IMO Label: Flammable Liquid

IMO Class: 3.2 or 3.3

DOT Class: Flammable Liquid

UN Register: UN1307

Data source code(s): 1, 2, 12, 73, 84-94, 100, 103.

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