Antea USA, Inc.
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September 28, 2017

Brian Jankauskas
NYSDEC – Remedial Bureau A, Section C
625 Broadway, 12th Floor
Albany, New York 12233

Re: Ciba Geigy/Hercules Main Plant/Pretreatment Plant
EPA ID NYD002069748
Site No.: 557011

Dear Mr. Jankauskas:

On behalf of Hercules, LLC, an affiliate of Ashland, and BASF Corporation, Antea® Group is providing this response to New York State Department of Environmental Conservation's (NYSDEC) September 13, 2017 comment letter regarding the AST & Pretreatment Plant Demolition Work Plan, dated August 21, 2017. This letter seeks to address the comments in the letter, and for your convenience, presents each of the Department's comments followed by a response. The revised work plan has been attached. Following a review of the responses and revisions to the noted documents, we would request approval of the work plan.

AST & Pretreatment Plant Demolition Work Plan

1. Section 4.4.1, fourth paragraph -This paragraph indicates that clean fill will be used. Fill materials shall be tested in accordance with DER-10 Section 5.4(e) to verify that materials meet the institutional control requirements for the site. Incorporate appropriate testing within the plan (e.g. FSP and QAPP).

   Response: Paragraph has been updated. Soils excavated during the exposing of the pipes will be staged nearby for backfilling purposes. Upon completion of work, the soils will be used to backfill the location.

2. Section 4.4.3 - This section pertains to an exterior manhole that connects to an approximately 21-inch pipe. The outfall for this pipe was decommissioned. Do you know the extent that this pipe has been decommissioned (e.g. backfilled) from previous corrective measures work? Does an open pipe extend beneath the roadway? Have you contacted the Town to verify if any additional steps are warranted?

   Response: According to the Eckenfelder Engineering P.C. *Report on Phase I Industrial Sewer Integrity Evaluation***,** dated February 25, 1992, the existing 21-inch reinforced concrete pipe was slip-lined with 40-foot sections of 8-inch diameter high density polyethylene pipe (HDPE) which were thermally fused prior to insertion. Bulkheads, consisting of an inner wall of brick and an outer wall of hydraulic cement, were constructed at both ends of the pipe, effectively sealing the 21-inch RCP. The southern/downstream bulkhead (at the effluent pump station wet well) also received a 2-inch diameter pipe for the purpose of preventing the buildup of water infiltrating into the RCP. Open pipe does extend beneath Lower Warren Street to the effluent

pump station wet well, though approximate depths of the pipe are unknown at this time. Discussions with local authorities have determined that this portion of Lower Warren Street falls under the jurisdiction of Washington County. At the request of Washington County, the work plan has been updated to include the filling of the 21-inch RCP and 8-inch HDPE pipe with flowable fill.

3. Section 4.5- Discusses a 1,000 gallon AST. Suggest additional discussion regarding the materials likely contained in the AST be included in an earlier section of the work plan.

   Response: The 1,000 gallon AST was historically used to introduce flocculent (ferrous sulfate) to T-110 in order to assist with the treatment process. This description has been added to Section 1 of the Work Plan. The tank is currently empty (no product remains), and will be cleaned prior to demolition as described in the Work Plan.

Health and Safety Plan

4. Table of Contents, Section 8 - Verify if demo related SOPs are warranted.

   Response: At this time, a demolition subcontractor has not been selected and SOPs are unavailable. SOPs will be developed by the demolition contractor prior to commencement of work. .

5. Section 2.4 and Section 3 (d) - Verify EPA contact as current EPA site manager is Andy Park.

   Response: Information has been verified and contact information updated.

6. Appendix D - Verify if Railway Pedestrian Safety and Pedestrian Bridge Safety are warranted.

   Response: Railway Pedestrian Safety is not warranted, the only railway which can be encountered is located at the main plant site; however, the work being conducted at the main plant site will not require any interaction with the railway. Pedestrian Bridge Safety is not warranted for the work as there are no pedestrian bridges in any of the work areas described in this work plan.

Quality Assurance Project Plan

7. Section 6 - Provide the resume of the chemist preparing the DUSR.

   Response: Antea Group has retained the services of Donald C. Anne of Alpha Geoscience. He has been referenced in Section 6, and his resume attached as Appendix B.

8. Table 6-1- Verify the cyanide analytical method (SM not EPA) and holding time (14 days).

   Response: Method SW-846 test method 9012B will be utilized for total cyanide analysis. The hold time for this method is 14 days.

Should you have any questions or require additional information, please feel free to contact me at 914-495-9937.

Sincerely,

Christopher Meyer
Consultant
Phone: 914-495-9937
Christopher.Meyer@anteagroup.com
Antea Group

CC: Jim Vondracek, Ashland LLC
Stephen K. Havlik, BASF Corporation

Revised AST & Pretreatment Plant Demolition Work Plan

Former CIBA-GEIGY/HERCULES Plant Site
89 Lower Warren Street, Queensbury, NY
EPA ID: NYD002069748

Antea Group Project No. GLENSFA171
September 27, 2017

Prepared for:
Hercules LLC
5200 Blazer Pkwy
Dublin, OH 43017
&
BASF Corporation
227 Oak Ridge Pkwy
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AST & Pretreatment Plant Demolition Work Plan

Former CIBA-GEIGY/HERCULES Plant Site
Queensbury, New York

1.0 INTRODUCTION

The following work plan is intended to document the planned demolition and removal of former operating assets located at the former Ciba-Geigy/Hercules Plant Site (EPA ID No. NYD002069748) (the Site) located in the Town of Queensbury, New York (Figure 1).

The Site is currently in Post-Closure Care with Corrective Measures implemented and managed under a New York State Department of Environmental Conservation (NYSDEC) Part 373 Hazardous Waste Permit #5-5234-0008/00096, dated March 6, 2015. The Permittees for the Site are Ciba-Geigy Corporation (which was acquired by BASF Corporation (BASF)) and Hercules LLC (Hercules). The Site comprises two key areas, the former main manufacturing plant where all facilities were previously removed, and the Pretreatment Plant (PTP) which is the subject of this work plan.

The facilities at the PTP are no longer required and planned for removal. Figure 2 shows the layout of the PTP and lists the remaining facilities to be removed. All remaining infrastructure will be removed including a 500,000-gallon aboveground storage tank (AST) (Tank T-110), two steel sand filter vessels with approximately 8,000 pounds of capacity each and mounted on a single skid, a 1,000-gallon AST formerly used for the mixing/introduction of ferrous sulfate (a flocculant) into tank T-110, associated ancillary equipment, and the former treatment system building. The tank and vessels were historically used for storage and/or treatment of facility process water during plant operation, and subsequently used for treatment of water during interim remedial measures (IRMs) for the management of construction water and storm water management and during final corrective measure implementation for management/treatment of water generated from operation of the existing groundwater extraction system (GWES) operating at the main plant site area.

The existing 500,000-gallon AST (Tank T-110) and two steel skid mounted sand filters were cleaned previously during the period between October 12, 2015 and December 2, 2015, and an *AST Decommissioning Report* dated May 12, 2016 was submitted to NYSDEC. NYSDEC responded to the report with comments in a letter dated October 21, 2016

and, after addressing the comments, Antea Group submitted a revised report dated February 23, 2017. NYSDEC approved the decommissioning report in a letter dated May 10, 2017. A copy of the approval letter is included in Appendix B.

The scope of work for the facilities demolition is summarized herein. A work plan for post removal confirmatory sampling will be submitted under separately.

2.0 HAZARDOUS MATERIALS SURVEYS

On June 2, 2015, a Hazardous Materials Survey (HMS) was completed by Asbestos and Environmental Consulting Corporation. The survey was completed by a New York State Department of Labor (NYSDOL)-certified Asbestos Building Inspector in accordance with the Labor Law of New York State and the New York State Codes, Rules and Regulations (12 NYCRR Part 56). Bulk asbestos samples were submitted to AmeriSci New York (New York State Department of Health (NYSDOH) Laboratory Identification Number 11480) for PLM analysis by NYS ELAP 198.1 or NYS ELAP 198.6. For each material, if the results of the PLM analysis was equal to or greater than 1% asbestos, the sample was confirmed to be an asbestos-containing material (ACM). If the results of the PLM analysis was less than 1% asbestos, the sample was analyzed for TEM by NYS ELAP 198.1 to confirm the absence of asbestos, as TEM is currently the only method that can be used to determine if the material can be considered or treated as a non-ACM in NY State. The results of the survey showed that the roofing cement located on the north and west sides of Tank T-110 contained 6.3% Chrysotile (a form of asbestos). Additionally, both intact vermiculite insulation as well as disturbed vermiculite insulation debris were found in the southwest corner of the west room of the PTP. As per NYS law, vermiculite insulation must be treated as an ACM.

In addition to the bulk asbestos samples, paint chips from both the upper and lower portion of Tank T-110 were submitted to Schneider Laboratories Global, Inc. in Richmond, Virginia (NYSDOH Laboratory Identification Number 11413) and analyzed for lead via EPA Method 7000B/3050B. Lead-based paint (LBP) is defined as any paint containing a minimum of 0.5% lead by weight. It was determined that the upper and lower paint samples contain 0.487% and 0.208% lead, respectively. Although these paints are not considered LBP, both samples were determined to be lead-containing materials (LCM) due to the presence of any detectable amount of lead.

Additional items were observed during the HMS that may contain hazardous substances; however, testing of these items was not performed. There are florescent lamps located in both the east and west rooms of the PTP which are

known to potentially contain mercury. Emergency exit signs and thermostats located in the east and west rooms may contain mercury and/or lead along with a floodlight located in the west room. Light ballasts in the east and west rooms may contain polychlorinated biphenyls (PCBs). A transformer was listed in the HMS as potentially containing PCBs but has since been confirmed with the manufacturer to be a dry type transformer which does not contain PCBs.

The full HMS report, including sampling locations and analytical results, can be found in Appendix C. The abatement of any material containing a hazardous substance is described in more detail in Section 4.0.

3.0 NOTIFICATIONS AND PERMIT REQUIREMENTS

In accordance with the conditions of the Post-Closure Permit, NYSDEC will be notified at least 7 days in advance of, and be allowed to attend, the field activities conducted under this work plan, as well as any pre-bid meetings, job progress meetings, substantial completion meetings and inspections, and the final inspection meeting.

The Permittees anticipate that it will be necessary to access portions of the Glens Falls Feeder Canal Towpath to facilitate removal of aboveground piping sections. The Permittees will obtain a New York State Canal Corporation work permit. A copy of the permit will be provided to NYSDEC prior to the start of decommissioning activities.

4.0 PRETREATMENT PLANT FACILITIES DEMOLITION

The demolition work will be conducted in accordance with the applicable provisions of the Demolitions Construction Industry, OSHA Safety and Health Standards subpart T (29 CFR 1926), and any other applicable codes and regulations. The Permittees and contractors shall conduct operations to minimize damage by falling debris or other causes to adjacent structures (i.e. Feeder Canal) and other facilities.

Presented below is a table which briefly outlines the PTP facilities to be decommissioned and removed, and a summary of what activities will be conducted as part of this work. Visual observations made during the work activities, estimated volumes of waste removed or fluids recovered, and indications of potential releases to soil (based on visual observations) will be documented for inclusion with the final report. The demolition activities will be completed in five separate tasks, descriptions of which are detailed in the sub-sections below.

Facility	Activities to be Conducted
Tank T-110 and two Sand Filter Vessels	Previously certified clean. AST will undergo lead containing paint abatement. Both AST and Sand Filter Vessels will be demolished and disposed of.
Exterior aboveground piping, including pipe bridge over Feeder Canal	Process piping to be cleaned via triple rinsing, confirmed clean via sampling, dismantled and disposed of. Utility piping to be dismantled and disposed of only. Pipe bridge to me dismantled following cleaning.
Underground piping between PTP & Main Plant Site, PTP floor drain and sumps	Process piping between the PTP and main plant site to be cleaned via rinsing, filled with flowable fill (such as grout) and abandoned in place. Utility piping to be filled with flowable fill and abandoned in place. Piping will be capped off/sealed at the point which it enters the main plant site.
Interior PTP Piping and ancillary equipment	To be cleaned via triple rinsing, confirmed clean via sampling, dismantled and disposed of. Potable water piping to be dismantled and disposed of only.

4.1 Rinsate Sample Analysis

Rinsate sampling will be conducted to establish whether the facility has been cleaned, or whether additional rinses are required. Rinsate samples will be collected and the results compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values. Laboratory analyses will include:

- Target Analyte List (TAL) Metals (including RCRA 8 and Vanadium) via EPA methods 6010 and EPA 7470 (Mercury);
- Hexavalent Chromium via EPA method 7196A; and,
- Total Cyanide via SW-846 test method 9012B.

As described in Section 5.0, these results will be provided to the waste disposal facilities.

4.2 Utility Investigation and Piping Identification

Prior to demolition, all utilities and piping will be identified. Working back from the PTP, it will be possible to determine which pipes contain utilities and which pipes were used for wastewater transport between the PTP and the effluent pump station located across Lower Warren Street to the south. Existing underground electric service and communication lines are known to service the former PTP via the pipe bridge. A private utility mark out was performed in 2014 in order to identify the approximate locations of each underground utility. Electric service to the PTP is via private line from an area located near the effluent pump station and communication lines are reportedly located in the effluent pump station. All electrical lines will be disconnected and terminated at the electrical junction box located near the effluent pump station. All wires will be tested to confirm that no voltage remains prior to the start of any work. Communication lines will be disconnected at and/or near the effluent pump station. Non-utility pipelines will be decommissioned as described in Section 4.4.

4.3 Abatement Work & Miscellaneous Waste Removal

During the course of the 2015 Hazardous Materials Survey, described in Section 2.0, various materials which were identified as hazardous, or potentially hazardous, require appropriate disposal prior to the demolition of the building. The management of these materials is described below.

4.3.1 Asbestos and Vermiculite Abatement

Due to the confirmed presence of asbestos in the roofing cement used to seal the space between Tank T-110 and the adjacent building, as well as the confirmed presence of vermiculite insulation located within the southwest corner of the west room of the PTP building, asbestos abatement will be performed prior to any demolition work. In addition to these known sources, during the removal of Tank T-110, the surface immediately below the AST will be inspected for the presence of any liners, which could potentially contain asbestos. If a liner is observed, any work associated with the bottom of the AST will be postponed until analytical sampling of the liner has been conducted and analytical results received. Should the liner contain asbestos, abatement work will be conducted concurrent with the removal of the AST floor.

Abatement activities will be performed by a NYSDOL licensed contractor, in accordance with New York State Labor Law and Industrial Code Rule 56. The City of Glens Falls, NYSDOL, and NYSDEC will be notified of the abatement prior to the work beginning. A Community Air Monitoring Plan (CAMP) for the abatement work is presented in Section 7.0. All asbestos-containing materials will be taken offsite for disposal at an appropriately licensed facility.

4.3.2 Lead-Containing Paint Abatement

The presence of lead-containing paint on both the upper and lower portions of Tank T-110, requires added health and safety measures prior to and during demolition activities. The removal of Tank T-110 will be performed in accordance with OSHA standard 29 CFR 1926.62.

4.3.3 Mercury-, Lead-, and PCB-Containing Materials Disposal

As previously mentioned in Section 2.0, several items found in the PTP were not scheduled to be tested during the hazardous materials survey and could potentially contain mercury, lead, and/or PCBs. These items included florescent lamps (which could contain mercury), light ballasts (PCBs), Emergency Exit signs (mercury and lead), thermostats (mercury and lead), and a flood light (Mercury & lead).

Under the NYSDEC Universal Waste Rule of 6 New York Codes, Rules and Regulations (NYCRR) Part 374-3, the florescent lights and thermostats can be managed as a universal waste and disposed of accordingly. The light ballasts, emergency exit sign and transformer will be treated as a hazardous material until proven otherwise. Each item will be carefully inspected for indications of presence or absence of the hazardous materials on any available labeling. The make and model of each item will be determined whenever possible. Manufacturers will be contacted in order to determine if these items do contain hazardous substances. Any item that is determined to contain one or more of these hazardous materials will be handled and disposed of in accordance with all applicable state, federal, and local regulations. If a determination is not possible, then the item will be managed under the assumption that the hazardous materials specified in the 2015 survey is present, and the item will be handled and disposed of in accordance with all applicable state, federal, and local regulations.

4.3.4 Miscellaneous Chemical Disposal

During the 2015 Survey, Antea Group also conducted a chemical survey of the PTP to identify what chemicals remained on site from previous site activities. These chemicals include a small volume of sulfuric acid, two unlabeled paint bucket containers, paint, laboratory bottle ware (some preserved with hexane, ethanol and nitric acid), antifreeze coolant, alconox, wood finish and rubber adhesives. These chemicals will be placed in laboratory over packs and disposed of in accordance with all applicable state, federal, and local regulations

4.4 Piping, Sump, Floor Drain and Manhole Decommissioning

4.4.1 Piping Decomissioning

Once all utilities are identified and disconnected, decommissioning of pipe lines will occur, including draining, cleaning and sealing of seven aboveground/underground pipelines which formerly serviced the PTP. These include two 16-inch

diameter steel waste water pipes, one 6-inch diameter steel pipe, three 4-inch diameter steel pipes and one 3-inch diameter PVC pipe. The aboveground piping runs from the Tank T-110 to the PTP southern boundary, across a pipe bridge over the Glens Falls Feeder Canal where the pipes transition underground (to a depth of approximately 5-foot to 8-foot deep), then continues approximately 300 feet towards the EPS located at the Main Plant Site. One 16-inch and one 4-inch diameter pipe were identified near grade in the vicinity of the EPS by private utility location. The terminus of the other pipelines could not accurately be determined during the private utility locate and will be identified by excavation.

Decommissioning will also include demolition of the pipe bridge that crosses the feeder canal. Decommissioning will consist of removing all aboveground piping leading from the PTP and across the pipe bridge to the point where it transitions to underground. The aboveground piping will be cut into manageable sections and cleaned by pressure washing and triple rinsing. Rinsate samples will be collected from each 25 feet of piping to confirm cleaning. Piping will be staged in appropriate containers pending offsite disposal and/or recycling at an approved facility.

The pipe bridge and all associated structures spanning the feeder canal will be removed and disposed of offsite as salvage at an approved facility (i.e. scrap yard). A crane will be required to lift and remove the pipe bridge.

Access points at the terminus of underground piping near the effluent pumping station will be excavated. Soil excavated during the process of exposing the piping will be staged nearby for use in backfilling the excavation. Once the ends of the underground pipes have been accessed, all underground process piping between the PTP and main plant site will be drained of any fluids and flushed with water and mild detergent wash. Fluids will be containerized on the main plant site pending laboratory analysis and approval for disposal to the local POTW. Any piping identified as a utility conveyance pipe will not be cleaned. Following cleaning, underground piping between the PTP and main plant site will be sealed with flowable fill (such as grout) from the point of origin (Feeder Canal path) to a terminus point near the effluent pumping station. The piping will be filled with an approved mix, leaving no voids or air spaces. Following filling, the piping, including pipes which continue on to the main plant site, will be sealed below grade at each end point with a blind flange and covered to grade with the staged excavated soils. Excavations will be backfilled to grade and compacted in 12-inch lifts with the excavator.

4.4.2 Floor Drain and Sump Decomissioning

The floor drains and associated sumps inside the PTP building include one shallow sump with pump in the eastern portion of the building and one floor drain connected to a deeper sump located on the west side of the building.

Historically, the eastern sump would be pumped into the western sump. The western floor drains would drain into the western sump, where the water would then be pumped into Tank T-110. Decommissioning will begin with the removal of all solids and liquids from the floor drains and sumps, staging them onsite in appropriate containers pending characterization for disposal.

The floor drain and sumps will be cleaned by pressure washing until visually clean. They will then be triple rinsed with clean water which will be containerized for disposal pending sampling and analytical results. Rinsate samples will then be collected from the floor drain by preventing water from flowing into the sumps, allowing clean water to pool in the drains, then collecting samples. Each of the sumps will be triple rinsed, emptied of fluids and then flushed with clean water for the collection of rinsate samples. All drains and sumps will be sealed with concrete to grade.

4.4.3 Exterior Manhole

One exterior manhole, located south of the PTP building near the southern boundary of the property, will be decommissioned. This manhole connects to an approximately 21-inch diameter reinforced concrete pipe (RCP) that reportedly extends underneath Lower Warren Street, down to the effluent pump station wet well, from which it used extend down to the Hudson River. During the Main Plant Site Corrective Measures work, the former outfall for this pipe was decommissioned.

According to the Eckenfelder Engineering P.C. *Report on Phase I Industrial Sewer Integrity Evaluation***,** dated February 25, 1992, the existing 21-inch RCP was slip-lined with 40-foot sections of eight inch diameter high density polyethylene (HDPE) pipe which were thermally fused prior to insertion. Bulkheads consisting of an inner wall of brick and an outer wall of hydaulic cement were constructed at both ends of the pipe, effectively sealing the 21-inch RCP. The southern/downstream bulkhead also included a two inch diameter pipe for the purpose of preventing the buildup of water infiltrating into the RCP.

Prior to the start of this phase of work, the site GWES will be temporarily shutdown and the effluent pump station wet well pump down to allow access to the southern end of the pipes. The bulkhead located in the manhole at the pre-treatment plant will be pierced to allow access to the 21-inch RCP. Flowable fill will be pumped into the 21-inch RCP until it has been observed at the southern end (effluent pump station) of the pipe. Both the two inch pipe and eight inch HDPE pipe will then be sealed at the southern end (effluent pump station), and both the 21-inch RCP and eight inch HDPE pipes filled to capacity with flowable fill. Following completion of filling the pipes, the manhole will be backfilled with gravel to above the level of the 21-inch pipe connection, then filled with concrete to grade.

4.5 Ancillary Equipment Decommissioning

As noted previously, Tank T-110 and the two steel skid-mounted 8,000-pound capacity vessels were previously decommissioned and certified clean. The ancillary equipment to be decommissioned and cleaned prior to removal include one 1,000-gallon AST, two stainless steel bag filter housings and several pumps associated with the former treatment system. This equipment will be cleaned by pressure washing, triple rinsing and removed from supporting structures. Rinsate samples will be collected from the tank, filter housings and pumps to verify clean. . Equipment will be cut into manageable sections for disposal/recycling at an appropriately licensed facility.

4.6 AST and Building Demolition

Following removal of ancillary equipment and equipment within the building, Tank T-110 and the PTP building will be removed. The concrete ring below the tank and the concrete slab beneath the building will remain. Tank T-110 will be demolished and cut into manageable pieces for off-site transport and disposal/recycling. Building debris will be separated for disposal and recycling, as applicable.

5.0 WASTE CHARACTERIZATION & DISPOSAL

All waste generated from demolition activities will be containerized, characterized and disposed at a properly permitted disposal facility that is approved by the Permittees. Analysis for waste characterization will depend on the requirements of the disposal facilities. Disposal facility information, analytical results (if applicable) and volume of material will be provided to NYSDEC for approval prior to offsite disposal of wastes. The steel sand filter vessels, Tank T-110, ancillary piping metal piping and other process equipment, stainless steel bag filter housings, etc., will be disposed of at a recycling facility, if possible. Structural components that were not involved with the process stream, non-metal system piping that has been cleaned and the cleaned 1,000 gallon AST will be placed in an on-site dumpster and taken to a landfill. Personnel Protective Equipment (e.g., disposable gloves, disposable clothing, and other disposable equipment) will also be containerized and properly disposed of at a disposal facility that is approved by the Permittees. Below is a table which summarizes anticipated wastes that will be generated from the work:

Type of Waste	Management and Disposal

Rinse Water	Containerized and temporarily stored at PTP , pending discharge to local POTW. Prior approval for discharge will be obtained from the POTW.
Solids in piping, floor drains or sumps	Containerized in drums pending disposal offsite at landfill.
Tank T-110, sand filter vessels and metal piping, support structures and ancillary equipment	Previously certified clean. Demolished and transported to metal recycling facility (as practical) or construction and demolition landfill for disposal.
PTP building and non-metal piping and ancillary structures or equipment	Demolished and transported off-site to construction and demolition landfill.
Hazardous Materials such as ACM, lead containing paint, PCBs or mercury containing objects and misc. chemicals onsite	Characterized, containerized and disposed of off-site at appropriately licensed facilities.

6.0 HEALTH AND SAFETY PROGRAM

A site-specific Health and Safety Plan (HASP) was prepared in accordance with the requirements of the Occupational Safety and Health Administration (OSHA) for the work proposed in this work plan. The HASP is included as Appendix D and contains site-specific health and safety information, and provides for worker and community protection. Activities conducted as part of this work plan will be performed in accordance with the HASP. The subcontractor will prepare their own HASP, which will at a minimum be as stringent as the HASP included in this Work Plan.

7.0 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan (CAMP), which presents the requirements for real-time community air monitoring and associated response actions (if required) during the decommissioning and demolition activities was prepared for the proposed work activities. The CAMP is included as Appendix E and is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and the NYSDEC. The plan follows procedures and practices outlined under the NYSDOH's Generic Community Air Monitoring Plan, dated June 2000.

The intent of the CAMP is to provide for a measure of protection of downwind communities from potential airborne releases of constituents of concern during the demolition of the PTP. As such, the CAMP specifies the potential air emissions, air monitoring procedures, monitoring schedule and data collection and reporting for the activities to be conducted.

8.0 QUALITY ASSURANCE/QUALITY CONTROL PROGRAM

A site-specific Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) were developed for the proposed work. The FSP is included as Appendix F and the QAPP is included in Appendix G. The Quality Assurance/Quality Control Program (QA/QC) program was designed to maximize the quality and validity of the data generated during the decommissioning activities. The FSP and QAPP describe detailed sampling and analytical procedures, as well as any necessary QA/QC sampling required for the project. Adherence to the procedures in the FSP and QAPP will allow for valid and usable analytical data.

9.0 FINAL REPORT

Following completion of the field activities, Antea Group will prepare a summary report describing the work performed, summarizing results, and presenting findings and conclusions. The body of the report will include, at a minimum:

- The scope of work and methodologies utilized for the project;
- A description of observations made during the visual inspection;
- A summary of the findings and conclusions for the project; and,
- A summary of any limitations to the project.

The attachments to the report will include, at a minimum:

- A scaled site plan showing the property outline and all significant features that were demolished;
- Tables summarizing analytical results of rinsate samples and laboratory reports;
- Tables summarizing the volume of and nature of materials removed, as well as documenting waste disposal and recycling volumes or amounts;
- Copies of waste manifests; and,

- Color photographs documenting site activities and visual inspection before and after demolition.

10.0 SCHEDULE

The Permittees are prepared to commence preparation of a request for proposal to distribute to contractors following NYSDEC review and approval of this work plan. Demolition activities will begin once a competent contractor and disposal facilities have been chosen. Following the completion of work activities, it is anticipated that the final report will be completed within 60 days; however, the completion of the report will be based upon receipt of all laboratory data as well as receipt of waste disposal records.

Figures

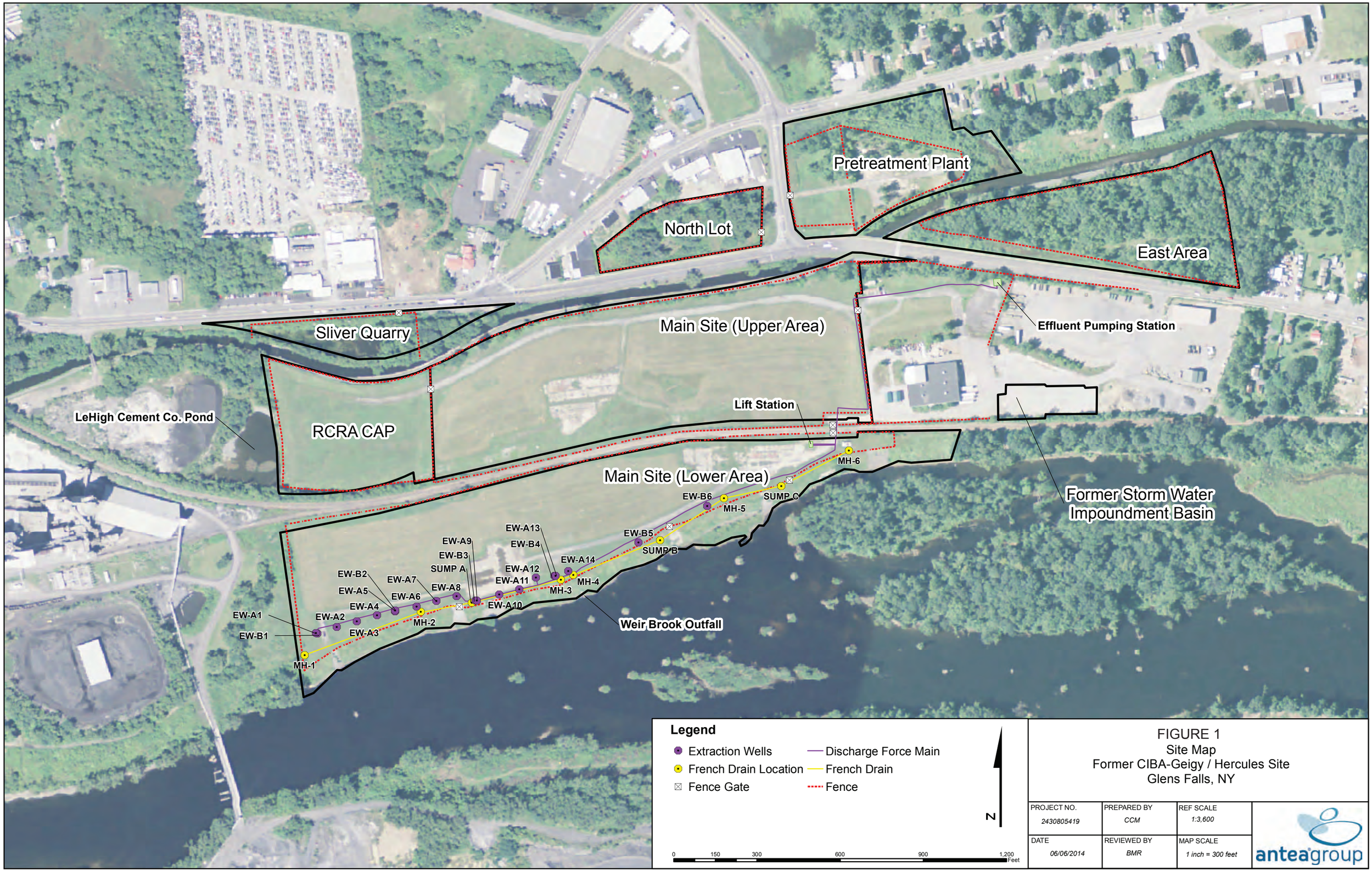

FIGURE 1
Site Map
Former CIBA-Geigy / Hercules Site
Glens Falls, NY

PROJECT NO.	PREPARED BY	REF SCALE
2430805419	CCM	1:3,600
DATE	REVIEWED BY	MAP SCALE
06/06/2014	BMR	1 inch = 300 feet

antea group

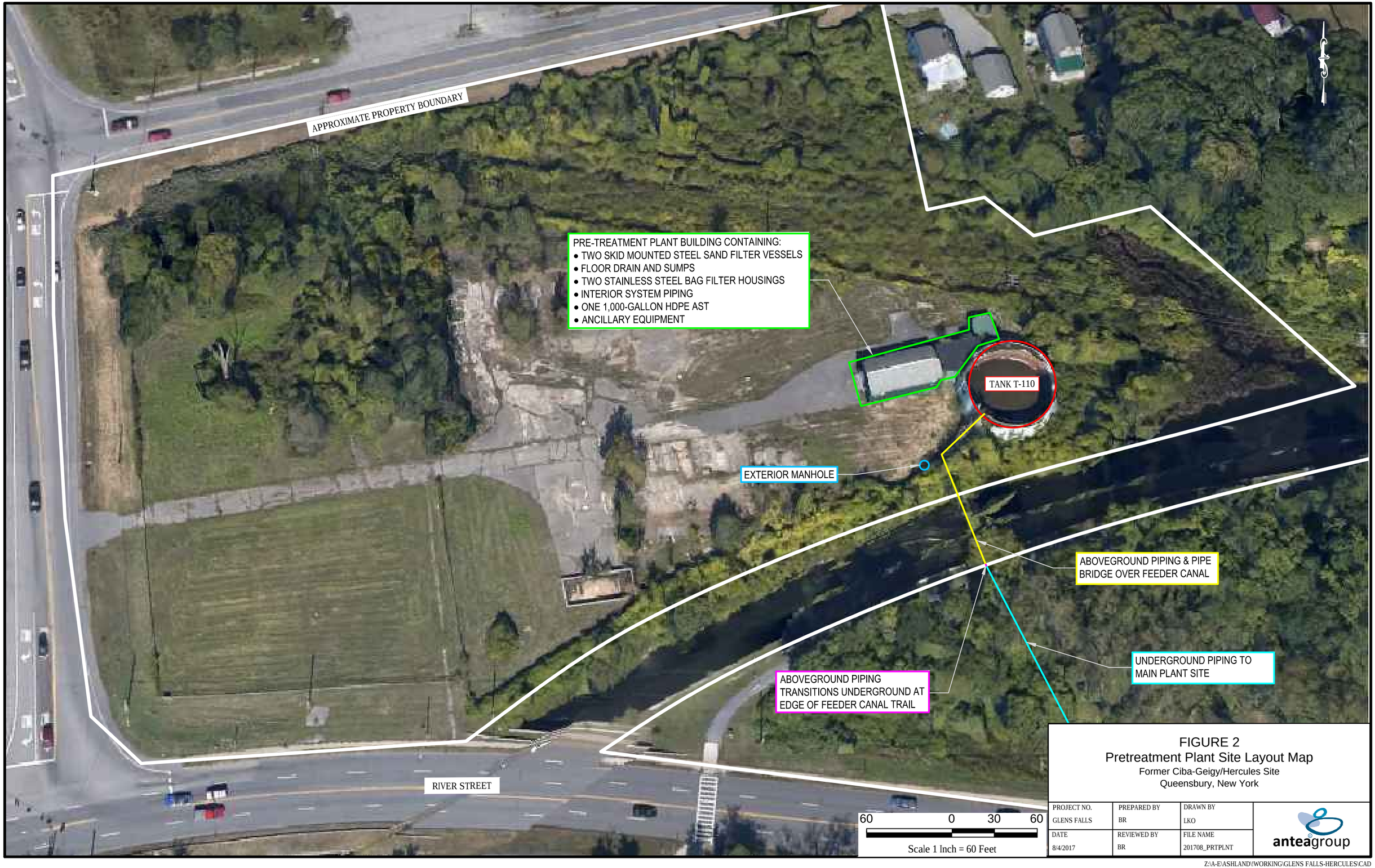

FIGURE 2
Pretreatment Plant Site Layout Map
Former Ciba-Geigy/Hercules Site
Queensbury, New York

PROJECT NO.	PREPARED BY	DRAWN BY	
GLENS FALLS	BR	LKO	anteagroup
DATE	REVIEWED BY	FILE NAME	
8/4/2017	BR	201708_PRTPLNT	

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Appendix A

Design Document Pretreatment Plant Process Summary Table

TABLE 10-1
MAJOR EQUIPMENT LIST (MEL)[1]

ITEM	QUANTITY (and ID#)	TYPE	PURPOSE and (STATUS)**
Equalization Tank	1 (T-110)	Coated steel tank, 500,000-gallon total capacity, 350,000-gallon typical operating capacity	Receives influent from the GWES, provides for contaminant load equalization and allows settlement of particulates. In addition, receives recycled water from backwash operations and stores influent and backwash water during PTS shutdown for maintenance/repairs. Its large storage volume compared to the GWES pumping rate enables operation of the PTS on an intermittent, batch-treatment basis.
Influent Pump	2 (P-1001, P1002)	End Suction 2.5" x 3"	Transfer water through the process train at 200 gpm, at 70' TDH (1-operating, 1 spare)
Chemical Addition System	2 New units, CFP-1 & CFP-2	HCL and NaOH	To add a chemical prior to anion exchange to lower pH (HCL) or raise pH (NaOH). Chemical pumps are positive displacement metering pumps, 100:1 turndown ration, 100 psig.
Sand Filter	1 Duplex Unit (SF-1, SF-2)	IT Corporation 15 psig (maximum allowed for these non-pressure vessels), 8,000 lb. unit, 100 gpm each.	Filter particulates that did not precipitate in T-110 (350,000-gallon Equalization Tank). Backwash at 8 – 10 psid increase compared to clean units.
Holding Tank And Mixer	1 (T-1001) and (M1001)	New, IT, 2000-gallon, HDPE vertical, flat bottom.	Pump reservoir for P-1003 transfer to IX and MX vessels. Also, pH adjustment. (Chemtainer).
IX, MX Transfer Pump	1 (P-1003)	New, End Suction 2" x 3"	Transfer water through filters, anion vessels and MetallX vessels. (Goulds 3657/3757, 200 gpm @ 170' TDH – 20 HP)

** - All equipment was permanently removed from service sometime between February 2002 and November 2003.

TABLE 10-1
MAJOR EQUIPMENT LIST (MEL)[1]

ITEM	QUANTITY (and ID#)	TYPE	PURPOSE and (STATUS)**
Bag Filters	2 Duplex Units (BF-1 & BF-2)	IT Corporation 150 psig, 100 gpm each pair; 200 gpm total	Filter particulates from process stream downstream of treatment media. Change bags at 8 – 10 psid increase compared to new units. (ASME Model by Rosedale.)
Anion Exchange System	1 Duplex Unit (IX-1, IX-2)	IT Corporation 80 psig, 8,000 lb. unit, 100 gpm each; 200 gpm total	Remove sulfate from the process stream prior to metals removal. Brine regeneration on site; ASME rated, but not stamped, fiberglass vessels; top mounted motorized cycle valve. Backwash at 8 – 10 psid increase compared to clean units.
Brine Tank and Eductor	1 each (T-1002	1000-gallon storage vessel, Fiberglass	Regenerate SBA resin for sulfate removal and reuse. Eductor provides "pumpless" addition of Brine or Bleach (NaOCl) solution using city water. Bleach for cyanide rinse of anion resin.
MetallX Resin Filter	1 Duplex Unit (MX-1, MX-2)	IT Corporation 80 psig, 8,000 lb. unit, 100 gpm each; 200 gpm total	Remove multivalent anions from the process stream prior to discharge, last stage on WTP. No on site regeneration planned. Backwash at 8 to 10 psid increase compared to clean units.
Backwash Pump And Tank	1 (P-1004, T1003)	New, IT, End Suction 2" x3" 1000-g Tank, HDPE Vertical Flat	Backwash media filters to remove collected solids. (Goulds Pump No. 3657/3757 200 gpm @ 100" TDH, 10 HP)

1. This table is adapted from Table 1 prepared by IT Corporation as part of the Contractor's Pre-treatment Plan for contact –water management and treatment during construction of the CM at the site.

** - All equipment was permanently removed from service sometime between February 2002 and November 2003.

Appendix B

Correspondence

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau A
625 Broadway, 12th Floor, Albany, NY 12233-7015
P: (518) 402-9625 I F: (518) 402-9627
www.dec.ny.gov

MAY 10 2017

Mr. James Vondracek
Ashland Inc.
5200 Blazer Parkway
Dublin, OH 43017
jevondracek@ashland.com

Mr. Stephen Havlik
BASF Corporation
227 Oak Ridge Parkway
Toms River, NJ 08755
steve.havlik@basf.com

Re: Ciba Geigy Main Plant/Pretreatment Plant
EPA ID NYD002069748
Site No.: 557011

Dear Mr. Vondracek & Mr. Havlik,

The Department has reviewed the AST Decommissioning Report, dated February 23, 2017. The Department finds the report to be acceptable and requires that future plans regarding demolition and confirmatory sampling should be provided to the Department for review and approval. Please contact me if you have any questions at 518-402-9626.

Regards,

Brian Jankauskas, P.E.
Environmental Engineer II
Remedial Bureau A, Section C

ecc: John Swartwout
Christopher Meyer
Laura McMahon
Arlene Lillie
Cassie Reuter
Jeffrey Caputi
File

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau A
625 Broadway, 12th Floor, Albany, NY 12233-7015
P: (518) 402-9625 I F: (518) 402-9627
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SEP 1 3 2017

Mr. James Vondracek
Ashland Inc.
5200 Blazer Parkway
Dublin, OH 43017
jevondracek@ashland.com

Mr. Stephen Havlik
BASF Corporation
227 Oak Ridge Parkway
Toms River, NJ 08755
steve.havlik@basf.com

Re: Ciba Geigy Main Plant/Pretreatment Plant
EPA ID NYD002069748
Site No.: 557011

Dear Mr. Vondracek & Mr. Havlik,

The Department has reviewed the AST & Pretreatment Plant Demolition Work Plan, dated August 21, 2017. The Department requires that the enclosed comments be addressed prior to approving the documents. Please contact me if you have any questions at 518-402-9626.

Regards,

Brian Jankauskas, P.E.
Project Manager
Remedial Bureau A, Section C

ecc: John Swartwout
Christopher Meyer
Laura McMahon
Arlene Lillie
Jeffrey Caputi
File

Work Plan

1. Section 4.4.1, fourth paragraph – This paragraph indicates that clean fill will be used. Fill materials shall be tested in accordance with DER-10 Section 5.4(e) to verify that materials meet the institutional control requirements for the site. Incorporate appropriate testing within the plan (e.g. FSP and QAPP).

2. Section 4.4.3 – This section pertains to an exterior manhole that connects to an approximately 21-inch pipe. The outfall for this pipe was decommissioned. Do you know the extent that this pipe has been decommissioned (e.g. backfilled) from previous corrective measures work? Does an open pipe extend beneath the roadway? Have you contacted the Town to verify if any additional steps are warranted?

3. Section 4.5 – Discusses a 1,000 gallon AST. Suggest additional discussion regarding the materials likely contained in the AST be included in an earlier section of the work plan.

Health and Safety Plan

4. Table of Contents, Section 8 – Verify if demo related SOPs are warranted.

5. Section 2.4 and Section 3 (d) – Verify EPA contact as current EPA site manager is Andy Park.

6. Appendix D – Verify if Railway Pedestrian Safety and Pedestrian Bridge Safety are warranted.

Quality Assurance Project Plan

7. Section 6 - Provide the resume of the chemist preparing the DUSR.

8. Table 6-1 – Verify the cyanide analytical method (SM not EPA) and holding time (14 days).

Appendix C

Hazardous Materials Survey Report

LIMITED HAZARDOUS MATERIAL PRE-DEMOLITION SURVEY REPORT (BUILDING & SHED)

Building & Shed
89 Lower Warren Street
Queensbury, New York 12804

Prepared for:

Antea Group
5788 Widewaters Parkway
Syracuse, New York 13214

Prepared by:

Asbestos & Environmental Consulting Corporation (AECC)
6308 Fly Road
East Syracuse, New York 13057

June 15, 2015

Mark J. Schumacher
Senior Project Manager
Antea Group
5788 Widewaters Parkway
Syracuse, New York 13214

RE: Limited Hazardous Material Pre-Demolition Survey Report
Building & Shed – 89 Lower Warren Street, Queensbury, New York 12804
AECC Project Number: 15-156

Dear Mr. Schumacher:

The Asbestos & Environmental Consulting Corporation (AECC) performed a limited hazardous material pre-demolition survey of the building and shed, located at 89 Lower Warren Street, in Queensbury, New York. The following sections of the report summarize the results of the survey:

ASBESTOS PRE-DEMOLITION SURVEY

The asbestos bulk samples were collected by Mr. Nick Coulombe, a New York State Department of Labor (NYSDOL)-certified Asbestos Building Inspector. The following building materials were collected, labeled, and shipped to AmeriSci New York for laboratory analysis:

Table 1: Asbestos Bulk Sampling Summary

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT
SR-001A,B	Sheetrock (Pink)	West Room – Wall	NAD
JC-002A,B	Joint Compound (White)	West Room – Wall	NAD
FT-003A,B	12”x12” Floor Tile (Green Self-Adhesive)	Bathroom – Floor	NAD
GSK-004A,B	Pipe Gasket (White)	East Room - Pipe	NAD
CEM-005A,B	**Roofing Cement (Gray/Black)**	**Silo - North & West Sides**	**6.3% Chrysotile**
RS-006A,B	Roofing Shingle (Black/Gray)	Lower Roof – East	NAD
RF-007A,B	Roofing Felt Paper (Black)	Lower Roof – East	NAD

Asbestos & Environmental Consulting Corp. ~ 6308 Fly Road, East Syracuse, NY 13057 ~ (315) 432-9400 ~ (315) 432-9405 fax

Table 1: Asbestos Bulk Sampling Summary

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	ASBESTOS CONTENT
RS-008A,B	Roofing Shingle (Black/Green)	Main Upper Roof – West	NAD
RF-009A,B	Roofing Felt Paper (Black)	Main Upper Roof – West	NAD

Table Notes:
NAD = No Asbestos Detected

The following asbestos-containing materials (ACMs) and presumed asbestos-containing mateirals (PACMs) were discovered during the survey:

Table 2: Approximate Quantity of ACMs & PACMs

BUILDING MATERIAL	MATERIAL LOCATION	ESTIMATED QUANTITY	MATERIAL CONDITION
Roofing Cement (CEM-005)	**Silo – North & West Sides**	**40 SF**	**NF, Intact**
Vermiculite Insulation (PACM)	**West Room – In a 48-Quart Chest Cooler**	**N/A**	**F, Intact**
Vermiculite Insulation Debris (PACM)	**West Room – Southwest Corner**	**40 SF**	**F, Disturbed**

Table Notes:
SF = Square Feet
NF = Non-Friable
F = Friable
N/A = Not Assessed

Asbestos Bulk Sample Summary – By regulatory definition, a building material must be greater than one percent (1%) asbestos to be considered an asbestos-containing material (ACM). During this survey, the roof cement was determined to be ACM by laboratory analysis. Additionally, the vermiculite insulation and associated debris were designated as PACMs by AECC's personnel (as per NYS law, vermiculite insulation must be treated as ACM*.) According to state and federal laws, ACMs and PACMs must be handled and disposed of by a licensed abatement contractor prior to any demolition-related activities. The laboratory analysis results have been included in Attachment B of this report.

****Vermiculite Disturbance*** – Due to the presence of disturbed vermiculite, a contamination assessment and NYSDOL-approved site-specific variance shall be required to facilitate the abatement work on this project.

Transmittal of Building / Structure Asbestos Survey Information – As required by New York State Industrial Code Rule 56, copies of this report shall be immediately transmitted by the building / structure owner, as follows:

Asbestos & Environmental Consulting Corp. ~ 6308 Fly Road, East Syracuse, NY 13057 ~ (315) 432-9400 ~ (315) 432-9405 fax

1. One (1) copy of the completed asbestos survey shall be sent by the owner or their agent to the local entity charged with issuing a permit for such demolition, renovation, remodeling or repair work under state or local laws.
2. One (1) copy of the completed asbestos survey for controlled demolition (as per Subpart 56-11.5) or pre-demolition asbestos projects shall also be submitted to the appropriate Asbestos Control Bureau district office.
3. One (1) copy of completed asbestos survey shall be kept on the construction (demolition) site with the asbestos notification and variance, if required, throughout the duration of the asbestos project and any associated demolition, renovation, remodeling or repair project.

PAINT CHIP SAMPLING / LEAD ANALYSIS

AECC collected representative paint chip samples of loose / flaking paint applications to determine the presence of lead-based paint (LBP). The following table and summary explain the results:

Table 3: Lead Paint Chip Sampling Summary

SAMPLE NUMBER	MATERIAL DESCRIPTION	SAMPLE LOCATION	LEAD CONTENT*
PAINT-001	Green Colored Paint	Upper Portion of Silo	0.487%
PAINT-002	Blue/White Colored Paint	Lower Portion of Silo	0.208%

Table Notes:
* = Percentage of Lead by Weight

Lead Paint Chip Summary – By regulatory definition, LBP is defined as any paint containing a minimum of 0.5% lead by weight. The paint applications tested during this survey are not considered LBP. However, please note that both paint applications were determined to be lead-containing materials (LCM – defined as containing any detectable amount of lead, even less than 0.5%). As such, certain worker protection regulations (OSHA) and waste disposal regulations (NYSDEC) shall apply to all of the LCMs found at the project site. The laboratory lead analysis report for the paint chip sampling has been included in Attachment C.

MISCELLANEOUS HAZARDOUS / SPECIAL WASTES

The following items were observed during AECC investigation and presumed to contain the specified hazardous / special wastes in the table below:

Table 4: Miscellaneous Hazardous / Special Waste Inventory

MISCELLANEOUS ITEM	ITEM LOCATION	ESTIMATED COUNT	PRESUMED HAZ MATERIAL	ITEM CONDITION
Florescent Lamps	East & West Room	34	Mercury	Intact

Asbestos & Environmental Consulting Corp. ~ 6308 Fly Road, East Syracuse, NY 13057 ~ (315) 432-9400 ~ (315) 432-9405 fax

Table 4: Miscellaneous Hazardous / Special Waste Inventory

MISCELLANEOUS ITEM	ITEM LOCATION	ESTIMATED COUNT	PRESUMED HAZ MATERIAL	ITEM CONDITION
Light Ballasts	East & West Room	27	PCBs	Intact
Emergency Exit Signs	East & West Room	2	Mercury & Lead	Intact
Thermostats	East & West Room	2	Mercury & Lead	Intact
Transformer	West Room	1	PCBs	Intact
Floodlight	West Room	1	Mercury & Lead	Intact

Miscellaneous Hazardous / Special Wastes Summary – Additional investigation into the status of these materials may be performed to prove that hazardous materials are not present. However, without conducting this additional investigation, these materials must be presumed to contain potentially hazardous materials and handled / disposed of in accordance with all applicable state, federal, and local regulations.

Report Note – In the event that other building materials (materials not specifically identified in this report) are identified during the course of the project, the materials shall be presumed and treated as hazardous materials until examined by an appropriately trained / certified individual and laboratory analysis proves otherwise.

If you have any questions pertaining to this report, please contact me directly at (315) 432-9400. We thank you for the opportunity to work with you on this project.

Sincerely,
Asbestos & Environmental Consulting Corporation

Bryan Bowers
President / Owner

Attachment A: AECC Company License and Personnel Certifications
Attachment B: Asbestos Bulk Sample Laboratory Results
Attachment C: Lead Paint Chip Sample Laboratory Results
Attachment D: Figures 1 & 2

Asbestos & Environmental Consulting Corp. ~ 6308 Fly Road, East Syracuse, NY 13057 ~ (315) 432-9400 ~ (315) 432-9405 fax

ATTACHMENT A

AECC COMPANY LICENSE AND PERSONNEL CERTIFICATIONS

New York State – Department of Labor
Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

ASBESTOS HANDLING LICENSE

Asbestos & Environmental Consulting Corporation

6308 Fly Road

E. Syracuse, NY 13057

FILE NUMBER: 09-42909
LICENSE NUMBER: 42909
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 02/12/2015
EXPIRATION DATE: 02/29/2016

Duly Authorized Representative – Bryan Bowers:

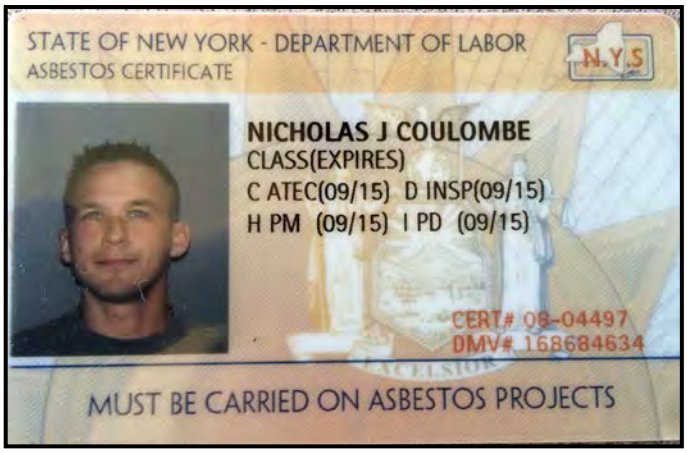
This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Eileen M. Franko, Director
For the Commissioner of Labor

SH 432 (8/12)

ASBESTOS CERTIFICATION



The following letter codes (as shown on the handling certificate) represent the corresponding asbestos classifications.

A – Asbestos Handler
B – Allied Trades
C – Air sampling Technician
D – Asbestos Inspector
E – Management Planner
F – Operations & Maintenance
G – Asbestos Supervisor
H – Asbestos Project Monitor
I – Asbestos Project Designer

ATTACHMENT B

ASBESTOS BULK SAMPLE LABORATORY RESULTS

AmeriSci Job #: **215061465**

Client Name: Asbestos & Environmental Consulting Corp.

Table I
Summary of Bulk Asbestos Analysis Results

15-156; Antea Group; 89 Lower Warren Street, Queensbury, New York 12801, Building & Shed Demolition

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	SR-001A	1	----	----	----	----	NAD	NA
Location: Wall In West Room - Sheetrock (Pink)								
02	SR-001B	1	----	----	----	----	NAD	NA
Location: Wall In West Room - Sheetrock (Pink)								
03	JC-002A	2	----	----	----	----	NAD	NA
Location: Wall In West Room - Joint Compound (White)								
04	JC-002B	2	----	----	----	----	NAD	NA
Location: Wall In West Room - Joint Compound (White)								
05	FT-003A	3	0.231	19.0	78.4	2.6	NAD	NAD
Location: Bathroom - 12" X 12" Green "Self-Stick" Floor Tile								
06	FT-003B	3	0.440	20.9	74.3	4.8	NAD	NAD
Location: Bathroom - 12" X 12" Green "Self-Stick" Floor Tile								
07	GSK-004A	4	----	----	----	----	NAD	NA
Location: Piping In East Room - Pipe Gasket (White)								
08	GSK-004B	4	----	----	----	----	NAD	NA
Location: Piping In East Room - Pipe Gasket (White)								
09	CEM-005A	5	0.761	43.2	20.8	29.7	Chrysotile 6.3	NA
Location: North & West Side Of Silo - Roofing Cement (Gray / Black)								
10	CEM-005B	5	0.352	35.2	52.8	11.9	NA/PS	NA
Location: North & West Side Of Silo - Roofing Cement (Gray / Black)								
11	RS-006A	6	0.555	60.2	10.5	29.4	NAD	NAD
Location: Lower Roof, East - Roofing Shingle (Black / Gray)								
12	RS-006B	6	0.336	66.4	13.1	20.5	NAD	NAD
Location: Lower Roof, East - Roofing Shingle (Black / Gray)								
13	RF-007A	7	0.548	80.8	8.9	10.2	NAD	NAD
Location: Lower Roof, East - Roofing Felt Paper (Black)								
14	RF-007B	7	0.377	82.5	8.8	8.8	NAD	NAD
Location: Lower Roof, East - Roofing Felt Paper (Black)								
15	RS-008A	8	0.522	22.0	23.2	54.8	NAD	NAD
Location: Main Upper Roof, West - Roofing Shingle (Black / Green)								
16	RS-008B	8	0.608	22.5	30.1	47.4	NAD	NAD
Location: Main Upper Roof, West - Roofing Shingle (Black / Green)								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results

15-156; Antea Group; 89 Lower Warren Street, Queensbury, New York 12801, Building & Shed Demolition

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
17	RF-009A	9	0.302	95.4	1.7	3.0	NAD	NAD
Location: Main Upper Roof, West - Roofing Felt Paper (Black)								
18	RF-009B	9	0.204	96.1	0.0	3.9	NAD	NAD
Location: Main Upper Roof, West - Roofing Felt Paper (Black)								

Analyzed by: Madell E. Collins; Date Analyzed 6/9/2015

**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by EPA 600/M4-82-020 per 40 CFR or ELAP 198.1 for New York friable samples or ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (not covered by NVLAP Bulk accreditation) or ELAP 198.4; for New York samples; NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses): NVLAP 200546-0, NYSDOH ELAP Lab 11480, AIHA Lab 102843.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

Reviewed By:_____

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

Asbestos & Environmental Consulting C
Attn: Bryan Bowers
6308 Fly Road

East Syracuse, NY 13057

Date Received 06/03/15
Date Examined 06/08/15
ELAP # 11480

AmeriSci Job # 215061465
P.O. #
Page 1 **of** 4

RE: 15-156; Antea Group; 89 Lower Warren Street, Queensbury, New York 12801, Building & Shed Demolition

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
SR-001A 1	215061465-01 **Location:** Wall In West Room - Sheetrock (Pink)	*No*	NAD (by NYS ELAP 198.1) by Ella Babayeva on 06/08/15
Analyst Description: Pink, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 10 %, Fibrous glass Trace, Non-fibrous 90 %			
SR-001B 1	215061465-02 **Location:** Wall In West Room - Sheetrock (Pink)	*No*	NAD (by NYS ELAP 198.1) by Ella Babayeva on 06/08/15
Analyst Description: Pink, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 15 %, Fibrous glass Trace, Non-fibrous 85 %			
JC-002A 2	215061465-03 **Location:** Wall In West Room - Joint Compound (White)	*No*	NAD (by NYS ELAP 198.1) by Ella Babayeva on 06/08/15
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
JC-002B 2	215061465-04 **Location:** Wall In West Room - Joint Compound (White)	*No*	NAD (by NYS ELAP 198.1) by Ella Babayeva on 06/08/15
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
FT-003A 3	215061465-05 **Location:** Bathroom - 12" X 12" Green "Self-Stick" Floor Tile	*No*	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 2.6 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

15-156; Antea Group; 89 Lower Warren Street, Queensbury, New York 12801, Building & Shed Demolition

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
FT-003B 3	215061465-06 **Location:** Bathroom - 12" X 12" Green "Self-Stick" Floor Tile	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 4.8 %			
GSK-004A 4	215061465-07 **Location:** Piping In East Room - Pipe Gasket (White)	***No***	NAD (by NYS ELAP 198.1) by Ella Babayeva on 06/08/15
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Wollastonite 40 %, Non-fibrous 60 %			
GSK-004B 4	215061465-08 **Location:** Piping In East Room - Pipe Gasket (White)	***No***	NAD (by NYS ELAP 198.1) by Ella Babayeva on 06/08/15
Analyst Description: White, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose Trace, Wollastonite 45 %, Non-fibrous 55 %			
CEM-005A 5	215061465-09 **Location:** North & West Side Of Silo - Roofing Cement (Gray / Black)	***Yes***	6.3 % (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Grey/Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 6.3 % **Other Material:** Non-fibrous 29.7 %			
CEM-005B 5	215061465-10 **Location:** North & West Side Of Silo - Roofing Cement (Gray / Black)		NA/PS
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			
RS-006A 6	215061465-11 **Location:** Lower Roof, East - Roofing Shingle (Black / Gray)	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Black/Grey, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 29.4 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

15-156; Antea Group; 89 Lower Warren Street, Queensbury, New York 12801, Building & Shed Demolition

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
RS-006B 6	215061465-12 **Location:** Lower Roof, East - Roofing Shingle (Black / Gray)	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Black/Grey, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 20.5 %			
RF-007A 7	215061465-13 **Location:** Lower Roof, East - Roofing Felt Paper (Black)	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 10.2 %			
RF-007B 7	215061465-14 **Location:** Lower Roof, East - Roofing Felt Paper (Black)	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 8.8 %			
RS-008A 8	215061465-15 **Location:** Main Upper Roof, West - Roofing Shingle (Black / Green)	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Black/Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 4 %, Non-fibrous 50.8 %			
RS-008B 8	215061465-16 **Location:** Main Upper Roof, West - Roofing Shingle (Black / Green)	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Black/Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Fibrous glass 2 %, Non-fibrous 45.4 %			
RF-009A 9	215061465-17 **Location:** Main Upper Roof, West - Roofing Felt Paper (Black)	***No***	NAD (by NYS ELAP 198.6) by Ella Babayeva on 06/08/15
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 3 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

15-156; Antea Group; 89 Lower Warren Street, Queensbury, New York 12801, Building & Shed Demolition

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
RF-009B	215061465-18	***No***	NAD
9	**Location:** Main Upper Roof, West - Roofing Felt Paper (Black)		(by NYS ELAP 198.6) by Ella Babayeva on 06/08/15

Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material
Asbestos Types:
Other Material: Non-fibrous 3.9 %

Reporting Notes:
Analyzed by: Ella Babayeva

*NAD/NSD =no asbestos detected; NA =not analyzed; NA/PS=not analyzed/positive stop; PLM Bulk Asbestos Analysis by EPA 600/M4-82-020 per 40 CFR 763 (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite or 198.6 for NOB samples or EPA 400 pt ct by EPA 600/M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that car be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. AIHA Lab 102843, RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054.

Reviewed By:_____

END OF REPORT

AECC
ENVIRONMENTAL CONSULTING

#215061465

Asbestos Bulk Sample Chain of Custody

Project No.	15-156	AECC Contact:	Bryan Bowers
Client	Antea Group	Office Phone:	315-432-9400
Address	89 Lower Warren Street	Office Fax:	315-432-9405
	Queensbury, New York 12801	E-mail:	labdata@aeccgroup.com
	Building & Shed Demolition		

Sample ID	Location	Description
SR-001A,B	Wall in West Room	Sheetrock (Pink)
JC-002A,B	Wall in West Room	Joint Compound (White)
FT-003A,B	Bathroom	12"x12" Green "Self-Stick" Floor Tile
GSK-004A,B	Piping in East Room	Pipe Gasket (White)
CEM-005A,B	North & West Side of Silo	Roofing Cement (Gray/Black)
RS-006A,B	Lower Roof – East	Roofing Shingle (Black/Gray)
RF-007A,B	Lower Roof – East	Roofing Felt Paper (Black)
RS-008A,B	Main Upper Roof – West	Roofing Shingle (Black/Green)
RF-009A,B	Main Upper Roof – West	Roofing Felt Paper (Black)

Analyzing Sequence:
1 - Separate layers/mastics for individual analysis, if applicable.
2 - Determine method of analysis for PLM (198.1 or 198.6).
3 - If the PLM NOB result is equal to or greater than 1% asbestos, testing of material is complete. If the PLM NOB result is less than 1% asbestos, please analyze utilizing TEM.
4 - If submitted in series (A, B, C), please stop at first positive.
5 - Report results as % Asbestos via e-mail.

Sample Turnaround Time: 5 Day **Verbal To:** _____ **Phone:** _____

Sampled By:	**Date:** 6/2/15
Shipped By:	**Date:** 6/3/15 1530
Received By Lab:	**Date:**
Results e-mailed By:	**Date:**

ATTACHMENT C

LEAD PAINT CHIP SAMPLE LABORATORY RESULTS

Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: Asbestos & Environmental Consulting Corp. (4307)
Address: 6308 Fly Road
East Syracuse, NY 13057

Attn:

Project: 89 Lower Warren Street
Location: Building & Shed Demolition
Number: 15-156

Order #: 130705

Matrix Paint
Received 06/03/15
Analyzed 06/04/15
Reported 06/05/15

PO Number:

Sample ID / Parameter	Cust. Sample ID / Method	Location	Sample Date	Weight / Total µg	% / Wt.	Conc.	RL*
130705-001	PAINT-001	Upper Portion of Silo	06/02/15	319 mg			
Lead		EPA 7000B / 3050B		1550 µg	0.487 %	4870 mg/kg	157 mg/kg
130705-002	PAINT-002	Lower Portion of Silo	06/02/15	331 mg			
Lead		EPA 7000B / 3050B		690 µg	0.208 %	2080 mg/kg	60.4 mg/kg

Analyst: OHE
130705-06/05/15 09:44 AM

Marti H. Baird

Reviewed By: **Marti Baird**
Analyst

Minimum reporting limit: 10.0 µg. Lead Based Paint contains 0.5% lead by weight per Federal statute. The OSHA Lead in Construction Standard, 29 CFR 1926.62, is invoked if any lead is present in the sample. Concentration and *Reporting Limit (RL) based on weights provided by client. All internal QC parameters were met. Unusual sample conditions, if any, are described. Values are reported to three significant figures. PPM = mg/kg | PPB = µg/kg. The test results reported relate only to the samples submitted.

AECC
ENVIRONMENTAL CONSULTING

Lead Paint Chip Sample Chain of Custody

Project No.	15-156	AECC Contact:	Bryan Bowers
Client	Antea Group	Office Phone:	315-432-9400
Address	89 Lower Warren Street	Office Fax:	315-432-9405
	Queensbury, New York 12801	E-mail:	labdata@aeccgroup.com
	Building & Shed Demolition		

Sample ID	Location	Description	Analysis Required
PAINT-001	Upper Portion of Silo	Green Paint	EPA 7000B Lead
PAINT-002	Lower Portion of Silo – Inside East Building	Blue/White Paint	EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead
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			EPA 7000B Lead
			EPA 7000B Lead
			EPA 7000B Lead

130705
V:\130\130705

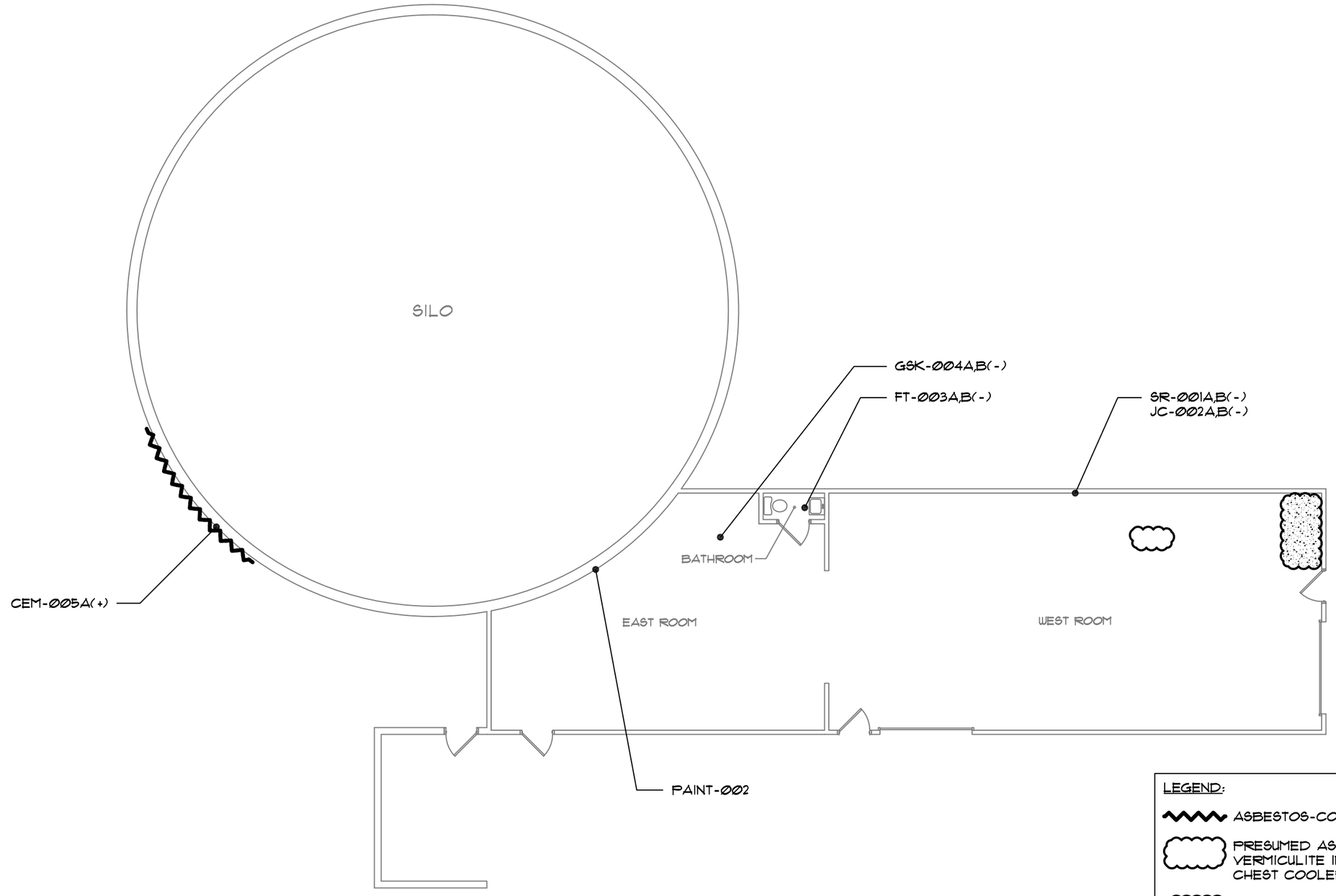
Sample Turnaround Time: 5 Day Verbal To: Phone:

Sampled By: [signature]	Date: 6/2/15
Shipped By:	Date:
Received By Lab: [signature]	Date: 6-3-15
Results e-mailed By:	Date:

UPS 8965 R

ATTACHMENT D

FIGURES 1 & 2



LEGEND:

- ASBESTOS-CONTAINING ROOFING CEMENT
- PRESUMED ASBESTOS-CONTAINING VERMICULITE INSULATION (IN A 48-QUART CHEST COOLER)
- PRESUMED ASBESTOS-CONTAINING VERMICULITE INSULATION DEBRIS

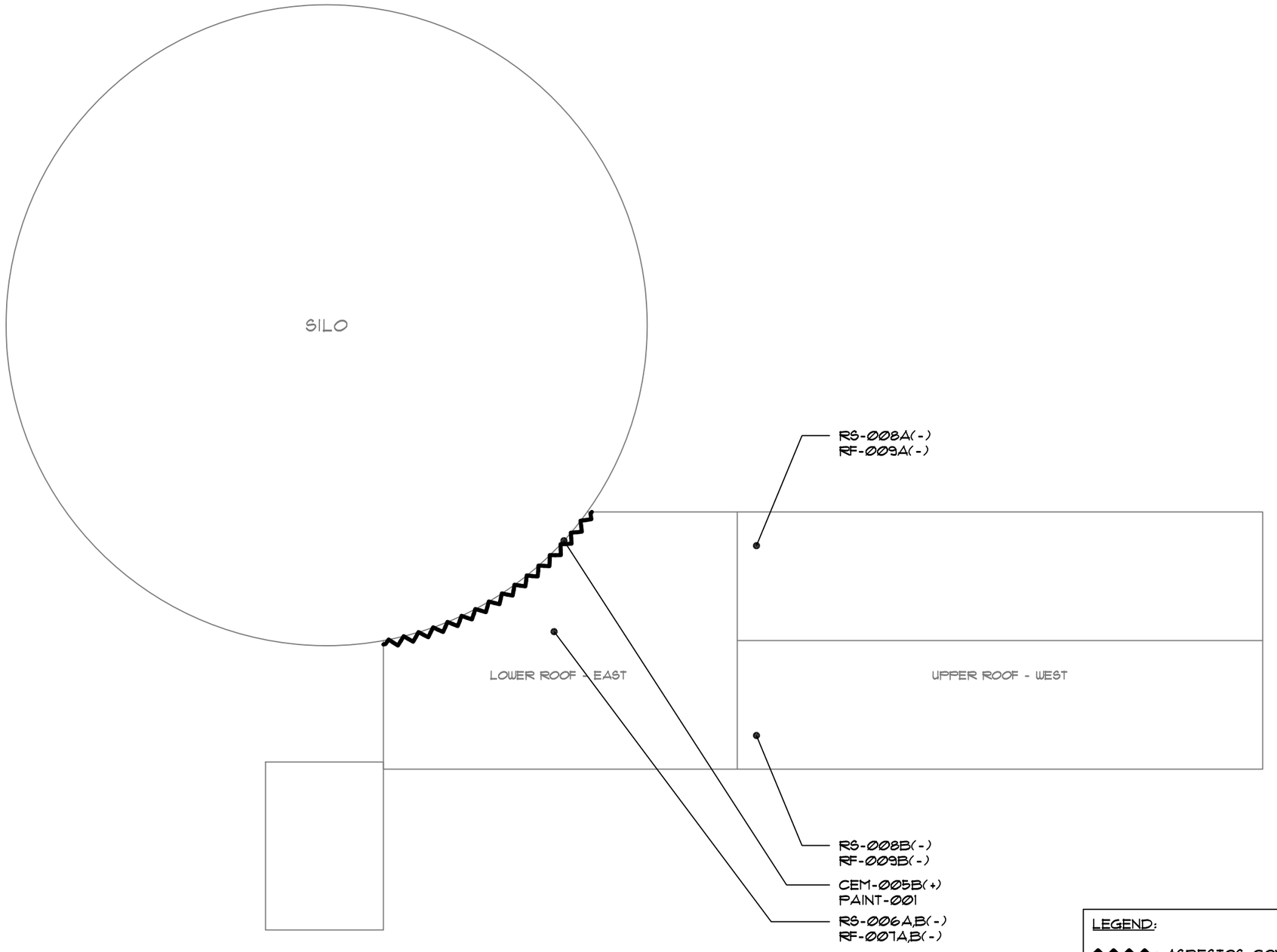
AECC
ENVIRONMENTAL CONSULTING
Asbestos & Environmental Consulting Corporation
6308 Fly Road
East Syracuse, NY 13057

PROJECT NO. 15-156
DRAWN: JUNE 2015
DRAWN BY: HS
CHECKED BY: BB

Building & Shed
89 Lower Warren Street
Queensbury, New York 12801
Floor Plan

Limited Hazardous Material Pre-Demolition Survey

FIGURE
1



LEGEND:

ASBESTOS-CONTAINING ROOFING CEMENT

AECC ENVIRONMENTAL CONSULTING
Asbestos & Environmental Consulting Corporation
6308 Fly Road
East Syracuse, NY 13057

PROJECT NO. 15-156
DRAWN: JUNE 2015
DRAWN BY: HS
CHECKED BY: BB

Building & Shed
89 Lower Warren Street
Queensbury, New York 12801
Roof Plan

Limited Hazardous Material Pre-Demolition Survey

FIGURE
2

Appendix D

Health and Safety Plan (HASP)

Health, Safety, Security & Environment

Ashland – Glens Falls, New York

Site Health and Safety Plan

Project Number:	GlensFa171
Project Name:	Former CIBA/Hercules Plant
Address:	89 Lower Warren Street
City, State	Queensbury, New York

Prepared By:	Antea Group
Address:	5788 Widewaters Parkway, 2nd Floor
City, State, Zip:	Syracuse, NY 13214

Telephone:	800.477.7411	Fax:	315.445.0793

Updated: September 19, 2017

Table of Contents

APPENDICES

FIGURES

SITE HEALTH AND SAFETY PLAN

Antea Group believes that all work-related injuries and illnesses are preventable and has a goal of zero work related injuries and illnesses for its worksites. This plan outlines the processes and procedures Antea Group will employ to achieve this goal.

- The Project Manager or Site Safety Officer (SSO) will hold daily on-site safety meetings ***prior to the start of field work*** to review site safety concerns, procedures, review key elements of the Site Health and Safety Plan (HASP) and Job Safety Analyses (JSAs) with all members of the field crew, including Antea Group employees and subcontractors. Other site safety meetings will be held as needed. Subcontractor personnel must participate in safety discussions as requested by Antea Group. See Antea Group's tailgate meeting checklist and guidance document for details (Appendix A).
- All field team members who may be exposed to site impacts during the course of their work, shall have completed OSHA 40-hour HAZWOPER and annual refresher training (29 CFR 1910.120). ***Documentation of training shall be readily available***.
- Each Antea Group team member must review, sign and date the HASP and the Antea Group Acknowledgement Agreement at the end of this document. Each subcontractor employee and visitor must review the HASP and sign, date, and describe their affiliation on the Subcontractor Acknowledgement Agreement at the end of this document.
- The signed HASP is kept in the field and readily available for duration of field work and returned to the project file upon completion of field activities.
- The HASP shall be revised or rewritten if site activities are changed significantly, if areas of differing hazards are involved, or as information about contaminants and hazards changes. Changing conditions may justify either increasing or decreasing HASP restrictions or action levels, depending upon the additional information generated.
- **STOP WORK AUTHORITY—ALL WORKERS HAVE THE AUTHORITY AND RESPONSIBILITY TO STOP ANY WORK, OR REFUSE TO DO WORK, THAT THEY FEEL IS UNSAFE.**

1.0 GENERAL INFORMATION

ANTEA GROUP PROJECT NUMBER:	**GlenFa171**		
Client:	Ashland LLC.	Site Owner:	BASF
Site Name:	Former CIBA/Hercules	Client Claim/PO Number:	N/A
Site Address:	89 Lower Warren Street, Queensbury, New York 120804		
Project Manager:	Chris Meyer		
Plan Prepared by:	Luke Gladue	Date:	1/20/2010
Approved by:	Greg Drumm	Date:	1/20/2010
Revised by:	Greg Drumm	Date:	5/5/2010
Revision Approved by:	Greg Drumm	Date:	5/13/2010
Revised by:	Patrick Storz	Date:	8/23/2010
Revision Approved by:	Patrick Storz	Date:	8/23/2010
Revised by:	Greg Drumm	Date:	9/24/2010
Revision Approved by:	Greg Drumm	Date:	9/24/2010
Revised by:	Chris Vandegrift	Date:	1/25/2011
Revision Approved by:	Chris Vandegrift	Date:	1/25/2011
Revised by:	Bryan Reles	Date:	2/9/2012
Revision Approved by:	Mark Schumacher	Date:	2/9/2012
Revised by:	Luke Gladue	Date:	2/27/2013
Revision Approved by:	Mark Schumacher	Date:	2/27/2013

Revised by:	Bryan Reles	Date:	2/26/2014
Revision Approved by:	Mark Schumacher	Date:	
Revised by:	Katie Angel	Date:	6/26/2017
Revision Approved by:	Bryan Reles	Date:	6/26/2017
Revised by:	Bryan Reles	Date:	9/19/2017
Revision Approved by:	Bryan Reles	Date:	9/19/2017

Place date(s) in appropriate box(es) for current phase(s) of site activities.

Site Activities	Soil Borings	Monitoring Well Installation	Tank Removal	Soil Excavation	Recovery Well Installation	Pilot Tests	Treatment System Construction	Ground Water Sampling	Groundwater Extraction System Operation	O&M
Site Assessment										
Remedial Investigation										
Site Remediation Activities			2012 (AST)					(2010-2016) Bi-Annually 2017 Quarterly	2004 - Indefinite	2004 - Indefinite

2.0 EMERGENCY CONTINGENCY PLAN

2.1 Local Emergency Telephone Numbers

Can 911 be used at this site? Yes [X] No [ ] If yes, be certain it is activated and enhanced.

Since cellular telephones may not reach a local 911 operator, also supply the following information. (Provide area code)

Ambulance	518-743-9884	Fire Department	518-761-3822
Hospital Emergency Room	518-926-1000	Police Department	518-761-3840
Poison Control Center	800-222-1222	HazMat Response Unit	518-761-3822
(List utility companies as appropriate)	National Grid: 800-642-4272	Verizon FiOS: 877-417-7607	
	Water & Sewer: 518-761-3857		

2.2 Hospital Routes

INCLUDES A MAP WITH HIGHLIGHTED EMERGENCY HOSPITAL ROUTE(S) at the end of the HASP.

Emergency Hospital* Name: Glens Falls Hospital Phone number: 518-926-1000

Hospital Address: 100 Park Street, Glens Falls, New York 12801

Hospital Directions: Head west on Lower Warren Street toward the Feeder Canal trails. Follow Lower Warren Street as it becomes Warren Street/Rt-32. Enter roundabout and take 4th exit onto Glen St/US-9/Rt-32. Turn right onto Park Street.

* **Hospital should be notified immediately if an injury occurs which requires medical attention.**

Estimated driving distance: 2.35 Miles Estimated driving time: 6 Minutes

Does hospital accept chemically contaminated patients? Yes [X] No [ ]

2.3 Evacuation Routes

Identify prevailing wind direction, if known. Evacuation route and meeting location must be upwind or crosswind):
Wind varies throughout the year.

PRIMARY EVACUATION ROUTE AND MEETING LOCATION: **Exit trailer/building/fenced in locations and head out towards Lower Warren Street. Will meet by DPW plow near entrance at Lower Warren Street.**

SECONDARY EVACUATION ROUTE AND MEETING LOCATION: **N/A – Only one exit.**

2.4 Emergency Contacts

PHONE NUMBERS (provide area codes)			
	Name or Description	**Work**	**24-hr. Emergency**
Consultant			
Project Manager:	Chris Meyer	914-495-9937	800-477-7411
Site Contacts:	Bryan Reles	315-949-7033	607-765-1480
	Katie Angel	315-949-7036	518-859-4626
	Meagan McNaney		970-292-1894
Hub Manager:	Aaron Lapine	914-495-9934	949-244-4951
Corporate HSSE :	Darius Szewczak	(800) 477-7411	(800) 651-3117
Antea Group Operator	Corporate Office	(800) 477-7411	(800) 651-3117
Consultant PM\UM to call			
Client Contact:	Gerald Hincka	248-699-0231	248-705-4107
Ashland Contact:	James E. Vondracek	908-243-3548	
Regulatory Agency			
NYS Dept. of Env. Cons. (DEC)	Region 5 – Warrensburg Office	518-623-1200	Spill Resp.: 518-457-7362
	DEC Site Contact: Brian Jankauskas, P.E.	518-402-9620	
US EPA, Region 2, RCRA	Andy Park	212-637-4184	

2.5 Reporting Procedures and First Aid

Call emergency services (911) ASAP if situation is an emergency, i.e. workers or the public are in immediate peril.

Report all accidents, injuries, and illnesses IMMEDIATELY to the Antea Group PM, Office Leader or Antea Group HSSE. **Antea Group is a member of WorkCare, a 24-hour occupational medical management service. If an employee is injured or becomes ill, immediately contact WorkCare to assist in the medical evaluation and management of the employee.**
(888) 449-7787

Report all NEAR MISSES as soon as reasonably possible (no later than 24 hrs after the event). Use Antea Group's online reporting system to submit your near miss. If necessary, use the attached reporting form to capture facts and details immediately while in the field. See Appendix B for reporting form.

2.5.1 First Aid Equipment

- Standard first aid kit/CPR mask
- Portable eye wash

2.5.2 First Aid Procedures

(if an emergency, call 911) (all Antea Group employees onsite must have up-to-date first aid/CPR training).

Ingestion:	Follow instructions from Poison Control Center or the MSDS, contact Antea Group Corporate HSSE to engage Antea Group's medical case management service as necessary.
Inhalation:	Move victim to fresh air. Contact Antea Group Corporate HSSE to engage Antea Group's medical case management service as necessary.
Dermal Exposure:	Remove contaminated clothing. Wash thoroughly with soap and water. Contact Antea Group Corporate HSSE to engage Antea Group's medical case management service as necessary.

A first aid kit and portable eyewash is provided in each employee's field bag and is available on-site. If a worker suffers a chemical splash in the eye, flush the eye for 15 minutes and arrange for off-site medical treatment immediately. Workers will also be instructed to thoroughly wash with soap and water any unprotected skin that comes in direct contact with contaminated soil or water. Contact Antea Group Corporate HSSE to engage Antea Group's medical case management service as necessary.

Trained workers who choose to provide CPR or First Aid must use Universal Precautions to control possible exposure to blood borne and infectious agents. CPR kits are available in employee field bags.

2.5.3 Site Emergencies

In the event of a fire or explosion, or other imminently dangerous situation (e.g. rupturing a natural gas line), evacuate the site immediately and call the appropriate emergency phone numbers listed in Section 2.1. Call the Antea Group PM or Office Leader and inform him/her of the situation as soon as possible.

2.6 SITE RESOURCES

If no, identify closest available resource with directions.

Water supply available on site:	Yes	X	No		Bathrooms available on site:	Yes	X	No	
Telephone available on site:	Yes	X	No		Electricity available on site:	Yes	X	No	
Other resources available on site:	Yes	X	No		If "yes", identify:	Site job trailer for storage/shelter.			

2.7 Project HSSE Team

Team Members (list)	
Project Manager:	Chris Meyer
Antea Group on-site Personnel: (On-site personnel Are responsible for Antea Group site health and safety.)	Bryan Reles, Katie Angel, Meagan McNaney
Antea Group Site Safety Officer:	Bryan Reles, Katie Angel

PROJECT TEAM OSHA TRAINING RECORDS
(DOCUMENTATION MUST BE AVAILABLE FROM ANTEA GROUP AND APPROPRIATE CONTRACTORS UPON REQUEST)

Name	40 Hr Training Date	8-Hr Refresher Date	Site Supervisor Training Date
Bryan Reles	**2/12/2007**	**12/20/2016**	**12/3/2007**
Katie Angel	**1/16/2014**	**12/9/2016**	**1/30/2014**
Meaghan McNaney	**8/22/2014**	**1/3/2017**	**8/29/2014**

All workers who have to potential to be exposed to site impacts must have up-to-date HAZWOPER training. In addition, Antea Group employees must, at a minimum, have defensive driver training, first aid/CPR and medical monitoring. See subcontractor Section 12 for minimum required subcontractor training.

2.8 Perimeter Establishment

Map/Sketch attached:	**Yes**	**X**	**No**		**Site secured:**	**Yes**	**X**	**No**	
Perimeter identified:	**Yes**	**X**	**No**		**Zone(s) of Contamination identified:**	**Yes**	**X**	**No**	

2.9 Work Zones

As deemed necessary based on work activities, an exclusion zone will be identified for each site or site activity. The exclusion zone will be clearly marked with yellow **CAUTION** tape, barricades and\or cones (recommended cone height – 42 inches), as needed. A contamination reduction zone and support zone will be established for any site with site contaminant levels that pose a health threat to site workers or the public. No person will be allowed in the exclusion zone or contamination reduction zone without approval from the Antea Group Site Safety Officer.

2.10 Site Security

Site security must be determined on a site-specific basis. The need for additional personnel, on-site security guards, fencing, etc. should be discussed with the client site manager, or other members of management. Equipment stored overnight will be locked and secured to prevent vandalism and protect the public. A description of the additional safety requirements should be listed below:

LIST SITE SECURITY MEASURES: ALL SECTIONS OF SITE ARE FENCED AND SHOULD BE CHAINED/LOCKED AT END OF THE THE WORK DAY. ALL DOORS TO BUILDINGS SHOULD BE CHECKED TO MAKE SURE LOCKS ARE IN PLACE.

When work scheduling requires that an excavation be left open overnight, security fencing will be erected to restrict access to the site or work zones described in Section 2.9.

2.11 Site Map

Attach a site map to the "Figures" section at the end of the Site Health and Safety Plan. The Site Map can also to be used to outline Traffic Control (see Section 10).

3.0 SITE CHARACTERIZATION

A. Summary of Previous Site Investigation(s): Series of historical investigations between early 1980s and 2000. Final Corrective Measures put into place in 2001. Ground water extraction system installed in 2000-2001, brought into operation soon after. Groundwater sampling conducted routinely (Changed from Bi-annually to quarterly in 2017), and reported annually.

B. Source of Previous Site Investigation Information: Historic site documents.

C. General Facility Description:

Gasoline Service Station		Refinery		Bulk Terminal		Other:	Former Chemical Production Facility		
Description:	Active		Years has the site been operating:				Closed/Abandoned	X	

Current property use (operations on-site, products, raw materials used, etc.): No current uses. Only site activities are site monitoring and remediation/extraction system maintenance.

Was the site previously used for industrial purposes: Yes [X] No [ ]

Describe previous site uses: Production of dyes, wallpaper, and chemicals.

Surface cover on-site includes:

[X]	Soil/bare ground	[ ]	Clay caps	[ ]	Plastic cover		
[X]	Grass	[X]	Paving/asphalt	[X]	Water bodies		
[X]	Woods	[ ]	Swamp	[X]	Brush/scrub		
[X]	Buildings	[X]	Unpaved roads	[X]	Other	Soil Cap	

Approximate site surface area: [ ] sq. ft. or 65 acres

Percentage of surface area: Concete Pad/unpaved road 15 % bare soil [ ] %

vegetated 85 % under water [ ] %

Potential for dust generation on-site: High [ ] Medium [X] Low [ ]

Any site access restrictions: Yes [ ] No [X] Please list:

Fenced/locked [X] Posting (signs) [X] Security guards [ ]

Evidence of public access to the site? Yes [ ] No [X]

If "yes," describe:

D. Regulatory Contacts

Are regulatory agencies involved with the site (Y/N)? Federal? [X] State? [X] Local? [ ]

Name	Agency	Phone (incl. area code)
Brian Jankauskas, P.E.	NYSDEC, Region 5	(518)-402-9620
Andy Park	USEPA, Region 2, RCRA	(212)-637-4184
		( )
		( )

4.0 WASTE CHARACTERIZATION

4.1 Waste/Contaminant Type(s)

Characteristic(s):

[X]	Liquid	[X]	Soil	[X]	Solid	[ ]	Sludge	[ ]	Gas
[ ]	Corrosive	[ ]	Ignitable	[ ]	Radioactive	[ ]	Explosive	[ ]	Flammable
[X]	Volatile	[X]	Toxic	[ ]	Reactive	[ ]	Unknown	[ ]	Other

4.2 Major Spills/Releases

Type	Date	Chemical	Quantity	Impacted Media*

(*air, surface water, soil, or ground water)

Free Product: Yes [ ] No [X] Dissolved: Yes [ ] No [X]

Have removal actions occurred? Yes [ ] No [X]

If "yes," describe:

Is there evidence that contaminants present could cause vapor problems in structures on-site?

Yes [ ] No [X] If "yes," is building mechanically ventilated? Yes [ ] No [ ]

Exhaust Ventilation: General Building Ventilation:

4.3 Chemicals/Waste Stored On-site (including petroleum products)

		How Many?	Size?	Chemical?
	Drums			
	Tanks			
	Vats			
	Surface impoundments			
	Pits/landfills			
	Other			

Identify all chemical products Antea Group will use or store on site:

Alconox, Muriatic Acid, Bleach, ZEP Citrus Degreaser, WD-40, Pine Sol, PVC Glue/Primer, utility marking paints, gasoline, rodent poison

Material Safety Data Sheets (MSDS) are **required** for site chemicals.
Please indicate where MSDS can be found for this site:

[ ] MSDS Log/Binder (In Field)

[X] Attached (Additional Info. Optional)

5.0 REMEDIATION SYSTEM INFORMATION

Is there a remediation system onsite? Yes [X] No [ ]

Describe: Extraction system consisting of six vaults, 6 man-holes and 3 sumps/vaults for removal of water from overburden, and two separate bedrock horizons (Horizons A and B). Water is pumped from the sumps located adjacent to the Hudson River up to Effluent pump house (Northeast corner of the property by Lower Warrant St.), where the water is then pumped to the local POTW.

List the Remediation System hazards identified at this site:

[ ]	Inadequate Ventilation	[ ]	Unguarded Equipment	[X]	Slip, trip, fall or overhead hazards
[ ]	Noise Exposures	[ ]	Confined Space	[ ]	Security Issues
[X]	Energized Equipment requiring lockout/tagout	[ ]	Temperature Extremes	[ ]	List Other:

If building ventilation system is not adequate, identify manual ventilation procedure:

Identify PPE/procedures required to mitigate the remaining system hazards identified above: Lockout/ Tag out procedures for anything involving electrical components of the system, situational awareness around vaults due to depth of vaults.

Have sound level surveys been conducted on site? Yes [ ] No [X]

If "Yes," record range of survey results and approximate distance from source. Note: hearing protection must be worn if noise levels prevent normal conversation at a distance of three feet, or anytime noise levels are measured to be over 85 dB.

dBA	Source	Distance from Source	Date

Check all energy sources on the remediation site:

[X]	Electrical	[X]	Mechanical	[ ]	Other (describe)
[ ]	Thermal	[ ]	Hydraulic		
[ ]	Chemical	[ ]	Pneumatic		

Are written Lockout/Tagout procedures required? Yes [X] No [ ] Where are they located? In each of the vaults.

Remediation Systems in Shutdown Mode (See Antea Group's Lockout/tagout practice for details)
Remediation systems that are shut down for **service or maintenance** reasons for extended periods of time, will be locked and tagged in accordance with the requirements of 29 CFR 1910.147, OSHA's Lockout/tagout standard, outlined in Antea Group's Lockout/Tagout written practice.

Remediation systems shut down for business reasons **other than equipment service or maintenance** (i.e. outside the scope of 29 CFR 1910.147), and which will be left in that condition at least until the next visit by a Antea Group employee, will be secured in accordance with the following procedure.

a) The system will be locked, using a standard Antea Group padlock, so that the power cannot be turned on, and a yellow "caution" tag will be applied. The tag must include the following information:

1) Caution
2) Do not operate
3) Do not remove the tag unless authorized
4) Name of person applying the tag
5) Date tag applied
6) Reason why equipment is shut down

b) Systems shutdown and locked for other business reasons can only be unlocked and have the tag removed with the approval of the Antea Group Project Manager for the site or the Office Leader for that region. However, unlike systems locked and tagged under 29 CFR 1910.147:

- The person applying or removing the lock and tag does not have to be an authorized LOTO trained employee under 29 CFR 1910.147.
- The person removing the lock and tag does not have to be the same person who applied the devices.

6.0 HAZARD EVALUATION

Identify all chemicals that are present or are suspected of being present on site and list their maximum concentrations in soil/water. Attach MSDS for each chemical of concern in **Appendix C**.

Chemical Name	TLV/*PEL*	**Maximum Concentration in Soil	*Maximum Concentration in Water	Health Hazards/ Comments
Primary				
Chromium	***TLV:*** *0.5 mg/m3 TWA* ***PEL:*** *1 mg/m3 TWA*	Current concen. unknown	60 mg/L	irritation eyes, skin; lung fibrosis (histologic)
Cyanide	***TLV****: 4.7 ppm, 5 mg/m3 Ceiling; Skin (as both Cyanide salts and Hydrogen Cyanide)* ***PEL:*** *5 mg/m3 TWA; Skin*	Current concen. unknown	7.3 mg/L	Irritation-Eyes, Skin, Nose, Throat; Acute Toxicity
Vanadium	***TLV:*** *0.05 mg/m3 TWA* ***PEL:*** *0.5 mg/m3 Ceiling*	Current concen. unknown	1.5 mg/L	Irritation-Eye, Nose, Throat, Skin, Acute and chronic bronchial damage
Secondary				
Metals/Inorganics:				
Aluminum	**PEL:** 15 mg/m3 TWA	Current concen. unknown	30 mg/L	Irritation eyes, skin, respiratory system
Ammonia	**TLV:** 25 ppm (17 mg/m3) TWA Or 35 ppm (24 mg/m3) STEL **PEL:** TWA 50 ppm (35 mg/m^3)	Current concen. unknown	8.2 mg/L	irritation eyes, nose, throat; dyspnea (breathing difficulty), wheezing, chest pain; pulmonary edema; pink frothy sputum; skin burns, vesiculation
Antimony	**Both:** 0.5 mg/m3 TWA	Current concen. unknown	0.053J mg/L	irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly
Arsenic	**PEL:** 0.01 mg/m3 TWA **TLV**: 0.01 mg/m3	Current concen. unknown	0.018 J mg/L	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]
Barium	**Both**: 0.5 mg/m3 TWA	Current concen. unknown	1.2 mg/L	Irritation of eyes, skin, upper respiratory system; skin burns (by hydroxide, carbonate); gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia. INGES ACUTE: Abdominal cramps, profuse watery diarrhea; vomiting; severe muscle weakness; cardiac arrhythmia; unconsciousness; respiratory arrest.
Beryllium	**TLV:** 0.00005 mg/m3 TWA (inhalable particulate matter) **PEL:** 0.002	Current concen. unknown	0.0027J mg/L	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]

Beryllium (continued)	mg/m3 TWA 0.005 mg/m3 Ceiling 0.025 mg/m3 Peak (30 minutes)			
Cadmium	**TLV:** 0.01 mg/m3 TWA (total particulate) 0.002 mg/m3 TWA (respirable particulate fraction) **PEL:** 5 µg/m3 TWA 2.5 µg/m3 Action Level	Current concen. unknown	0.055 mg/L	pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]
Chloride	N/A	Current concen. unknown	430 mg/L	*Note*No MSDS for Chloride
Cobalt	**TLV:** 0.02 mg/m3 TWA **PEL:** 0.1 mg/m3 TWA	Current concen. unknown	0.062 mg/L	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma
Hex. Chromium	**TLV:** (as insoluble) 0.01 mg/m3 TWA (Water Soluble) 0.05 mg/m3 TWA **PEL:** 5 µg/m3 TWA	Current concen. unknown	53 mg/L	Lung cancer, nasal septum ulcerations and perforations, skin ulcerations, and allergic and irritant contact dermatitis. *Note* No MSDS for Hexavalent Chromium
Copper	**Both**: 1 mg/m3 TWA	Current concen. unknown	0.270 mg/L	Irritation-Eye, Nose, Throat, Skin; Cumulative Lung Damage
Flouride	N/A	Current concen. unknown	6.1 mg/L	*Note* No MSDS for Flouride
Iron	**(Both as iron oxide)** **TLV:** 5 mg/m3 TWA **PEL:** 10 mg/m3 TWA	Current concen. unknown	120 mg/L	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)
Lead	**TLV:** 0.05 mg/m3 TWA **PEL:** 0.05 mg/m3 TWA 0.03 mg/m3 Action Level	Current concen. unknown	1.4 mg/L	lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension
Magnesium	No PEL for Magnesium. As magnesium oxide: **TLV:** 10 mg/m3 TWA **PEL:** 15 mg/m3 TWA	Current concen. unknown	65 mg/L	Irritation of eyes, mucous membranes; cough; headache, dullness, weakness; elevated body temperature, metal fume fever; eye redness, pain; INGES. ACUTE: Abdominal pain, diarrhea
Manganese	**TLV:** 0.02 mg/m3 (respirable fraction) TWA 0.1 mg/m3 (inhalable fraction) TWA **PEL**: 5 mg/m3 Ceiling	Current concen. unknown	16 mg/L	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage

Mercury	**TLV:** 0.025 mg/m3 **PEL:** 1 mg/10m3 Ceiling	Current concen. unknown	0.0088	mg/L	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria; erethism (a central nervous system disorder characterized by irritability, weakness, sensitivity to stimulation, shyness, depression, insomnia, and eventually memory loss and tremors.)
Methyl Mercury	**TLV:** 0.01 mg/m3 TWA, 0.03 mg/m3 STEL **PEL:** 0.01 mg/m3 TWA, 0.04 mg/m3 CEILING	Current concen. unknown	2	ng/L	Toxic if inhaled. May cause respiratory tract irritation. May be fatal if absorbed through skin. May cause Skin irritation. May cause eye irritation. May be fatal if swallowed.
Nickel	**TLV:** Elemental: 1.5 mg/m3 TWA, Insoluble compounds: 0.2 mg/m3 TWA, Nickel subsulfide: 0.1 mg/m3 TWA **PEL:** 1 mg/m3 TWA	Current concen. unknown	0.037 J	mg/L	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]
Nitrate	N/A	Current concen. unknown	6	mg/L	*Note* No MSDS for Nitrate
Nitrite	N/A	Current concen. unknown	0.16	mg/L	*Note* No MSDS for Nitrite
Ortho-phosphate	N/A	Current concen. unknown	4.5	mg/L	*Note* No MSDS for Orthophosphate
Phosphorus	N/A	Current concen. unknown	4.7	mg/L	*Note* No MSDS for Phosphorus
Potassium	N/A	Current concen. unknown	980	mg/L	Very hazardous in case of skin contant, eye contact, ingestion, or inhalation. Severe over exposure can produce lung damage, choking, unconsciousness or death.
Selenium	**Both:** 0.2 mg/m3 TWS	Current concen. unknown	0.012 J	mg/L	irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns
Sodium	N/A	Current concen. unknown	3,600	mg/L	Very hazardous in case of skin contact and eye contact.
Strontium	N/A	Current concen. unknown	6.8	mg/L	*Note* No MSDS for Strontium
Sulfate	N/A	Current concen. unknown	750	mg/L	*Note* No MSDS for Sulfate
Thallium	**Both:** 0.1 mg/m3 TWA	Current concen. unknown	0.025 J	mg/L	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs
Thiocyanate	N/A	Current concen. unknown	1.4	mg/L	*Note* No MSDS for Thiocyanate
Zinc	N/A	Current concen. unknown	0.890	mg/L	Slightly hazardous in case of skin contact, eye contact, ingestion, and inhalation.
VOCs					
Acetone	**TLV:** 500 ppm (1,188 mg/m3) TWA 750 ppm (1,782 mg/m3) STEL **PEL:** 1,000 ppm (2,400 mg/m3) TWA	Current concen. unknown	59	µg/L	Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis
Benzene	**TLV:** 0.5 ppm (1.6 mg/m3) TWA 2.5 ppm (8 mg/m3) STEL **PEL:** 1 ppm TWA	Current concen. unknown	1.6	µg/L	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]

Benzene (Continued)	5 ppm STEL			
Chlorobenzene	**TLV**: 10 ppm, 46 mg/m3 TWA **PEL:** 75 ppm, 350 mg/m3 TWA	Current concen. unknown	86 µg/L	Skin, eye, nose irritation, headache; nausea; drowsiness, incoordination, unconsciousness; CHRONIC EXPOSURE: Numbness, cyanosis, hyperesthesia (increased sensation), muscle spasms; anemia. In animals: liver, lung, kidney damage, bone marrow suppression. INGES. ACUTE: Abdominal pain
Chloroform	**TLV:** 10 ppm, 49mg/m3 TWA **PEL:** 50 ppm, 240 mg/m3 Ceiling	Current concen. unknown	8.7 µg/L	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]
cis-1,2-dichloroethene	***Both:*** *200 ppm TWA, 790 mg/m^3*	Current concen. unknown	81 µg/L	Respiratory tract irritation, skin irritation, eye irritation, central nervous system depression.
1,1-Dichloroethene	N/A	Current concen. unknown	0.24 µg/L	Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]
1,2-Dichlorobenzene	**PEL:** C 50 ppm (300 mg/m3)	Current concen. unknown	750 µg/L	irritation eyes, nose; liver, kidney damage; skin blisters
1,3-Dichlorobenzene	N/A	Current concen. unknown	1.6 µg/L	Irritation-Eye, Nose, Throat, Skin; Liver damage
1,4-Dichlorobenzene	**PEL:** 75 ppm TWA, 450 mg/m^3	Current concen. unknown	71 µg/L	Irritant (skin, eye, nose)
Methyl Ethyl Ketone (a.k.a. 2-Butanone)	**TLV**: 200 ppm (590 mg/m3) TWA 300 ppm (885 mg/m3) STEL **PEL:** 200 ppm (590 mg/m3) TWA	Current concen. unknown	6.2 µg/L	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis
Tetrachloroethene	**TLV:** 25 ppm (170 mg/m3) TWA 100 ppm (685 mg/m3) STEL **PEL:** 100 ppm TWA 200 ppm Ceiling 300 ppm (peak) for a single time period up to 5 minutes for any 3 hours	Current concen. unknown	0.25 µg/L	irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]
Toluene	**TLV:** 20 ppm (75 mg/m3) TWA **PEL:** 200 ppm TWA 300 ppm Ceiling 500 ppm Peak (10 minutes)	Current concen. unknown	1.0 µg/L	Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage
trans-1,2-dichloroethene	*N/A*	Current concen. unknown	20 µg/L	N/A
Trichloroethene	**TLV:** 10 ppm TWA; 25 ppm STEL **PEL:** 100 ppm TWA; Also, exposures shall not exceed 200 ppm (ceiling) with the	Current concen. unknown	19 µg/L	irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]

Trichloroethene (continued)	following exception: exposures may exceed 200 ppm, but not more than 300 ppm (peak), for a single time period up to 5 minutes in any 2 hours.			
Vinyl chloride	**TLV:** 1 ppm TWA **PEL:** 1 ppm TWA; 0.5 ppm Action Level	Current concen. unknown	2.4 µg/L	Carcinogen: lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities;

(*P*) = results pending; (NA) = not analyzed; (NE) = not established
**Most recent (2013) results for each constituent for each well.*
*** Excludes soil results that have been verified by more recent borings to be unrepresentative of soil conditions*

Potential Hazards (check boxes that apply to the site):

	corroded containers		open lagoons		underground tanks		air stack emissions
X	overhead electric lines		visible leachate		surface tanks		visible on-site releases
	visible soil contamination		odors		observed tanks		visible off-site releases
	observed free product	X	dust	X	confined spaces		visible on-site erosion
X	underground utilities		open pits		excess debris		on-site surface water contamination
	building contamination		no hazards		high traffic issues		off-site surface water contamination

List Other: Biological-ticks and spiders onsite, sac spiders have been found onsite and are moderately poisonous to humans

Wild parsnip has been found onsite, a rash can develop when skin contacts the leaves or plant sap in the presence of sunlight

7.0 PERSONAL PROTECTION & MONITORING EQUIPMENT GUIDELINES

7.1 Personal Protection

Level of Protection: B [ ] C [ ] D [X] List any modifications: Long sleeves shirts and gloves on hillside

1. **All personnel working on Antea Group sites must wear: long pants, sleeved shirt (short sleeves are acceptable), hard hat, high visibility traffic safety vests, safety glasses and safety shoes. When working on the hillside long sleeves and gloves should be worn to prevent skin contact with wild parsnip. Personnel may need to wear additional or more protective eye, ear and hand PPE appropriate for their work tasks.**

2. Nitrile gloves and tyvek/saranex suit should be worn if contact with contaminated water or soil is likely.

3. Hearing protection must be worn if noise levels prevent normal conversation at a distance of three feet, or anytime noise levels are measured to be over 85 dB.

4. No smoking, eating, or drinking is allowed in the exclusion or contamination reduction zones. Smoking is only allowed in areas pre-approved by the Antea Group PM and client.

5. No Antea Group personnel shall conduct a permit required confined space entry. In addition, no personnel shall approach any excavation area where there is danger of a wall collapse.

6. Respiratory protection is dependent on conditions listed below Section 7.2. No site specific respiratory protection required onsite. Minimum Level C respiratory protection for most Antea Group release sites consists of a half-face air purifying respirator with combination P100 filters with organic vapor (minimum).

7.2 Surveillance Equipment and Materials

1. Calibration: A qualified individual will calibrate before and after field activities the photo ionization detector (PID) or flame ionization detector (FID).

2. Frequency: The worker breathing zone will be initially monitored every hour (at a minimum) and recorded in Appendix F. If previous site monitoring data indicates that there are exposures are below action level, monitoring frequency may be reduced, as long as site conditions have not changed and site activities will not create new exposures. Periodic monitoring can be stopped when site monitoring data indicates that breathing zone shows no hazardous conditions or air contaminants. However, if monitoring is stopped, data to support this decision must be available onsite for review. (Table for recording data is provided in Appendix F.)

   In addition to periodic site monitoring, breathing zone monitoring should always be conducted and documented (in Appendix F) during tasks that may result in continuing or new exposures, such as active drilling, probing, or excavating.
   If there are more stringent state or federal regulatory requirements for site monitoring, those requirements must be followed.

3. Instrumentation

Instrument	Breathing Zone Reading	PPE Upgrade or Other Actions To Be Taken
Photo ionization detector (PID) or Flame ionization detector (FID)	Total Org.Vapors	**Level D.** Work may continue.
	Bkgrd - 2 ppm	**Level D.** Collect benzene detector tubes (unless there is previous site data to show that benzene at these PID levels is below 0.5 ppm)
	2 - 100 ppm	**Level C.** Air-purifying respirator with organic vapor canisters required if levels continue for **two hours or more** in the breathing zone. Workers can choose to don respirators at lower levels if nuisance odors are a concern. Collect benzene detector tubes.
	100 - 300 ppm	**Level C if levels continue for 15 minutes in the breathing zone**. If levels continue beyond 15 minutes **STOP WORK**. Contact Corporate HSSE.
	300- 500 ppm	**STOP WORK, leave immediate area--** Contact Corporate HSSE
	>500 ppm	
Explosion Meter	< 10% of LEL	**Work may continue. Evaluate inhalation potential.**
	10 - 20% of LEL	**Work may continue. Eliminate all ignition sources, Reduce the concentration &increase monitoring** frequency, consider use of ventilation.
	> 20% of LEL	**Work must stop until LEL is Below 10%!**
Oxygen Meter	< 19.5% O_2	**Leave area.** Re-enter only with SCBA.
	19.5% to 23.5% O_2	**Work may continue.** Investigate causes of changes above/below 21%.
	>23.5% O_2	**Work must stop.** Ventilate before returning and retest atmosphere. O_2-rich atmospheres pose explosion hazards.
Sound Level Meter	< 85 dBA	Suggest wearing hearing protection when it is necessary to raise voice to be heard at distance of 3 feet.
	85 - 90 dBA	**Hearing protection required.** Install warning signs for fixed noise sources.
	> 90 dBA	**Hearing protection required.** Employer must have Hearing Conservation Program.

8.0 SAFETY STANDARD OPERATING PROCEDURES (ALSO SEE APPENDIX D FOR SITE SAFETY CHECKLIST)

8.1 Chemical Hazards

A photo ionization detector (PID) or flame ionization detector (FID) will be used to measure the relative concentration of hydrocarbon vapors. Monitoring for exposure to benzene vapors may be done using activated charcoal tubes and vacuum pumps, vapor badges, or benzene colorimetric tubes in the breathing zone when working with heavily contaminated soil or water. Action limits for use of respiratory protective equipment are outlined in Section 7.2 above. All respiratory protection equipment shall be NIOSH/MSHA-approved and use shall conform to OSHA 29 CFR 1910.134. Antea Group's written Respiratory Protection Program detailing selection, use, cleaning, storage, medical monitoring, training and fit testing of respiratory protective equipment is available to all employees via Antea Group's intranet.

In addition to being inhalation hazards, hydrocarbon compounds can also be absorbed through the skin. Skin contact with liquid hydrocarbons or fuel hydrocarbon-bearing soil should be prevented. In situations where sampling would result in direct skin contact with hydrocarbon liquids, saturated soil or contaminated equipment, nitrile gloves will be worn.

Drilling or digging may also liberate pockets of hydrogen sulfide (H_2S). While the characteristic "rotten egg" odor of H_2S is detectable at levels as low as 0.0005 ppm, prolonged detection is unreliable due to its olfactory fatigue properties. In open air on a typical petroleum remediation site, risk from exposure to H_2S is minimal. However, should H_2S be encountered or expected, workers shall be instructed to stop drilling/digging and move to an upwind location until the vapors have dissipated, as measured by H_2S colorimetric detector tubes or other direct-reading instruments. The bore hole or excavation will be immediately backfilled.

When working in areas that are not open air and/or have to potential to accumulate gases or vapors, a combination explosimeter/oxygen (O_2) meter will be available on-site to monitor the levels of flammable gases, such as petroleum vapors and methane. An explosimeter should be used by a subcontractor to verify that the atmosphere inside an underground storage tank has been inerted prior to allowing the tank to be moved from its location.

8.2 Physical Hazards

1. Mechanical hazards: Ensure that mechanical equipment is properly guarded and overhead hazards are removed or secured to prevent being struck or entrapped by moving parts or heavy equipment or falling objects.

   Maintain a safe distance from heavy equipment and moving machinery parts.

   Tools and equipment used on site shall be in proper working condition. Workers using tools and equipment must be properly trained in their use.

   Antea Group has adopted a practice to eliminate the wide-spread use of fixed open-bladed knives (FOBKs), such as pocket or utility knives. FOBKs are not allowed on Antea Group field sites without prior approval by the Antea Group PM. Safer alternatives such as safety knives, shears, etc. should be used in place of FOBKs. See Antea Group's FOBK practice for more details.

2. Electrical hazards: Be aware of underground and overhead utilities. For protective measures against underground electrical cables see Section 8.3 Underground Utilities.

   For overhead power lines, OSHA requires a minimum distance of 10 feet from overhead lines transmitting up to 50kVs and an additional 4" of distance for every 10kV after 50kV, from any unguarded, energized overhead line. For example: 15 feet from lines transmitting up to 200kVs and 25 feet from 350kV lines. However, because power lines, rig masts and other elevated objects can move due to wind or other forces, **it is Antea Group's policy is to maintain at least 20 feet clearance from any lines, or an additional 5 feet from any OSHA minimum distance that exceeds 20 feet.** If it is critical to work within 20 feet of a line, or at OSHA minimum distance, efforts should be made to have the lines covered ("shrouded") or shut off and locked out by the local power company. If neither can be accomplished, contact Antea Group Corporate HSSE.

   Generators, powered hand tools and extension cords used on Antea Group sites must be grounded. Extension cords must be inspected at the start of each work day to ensure that they are not damaged. Frayed or otherwise damaged extension cords shall not be used onsite, and must be taken out of service unless they can be properly repaired.

   Heavy equipment, including drilling rigs and vacuum trucks, must be grounded when the potential for static electricity build up and its uncontrolled release exists. Confirm with the equipment operator that equipment is grounded as needed. All equipment will be properly locked/tagged out when required by the Energy Lockout/Tagout Program and Safe Electrical Work Policy and Procedure for Antea Group Project Work. Do not stand in water when operating electrical equipment.

3. Open excavations: Open excavations deeper than 6 feet that are not clearly visible to site workers and the public must have fall protection measures in place, such as barricades and warning signs. When scheduling or work conditions necessitate leaving excavations open overnight, security fencing will be erected to restrict access to the site or work zones described in Section 2.9

   Excavations must be properly constructed and maintained as per Section 8.12 of this HASP.

4. Hazardous plants or animals: Poisonous plants, and stinging, biting or other dangerous animals can be encountered on field sites. Identify workers with any allergies. Do not touch any plants that you cannot identify. Clear brush from well locations and other work areas. If necessary, arrange for vegetation removal by a landscaping company. Do not approach or provoke any animals, including spiders or insects. If a worker is bitten or stung by insect or spider, provide first aid and monitor the worker for a reaction. If an insect, or spider bite is suspected to be serious, or a worker is bitten by snake or other animal, seek medical attention immediately. If the bite is not an emergency, call WorkCare (800) 455-6155 for medical assistance.

5. Slip, trip fall hazards: will be minimized by maintaining good housekeeping practices at all times. Keep the work area free of debris, unused tools, extra supplies, or any other objects that could interfere with walking and working surfaces.

8.3 Underground Utilities

A minimum of 72 working hours prior to excavating, Underground Service Alert or the state equivalent:

Name DIGSAFE Phone 811 / 1-800-962-7962

will be contacted and informed of the scheduled field activities. The underground service locator company will identify which underground utilities (e.g. electrical, gas, sewer, water, telephone, cable TV) are present and will notify their respective owners. The utilities will be located by their owners. **Prior to drilling or direct push, air excavate (120% the width of the hole) and to a depth of at least 5 feet will be performed at all times** to ensure no utilities, lines or tanks are in the way. See Excavation Section 8.12. **Look for overhead utilities** as well.

Utility service locator company has been notified? **If applicable attach contact sheet to back of document.**	Date(s)	_____ _____	Confirmation #, if applicable:	_____ _____

If you are planning to drill the same location as a previously installed point and the diameter of the new boring/well is larger, you must manually clear the borehole.

8.4 Work Limitations (time of day, weather, heat/cold stress)

In the event of severe weather, such as high winds, heavy rain or snow, tornadoes, electrical storms, or extreme temperatures, the SSO and PM shall determine whether work can continue without compromising site worker health and safety.

In high ambient temperatures (especially with high humidity), ***follow heat-stress precautions***. Drink plenty of cool water and/or electrolyte-replacement beverages (e.g., Gatorade). Take frequent breaks out of direct sunlight removing protective clothing. Provide shade to workers if necessary. Increase number of breaks if pulse does not return to normal resting pulse during breaks. Alter schedules so work is conducted during early morning or evening. Work shall progress only under conditions of adequate lighting.

Symptoms of heat exhaustion and heat stress include:

- Profuse sweating **or** complete cessation of sweating;
- Changes in skin color;
- Increased respiration;
- Vision problems, confusion;
- Body temperatures in excess of 100°F; and
- Increased heart rate.

Any member of the work team who exhibits these symptoms should immediately be removed from the area and observed while resting in a shaded area after removal of impervious or restrictive clothing and after consumption of cool water or electrolyte fluid. If symptoms persist, immediate medical attention shall be sought.

In cold temperatures, especially when combined with high wind, follow hypothermia precautions:

- Drink warm liquids and take frequent work breaks in a wind-sheltered area. Monitor co-workers for signs of shivering, lack of coordination, or confusion. Remove workers exhibiting these signs from the work area to a heated warming shelter.
- Dress in removable layers of insulated clothing to prevent sweating and use protective waterproof gear;
- Frostbite (superficial or deep tissue) can occur on any exposed skin at temperatures of 30.2°F or colder.
- If available clothing does not give adequate protection to prevent hypothermia or frostbite (which can occur on any exposed skin), work should be modified or suspended until adequate clothing is available or until conditions improve.

If extreme cold conditions are encountered (e.g. < 10° F), discuss proper clothing requirements and a warming break schedule with the Project Manager. Consider rescheduling the work if possible.

8.5 Fire and Explosion Hazards

Each site will be inspected for fire and explosion hazards during a pre-work site walk-through.

During the course of underground storage tank removal, drilling, or remediation of petroleum impacted soil or ground water, the potential for fire and explosion of flammable vapors exists. Extreme caution should be taken to monitor for the presence of flammable vapors or conditions that could create flammable conditions. Explosimeters are available for this monitoring and

action levels are defined in Section 7.2. Fire extinguishers must be available on all sites with the potential for flammable vapors or electrical fires (i.e., systems, control panels). Use of fire extinguishers by employees trained in their use is limited to employee rescue or extinguishing relatively small, controllable fires. Antea Group does not expect or require its employees to fight fires.

In the event of a fire or explosion, the following action plan should be followed:

Shut down equipment and shut off all supply lines immediately if this can be done safely. (Notify the site operator to shut down operations if necessary.)

Evacuate the immediate area. At this point you may not know if a soil vapor fire has started or if a supply line, natural gas line, etc. has been hit. Tank, supply line, or remediation system fires are extremely hazardous and precautions must be taken to evacuate the area immediately.

Call 911 to notify the fire department. Antea Group employees are not trained fire brigades. Every fire should be treated as an emergency. Even if site personnel extinguish the fire, professional fire departments should evaluate the situation to ensure that the danger is over and that a fire will not reoccur.

Evaluate the situation to identify the source of the flammable vapors and to assess the danger to employees, the public and property. From a safe distance, try to determine if the fire is due to a ruptured supply line, ignited soil vapors or methane, or is electrical. This information should be communicated to the fire department. Small fires from known sources (i.e., engine fires, electrical panel fires, etc.) may be extinguished if the employee can do it without high risk. A soil vapor fire may eventually burn itself out. Soil stockpiles must be placed away from nearby structures and property lines. Extinguishing fires in fuel vapor-laden soils with clean soil may be possible. **Employees or subcontractors shall not enter an excavation to attempt to extinguish a fire.**

Fire, Explosion and Vacuum Truck Operations—vacuum truck operators must ensure that the truck and hoses are properly bonded and grounded prior to initiating vacuum operations and that vacuum truck hoses are properly tested for continuity each work shift.

Vacuum truck operators must ensure that the materials to be collected are compatible with residual materials that may already be in the truck or the truck must be washed prior to use. Hydrocarbons and other vapors created by the vacuum pump exhaust shall be vented away from the work area and away from areas where people are present.

8.6 Noise/Hearing Protection

Workers shall be instructed in the recognition of noise hazards and shall be provided, and trained in the use of, hearing protective devices. Monitoring should be performed for on-site noise sources that are suspected to be above 85 dB. Record sound readings in Appendix G. If monitoring has not been performed for suspected noise sources, hearing protection must be worn. As a general rule, hearing protection should be worn when working around heavy equipment, particularly drill rigs, or when background noise is such that a worker has to raise their voice to be heard at a distance of 3 feet.

8.7 Levels of Protection

Work on petroleum remediation sites must be performed, at a minimum, in the following Level D protection:

- hard hat (a Antea Group requirement, unless wearing the hard hat creates additional safety risks and there are no overhead hazards present),
- steel-toed (safety-toed) work shoes/boots, meeting ANSI/ASTM standards
- sleeved shirt (short sleeve minimum) and long pants, or cotton coveralls
- eye protection- safety glasses (ANSI Z87), goggles or face shield as required
- high visibility safety vest (ANSI Class II preferred)
- gloves- sampling (nitrile) or work (leather, synthetic leather, Kevlar, etc. depending on work tasks), and
- hearing protection, as needed.

If monitoring equipment or site conditions indicate the need to upgrade the level of protection to Level C at a petroleum release site, air-purifying respirators with organic vapor canisters (at a minimum) will be donned, Tyvek coveralls with hoods, chemical resistant inner and outer gloves, and disposable boot covers will be donned as necessary. Contact Corporate HSSE regarding dermal protection.

At no time will an Antea Group employee conduct work on any site requiring Level A protection. On work sites requiring Level B protection, workers will be provided with additional training and equipment. Corporate HSSE must review and approve the work plan for Level B work before the work can be performed.

8.8 Decontamination Procedure

Level: B. [ ] C. [ ] D. [X]

Contamination may result from walking through contaminated soils or liquids, splashing liquids during sampling, use of or contact with contaminated equipment, or contact with air contaminants. Field team workers will be instructed to observe the following precautions to assure contaminants will not remain in contact with their skin.

- Tools, equipment and personnel will be decontaminated using procedure appropriate for level of personal protection worn.

- All contaminated, disposable clothing will be properly bagged for disposal and left on site. All personnel will be instructed to wash hands, face, neck and forearms at the end of the work shift and to shower at the end of the workday.

- No eating or drinking will be permitted in the vicinity of heavy equipment and/or drilling and excavating activities. Smoking is only permitted in pre-designated area when approved by Antea Group and the client.

Special decontamination requirements: _____

8.9 Confined Spaces

If entry into a confined space is necessary, a trained Antea Group subcontractor shall be used and a Confined Space Entry Permit must be completed and authorized, and confined space entry procedures followed. Detailed information on Antea Group's Confined Space Entry procedures can be found in the Antea Group Health & Safety Manual. Contact Corporate HSSE before any permit required confined space entry.

Does this site have any permit-required confined spaces?	Yes	X	No	
Does someone need to enter the permit-required confined space as part of the work?	Yes		No	X

If "yes," the Antea Group project team must confirm the subcontractor's permit required confined space program and employee training have been reviewed as part of the Antea Group pre-qualification process.

8.10 Investigation – Derived Material Disposal

Soil cuttings and well development or sampling water shall be placed in 55-gallon drums on-site, unless on-site disposal is allowed under both regulatory and client requirements. Drums must be in sound condition (new or reconditioned drums) with lid that seals and can be tightened in place. Disposal methods of drummed soil and water will be determined based on laboratory analytical data.

Drums stored on site until disposal shall be labeled, sealed, and if possible, placed on an impermeable surface in a secure location prior to Antea Group's field team leaving the site. At a minimum, non-hazardous waste containers must be marked with a description of the material, and emergency contact information (company name and phone number). Hazardous waste must be marked and labeled so that the container complies with applicable DOT or RCRA requirements. Drums must be removed within 90 days of waste generation.

8.11 Excavations

All soil excavation and utility trenching is to be undertaken in strict conformance with all applicable local, state, and federal regulations. Subcontractors performing excavations on-site must have a competent person in charge of the excavation, who performs daily inspections of the excavation. Entry into excavated areas or trenches is allowed only when:

1. Shoring, sloping and spoil pile placement is in conformance with 29 CFR 1926 Subpart P, and
2. Personal protection and monitoring, as detailed in this Site Health and Safety Plan, have been implemented, and there is no hazardous atmosphere or other unsafe condition in the excavation.

9.0 Drilling and Excavating Health and Safety Guidance Procedures

9.1 Preparation

Prior to conducting any subsurface work, a markout must ALWAYS be called in (approximately three working days before field work is scheduled - depending on the area). In some areas, not all markouts are performed by the "Call Before You Dig System," thus contacting the appropriate utility companies and assuring their markouts must be tracked by Antea Group or the subcontractor responsible for the markouts. Private utility mark-outs should also be arranged when site work and conditions warrant it.

- Always search the file and request the client search files for an as-built of the station/facility.

9.2 When on Site

- Subcontractors are required to perform an on-site inspection of their heavy machinery each day prior to the start of fieldwork. The Antea Group Site Safety Officer (SSO) will observe the inspection. Any safety concerns identified by the subcontractor must be addressed prior to the use of the equipment. During the inspection, the subcontractor must verify that all rig/vehicle kill switches are working properly. Antea Group employees on-site must be informed of the location of the kill switches and how to operate them.

- As part of your on-site health and safety meeting, walk the site with the field team to identify any additional site hazards and determine possible boring locations (make sure the locations shown on the work plan/site plan are in areas free of utilities/subsurface structures). Make sure all utilities have been marked out properly. It is Antea Group's responsibility to ensure all boring or excavation locations are clear of utilities prior to drilling. Often "as-builts" are incorrect or not available.

- Attempt to determine how all utilities are running. For the most part, utilities can run anywhere and can bend and twist in any direction but, there are a few basic things to keep in mind. Usually water and sewer lines will run to a bathroom. Electrical lines will run in between on-site lights, the kiosk, service station and car wash buildings. Storm water drains usually tie into one another and you can get a general idea of how they run by looking into them and seeing what direction the line is going. Obviously any cut outs in the asphalt should be avoided, especially if observed around the USTs (often, leak detection is an afterthought and is added following the completion of the service station rebuild and its location is obvious due to a continuous cut out in the asphalt around the tank field).

- ALWAYS AIR EXCAVATE (120% the width of the proposed hole) TO A DEPTH ONE FOOT BELOW THE ESTIMATED DEPTH OF UTILITIES AND AT LEAST FIVE FEET bgs. If you are drilling in the same location as a previously installed point and the diameter of the new boring/well is larger, you must manually clear the borehole. In addition, if you didn't advance the "old" boring yourself, you can't assume that it is a safe drilling location. Refusal may have been encountered in the "old" location. If refusal is encountered prior to five feet, move to a new location. If you make three attempts without success, call the project manager to discuss alternatives. If you can't reach the PM contact your Office Leader for further instruction.

- If you encounter pea-gravel while excavating STOP. Call the Antea Group PM for further instruction. Utilities or USTs may be present.

- If you hit/damage any utility/subsurface feature IMMEDIATELY contact the office for further instruction. If you can't reach the PM contact your Office Leader for further instruction. Also contact your HSSE Advisor.

9.3 Drilling Activities

- Drilling operations shall at all times be under the immediate supervision of a contractor's representative who has authority to modify the work methods as necessary to ensure safety.
- Contractors shall ensure properly designed cribbing (i.e., wooden mats) is always carried with mobile drill rig to work site.
- Where practical, drilling should always take place on "level" surfaces. If the proposed site is not level, consideration should be given to selecting another suitable site that is level, or to leveling the site by re-grading.
- Drilling locations must be clear of underground and overhead hazards as discussed in this HASP.
- Additionally, the guidance provided in the Environmental Remediation Drilling Safety Guidelines (ERDSG) industry document **should** be followed.

10.0 TRAFFIC CONROL AND ON-SITE VEHICLES/MOBILE EQUIPMENT

Petroleum site work frequently necessitates working in parking lots, streets or other areas with vehicular traffic. In such instances, the work team will be wearing high visibility traffic safety vests (ANSI Class II minimum recommended) and will use a combination of traffic cones (recommended height - 42-inches) and barricades as necessary to prevent contact between workers, pedestrians and motor vehicles. Proper placement of large contractor vehicles such as field trucks and drill rigs to add a layer of protection should be considered.

Check for specific DOT requirements when working in or near a road or road right-of-way. In such cases, traffic control set up will need to be subcontracted to a traffic control subcontractor.

The PM shall develop a **Site Specific Traffic Control Plan** for high traffic sites, or other high-risk locations. The plan (map) should include known site traffic patterns and the control equipment set up used to divert or restrict traffic and to define site work (exclusion) zones. **Include Traffic Control Plan in the "Figures" section at the end of the HASP.**

Onsite Vehicles:

- Enter and exit through the gates or pathway provided and designated for this use.
- Vehicles will not be driven over unprotected hoses or exposed piping.
- Vehicles may be left running **only** when operating auxiliary equipment or lights, and then only when driver can ensure the vehicle is secure with the transmission in park or neutral, the parking brake set and the wheels chocked.

Earth Moving Activities:
All mobile earth-moving equipment on-site must comply with 29 CFR 1926.602 for back-up alarms or signal persons.

Dig and Haul Projects:
Dump trucks should only dump the load on **level** ground so the hazard of "tip-over" is avoided. If absolutely necessary, the dump truck can dump into the slope (i.e., back of truck facing directly uphill).

Any truck that has a raised bed dumping feature (i.e., dump-truck) must always lower bed before driving forward to leave the immediate work area. This is due to two hazards:

- *Tip-over* due to change in gravity of raised bed and
- *Hitting overhead obstacles* (like power lines or canopies).

11.0 JOURNEY MANAGEMENT PLAN

Provide directions for the preferred route from Antea Group's office to the field site, with the preferred/safest exit and entry points to the site. Also, provide any specific information of problem traffic areas that should be avoided when traveling in the area of the site. Information can be provided via maps, written instruction or both, as appropriate and available. Use the "Figures" section at the end of the HASP. (Information regarding onsite traffic flow and mobile equipment is provided in Antea Group's Traffic Control Plan in Section 10.)

Additional Comments:

- Seatbelts must be worn by all occupants in traveling vehicles
- Including the requirements for drivers to have all appropriate licenses, and to have received defensive driver training within the last two years.

11.1 Lone or Isolated Worker

Workers should not be put into a situation where they are left alone or isolated with no means of quickly summoning help should he/she become incapacitated due to injury or vehicle accident.

- A positive means of communication, i.e. a device such as a walkie-talkie, vehicle radio or cell phone, should be provided to all field personnel.
- Lone employees should check in with their supervisor or their field office at the start of the day, mid-day, and a final status report call at the end of the day (so others know where the worker is and that he/she is safe).
- In high hazard/crime affected areas, operations teams should consider assigning two workers or hiring a security guard during site work. If the area appears too dangerous, work should be postponed until an appropriate security plan can be developed.

12.0 SUBCONTRACTOR TRAINING AND SAFETY DOCUMENTS

All subcontractors must meet OSHA training requirements for the work they will perform while onsite. Subcontractor workers that have the potential to be exposed to site impacts must have initial HAZWOPER training and up-to-date annual 8-hr refresher training. In addition, subcontractors driving on Antea Group business must have completed a defensive driver training class within the last two years.

Subcontractors shall be responsible for the development and implementation of their own HASP and/or JSAs to cover duties and hazards specific to that subcontractor's area of expertise or on-site functions. Subcontractors are given the opportunity to review Antea Group's HASP, and must sign the document, prior to the start of on-site work. Subcontractors are required to provide job safety analyses (JSAs) or written safety standard operating procedures, for the primary tasks they perform on-site. Contractors are required to review these safety documents with the work team during the appropriate on-site safety meetings (tailgate, etc). Any discrepancies or conflicting safety requirements between Antea Group and subcontractor HASPs shall be addressed prior to the start of field work.

All subcontractor employees must attend and participate in all on-site safety meetings as required by Antea Group. All on-site subcontractor workers must be able to effectively communicate with all field workers in English. If not, a translator/mentor must be assigned to those employees that cannot communicate in English to assure that all employees understand the safety information communicated on-site.

Any hazardous work situations, unsafe acts and conditions, near misses, or other safety incidents must be reported to the Antea Group Site Safety Officer immediately so that corrective measures may be taken, and the information can be reported to Antea Group management in a timely manner.

13.0 BEHAVIORAL SAFETY OBSERVATIONS

Behavior Based Safety is an established method of using reinforcement to change unsafe individual behaviors. The process starts with a behavioral hazard analysis to identify "at-risk" behaviors. These can be determined by using near miss/incident reviews, JSAs, audits, etc. Using the inventory of at-risk behaviors, a checklist is then developed to assist in the observation of work behavior. Observers record safe and at-risk behaviors and provide feedback to workers about their performance. The feedback reinforces the necessity for safe behaviors. Observation data also is used to identify barriers to safe behavior. Removing these barriers lowers the workers' exposure to at-risk conditions and makes it easier for employees to work safely. Antea Group has developed a behavior based safety observation (BBSO) checklist from an analysis of its near miss/incident data, JSAs and auditing data.

The checklist is attached as Appendix H. Field teams should perform one BBSO per field event. BBSOs can be performed on Antea Group employees or subcontractors.

14.0 ACKNOWLEDGMENT AGREEMENT

14.1 Antea Group Employee

SITE HEALTH AND SAFETY PLAN REVIEW RECORD

I acknowledge that I have read and understood the contents of this Site Health and Safety Plan and I agree to abide by all provisions as set forth. I have also checked in with the site client contact to alert them of our presence and for any daily safety issues. Please note: "no implements are to be brought on a Antea Group site, or while performing Antea Group business that are, or are intended to be used, as weapons (such as: guns, knives, etc.)". Firearms are expressly prohibited. By signing below you are certifying, that this policy is upheld. Antea Group retains the option to audit your personnel and equipment to assure your compliance.

NAME	SIGNATURE	CELL PHONE	DATE

NAME	SIGNATURE	CELL PHONE	DATE

14.2 Subcontractor & Visitor

SITE HEALTH AND SAFETY PLAN REVIEW RECORD

I have been given the opportunity to review the Health and Safety Plan for this site and have been briefed on its contents and on the nature of the contaminants and the level and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this plan. (This HASP does not replace the requirement or liability for your company to have it's own safety program and HASP.) I also acknowledge that this plan is specific for this Antea Group site and may not address unforeseen hazards not included in the Site Health and Safety Plan or your specific contracted task. Please note: "no implements are to be brought on a Antea Group site, or while performing Antea Group business that are, or are intended to be used, as weapons (such as: guns, knives, etc.)". Firearms are expressly prohibited.

By signing below I am certifying that this policy is upheld. Antea Group retains the option to audit your personnel and equipment to assure your compliance.

ALL WORKERS HAVE THE AUTHORITY TO STOP, AND/OR REFUSE TO PERFORM, ANY UNSAFE WORK.

NAME & AFFILIATION	SIGNATURE	CELL PHONE	DATE

NAME & AFFILIATION	SIGNATURE	CELL PHONE	DATE

APPENDIX A
DAILY TAILGATE MEETING OUTLINE/CHECKLIST

DAILY TAILGATE MEETING OUTLINE/CHECKLIST

SITE INFORMATION	
Date:	
Site Name:	
Site Location:	
Project / Site Number:	
Name of Antea Group Employee Leading Meeting	
Title of Antea Group Employee Leading Meeting:	

	YES	NO
Are all field team members in attendance for the tailgate meeting?		
Are there potential language barriers or concerns?		
Is safety information provided in language(s) that all workers understand? (If no an interpreter is required.)		
Identified worker with the least years of experience. Name: Company:		
How many years (or months) experience for worker? # of yrs / months:		
How many workers have less than 1 year experience?		
Is each one assigned an on-site mentor?		

TAILGATE DISCUSSIONS POINTS **(*see next page for additional guidelines*)**	**COVERED** YES	NO
INTRODUCTION- site background, field team introductions, training documentation review		
SITE HAZARDS- perform site walk-thru with team, locate utility markings, work locations, ID any site hazards		
Locate site/facility Emergency Stop switches		
EMERGENCY ACTION PLAN - emergency #s, evacuation signal & routes (walk them), 1st aid kits, training, etc		
WORK HAZARDS- scope-of-work, etc		
Antea Group discuss safety of Antea Group tasks to be performed- review JSAs		
Contractor(s) discusses safety of contractor work tasks to be performed- review JSAs		
List JSAs reviewed		
Heavy machinery inspection, kill switches located and tested		
Hand tools, power tools and other equipment inspected ***INSPECT portable fire extinguishers onsite***		
On-site impacts, other chemical on-site- monitoring procedures, PPE upgrade and action levels		
ONSITE VEHICLE MOVEMENT AND SPOTTER REQUIREMENTS - discuss movement of work vehicles and spotter procedures		
HIGHLIGHT SPECIFIC WORK CONCERNS- e.g. excavation, drilling, utilities, power lines, traffic, weather, etc.		
PPE REVIEW - review standard PPE, upgrades needed		
Gloves available on site match the glove type(s) listed in the JSAs for today's work? *NOTE: Any gloves not listed in JSA cannot be used onsite without management approval and field editing of onsite JSA*		
ANTEA GROUP OR CLIENT SPECIFIC SAFETY PROTOCOLS- FOBK practice, utility clearance requirements, etc.		
REQUIRED PERMITS. LIST:		
PROACTIVE SAFETY ACTIONS - report all near misses, stop work authority, STOP WORK as needed,		
FEEDBACK - Worker questions, comments, concerns		
Have all worker signed the site health and safety plan?		

DAILY TAILGATE MEETING OUTLINE/CHECKLIST

TAILGATE MEETING ATTENDANCE *(use additional sheets if required)*		
Worker Name	**Company Name**	**Signature**

AFTERNOON TAILGATE MEETING		YES	NO
Afternoon Tailgate held?			
List Topics:			
Name & Title or worker leading afternoon tailgate meeting:			

DAILY TAILGATE MEETING OUTLINE/CHECKLIST

DAILY TAILGATE MEETINGS

Daily tailgate meetings shall be held at the start of each work day, shift or task change.

The daily tailgate meetings shall review the planned work activities for the day, discuss and resolve the risks and mitigations, discuss any Health, Safety, Security and Environment (HSSE) concerns and raise the HSSE consciousness of each worker before they start work.

These meetings shall include, but are not limited to:

- A review of relevant Health and Safety Plan (HASP) elements to be performed at an appropriate frequency. A review shall be done whenever the HASP is updated and should also be done regularly to remind workforce of relevant elements.
- A Hazard Communication (HAZCOM) review.
- Address the risks of any issues arising from the site walk and the location of on-site equipment and materials.
- Complete the tailgate safety meeting forms.
- A review of applicable permit/s.
- A review of the right and obligation to 'Stop Work.'
- Complete and review *Job Safety Analyses* (JSAs) for the tasks to be completed. The focus should be on how to complete activities on a given site during that work day and activity. The JSA discussion should include identification of 'Stop Work' triggers.
- Implement the controls set forth in the HASP and JSAs. Verify that all parties on site have a complete understanding of the work plan and controls that are in place.
- In addition, allocate resources and complete permits.

PARTICIPATION AND PREPARATION

Effective daily tailgate meetings require participation. Team members should recognize the connection between the meetings and their personal safety.

Involvement of all team members is a critical factor for a successful meeting.

The conductor of the daily tailgate meeting shall prepare by achieving a thorough understanding of: JSAs, HASP, the scope of work, the subcontractors on site, and client requirements.

Additionally, the conductor of the meeting should have the required checklists available to verify that he or she covers all applicable and necessary topics.

TAILGATE MEETING LOCATIONS

When selecting the location of the meetings, the following shall be considered:

- Safety of personnel.
- Background noise.
- Uncomfortable or cramped locations.
- Weather and environment.

APPENDIX B
I-3 FIRST REPORT FIELD FORM

I-3 – FIRST REPORT FIELD FORM

All injuries/illnesses to Antea Group employees, contractor employees, and contractor or subcontractor employees require immediate notification to your Manager, and Darius Szewczak or Tara Duffy

GENERAL INFORMATION	
Antea Group Employee Name Reporting:	
Date of Incident:	
City/State of Antea Group Office:	
Site Project/ID Number:	
Site Location (Street, City, State):	
Antea Group Project Manager Name:	
Subcontractor Name (if applicable):	
Incident Location (Street, City, State):	
Short Description of Incident:	

CONDITIONS					
Weather:		**Temperature:**		**Lighting:**	

WHEN DID INCIDENT OCCUR						
	Month	**Day**	**Year**	**Time (hrs)**	**(min)**	**AM/PM**
Occurred						
Reported						

DETAILS		
Witness Name (s)	**Employee/Contractor/Other**	**Phone #**

Equipment Involved:	
Incident Type:	

Environmental Release Info	Product / Material	Amount	Unit

Full Description of Incident:	
Immediate Actions Taken:	

Reported by:	
Date:	

APPENDIX C
CLASS III HASP
HAZARDOUS PROPERTY INFORMATION
(including MSDS)

HAZARDOUS CHEMICAL PROPERTY INFORMATION
Explanations and Footnotes

A	Water solubility expressed as 0.2 g means 0.2 grams per 100 grams of water at 20 °C. Water solubility is expressed in different terms in different references. Many references use the term "insoluble" for materials that will not readily mix with water, such as gasoline. However, most of these materials are water soluble at the part per million or part per billion level. Gasoline, for example, is nearly insoluble and will be found as a discrete layer on top of the ground water. But certain gasoline constituents, such as benzene, toluene, and xylene, will also be found in solution in the ground water at the part per million or part per billion level.
B	Solubility of metals depends on the compound in which they are present.
C	Specific gravity is the ratio of the density of a substance to the density of a reference substance. For solids and liquids, the reference substance is water; for gases, the reference substance is air. Specific gravity is expressed in units of g/cc (for solids and liquids) or g/l (at 0 °C and 760 mm Hg) for gases.
D	Vapor density is the weight/unit volume expressed as grams/cubic centimeter liquids.
E	Flash point is the temperature at which a liquid or volatile solid gives off sufficient vapor to form an ignitable mixture with the air. Flash points may be determined by the open cup method or closed cup method. Several chlorinated hydrocarbons exhibit no flash point in the conventional sense, but will burn in the presence of high energy ignition sources or will form explosive mixtures at temperatures above 200 °F.
F	Vapor pressure is the pressure at a given temperature of a vapor in equilibrium with its liquid or solid form. It is expressed as mm Hg at 1 atm. Temperatures vary...see chart.
G	Lower explosive limit (LEL) and Upper explosive limit (UEL) are the minimum and maximum concentrations of a gas or vapor in air that will support flame. LEL and UEL are expressed as % in air at ambient or room temperature.
H	LD_{50} is the quantity of a substance administered by ingestion that is necessary to kill 50% of the test animals exposed to it within a specified time.
I	Threshold limit value as a time-weighted average (TLV-TWA) is the concentration for a normal 8-hr workday and 40-hr work week to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. Values reported are the current ACGIH Threshold Limit Value-Time Weighted Average (TLV-TWA) and OSHA Permissible Exposure Limit (PEL). All PELs are based on pre-1989 values, per OSHA's 1993 decision to vacate the 1989 PELs. STEL- 15 min exposure limit
J	Immediately Dangerous to Life and Health (IDLH) concentrations represent the maximum concentrations from which, in the event of a respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
K	Recommended Respiratory Protection/Max. Use Concentration is used to show the limits for respirator style and contaminant concentration. MUC can be calculated by multiplying the assigned protection factor for a respirator by the required OSHA permissible exposure limit (PEL), short term exposure limit (STEL) or the ceiling limit. The codes in the table refer to the following: ½ = Half-face, air-purifying respirator FF = Full-face, air-purifying respirator OV = Organic vapor canisters HEPA = High Efficiency Particulate Air canisters PAPR = Powered Air-purifying Respirator The Odor Threshold is the lowest concentration at which one may detect an odor or experience a warning effect such as taste, eye irritation, etc., which varies with individual susceptibility.
L	Hazard Property: A - Corrosive; D - Volatile; G - Carcinogen B - Flammable; E - Reactive; H - Infectious C - Toxic; F - Radioactive; I - Reproductive Toxin *Note: A reproductive toxin is a compound (chemical) that affects the reproductive organs (generally the sperm and eggs, but sometimes the physical structure of the testes or ovaries, too). It can affect the reproductive organs of males, females, or both; it can affect the reproductive organs of an adult or child; it can affect the reproductive organs of a developing fetus with or without affecting the mother.*
M	Dermal toxicity data is summarized in the following three categories: 1. **Skin Penetration** A - negligible penetration (solid-polar) + B - slight penetration (solid-nonpolar) ++ C - moderate penetration (liquid/solid-nonpolar) +++ D - high penetration (gas/liquid-nonpolar) 2. **Systemic Potency** E - Slightly Toxic (LD50 = 5 - 15 g/kg) Lethal dose for 70 kg adult = 1 pint to 1 quart F - Moderately Toxic (LD50 = 0.5 - 5 g/kg) Lethal dose for 70 kg adult = 1 ounce to 1 pint G - Extremely toxic (LD50 = 5 - 50 mg/kg) Lethal dose for 70 kg adult = 7 drops to 1 teaspoon 3. **Local Potency** H - slight - reddening of the skin I - moderate - irritation/inflammation of skin J - extreme - tissue destruction/necrosis
N	Acute Exposure Symptoms A - abdominal pains; G - diarrhea; M - respiratory irritation B - central nervous system depression; H - drowsiness; N - skin C - comatose; I - dyspnea; O - tremors D - convulsions; J - fever; P - unconsciousness E - confusion; K - headache; Q - vomiting F – dizziness; L - nausea; R - weakness

APPENDIX D
RAILWAY PEDESTRIAN SAFETY

Railway Pedestrian Safety

- Railroad tracks, trestles, yards and equipment are private property and trespassers are subject to arrest and fine.
- Cross tracks ONLY at designated pedestrian or roadway crossings.
- It can take a mile or more to stop a train, so a locomotive engineer who suddenly spots you ahead has little chance to miss you. Railroad property is private property. For your safety, it is illegal to be there unless you are at a designated public crossing.
- Trains overhang the tracks by at least three feet in both directions and loose straps hanging from rail cars may extend even further. If you are in the right-of-way next to the tracks, you can be hit by the train.
- The only safe place to cross is at a designated public crossing with either a crossbuck, flashing red lights or a gate. If you cross at any other place, you are trespassing and can be ticketed or fined.
- Do not cross the tracks immediately after a train passes. A second train might be blocked by the first. Trains can come from either direction. Wait until you can see clearly around the first train in both directions.
- Flashing red lights signal that a train is approaching from either direction. You can be fined for failure to obey these signals. Never walk around or behind lowered gates at a crossing. Stay Alive! DO NOT cross the tracks until the lights have stopped flashing and it is safe to do so.
- If you are in a rail yard uninvited, you are trespassing and subject to criminal prosecution. The worst penalty is death.
- DO NOT hunt, fish or bungee jump from railroad trestles. There is only enough clearance on the tracks for a train to pass. Trestles are not meant to be sidewalks or pedestrian bridges!
- DO NOT attempt to hop aboard railroad equipment at any time. A slip of the foot can cost you a limb or your life.
- Be aware trains do not follow set schedules. Any Time is Train Time!
- Do not walk, run, cycle or operate all terrain vehicles (ATVs) on railroad tracks or rights-of-way or through tunnels.
- Freight trains do not travel on a predictable schedule; schedules for passenger trains change. Always expect a train at every highway-rail intersection.
- Train tracks are private property, no matter which railroad owns them. Trains have the right of way 100% of the time — over ambulances, fire engines, cars, the police and pedestrians.
- If there are rails on the railroad ties, assume that the track is in use, even if there are weeds or the track looks "rusty."
- A typical locomotive weighs approximately 400,000 pounds or 200 tons. When 100 railcars are added to the locomotive, the train can weigh approximately 6,000 tons. The weight ratio of an automobile to a train is proportional to a soda can and an automobile.
- A train may extend three feet or more outside the steel rail, which makes the safety zone for pedestrians well beyond the rails themselves.
- Trains cannot stop quickly. It is a simple law of physics: the huge weight and size of the train and the speed of the train dictate how quickly it can stop under ideal conditions. A 100-car freight train traveling at 55 miles per hour will need more than a mile to stop — that's approximately 18 football fields — once the train is set into emergency braking.
- There are approximately 140,000 miles of railroad tracks in the United States (source: Association of American Railroads, 2006).
- Trains can move in either direction at any time. Trains are sometimes pushed by locomotives instead of being pulled. This is especially true in commuter and light rail passenger service.
- Modern trains are quieter than ever, with no telltale "clackety-clack." Also, an approaching train will always be closer and moving faster than you think.
- Cross tracks ONLY at designated pedestrian or roadway crossings. Observe and obey all warning signs and signals.
- Never walk down a train track; it's illegal and it's dangerous. By the time a locomotive engineer can see a trespasser or a vehicle on the tracks, it is too late. The train cannot stop quickly enough to avoid a collision.

Railway Pedestrian Safety Guidelines adopted from http://www.oli.org/

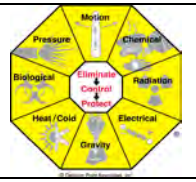
Pedestrian Bridge Safety

One of the possible work tasks that may be required for this site includes working from a pedestrian bridge to collect samples and/or conduct water gauging and/or other necessary tasks. The following items are provided as guidelines for this type of work and may be revised based on specific site conditions or requirements with concurrence of the site safety officer and the project manager.

- Work shall try to be arranged such that tasks shall not require breaking the outer plane of the bridge structure. Work shall be conducted within the bridge to the extent possible.
- Work tasks and equipment shall be arranged to minimize slip/trip hazards while working from the bridge as well as to prevent knocking items off the bridge.
- Work shall be preferably performed from a bridge location that is securely guarded with a railing or similar means.
- If work requires breaking the outer plane of the bridge with no adequate railing type system, a life vest and fall protection shall be used.
- Work over or near the water edge shall be conducted using a buddy system with one person acting as a watch with means to immediately summon emergency services.
- All work from the bridge shall be preceded by a notification call to the project manager (or designee) if not on-site. Upon completion of the work from the bridge, the project manager (or designee) shall be notified that work is completed on the bridge.

APPENDIX E
JOB SAFETY ANALYSIS

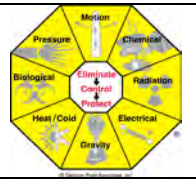
JOB SAFETY ANALYSIS



Job Safety Analysis for: ***(State Task)***			
CONTRACTOR:	*Antea Group Consultants*	DATE:	
PROJECT MANAGER/SITE SUPERVISOR (List Name(s)::**			
PERMITS REQUIRED (Y/N) List Type: **?**			
JSA TEAM MEMBERS:			
LOCATION OF WORKSITE	Street, w/Cross Street:		
	City, State, Zip:		
DESCRIPTION OF WORK:			
Team Leader Reviewed by Signature:		Date:	

Sequence of Basic Job/Task Steps *List the tasks required to perform the activity in the sequence they are carried out.*	**Potential Hazards (Energy Sources) Involved with Task/Environment** *Against each task list the hazards that could cause injury when the task is performed.*	**Control Measures (Eliminate, Control, Protect)** *List the control measures required to eliminate or minimize the risk of injury arising from the identified hazard.*	**Stop Work Triggers** 

JOB SAFETY ANALYSIS



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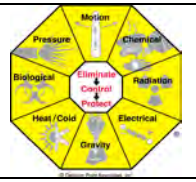
JOB SAFETY ANALYSIS



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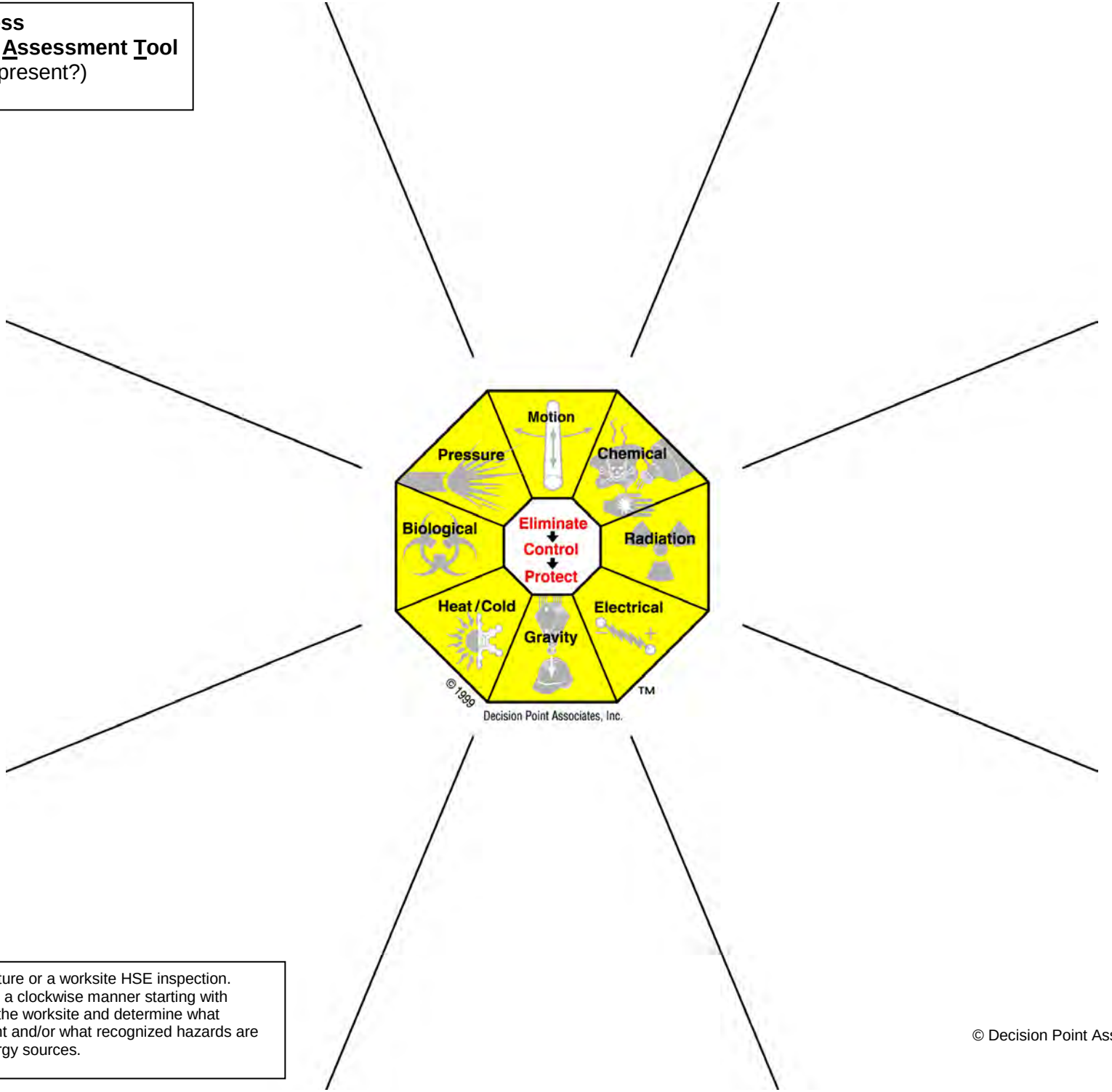
HRP Team Process
Worksite Hazard Assessment Tool
(WHAT energy is present?)



For use with a JSA big picture or a worksite HSE inspection. Using the HRP Octagon in a clockwise manner starting with Energy of Motion, assess the worksite and determine what energy sources are present and/or what recognized hazards are associated with those energy sources.

Use the following to help you DRAFT the job steps before starting the JSA:

DRAFT STEPS

1.

2.

3.

4.

5.

6.

7.

8.

ADDITIONAL FIELD NOTES/OBSERVATIONS:

APPENDIX F
On-site Chemical MSDS's

Zep Commercial Sales & Service
A unit of Zep Inc.
P.O. Box 1060
Cartersville, GA 30120
1-888-805-HELP (4357)
www.zepcommercial.com

Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Product name Heavy-Duty Citrus Degreaser

Product code ZUCIT

Date of issue 10/14/08 **Supersedes** 08/29/07

Emergency Telephone Numbers

For MSDS Information:
Compliance Services 404-352-1680

For Medical Emergency
INFOTRAC: (877) 541-2016 Toll Free - All Calls Recorded

For Transportation Emergency
CHEMTREC: (800) 424-9300 - All Calls Recorded
In the District of Columbia (202) 483-7616

Prepared By
Compliance Services
1420 Seaboard Industrial Blvd.
Atlanta, GA 30318

Section 2. Hazards Identification

Emergency overview

*Hazard Determination System (HDS): Health, Flammability, Reactivity

WARNING !

COMBUSTIBLE. CAUSES EYE IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. HARMFUL IF SWALLOWED.

NOTE: MSDS data pertains to the product as delivered in the original shipping container(s). Risk of adverse effects are lessened by following all prescribed safety precautions, including the use of proper personal protective equipment.

Acute Effects **Routes of Entry** Dermal contact. Eye contact. Inhalation.

Eyes Causes eye irritation. Inflammation of the eye is characterized by redness, watering and itching.

Skin May cause skin irritation. May cause skin sensitization. May cause allergic reactions in certain individuals. Skin inflammation is characterized by itching, scaling, or reddening.

Inhalation Over-exposure by inhalation may cause respiratory irritation.

Ingestion May be harmful if swallowed. Ingestion may cause gastrointestinal irritation and diarrhea.

Prolonged or repeated contact may dry skin and cause irritation. Contains material which may cause damage to the following organs: upper respiratory tract, blood, kidneys, lungs, liver.

Carcinogenicity Ingredients: Not listed as carcinogen by OSHA, NTP or IARC.

Additional Information: See Toxicological Information (Section 11)

Section 3. Composition/Information on Ingredients

Name of Hazardous Ingredients	CAS number	% by Weight
D-LIMONENE; orange distillate; citrus terpene; cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)-	5989-27-5	1 - 5
MONOETHANOLAMINE; 2-aminoethanol; MEA	141-43-5	1 - 5
DIETHYLENE GLYCOL MONOBUTYL ETHER; 2-(2-butoxyethoxy)-ethanol; butyl carbitol	112-34-5	1 - 5
DIPROPYLENE GLYCOL N-BUTYL ETHER; 1-(2-butoxy-1-methoxy)- 2-propanol; Glycol Ether DPNB	29911-28-2	1 - 5

Section 4. First Aid Measures

Eye Contact Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention immediately.

Skin Contact Flush affected skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Wash clothing before reuse. Get medical attention if irritation develops.

Inhalation Move exposed person to fresh air. If irritation persists, get medical attention.

Ingestion If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If affected person is conscious, give plenty of water to drink. Get medical attention immediately.

Section 5. Fire Fighting Measures

National Fire Protection Association (U.S.A.)

Flash Point Closed cup: 51.1°C (124°F) [Tagliabue.]

Flammable Limits Not determined.

Flammability COMBUSTIBLE.

Fire hazard Combustible liquid and vapor. Keep away from heat, sparks and flame.

Fire-Fighting Procedures Use dry chemical, CO_2, water spray (fog) or foam. Fire-fighters should wear appropriate protective equipment. Do not release runoff from fire to sewers or waterways.

Section 6. Accidental Release Measures

Spill Clean up Eliminate all ignition sources. Put on appropriate personal protective equipment (see section 8). Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and Storage

Handling Put on appropriate personal protective equipment (see section 8). Store and use away from heat, sparks, open flame or any other ignition source. Avoid contact with eyes, skin and clothing. Avoid breathing vapors, spray or mists. Use only with adequate ventilation. Do not ingest. Observe label precautions. Wash thoroughly after handling. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage Keep away from heat and direct sunlight. Avoid all possible sources of ignition (spark or flame). Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Keep away from food, drink and animal feeding stuffs. Keep out of the reach of children.

Section 8. Exposure Controls/Personal Protection

Product name	Exposure limits
MONOETHANOLAMINE; 2-aminoethanol; MEA	**OSHA PEL / ACGIH TLV (United States).** TWA: 3 ppm 8 hour(s). **OSHA /ACGIH (United States).** STEL: 6 ppm 15 minute(s).
DIETHYLENE GLYCOL MONOBUTYL ETHER; 2-(2-butoxyethoxy)-ethanol; butyl carbitol	**Manufacturer (United States).** TWA: 35 ppm 8 hour(s).

Personal Protective Equipment (PPE)

Eyes Safety glasses.

Body For prolonged or repeated handling, use gloves. Recommended: Neoprene gloves. Nitrile gloves. Rubber gloves.

Respiratory Use with adequate ventilation. A respirator is not needed under normal and intended conditions of product use.

Section 9. Physical and Chemical Properties

Physical State Liquid.

pH 11.0 - 12.0

Boiling Point Not available.

Specific Gravity 1.01

Solubility Soluble in water.

Color Clear. Amber.

Odor Citrus

Vapor Pressure Not available.

Vapor Density Not determined.

Evaporation Rate 1 (Water = 1)

VOC (Consumer) 4.0% 0.34 lbs/gal 40 (g/l).

Section 10. Stability and Reactivity

Stability and Reactivity The product is stable.

Incompatibility Combustible materials should be stored away from extreme heat and away from strong oxidizing agents. Incompatible with some strong acids. Reactive with acidic clay (i.e. clay absorbent)

Hazardous Polymerization Will not occur.

Hazardous Decomposition Products carbon oxides, nitrogen oxides (NO, NO_2 etc.)

Section 11. Toxicological Information

Acute Toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Monoethanolamine	LD50 Dermal	Rabbit	>1000 mg/kg	-
	LD50 Oral	Rat	1720 mg/kg	-
Diethylene Glycol Monobutyl Ether	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Oral	Rat	5660 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-

Section 12. Ecological Information

Environmental Effects No known significant effects or critical hazards.

Aquatic Ecotoxicity

Not available.

Section 13. Disposal Considerations

Waste Information

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Consult your local or regional authorities for additional information.

Waste Stream Code: D001
Classification: - [Hazardous waste.]
Origin: - [RCRA waste.]

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
DOT Classification	Not applicable.	Not a DOT controlled material (United States).			
TDG Classification					
IMDG Class	Not determined.				

NOTE: DOT classification applies to most package sizes. For specific container size classifications or for size exceptions, refer to the Bill of Lading with your shipment.

PG* : Packing group

Section 15. Regulatory Information

U.S. Federal Regulations

SARA 313 toxic chemical notification and release reporting:

Product name

Diethylene Glycol Monobutyl Ether

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: Diethylene Glycol Monobutyl Ether

All Components of this product are listed or exempt from listing on TSCA Inventory.

State Regulations

California Prop 65 No products were found.

Canada

WHMIS (Canada) Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2B: Material causing other toxic effects (Toxic).

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**NOTE: Hazard Determination System (HDS) ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although these ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HDS ratings are to be used with a fully implemented program to relay the meanings of this scale.*

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2005/03/09

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier).
CAS# 497-19-8: LD50 4020 mg/kg - rat oral.
CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Solid

Appearance & odor: Almost odourless.
White granular powder.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): Not applicable.

Vapour density (air=1): Not applicable.

By weight: Not available.

Evaporation rate (butyl acetate = 1): Not applicable.

Boiling point (°C): Not applicable.

Freezing point (°C): Not applicable.

pH: (1% aqueous solution).
9.5

Specific gravity @ 20 °C: (water = 1).
0.85 - 1.10

Solubility in water (%): 100 - > 10% w/w

Coefficient of water\oil dist.: Not available.

VOC: None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: None

Section 5 : REACTIVITY DATA

Chemical stability: Stable under normal conditions.

Conditions of instability: None known.

Hazardous polymerization: Will not occur.

Incompatible substances: Strong acids.
Strong oxidizers.

Hazardous decomposition products: See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry: Skin contact, eye contact, inhalation and ingestion.

Effects of Acute Exposure

Eye contact: May cause irritation.

Skin contact: Prolonged contact may cause irritation.

Inhalation: Airborne particles may cause irritation.

Ingestion: May cause vomiting and diarrhea.
May cause abdominal pain.
May cause gastric distress.

Effects of chronic exposure: Contains an ingredient which may be corrosive.

LD50 of product, species & route: > 5000 mg/kg rat oral.

LC50 of product, species & route: Not available for mixture, see the ingredients section.

Exposure limit of material: Not available for mixture, see the ingredients section.

Sensitization to product: Not available.

Carcinogenic effects: Not listed as a carcinogen.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Medical conditions aggravated by exposure: Not available.

First Aid

Skin contact: Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.

Eye contact: Check for and remove contact lenses.
Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.

Inhalation: Remove victim to fresh air.
Seek medical attention if symptoms persist.

Ingestion: Dilute with two glasses of water.
Never give anything by mouth to an unconscious person.
Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak / Spill: Contain the spill.
Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.
Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves / Type:

Neoprene or rubber gloves.

Respiratory / Type:

If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye / Type:

Safety glasses with side-shields.

Footwear / Type: Safety shoes per local regulations.

Clothing / Type: As required to prevent skin contact.

Other / Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

Material Safety Data Sheet

MSDS

Printed April 2010

Revised **29 Aug 2007**

Bernzomatic BF55 & BF9 BUTANE FUEL

Hazardous Ratings:

4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

HMIS Hazard Class:

Fire = 4
Health = 1
Reactivity = 0

NFPA Hazard Class:

Fire = 4
Health = 1
Reactivity = 0

MATERIAL IDENTIFICATION

Marketer: Bernzomatic
1 Bernzomatic Drive
Medina, NY 14103

Phone Number: 800-654-9011
Transportation Emergency: 800-424-9300

Chemical Trade Name, synonyms: LP Gas, A-28

Chemical Family: Hydrocarbon, LP Gas

Chemical Formula: C_4H_{10}

COMPONENTS

Material	CAS Number	PEL/TLV, Source	Percent
Liquefied Petroleum Gas			
N,Butane, volume	106-97-8	1000 ppm, OSHA	22%
Isobutane, volume	75-28-5	1000 ppm, OSHA	78%

PHYSICAL DATA

Boiling Point	-11.7F
Pressure in can at 70□F	Approx. 28 psig
Vapor Density (Air=1)	Greater than 2
Solubility in water	Less than 0.1% by weight @70F
Specific Gravity (Water=1)	0.5676

Percent Volatile by weight	100%
Evaporation Rate (BuAce=1)	Gas
Appearance and odor	Liquefied compressed gas, flash evaporates at room temperature when released from can, colorless gas with essentially no odor.

HAZARDOUS REACTIVITY

Stability	Stable when stored as a liquid in cans under its own pressure.
Conditions to avoid	Contact with sparks, open flame or any source of ignition.
Hazardous Polymerization	Will not occur
Hazardous Decomposition Products	May produce carbon monoxide when oxidized with deficiency of oxygen.

FIRE AND EXPLOSION DATA

Flammability Category	Extremely Flammable (Reference - Consumer Product Commission, flame projection test for aerosol products, per 16 CFR 1500.45)
Flash Point	Less than -117□F
Flammable Limits	LEL% 1.8 UEL% 8.4
Extinguishing Media	If feasible, stop flow of gas. Use water to cool fire-exposed cans, surroundings and to protect personnel working on shut off. Water spray, dry powder or carbon dioxide can be directed at flame area, if gas flow cannot be stopped, to reduce fire intensity. DO NOT COMPLETELY EXTINGUISH FLAME UNLESS GAS FLOW IS SHUT OFF!
Unusual Fire and Explosion Hazards	This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing Apparatus against the hazardous effects of normal products of combustion of oxygen deficiency. Petroleum gases are heavier than air and travel along the ground or into drains to possible distant ignition sources, causing an explosive flashback.
Special Fire Fighting Procedures	Avoid possible accumulations of vapors at floor level, as vapor is heavier than air. Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals. This product is extremely flammable at all times. Keep away from any sources of inadvertent ignition, including heat, fire, sparks, or flame.

HEALTH HAZARD INFORMATION

Suggested Exposure Guideline	1000 ppm
Primary Route of Exposure	Inhalation, skin contact, eye contact
Inhalation	This product is an asphyxiate and may exhibit anesthetic properties at very high concentrations. Initial symptoms of exposure at these concentrations are disorentation, lack of coordination, rapid respiration, headache, and nausea. Continued exposure May result in unconsciousness, coma, and possible death.
Skin Contact	Vapors are not irritating. Freeze burns or frostbite possible if skin is in prolonged contact with vaporizing liquid.
Eye Contact	Same as skin contact.
Carcinogenicity	None of the components in this material are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

FIRST AID

Inhalation	Remove to fresh air. Artificial respiration, consult physician.
Skin Contact	Wash with soap and water. Remove soaked clothing to avoid prolonged skin contact.
Eye Contact	Flush eyes well with running water for 15 minutes.
Ingestion	NA, product is gaseous at normal temperature and pressure.

SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled	Protect from any ignition source, keep away from heat, fire, sparks, or flame. Ventilate area well. Avoid accumulation of vapor at low levels.
Waste disposal method	Dispose of in accordance with all local, state and federal regulations. Do not puncture or incinerate.

SPECIAL PROTECTION INFORMATION

Respiration Protection	If TLV is exceeded wear NIOSH-approved self-contained breathing device or respirator.
Ventilation	Must be adequate to maintaining airborne concentrations below established exposure limits, particularly at floor level as vapors are heavier than air.
Protective gloves	None needed for normal use. Thermal insulated gloves when handling if prolonged exposure expected.

Eye Protection	Safety glasses or goggles recommended

HANDLING AND STORAGE PRECAUTIONS

Precautions to be taken in handling and storage	Do not store where temperature may exceed 120□F. Store away from, fire, sparks, or flame. Store in suitable area for hazardous materials storage.
D.O.T. Shipping Classification	Lighter, Lighter Refills, 2.1
Hazard Class	2.1
ID Number	UN1057
Label Required	Flammable Gas

TSCA Statement: All the components of this product are in compliance with the Toxic Substances Control Act (TSCA) and are either listed on the TSCA Inventory or otherwise exempted from listing.

SPECIAL PRECAUTIONS

Precautions for usage	Do not use near heat, fire, flame or sparks. Avoid excessive breathing of vapor. Do not spray in direction of body. Use only in accordance with directions.

Notice: This data represents typical values, not product specifications. No guarantee of accuracy or completeness is made. No responsibility is assumed for any kind of loss or damages arising from use of this data.

End of MSDS

JMB - 1

OSHA 174, Sept. 1985

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

Identity (As Used on Label and List)

PROPANE

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

SECTION 1

Supplier's Name
Bernz-O-matic

Address
Number, Street, City, State and ZIP Code

One BernzOmatic Drive
Medina, NY 14103

Emergency Telephone Number
800-424-9300

Telephone Number for Information
800-654-9011

Date Prepared
June 11, 2008

Signature of Preparer *(Optional)*

SECTION II - Hazardous Ingredients / Identity Information

Hazardous Components *Specific Chemical Identity, Common Name(s)*	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
PROPANE CAS #74-98-6	1000PPM	1000PPM	NA	100

NFPA HAZARD RATINGS
Health -1
Flammability -4
Reactivity -0

HMIS RATINGS
Health -0
Flammability -4
Reactivity -0

Note: When propane fuel is burned efficiently, the normal by-products of combustion are CO_2 and H_20. Inefficient burning may add CO to the by-products of combustion.

SECTION III - Physical / Chemical Characteristics

Boiling Point
-44° F

Specific Gravity (H_20 - 1)
Liquid @ 60° F .51

Vapor Pressure (mm Hg)
@ 100° F 197 psig

Melting Point
N/A

Vapor Density (AIR=1)
@ 1 ATM @ 60° F 1.56

Evaporation Rate
Butyl Acetate -1) N/A

Solubility in Water
Not Soluble

Appearance and Odor
Colorless - Rotten Egg Odor

SECTION IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
-156° F Closed Cup		2.1	9.5

Extinguishing Media
Stop flow of gas or oxygen

Special Fire Fighting Procedures
Use water to cool tanks

Unusual Fire and Explosion Hazards Auto Ignition temp. 842° F Heavier than air (vapor density 1.5). May travel a considerable distance to a source of ignition and flashback.

SECTION V - Reactivity Data

Stability → Unstable / Stable X

Conditions to Avoid
N/A

Incompatibility (Materials to Avoid)
N/A

Hazardous Decomposition or Byproducts
None

Hazardous Polymerization → May Occur / Will Not Occur X

Conditions to Avoid
N/A

SECTION VI - Health Hazard Data

Routes of Entry →	Inhalation?	Skin?	Ingestion?
	YES	YES	NO

Health Hazards (Acute and Chronic)

Contact with liquid propane may cause frost burns.

Carcinogenicity →	NTP?	IARC Monographs?	OSHA Regulated?
	N/A	N/A	N/A

Signs and Symptoms of Exposure

High concentrations may cause headaches and drowsiness.

Medical Conditions Generally Aggravated by Exposure

N/A

Emergency and First Aid Procedures

Remove exposed person from contaminated area.

Warning

This fuel, and byproducts of combustion of this fuel, contain chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.

SECTION VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Remove ignition sources and ventilate area.

Waste Disposal Method

Vent gas to atmosphere in flame free, spark free area outdoors.

Precautions to be Taken in Handling and Storing

Store at temperatures below 120° F in well ventilated, spark free, flame free area.

Other Precautions

None

SECTION VIII - Control Measures

Respiratory Protection (Specify Type)

Not required with normal use.

Ventilation →	Local Exhaust	Mechanical (General)	Special	Other
	N/A	N/A	N/A	N/A

Protective Gloves	Eye Protection
Not required	Not required

Other Protective Clothing or Equipment

Not required

Work / Hygienic Practices

N/A

SECTION IX - Shipping Information

WHMIS Classification: A - Compressed Gas & B1 - Flammable Gas | **Class:** 2.1

DOT	Proper Shipping Name	Hazard Classification	UN. No.
	Petroleum Gas, Liquefied	Flammable Gas	1075

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SITE_FORM Number
30000000000000003296.003

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	OFF!® DEEP WOODS® SPRAY INSECT REPELLENT 5 (REG. NO. 29931 P.C.P. ACT)
Use of the Substance/Mixture	:	Insect Repellent
Company	:	S.C. Johnson and Son, Limited 1 Webster Street Brantford ON N3T 5R1
Emergency telephone number	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647 24 Hour Canadian Transport Emergency Phone (CANUTEC) (613) 996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	clear / liquid / pleasant
Immediate Concerns	:	Warning FLAMMABLE: CAUSES EYE IRRITATION. Keep away from heat, sparks and flame. Harmful if swallowed. Avoid contact with eyes and lips.

Potential Health Effects

Exposure routes	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	Causes: Moderate eye irritation
Skin	:	May cause skin reactions in rare cases. Prolonged or repeated contact may dry skin and cause irritation.
Inhalation	:	May cause nose, throat, and lung irritation. Inhalation may cause central nervous system effects.
Ingestion	:	May cause irritation to mouth, throat and stomach. May cause abdominal discomfort.

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Causes headache, drowsiness or other effects to the central nervous system.
Harmful if swallowed.

Aggravated Medical Condition : Do not apply to cuts or irritated skin.
Persons with pre-existing skin disorders may be more susceptible to irritating effects.
Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc. may be more susceptible to irritating effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous chemicals present at or above reportable levels as defined by OSHA 29 CFR 1910.1200 or the Canadian Controlled Products Regulations are listed in this table:

Chemical Name	CAS-No.	Weight percent
Ethyl alcohol	64-17-5	30.00 - 60.00
N,N-Diethyl-m-toluamide	134-62-3	10.00 - 30.00

For additional information on product ingredients, see www.whatsinsidescjohnson.com.

4. FIRST AID MEASURES

Eye contact : Remove contact lenses. Flush immediately with plenty of water for at least 15 to 20 minutes. Get medical attention if irritation develops and persists.

Skin contact : Wash off immediately with plenty of water. Rinse with plenty of water. Get medical attention if irritation develops and persists. If you suspect a reaction to this product, discontinue use and remove contaminated clothing.

Inhalation : Remove to fresh air.

Ingestion : If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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Specific hazards during fire fighting	:	Flammable liquid. Vapors are heavier than air and may travel to a source of ignition and flash back. Liquid run-off to sewers may create fire/explosion hazard. Container may melt and leak in heat of fire. Do not allow run-off from fire fighting to enter drains or water courses. Burns with colourless flame.
Further information	:	Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. For large quantities of flammable liquids, consider containment to prevent the spread of fire. Wear full protective clothing and positive pressure self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.
Flash point	:	29 °C 84.2 °F Method: Tag Closed Cup (TCC)
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Wear personal protective equipment.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Use appropriate containment to avoid environmental contamination. Outside of normal use, avoid release to the environment.
Methods for cleaning up	:	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Use only non-sparking equipment. Dike large spills. Clean residue from spill site.

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7. HANDLING AND STORAGE

Handling

Advice on safe handling : Avoid contact with eyes and lips.
Avoid breathing vapors, mist or gas.
For personal protection see section 8.
Use only as directed.
KEEP OUT OF REACH OF CHILDREN AND PETS.
Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Take measures to prevent the build up of electrostatic charge.

Storage

Requirements for storage areas and containers : Keep away from food, drink and animal feedingstuffs.
Keep container closed when not in use.
Keep in a dry, cool and well-ventilated place.

Other data : Stable under normal conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Non-standard units	Basis
Ethyl alcohol	64-17-5	-	1,000 ppm	-	ACGIH STEL

Personal protective equipment

Respiratory protection

Industrial setting : Use only with adequate ventilation.
Do not spray in enclosed areas.

Household setting : Use only with adequate ventilation.

Hand protection : No special requirements.

Eye protection

Industrial setting	:	Safety glasses with side-shields
Household setting	:	Avoid contact with eyes.
Skin and body protection	:	No special requirements.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Smoking, eating and drinking should be prohibited in the application area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	liquid
Color	:	clear
Odor	:	pleasant
pH	:	5.3
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	29 °C 84.2 °F Method: Tag Closed Cup (TCC)
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Density	:	0.93 g/cm3
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	no data available

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Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	not applicable
Volatile Organic Compounds (California Air Resource Board – CARB) Total VOC (wt. %)	:	34.9 % - does not include any applicable regulatory exemptions

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	Strong oxidizing agents
Hazardous decomposition products	:	Thermal decomposition can lead to release of irritating gases and vapours.
Hazardous reactions	:	Stable under recommended storage conditions.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 4,103 mg/kg
Acute inhalation toxicity	:	LC50 > 2.07 mg/l
Acute dermal toxicity	:	LD50 > 5,000 mg/kg

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available

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Sensitisation : Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects : no data available

13. DISPOSAL CONSIDERATIONS

PESTICIDAL WASTE:
Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Consumer may discard empty container in trash, or recycle where facilities exist.

RCRA waste class : D001 (Ignitable Waste)

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation:**

Proper shipping name	UN 1993 FLAMMABLE LIQUID N.O.S. (ethanol), 3, III
Class:	3
UN number	1993
Packaging group:	III
Note:	SC Johnson ships this product as Consumer Commodity ORM-D (non-bulk packages)

Sea transport

- *IMDG:*

Proper shipping name	UN 1993 FLAMMABLE LIQUID N.O.S. (ethanol), 3, III
Class:	3
UN number:	1993
Packaging group:	III
EmS:	F-E, S-E
Note:	Limited quantities derogation may be applicable to this product, please check transport documents.

Air transport

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- *ICAO/IATA:*

Proper shipping name	UN 1993 FLAMMABLE LIQUID N.O.S. (ethanol), 3, III
Class:	3
UN/ID No.:	UN 1993
Packaging group:	III
Note:	SC Johnson typically does not ship products via air, therefore it has not been determined if the product container meets current IATA/ICAO package criteria. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

15. REGULATORY INFORMATION

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
Notification status	:	All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
California Prop. 65	:	This product is not subject to the reporting requirements under California's Proposition 65.
Canada Regulations	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

Health	2
Flammability	3
Reactivity	0

NFPA Ratings

Health	2
Fire	3
Reactivity	0
Special	

Further information

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Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950
US GHS

Synonyms: Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

* * * Section 1 - Product and Company Identification * * *

Manufacturer Information

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC
www.hess.com (Environment, Health, Safety Internet Website)

* * * Section 2 - Hazards Identification * * *

GHS Classification:

Flammable Liquid - Category 2
Skin Corrosion/Irritation - Category 2
Germ Cell Mutagenicity - Category 1B
Carcinogenicity - Category 1B
Toxic to Reproduction - Category 1A
Specific Target Organ Toxicity (Single Exposure) - Category 3 (respiratory irritation, narcosis)
Specific Target Organ Toxicity (Repeat Exposure) - Category 1 (liver, kidneys, bladder, blood, bone marrow, nervous system)
Aspiration Hazard - Category 1
Hazardous to the Aquatic Environment – Acute Hazard - Category 3

GHS LABEL ELEMENTS

Symbol(s)

Signal Word

DANGER

Hazard Statements

Highly flammable liquid and vapour.
Causes skin irritation.
May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Causes damage to organs (liver, kidneys, bladder, blood, bone marrow, nervous system) through prolonged or repeated exposure.
May be fatal if swallowed and enters airways.
Harmful to aquatic life.

Precautionary Statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and forearms thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist/vapours/spray.
Use only outdoors or in well-ventilated area.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.

Response

In case of fire: Use water spray, fog, dry chemical fire extinguishers or hand held fire extinguisher.
IF ON SKIN (or hair): Wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.
IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Get medical advice/attention if you feel unwell.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting.

Storage

Store in a well-ventilated place.
Keep cool. Keep container tightly closed.
Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
86290-81-5	Gasoline, motor fuel	100
108-88-3	Toluene	1-25
106-97-8	Butane	<10
1330-20-7	Xylenes (o-, m-, p- isomers)	1-15
95-63-6	Benzene, 1,2,4-trimethyl-	<6
64-17-5	Ethyl alcohol	0-10
100-41-4	Ethylbenzene	<3
71-43-2	Benzene	0.1-4.9

110-54-3	Hexane	0.5-4

A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol). Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

First Aid: Skin

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

First Aid: Inhalation

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

See Section 9 for Flammability Properties.

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

Extinguishing Media

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or gaseous extinguishing agent.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration.

Unsuitable Extinguishing Media

None

Fire Fighting Equipment/Instructions

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

* * * Section 6 - Accidental Release Measures * * *

Recovery and Neutralization

Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

Emergency Measures

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Personal Precautions and Protective Equipment

Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions

Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards

None

* * * Section 7 - Handling and Storage * * *

Handling Procedures

USE ONLY AS A MOTOR FUEL.
DO NOT SIPHON BY MOUTH

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage Procedures

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Incompatibilities

Keep away from strong oxidizers.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component Exposure Limits

Gasoline, motor fuel (86290-81-5)

ACGIH: 300 ppm TWA
500 ppm STEL

Toluene (108-88-3)

ACGIH: 20 ppm TWA
OSHA: 200 ppm TWA; 375 mg/m3 TWA
150 ppm STEL; 560 mg/m3 STEL
NIOSH: 100 ppm TWA; 375 mg/m3 TWA
150 ppm STEL; 560 mg/m3 STEL

Butane (106-97-8)

ACGIH: 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)
OSHA: 800 ppm TWA; 1900 mg/m3 TWA
NIOSH: 800 ppm TWA; 1900 mg/m3 TWA

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: 100 ppm TWA
150 ppm STEL
OSHA: 100 ppm TWA; 435 mg/m3 TWA
150 ppm STEL; 655 mg/m3 STEL

Benzene, 1,2,4-trimethyl- (95-63-6)

NIOSH: 25 ppm TWA; 125 mg/m3 TWA

Ethyl alcohol (64-17-5)

ACGIH: 1000 ppm STEL
OSHA: 1000 ppm TWA; 1900 mg/m3 TWA
NIOSH: 1000 ppm TWA; 1900 mg/m3 TWA

Ethylbenzene (100-41-4)

ACGIH: 20 ppm TWA
OSHA: 100 ppm TWA; 435 mg/m3 TWA
125 ppm STEL; 545 mg/m3 STEL
NIOSH: 100 ppm TWA; 435 mg/m3 TWA
125 ppm STEL; 545 mg/m3 STEL

Benzene (71-43-2)

ACGIH: 0.5 ppm TWA
2.5 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 5 ppm STEL (Cancer hazard, Flammable, See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA
NIOSH: 0.1 ppm TWA
1 ppm STEL

Hexane (110-54-3)

ACGIH: 50 ppm TWA
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 500 ppm TWA; 1800 mg/m3 TWA
NIOSH: 50 ppm TWA; 180 mg/m3 TWA

Engineering Measures

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands

Gloves constructed of nitrile, neoprene, or PVC are recommended.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body

Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

* * * Section 9 - Physical & Chemical Properties * * *

Appearance:	Translucent, straw-colored or light yellow	**Odor:**	Strong, characteristic aromatic hydrocarbon odor. Sweet-ether like
Physical State:	Liquid	**pH:**	ND
Vapor Pressure:	6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)	**Vapor Density:**	AP 3-4
Boiling Point:	85-437 °F (39-200 °C)	**Melting Point:**	ND
Solubility (H2O):	Negligible to Slight	**Specific Gravity:**	0.70-0.78
Evaporation Rate:	10-11	**VOC:**	ND
Percent Volatile:	100%	**Octanol/H2O Coeff.:**	ND
Flash Point:	-45 °F (-43 °C)	**Flash Point Method:**	PMCC
Upper Flammability Limit (UFL):	7.6%	**Lower Flammability Limit (LFL):**	1.4%
Burning Rate:	ND	**Auto Ignition:**	>530°F (>280°C)

* * * Section 10 - Chemical Stability & Reactivity Information * * *

Chemical Stability

This is a stable material.

Hazardous Reaction Potential

Will not occur.

Conditions to Avoid

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

Incompatible Products

Keep away from strong oxidizers.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

* * * Section 11 - Toxicological Information * * *

Acute Toxicity

A: General Product Information

Harmful if swallowed.

B: Component Analysis - LD50/LC50

Gasoline, motor fuel (86290-81-5)

Inhalation LC50 Rat >5.2 mg/L 4 h; Oral LD50 Rat 14000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

Toluene (108-88-3)

Inhalation LC50 Rat 12.5 mg/L 4 h; Inhalation LC50 Rat >26700 ppm 1 h; Oral LD50 Rat 636 mg/kg; Dermal LD50 Rabbit 8390 mg/kg; Dermal LD50 Rat 12124 mg/kg

Butane (106-97-8)

Inhalation LC50 Rat 658 mg/L 4 h

Xylenes (o-, m-, p- isomers) (1330-20-7)
Inhalation LC50 Rat 5000 ppm 4 h; Inhalation LC50 Rat 47635 mg/L 4 h; Oral LD50 Rat 4300 mg/kg; Dermal LD50 Rabbit >1700 mg/kg

Benzene, 1,2,4-trimethyl- (95-63-6)
Inhalation LC50 Rat 18 g/m3 4 h; Oral LD50 Rat 3400 mg/kg; Dermal LD50 Rabbit >3160 mg/kg

Ethyl alcohol (64-17-5)
Oral LD50 Rat 7060 mg/kg; Inhalation LC50 Rat 124.7 mg/L 4 h

Ethylbenzene (100-41-4)
Inhalation LC50 Rat 17.2 mg/L 4 h; Oral LD50 Rat 3500 mg/kg; Dermal LD50 Rabbit 15354 mg/kg

Benzene (71-43-2)
Inhalation LC50 Rat 13050-14380 ppm 4 h; Oral LD50 Rat 1800 mg/kg

Hexane (110-54-3)
Inhalation LC50 Rat 48000 ppm 4 h; Oral LD50 Rat 25 g/kg; Dermal LD50 Rabbit 3000 mg/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

Moderate irritant. Contact with liquid or vapor may cause irritation.

Potential Health Effects: Ingestion

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

Potential Health Effects: Inhalation

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity

This product may cause genetic defects.

Carcinogenicity

A: General Product Information

May cause cancer.

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.

B: Component Carcinogenicity

Gasoline, motor fuel (86290-81-5)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Toluene (108-88-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen
IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Ethyl alcohol (64-17-5)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC: Monograph 100E [in preparation] (in alcoholic beverages); Monograph 96 [2010] (in alcoholic beverages) (Group 1 (carcinogenic to humans))

Ethylbenzene (100-41-4)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC: Monograph 77 [2000] (Group 2B (possibly carcinogenic to humans))

Benzene (71-43-2)

ACGIH: A1 - Confirmed Human Carcinogen
OSHA: 5 ppm STEL (Cancer hazard, Flammable, See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA
NIOSH: potential occupational carcinogen
NTP: Known Human Carcinogen (Select Carcinogen)
IARC: Monograph 100F [in preparation]; Supplement 7 [1987]; Monograph 29 [1982] (Group 1 (carcinogenic to humans))

Reproductive Toxicity

This product is suspected of damaging fertility or the unborn child.

Specified Target Organ General Toxicity: Single Exposure

This product may cause drowsiness or dizziness.

Specified Target Organ General Toxicity: Repeated Exposure

This product causes damage to organs through prolonged or repeated exposure.

Aspiration Respiratory Organs Hazard

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Very toxic to aquatic life with long lasting effects. Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Gasoline, motor fuel (86290-81-5)

Test & Species		Conditions
96 Hr LC50 Alburnus alburnus	119 mg/L [static]	
96 Hr LC50 Cyprinodon variegatus	82 mg/L [static]	
72 Hr EC50 Pseudokirchneriella subcapitata	56 mg/L	
24 Hr EC50 Daphnia magna	170 mg/L	

Toluene (108-88-3)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	15.22-19.05 mg/L [flow-through]	1 day old
96 Hr LC50 Pimephales promelas	12.6 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	5.89-7.81 mg/L [flow-through]	
96 Hr LC50 Oncorhynchus mykiss	14.1-17.16 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	5.8 mg/L [semi-static]	
96 Hr LC50 Lepomis macrochirus	11.0-15.0 mg/L [static]	
96 Hr LC50 Oryzias latipes	54 mg/L [static]	
96 Hr LC50 Poecilia reticulata	28.2 mg/L [semi-static]	
96 Hr LC50 Poecilia reticulata	50.87-70.34 mg/L [static]	
96 Hr EC50 Pseudokirchneriella subcapitata	>433 mg/L	
72 Hr EC50 Pseudokirchneriella subcapitata	12.5 mg/L [static]	
48 Hr EC50 Daphnia magna	5.46 - 9.83 mg/L [Static]	
48 Hr EC50 Daphnia magna	11.5 mg/L	

Xylenes (o-, m-, p- isomers) (1330-20-7)

Test & Species		Conditions
96 Hr LC50 Pimephales promelas	13.4 mg/L [flow-through]	

96 Hr LC50 Oncorhynchus mykiss	2.661-4.093 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	13.5-17.3 mg/L
96 Hr LC50 Lepomis macrochirus	13.1-16.5 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	19 mg/L
96 Hr LC50 Lepomis macrochirus	7.711-9.591 mg/L [static]
96 Hr LC50 Pimephales promelas	23.53-29.97 mg/L [static]
96 Hr LC50 Cyprinus carpio	780 mg/L [semi-static]
96 Hr LC50 Cyprinus carpio	>780 mg/L
96 Hr LC50 Poecilia reticulata	30.26-40.75 mg/L [static]
48 Hr EC50 water flea	3.82 mg/L
48 Hr LC50 Gammarus lacustris	0.6 mg/L

Benzene, 1,2,4-trimethyl- (95-63-6)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	7.19-8.28 mg/L [flow-through]
48 Hr EC50 Daphnia magna	6.14 mg/L

Ethyl alcohol (64-17-5)

Test & Species	Conditions
96 Hr LC50 Oncorhynchus mykiss	12.0 - 16.0 mL/L [static]
96 Hr LC50 Pimephales promelas	>100 mg/L [static]
96 Hr LC50 Pimephales promelas	13400 - 15100 mg/L [flow-through]
48 Hr LC50 Daphnia magna	9268 - 14221 mg/L
24 Hr EC50 Daphnia magna	10800 mg/L
48 Hr EC50 Daphnia magna	2 mg/L [Static]

Ethylbenzene (100-41-4)

Test & Species	Conditions
96 Hr LC50 Oncorhynchus mykiss	11.0-18.0 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	4.2 mg/L [semi-static]
96 Hr LC50 Pimephales promelas	7.55-11 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	32 mg/L [static]
96 Hr LC50 Pimephales promelas	9.1-15.6 mg/L [static]
96 Hr LC50 Poecilia reticulata	9.6 mg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	4.6 mg/L
96 Hr EC50 Pseudokirchneriella subcapitata	>438 mg/L
72 Hr EC50 Pseudokirchneriella subcapitata	2.6 - 11.3 mg/L [static]

96 Hr EC50 Pseudokirchneriella subcapitata	1.7 - 7.6 mg/L [static]
48 Hr EC50 Daphnia magna	1.8 - 2.4 mg/L

Benzene (71-43-2)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	10.7-14.7 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	5.3 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	22.49 mg/L [static]
96 Hr LC50 Poecilia reticulata	28.6 mg/L [static]
96 Hr LC50 Pimephales promelas	22330-41160 µg/L [static]
96 Hr LC50 Lepomis macrochirus	70000-142000 µg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	29 mg/L
48 Hr EC50 Daphnia magna	8.76 - 15.6 mg/L [Static]
48 Hr EC50 Daphnia magna	10 mg/L

Hexane (110-54-3)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	2.1-2.98 mg/L [flow-through]
24 Hr EC50 Daphnia magna	>1000 mg/L

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Mobility in Soil

No information available.

* * * Section 13 - Disposal Considerations * * *

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 14 - Transportation Information * * *

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Gasoline, motor fuel	86290-81-5	DOT regulated marine pollutant

DOT Information

Shipping Name: Gasoline
UN #: 1203 **Hazard Class:** 3 **Packing Group:** II
Placard:

* * * Section 15 - Regulatory Information * * *

Regulatory Information

A: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Toluene (108-88-3)
SARA 313: 1.0 % de minimis concentration
CERCLA: 1000 lb final RQ; 454 kg final RQ

Xylenes (o-, m-, p- isomers) (1330-20-7)
SARA 313: 1.0 % de minimis concentration
CERCLA: 100 lb final RQ; 45.4 kg final RQ

Benzene, 1,2,4-trimethyl- (95-63-6)
SARA 313: 1.0 % de minimis concentration

Ethylbenzene (100-41-4)
SARA 313: 0.1 % de minimis concentration
CERCLA: 1000 lb final RQ; 454 kg final RQ

Benzene (71-43-2)
SARA 313: 0.1 % de minimis concentration
CERCLA: 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

Hexane (110-54-3)

SARA 313: 1.0 % de minimis concentration
CERCLA: 5000 lb final RQ; 2270 kg final RQ

SARA Section 311/312 – Hazard Classes

Acute Health	Chronic Health	Fire	Sudden Release of Pressure	Reactive
X	X	X	--	--

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Gasoline, motor fuel	86290-81-5	DOT regulated marine pollutant

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	**CAS**	**CA**	**MA**	**MN**	**NJ**	**PA**	**RI**
Gasoline, motor fuel	86290-81-5	No	No	No	No	Yes	No
Toluene	108-88-3	Yes	Yes	Yes	Yes	Yes	No
Butane	106-97-8	Yes	Yes	Yes	Yes	Yes	No
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes	Yes	Yes	Yes	Yes	No
Benzene, 1,2,4-trimethyl-	95-63-6	No	Yes	Yes	Yes	Yes	No
Ethyl alcohol	64-17-5	Yes	Yes	Yes	Yes	Yes	No
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	Yes	No
Benzene	71-43-2	Yes	Yes	Yes	Yes	Yes	No
Hexane	110-54-3	No	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.
WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Toluene	108-88-3	1 %
Butane	106-97-8	1 %
Benzene, 1,2,4-trimethyl-	95-63-6	0.1 %
Ethyl alcohol	64-17-5	0.1 %
Ethylbenzene	100-41-4	0.1 %
Benzene	71-43-2	0.1 %
Hexane	110-54-3	1 %

Additional Regulatory Information

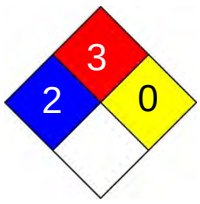
Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Gasoline, motor fuel	86290-81-5	No	DSL	EINECS
Toluene	108-88-3	Yes	DSL	EINECS
Butane	106-97-8	Yes	DSL	EINECS
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes	DSL	EINECS
Benzene, 1,2,4-trimethyl-	95-63-6	Yes	DSL	EINECS
Ethyl alcohol	64-17-5	Yes	DSL	EINECS
Ethylbenzene	100-41-4	Yes	DSL	EINECS
Benzene	71-43-2	Yes	DSL	EINECS
Hexane	110-54-3	Yes	DSL	EINECS

* * * Section 16 - Other Information * * *

NFPA® Hazard Rating

Health	2
Fire	3
Reactivity	0



HMIS® Hazard Rating

Health	2	Moderate
Fire	3	Serious
Physical	0	Minimal
		*Chronic

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

Literature References

None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet

KIK CUSTOM PRODUCTS

Material Safety Data Sheet

GREAT VALUE BLEACH 1

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Distributor Name	Wal-mart Stores,Inc.
Distributor Address	702 SW 8th Street, Box 116 Bentonville, AR 72712
Reference Number	H12-023 (EPA Reg. No. 70271-24-41348)
Manufacturing Company	KIK Custom Products 33 MacIntosh Blvd. Concord, Ontario L4K 4L5 T: 905-660-0444
24 Hour Emergency Contact	1-800-255-3924
Prepared By	Product Development KIK Classic Division
Revised Date	01-31-12 Revision: New

SECTION 2: HAZARD IDENTIFICATION

General Advice: DANGER! CORROSIVE.
May cause severe burns or damage to eyes.
May cause severe skin burns or irritation.
Harmful if swallowed.
Vapor or mist may irritate.
If irritation occurs see a doctor immediately. Keep out of reach of children and pets.

Routes of Exposure: Eyes, Skin, Inhalation, Ingestion
Potential Health Effects:
Eyes: Vapor or mist can be irritation, causing redness. Concentrated vapor, mist or splashed liquid can cause severe irritation, burns or even permanent blindness.
Skin: Contact may produce severe irritation or corrosive skin damage, depending upon length of contact. Under normal consumer use conditions the likelihood of any adverse health effects are low.
Inhalation: Vapor or mist can cause irritation to nose, throat and upper respiratory tract. Symptoms include: coughing, choking. Severe exposure can result in pulmonary edema and corrosion of tissues in the nose and throat.
Ingestion: Causes severe burns of the mouth, esophagus, and stomach, with consequent pain, nausea, vomiting, diarrhea, circulatory collapse.
Target organs: Eyes. Skin.
Chronic effects: Not known.

GREAT VALUE BLEACH [1]

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	*Concentration %*	*CAS No.*	*Worker Exposure Limit*
Sodium Hypochlorite	6% - 9%	7681-52-9	5800 mg/kg / >10500
Sodium Hydroxide	<1.00%	7647-01-0	Not Established

SECTION 4: FIRST AID MEASURES

Eyes: Flush eyes immediately with lukewarm water for at least 20 minutes. Remove contact lenses after first 5 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. See doctor immediately.

Skin: Remove contaminated clothing. Immediately wash the skin with copious amount of lukewarm water for at least 20 - 30 minutes. See doctor immediately.

Inhalation: Move to fresh air immediately and restore breathing. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. See doctor immediately.

Ingestion: DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY MEDICAL PERSONNEL! Rinse mouth out with water. Drink 1 or 2 glasses of water, if swallowing is possible. Do not give anything by mouth to a convulsing or unconscious person. See a doctor immediately.

SECTION 5: FIRE FIGHTING MEASURES

This product is neither flammable nor explosive.

Suitable extinguishing media : Treat for surrounding material.

Protective equipment for fire-fighters : As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

GREAT VALUE BLEACH 1

SECTION 6: ACCIDENTAL RELEASE MEASURES

Always contained all type of spills. Be sure to wear protective equipment (see Section 8)

Leak and Spill Procedure: Rinse with water, mop up, dispose of in accordance with local, state/provincial and federal regulations.

Large Spills: Large spills should be contained, and if not recoverable, then diluted with water. Use a water rinse for final clean-up.

SECTION 7: HANDLING AND STORAGE

Handling: Use only as directed. Avoid any contact with eyes, skin and clothing. When using, do not eat or drink.

Storage: Store in a cool, dry and well-ventilated area. Always keep the container closed when not in use. KEEP OUT OF REACH OF CHILDREN AND PETS.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Household Setting

Eyes Protection – No special requirements under normal use conditions.

Hand Protection – Use gloves for prolonged exposure.

Footwear – No special requirements under normal use conditions.

Respiratory protection – Not normally required.

Industrial Setting

Eyes Protection – Wear splash-resistant, full-face shield chemical goggles.

Hand Protection – Use suitable gloves.

Footwear – Impervious boots of chemically resistant material should be worn at all times.

Respiratory protection – If ventilation is not sufficient to prevent vapor build up, use appropriate NIOSH/MSHA respiratory protection.

GREAT VALUE BLEACH 1

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form	: Liquid
Appearance	: Clear
Color	: Slightly yellow
Odor	: Bleach
pH	: 12.0 – 13.0
Specific Gravity	: 1.09 minimum (water = 1)
Viscosity	: Water thin
Water Solubility	: Complete
Boiling Point	: 212^{o}F (100^{o}C)
Melting Point	: no data available
Freezing point	: no date available

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: Stable under normal use and storage conditions.
Conditions to avoid: Temperature above 40^{o}C, sunlight and metals.
Materials to avoid: Acids, ammonia, urea, metals and oxidizers.
Reactivity: Releases Chlorine gas if mixed with ammonia.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Oral Toxicity: Will cause membrane irritation, pain and inflammation to digestive tract.

Acute dermal toxicity: Will cause moderate irritation to skin and severe irritation and pain to eyes.

Chronic toxicity	: None known.
Carcinogenic Effects	: Not considered to be carcinogenic by IARC, NTP and ACGIH
Mutagenic Effects	: None Known
Reproductive Toxicity	: None Known

GREAT VALUE BLEACH 1

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity effects : Not Available

SECTION 13: DISPOSAL CONSIDERATIONS

Reclaim or dispose in accordance with federal, provincial and local regulations.

SECTION 14: TRANSPORTATION INFORMATION

U.S. DOT and Canadian TDG land Transportation

Class 8: Corrosive material
UN Number: 1791
Proper Shipping name: Sodium Hypochlorite Solution
Packaging group: III
Marine pollutant: No

IMDG Sea Transport

Class 8: Corrosive material
UN Number: 1791
Proper Shipping name: Sodium Hypochlorite Solution
Packaging group: III
Marine pollutant: No

SECTION 15: REGULATORY INFORMATION

TSCA/DSL Status: All components in this product are on the U.S. TSCA and Canadian DSL.

WHMIS (Canada): Class C: Oxidizing Material
Class D, Div. 2, Toxic Liquid, Skin Sensitizer

GREAT VALUE BLEACH 1

SECTION 16: OTHER INFORMATION

HMIS Ratings

Health	: 2
Flammability	: 0
Reactivity	: 2

NFPA Ratings

Health	: 2
Flammability	: 0
Reactivity	: 2

Created By: Mitul Bhandari	Date: 1/31/2012
Approved By: Eden Mercado	Date: 1/31/2012

***** Preliminary MSDS. Subject to change *****

World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Date Printed 11/9/12
MSDS No: M00008

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Phenolphthalein Indicator Powder
Catalog Number: 94299

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00008
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: May cause eye irritation. Experimental carcinogen.
Date of MSDS Preparation:
Day: 29
Month: October
Year: 2012

2. COMPOSITION / INFORMATION ON INGREDIENTS

Phenolphthalein
CAS No.: 77-09-8
TSCA CAS Number: 77-09-8
Percent Range: < 1.0
Percent Range Units: weight / weight
LD50: None reported
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: May cause allergic reaction. May cause irritation. Suspected carcinogen.

Other component
CAS No.: Not applicable
TSCA CAS Number: Not applicable
Percent Range: < 1.0
Percent Range Units: weight / weight
LD50: Not applicable
LC50: Not applicable
TLV: Not established
PEL: Not established
Hazard: Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

Sodium Chloride
CAS No.: 7647-14-5
TSCA CAS Number: 7647-14-5
Percent Range: >95.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 3000 mg/kg
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: Causes moderate eye irritation.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: White or light pink powder
Odor: None
MAY CAUSE EYE IRRITATION
CONTAINS MATERIAL WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA
HMIS:
Health: 2*
Flammability: 0
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.
NFPA:
Health: 2
Flammability: 0
Reactivity: 0
Symbol: Not applicable
Potential Health Effects:
Eye Contact: Causes moderate irritation
Skin Contact: Causes mild irritation
Skin Absorption: No effects anticipated
Target Organs: Not applicable
Ingestion: May cause: dehydration vomiting blood pressure changes muscular twitching rigidity
Target Organs: None reported
Inhalation: No effects anticipated
Target Organs: Not applicable
Medical Conditions Aggravated: Pre-existing: Eye conditions
Chronic Effects: None reported
Cancer / Reproductive Toxicity Information:
This product does NOT contain any OSHA listed carcinogens.
An ingredient of this mixture is: IARC Group 2B: Experimental Carcinogen
Phenolphthalein
An ingredient of this mixture is: NTP Listed Group 2B: Experimental Carcinogen
Phenolphthalein
Additional Cancer / Reproductive Toxicity Information: Contains: a suspected mutagen.
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Flush eyes with water. Call physician if irritation develops.
Skin Contact (First Aid): Wash skin with plenty of water.
Ingestion (First Aid): Give large quantities of water. Call physician immediately.
Inhalation: Remove to fresh air.

5. FIRE FIGHTING MEASURES

Flammable Properties: During a fire, this product decomposes to form toxic gases.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not applicable
Hazardous Combustion Products: Toxic fumes of: chlorides sodium oxides
Fire / Explosion Hazards: May react violently with: bromine trifluoride
Static Discharge: None reported.

Mechanical Impact: None reported
Extinguishing Media: Use media appropriate to surrounding fire conditions
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.
Containment Technique: Stop spilled material from being released to the environment.
Clean-up Technique: Scoop up spilled material into a large beaker and dissolve with water. Dilute with a large excess of water. Flush the spilled material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.
Special Instructions (for accidental release): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
D.O.T. Emergency Response Guide Number: None

7. HANDLING / STORAGE

Handling: Avoid contact with eyes skin Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Keep container tightly closed when not in use.
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Maintain general industrial hygiene practices when using this product.
Personal Protective Equipment:
Eye Protection: safety glasses with top and side shields
Skin Protection: disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it. lab coat
Inhalation Protection: adequate ventilation
Precautionary Measures: Avoid contact with: eyes skin Wash thoroughly after handling.
TLV: Not established
PEL: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: White or light pink powder
Physical State: Solid
Molecular Weight: Not applicable
Odor: None
pH: of 5% solution = 6.2
Vapor Pressure: Not applicable
Vapor Density (air = 1): Not applicable
Boiling Point: Not applicable
Melting Point: 258°-262°C (496°-504°F)
Specific Gravity/ Relative Density (water = 1; air =1): 2.10
Evaporation Rate (water = 1): Not applicable
Volatile Organic Compounds Content: Not applicable
Partition Coefficient (n-octanol / water): Not determined
Solubility:
Water: Soluble

Acid: Soluble
Other: Not determined
Metal Corrosivity:
Steel: Not determined
Aluminum: Not determined

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Heating to decomposition. Excess moisture
Reactivity / Incompatibility: Incompatible with: bromine trifluoride lithium
Hazardous Decomposition: Toxic fumes of: chlorides sodium oxides
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:
LD50: None reported
LC50: None reported
Dermal Toxicity Data: None reported
Skin and Eye Irritation Data: None reported
Mutation Data: None reported
Reproductive Effects Data: In a laboratory test, single subcutaneous injection of sodium chloride into pregnant mice at the level of 2500 mg/kg caused fetal deaths and malformations.
Ingredient Toxicological Data: Sodium Chloride: Oral rat LD50 = 3000 mg/kg

12. ECOLOGICAL INFORMATION

Product Ecological Information: --
No ecological data available for this product. Mobility in soil: No data available
Ingredient Ecological Information: --
No ecological data available for the ingredients of this product.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: None
Special Instructions (Disposal): Dilute material with excess water making a weaker than 5% solution. Open cold water tap completely, slowly pour the material to the drain. Flush system with plenty of water.
Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:
D.O.T. Proper Shipping Name: Not Currently Regulated
--
DOT Hazard Class: NA
DOT Subsidiary Risk: NA
DOT ID Number: NA
DOT Packing Group: NA
I.C.A.O.:
I.C.A.O. Proper Shipping Name: Not Currently Regulated
--
ICAO Hazard Class: NA
ICAO Subsidiary Risk: NA
ICAO ID Number: NA

ICAO Packing Group: NA
I.M.O.:
I.M.O. Proper Shipping Name: Not Currently Regulated
--
I.M.O. Hazard Class: NA
I.M.O. Subsidiary Risk: NA
I.M.O. ID Number: NA
I.M.O. Packing Group: NA
Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:
O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)
E.P.A.:
S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard
S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.
--
302 (EHS) TPQ (40 CFR 355): Not applicable
304 CERCLA RQ (40 CFR 302.4): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
Clean Water Act (40 CFR 116.4): Not applicable
RCRA: Contains no RCRA regulated substances.
C.P.S.C.: Not applicable
State Regulations:
California Prop. 65: WARNING - This product contains a chemical known to the State of California to cause cancer.
Identification of Prop. 65 Ingredient(s): Phenolphthalein
California Perchlorate Rule CCR Title 22 Chap 33: Not applicable
Trade Secret Registry: Not applicable
National Inventories:
U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).
TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Reagent Indicator for pH
References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. Journal of Clinical Investigations 41: 710-714 (1962). Acta Anat. 74: 121-124 (1969). Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. In-house information.
Revision Summary: Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Date Printed 5/13/10
MSDS No: M00337

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sulfuric Acid 0.1600 ± 0.0008 N
Catalog Number: 1438801

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00337
Chemical Name: Not applicable.
CAS No.: Not applicable.
Chemical Formula: Not applicable.
Chemical Family: Not applicable
Hazard: May cause eye irritation.
Date of MSDS Preparation:
Day: 15
Month: October
Year: 2009

2. COMPOSITION / INFORMATION ON INGREDIENTS

Demineralized Water
CAS No.: 7732-18-5
TSCA CAS Number: 7732-18-5
Percent Range: >98
Percent Range Units: weight / volume
LD50: None reported
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: No effects anticipated.

Other components, each
CAS No.: Not applicable
TSCA CAS Number: Not applicable
Percent Range: 0.01 - 0.1
Percent Range Units: weight / weight
LD50: Not applicable
LC50: Not applicable
TLV: Not established
PEL: Not established
Hazard: Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

Sulfuric acid
CAS No.: 7664-93-9
TSCA CAS Number: 7664-93-9
Percent Range: 0.1 - 1.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 2140 mg/kg.
LC50: Inhalation rat LC50 = 87 ppm/4 hr
TLV: 1 mg/m³ (TWA); 3 mg/m³ (STEL)
PEL: 1 mg/m³
Hazard: Causes severe burns. Harmful if inhaled. Recognized carcinogen.

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: Clear, colorless liquid
Odor: None
MAY CAUSE EYE IRRITATION

HMIS:
Health: 1
Flammability: 0
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.
NFPA:
Health: 1
Flammability: 0
Reactivity: 0
Symbol: Not applicable
Potential Health Effects:
Eye Contact: May cause irritiation
Skin Contact: No effects are anticipated
Skin Absorption: None reported
Target Organs: Not applicable
Ingestion: Practically non-toxic
Target Organs: None reported
Inhalation: No data reported.
Target Organs: None reported
Medical Conditions Aggravated: None reported
Chronic Effects: None reported
Cancer / Reproductive Toxicity Information:
This product does NOT contain any OSHA listed carcinogens.

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen
Sulfuric Acid - The IARC evaluation was based on exposure to the mist or vapor of concentrated sulfuric acid generated during chemical processes.
This product does NOT contain any NTP listed chemicals.

Additional Cancer / Reproductive Toxicity Information: None reported
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with plenty of water. Call physician if irritation develops.
Ingestion (First Aid): Give large quantities of water. Call physician immediately.
Inhalation: None required.

5. FIRE FIGHTING MEASURES

Flammable Properties: Material will not burn.
Flash Point: Not applicable.
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable.
Upper Explosion Limits: Not applicable.
Autoignition Temperature: Not applicable.
Hazardous Combustion Products: This material will not burn.

Fire / Explosion Hazards: This product will not burn or explode.
Static Discharge: None reported.
Mechanical Impact: None reported
Extinguishing Media: Use media appropriate to surrounding fire conditions
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.
Containment Technique: Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.
Clean-up Technique: Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Dispose of material in government approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.
Special Instructions (for accidental release): Mixture contains a component which is regulated as a water pollutant in the U. S. . Mixture contains a component which is regulated as hazardous waste in the U. S. .
304 EHS RQ (40 CFR 355): Sulfuric Acid - RQ 1000 lbs.
D.O.T. Emergency Response Guide Number: Not applicable.

7. HANDLING / STORAGE

Handling: Avoid contact with eyes Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Store between 10° and 25°C.
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.
Personal Protective Equipment:
Eye Protection: safety glasses with top and side shields
Skin Protection: disposable latex gloves lab coat
Inhalation Protection: adequate ventilation
Precautionary Measures: Avoid contact with: eyes Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat
TLV: Not established.
PEL: Not established.

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid
Physical State: Liquid
Molecular Weight: Not applicable.
Odor: None
pH: 1.1
Vapor Pressure: Not determined.
Vapor Density (air = 1): Not determined.
Boiling Point: ~ 100° C (~ 212° F)
Melting Point: Not determined.
Specific Gravity (water = 1): 0.990
Evaporation Rate (water = 1): 0.56
Volatile Organic Compounds Content: Not applicable.

Partition Coefficient (n-octanol / water): Not applicable.
Solubility:
Water: Miscible.
Acid: Miscible.
Other: Not determined.
Metal Corrosivity:
Steel: 0.027 in/yr (0.689 mm/yr)
Aluminum: 0.124 in/yr (3.150 mm/yr)

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Extreme temperatures Evaporation
Reactivity / Incompatibility: Incompatible with: caustics
Hazardous Decomposition: None reported
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:
LD50: None reported.
LC50: None reported.
Dermal Toxicity Data: None reported.
Skin and Eye Irritation Data: None reported.
Mutation Data: None reported.
Reproductive Effects Data: None reported.
Ingredient Toxicological Data: Sulfuric Acid: Oral rat $LD_{50} = 2140$ mg/kg; Inhalation rat $LC_{50} = 347$ ppm/1 hr.

12. ECOLOGICAL INFORMATION

Product Ecological Information: No specific ecological information available for this product.

Ingredient Ecological Information: Sulfuric Acid: The 48-Hour TLm in flounder is 100-300 ppm.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: D002
Special Instructions (Disposal): Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Flush system with plenty of water.
Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:
D.O.T. Proper Shipping Name: Not Currently Regulated
--
DOT Hazard Class: NA
DOT Subsidiary Risk: NA
DOT ID Number: NA
DOT Packing Group: NA

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Not Currently Regulated

--

ICAO Hazard Class: NA
ICAO Subsidiary Risk: NA
ICAO ID Number: NA
ICAO Packing Group: NA

I.M.O.:

I.M.O. Proper Shipping Name: Not Currently Regulated

--

I.M.O. Hazard Class: NA
I.M.O. Subsidiary Risk: NA
I.M.O. ID Number: NA
I.M.O. Packing Group: NA

Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size.)

302 (EHS) TPQ (40 CFR 355): Sulfuric Acid 1000 lbs.
304 CERCLA RQ (40 CFR 302.4): Sulfuric Acid 1000 lbs.
304 EHS RQ (40 CFR 355): Sulfuric Acid - RQ 1000 lbs.
Clean Water Act (40 CFR 116.4): Sulfuric acid - RQ 1000 lbs.
RCRA: Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

C.P.S.C.: Not applicable

State Regulations:

California Prop. 65: No Prop. 65 listed chemicals are present in this product.

Identification of Prop. 65 Ingredient(s): None

California Perchlorate Rule CCR Title 22 Chap 33:

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

TSCA CAS Number: Not applicable.

16. OTHER INFORMATION

Intended Use: Alkalinity determination

References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Verschueren, Karel. Handbook of Environmental Data on Organic Chemicals. New York: Van Nostrand Reinhold Co., 1977.

Revision Summary: Updates in Section(s) 15,

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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Date Printed 11/9/12
MSDS No: M00299

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sulfuric Acid 1.600 ± 0.008 N
Catalog Number: 1438901

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00299
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: Carcinogen. Causes eye burns.
Date of MSDS Preparation:
Day: 06
Month: November
Year: 2012

2. COMPOSITION / INFORMATION ON INGREDIENTS

Demineralized Water
CAS No.: 7732-18-5
TSCA CAS Number: 7732-18-5
Percent Range: 90.0 - 100.0
Percent Range Units: volume / volume
LD50: None reported
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: No effects anticipated.

Other component
CAS No.: Not applicable
TSCA CAS Number: Not applicable
Percent Range: 0.01 - 0.1
Percent Range Units: weight / weight
LD50: Not applicable
LC50: Not applicable
TLV: Not established
PEL: Not established
Hazard: Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

Sulfuric Acid
CAS No.: 7664-93-9
TSCA CAS Number: 7664-93-9
Percent Range: 1.0 - 10.0
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 2140 mg/kg
LC50: Inhalation rat LC50 = 87 ppm/4 hr
TLV: 1 mg/m³ (TWA); 3 mg/m³ (STEL)
PEL: 1 mg/m³

Hazard: Causes severe burns. Harmful if inhaled. STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: Clear, colorless
Odor: Acidic
CAUSES EYE BURNS MAY CAUSE RESPIRATORY TRACT IRRITATION
HMIS:
Health: 3
Flammability: 0
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.
NFPA:
Health: 3
Flammability: 0
Reactivity: 0
Symbol: Not applicable
Potential Health Effects:
Eye Contact: Causes eye burns.
Skin Contact: No effects are anticipated
Skin Absorption: None reported
Target Organs: None reported
Ingestion: Causes: irritation of the mouth and esophagus May cause: vomiting diarrhea
Target Organs: None reported
Inhalation: May cause: respiratory tract irritation teeth erosion mouth soreness difficult breathing
Target Organs: Lungs
Medical Conditions Aggravated: Pre-existing: Eye conditions Respiratory conditions
Chronic Effects: Chronic overexposure may cause erosion of the teeth chronic irritation or inflammation of the lungs cancer
Cancer / Reproductive Toxicity Information:
This product does NOT contain any OSHA listed carcinogens.
An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen
Sulfuric Acid - The IARC evaluation was based on exposure to the mist or vapor of concentrated sulfuric acid generated during chemical processes.
NTP Listed Group 1: Recognized Carcinogen
Sulfuric Acid Mist or Vapor
Additional Cancer / Reproductive Toxicity Information: None reported
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with plenty of water.
Ingestion (First Aid): Do not induce vomiting. Call physician immediately. Give 1-2 glasses of water under medical supervision. Never give anything by mouth to an unconscious person.
Inhalation: Remove to fresh air.

5. FIRE FIGHTING MEASURES

Flammable Properties: Material will not burn. During a fire, irritating and highly toxic gases may be generated by thermal decomposition.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable

Upper Explosion Limits: Not applicable
Autoignition Temperature: Not applicable
Hazardous Combustion Products: This material will not burn.
Fire / Explosion Hazards: This product will not burn or explode.
Static Discharge: None reported.
Mechanical Impact: None reported
Extinguishing Media: Use media appropriate to surrounding fire conditions
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.
Containment Technique: Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.
Clean-up Technique: Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.
Evacuation Procedure: Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.
Special Instructions (for accidental release): Mixture contains a component which is regulated as a water pollutant in the U. S. . Product is regulated as RCRA hazardous waste in the U.S.
304 EHS RQ (40 CFR 355): Sulfuric Acid - RQ 1000 lbs.
D.O.T. Emergency Response Guide Number: Not applicable

7. HANDLING / STORAGE

Handling: Avoid contact with eyes Do not breathe mist or vapors. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product. Wash thoroughly after handling.
Storage: Store between 10° and 25°C.
Flammability Class: Class IIIB

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Use general ventilation to minimize exposure to mist, vapor or dust. Maintain general industrial hygiene practices when using this product.
Personal Protective Equipment:
Eye Protection: safety glasses with top and side shields
Skin Protection: disposable latex gloves lab coat
Inhalation Protection: adequate ventilation
Precautionary Measures: Avoid contact with: eyes skin Do not breathe: mist/vapor Use with adequate ventilation. Protect from: heat
TLV: Not established
PEL: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Clear, colorless
Physical State: Liquid
Molecular Weight: Not applicable
Odor: Acidic
pH: <0.5
Vapor Pressure: Not determined
Vapor Density (air = 1): Not determined

Boiling Point: ~ 100 °C (212 °F)
Melting Point: Not determined
Specific Gravity/ Relative Density (water = 1; air =1): 1.047
Evaporation Rate (water = 1): 0.53
Volatile Organic Compounds Content: Not applicable
Partition Coefficient (n-octanol / water): Not applicable
Solubility:
Water: Soluble
Acid: Soluble
Other: Not determined
Metal Corrosivity:
Steel: 0.096 in/yr
Aluminum: Not determined

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Extreme temperatures Exposure to air. Heating to decomposition.
Reactivity / Incompatibility: Incompatible with: alkalies oxidizers reducers
Hazardous Decomposition: Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:
LD50: None reported
LC50: None reported
Dermal Toxicity Data: None reported
Skin and Eye Irritation Data: Skin testing with 10% solution shows no irritation.
Mutation Data: None reported
Reproductive Effects Data: None reported
Ingredient Toxicological Data: Sulfuric Acid: Oral rat LD50 = 2140 mg/kg, Inhalation rat LC50 87 ppm/4Hours

12. ECOLOGICAL INFORMATION

Product Ecological Information: --
No ecological data available for this product. Mobility in soil: No data available
Ingredient Ecological Information: Sulfuric Acid: The 48-Hour TLm in flounder is 100-300 ppm.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: D002
Special Instructions (Disposal): Work in an approved fume hood. Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.
Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:
D.O.T. Proper Shipping Name: Not Currently Regulated
--
DOT Hazard Class: NA
DOT Subsidiary Risk: NA
DOT ID Number: NA

DOT Packing Group: NA

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Not Currently Regulated

--

ICAO Hazard Class: NA

ICAO Subsidiary Risk: NA

ICAO ID Number: NA

ICAO Packing Group: NA

I.M.O.:

I.M.O. Proper Shipping Name: Not Currently Regulated

--

I.M.O. Hazard Class: NA

I.M.O. Subsidiary Risk: NA

I.M.O. ID Number: NA

I.M.O. Packing Group: NA

Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size.)

302 (EHS) TPQ (40 CFR 355): Sulfuric Acid 1000 lbs.

304 CERCLA RQ (40 CFR 302.4): Sulfuric Acid 1000 lbs.

304 EHS RQ (40 CFR 355): Sulfuric Acid - RQ 1000 lbs.

Clean Water Act (40 CFR 116.4): Sulfuric acid - RQ 1000 lbs.

RCRA: Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

C.P.S.C.: Not applicable

State Regulations:

California Prop. 65: No Prop. 65 listed chemicals are present in this product.

Identification of Prop. 65 Ingredient(s): None

California Perchlorate Rule CCR Title 22 Chap 33: Not applicable

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Use Alkalinity determination

References: TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. In-house information. Technical Judgment. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. Vendor Information. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987.

Revision Summary: Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Bromcresol Green-Methyl Red Indicator Powder
Catalog Number: 94399

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00009
Chemical Name: Not applicable
CAS No.: Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Hazard: May cause irritation.
Date of MSDS Preparation:
Day: 05
Month: December
Year: 2013

2. COMPOSITION / INFORMATION ON INGREDIENTS

Citric Acid
CAS No.: 77-92-9
TSCA CAS Number: 77-92-9
Percent Range: < 0.1
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 6730 mg/Kg; LD50 oral rat - 5,400 mg/kg; LD50 oral rat = 3,000 mg/kg;
LC50: None reported
TLV: 10 mg/m^3 as inhalable dust
PEL: 15 mg/m^3 as total dust; 5 mg/m^3 as respirable dust
Hazard: May be harmful if swallowedCauses eye and skin irritation

Methyl Red, Sodium Salt
CAS No.: 845-10-3
TSCA CAS Number: 845-10-3
Percent Range: < 0.01
Percent Range Units: weight / weight
LD50: None reported
LC50: None reported
TLV: Not established
PEL: Not established
Hazard: Toxic properties unknown.May cause irritation.

Bromcresol Green
CAS No.: 76-60-8
TSCA CAS Number: 76-60-8
Percent Range: < 0.0001
Percent Range Units: weight / weight
LD50: Oral rat LD_{50} >3200 mg/kg
LC50: None reported
TLV: 10 mg/m^3 as inhalable dust; 3 mg/m^3 as respirable dust
PEL: 15 mg/m^3 as total dust; 5 mg/m^3 as respirable dust
Hazard: May cause irritation.Toxic properties unknown.

Potassium Hydroxide
CAS No.: 1310-58-3
TSCA CAS Number: 1310-58-3
Percent Range: < 0.5
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 273 mg/kg
LC50: None reported
TLV: 10 mg/m^3 as inhalable dust; 3 mg/m^3 as respirable dust
PEL: 15 mg/m^3 as inhalable dust; 5 mg/m^3 as respirable dust
Hazard: Toxic.Causes severe burns.

Potassium Chloride
CAS No.: 7447-40-7
TSCA CAS Number: 7447-40-7
Percent Range: > 99.0
Percent Range Units: weight / weight
LD50: Oral rat LD_{50} = 2600 mg/kg
LC50: None reported.
TLV: 10 mg/m^3 as inhalable dust; 3 mg/m^3 as respirable dust
PEL: 15 mg/m^3 as inhalable dust; 5 mg/m^3 as respirable dust
Hazard: May cause irritation.

Sodium Citrate
CAS No.: 68-04-2
TSCA CAS Number: 68-04-2
Percent Range: < 0.1
Percent Range Units: weight / weight
LD50: Oral rat LD50 > 8 g/Kg
LC50: Not available
TLV: 10 mg/m^3 as inhalable dust; 3 mg/m^3 as respirable dust
PEL: 15 mg/m^3 as total dust; 5 mg/m^3 as respirable dust
Hazard: May cause irritation.

Sulfuric Acid
CAS No.: 7664-93-9
TSCA CAS Number: 7664-93-9
Percent Range: <0.2
Percent Range Units: weight / weight
LD50: Oral rat LD50 = 2140 mg/kg
LC50: Inhalation rat LC50 = 87 ppm/4 hr
TLV: 1 mg/m^3
PEL: 1 mg/m^3
Hazard: Causes severe burns.Harmful if inhaled.STRONG INORGANIC ACID MISTS CONTAINING SULFURIC ACID CAN CAUSE CANCER

3. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance: Red-brown to green powder
Odor: None
MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION
HMIS:
Health: 1
Flammability: 0
Reactivity: 0
Protective Equipment: X - See protective equipment, Section 8.
NFPA:
Health: 1

Flammability: 0
Reactivity: 0
Symbol: Not applicable
Potential Health Effects:
Eye Contact: May cause irritiation
Skin Contact: May cause irritiation
Skin Absorption: No effects anticipated
Target Organs: Not applicable
Ingestion: May cause: gastrointestinal disturbances blood pressure changes cardiac depression gastroenteritis
Target Organs: None reported
Inhalation: May cause: irritation of nose and throat
Target Organs: None reported
Medical Conditions Aggravated: Pre-existing: Kidney conditions
Chronic Effects: None reported
Cancer / Reproductive Toxicity Information:
This product does NOT contain any OSHA listed carcinogens.
This product does NOT contain any IARC listed chemicals.
This product does NOT contain any NTP listed chemicals.
Additional Cancer / Reproductive Toxicity Information: None reported
Toxicologically Synergistic Products: None reported

4. FIRST AID

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician.
Skin Contact (First Aid): Wash skin with plenty of water. Call physician if irritation develops.
Ingestion (First Aid): Give large quantities of water. Call physician immediately.
Inhalation: Remove to fresh air.

5. FIRE FIGHTING MEASURES

Flammable Properties: Does not burn, but may melt in a fire, releasing toxic fumes.
Flash Point: Not applicable
Method: Not applicable
Flammability Limits:
Lower Explosion Limits: Not applicable
Upper Explosion Limits: Not applicable
Autoignition Temperature: Not determined
Hazardous Combustion Products: None reported
Fire / Explosion Hazards: None reported
Static Discharge: None reported.
Mechanical Impact: None reported
Extinguishing Media: Use media appropriate to surrounding fire conditions
Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.
Containment Technique: Stop spilled material from being released to the environment.
Clean-up Technique: If permitted by regulation, Sweep up material. Dilute with a large excess of water. Flush the spilled material to the drain with a large excess of water. Otherwise, Pick up spill for disposal and place in a closed container Dispose of in accordance with local, state and federal regulations or laws.
Evacuation Procedure: Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

Special Instructions (for accidental release): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
D.O.T. Emergency Response Guide Number: None

7. HANDLING / STORAGE

Handling: Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.
Storage: Keep container tightly closed when not in use.
Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

Engineering Controls: Maintain general industrial hygiene practices when using this product.
Personal Protective Equipment:
Eye Protection: safety glasses with top and side shields
Skin Protection: disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it. lab coat
Inhalation Protection: adequate ventilation
Precautionary Measures: Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling.
TLV: Not established
PEL: Not established

9. PHYSICAL / CHEMICAL PROPERTIES

Appearance: Red-brown to green powder
Physical State: Solid
Molecular Weight: Not applicable
Odor: None
pH: of 5% solution = 9.0
Vapor Pressure: Not applicable
Vapor Density (air = 1): Not applicable
Boiling Point: Not applicable
Melting Point: 181°C (358°F)
Specific Gravity/ Relative Density (water = 1; air =1): 1.91
Evaporation Rate (water = 1): Not applicable
Volatile Organic Compounds Content: Not applicable
Partition Coefficient (n-octanol / water): Not determined
Solubility:
Water: Soluble
Acid: Soluble
Other: Not determined
Metal Corrosivity:
Steel: Not determined
Aluminum: Not determined

10. STABILITY / REACTIVITY

Chemical Stability: Stable when stored under proper conditions.
Conditions to Avoid: Extreme temperatures Excess moisture
Reactivity / Incompatibility: None reported
Hazardous Decomposition: Toxic fumes of: chlorides
Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Data:

LD50: None reported
LC50: None reported
Dermal Toxicity Data: None reported
Skin and Eye Irritation Data: None reported
Mutation Data: None reported
Reproductive Effects Data: None reported
Ingredient Toxicological Data: Potassium Chloride: Oral rat LD_{50} = 2600 mg/kg, Oral man LD_{Lo} = 20 mg/kg

12. ECOLOGICAL INFORMATION

Product Ecological Information: --
No ecological data available for this product. Mobility in soil: No data available
Ingredient Ecological Information: Potassium Chloride: EC50 Daphnia magna 48h = 83 mg/l;

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: None
Special Instructions (Disposal): Dilute material with excess water making a weaker than 5% solution. Open cold water tap completely, slowly pour the material to the drain. Flush system with plenty of water.
Empty Containers: Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.
NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

14. TRANSPORT INFORMATION

D.O.T.:
D.O.T. Proper Shipping Name: Not Currently Regulated
--
DOT Hazard Class: NA
DOT Subsidiary Risk: NA
DOT ID Number: NA
DOT Packing Group: NA
I.C.A.O.:
I.C.A.O. Proper Shipping Name: Not Currently Regulated
--
ICAO Hazard Class: NA
ICAO Subsidiary Risk: NA
ICAO ID Number: NA
ICAO Packing Group: NA
I.M.O.:
I.M.O. Proper Shipping Name: Not Currently Regulated
--
I.M.O. Hazard Class: NA
I.M.O. Subsidiary Risk: NA
I.M.O. ID Number: NA
I.M.O. Packing Group: NA
Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:
O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)
E.P.A.:
S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

302 (EHS) TPQ (40 CFR 355): Not applicable
304 CERCLA RQ (40 CFR 302.4): Not applicable
304 EHS RQ (40 CFR 355): Not applicable
Clean Water Act (40 CFR 116.4): Not applicable
RCRA: Contains no RCRA regulated substances.
C.P.S.C.: Not applicable
State Regulations:
California Prop. 65: No Prop. 65 listed chemicals are present in this product.
Identification of Prop. 65 Ingredient(s): None
California Perchlorate Rule CCR Title 22 Chap 33: Not applicable
Trade Secret Registry: Not applicable
National Inventories:
U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).
TSCA CAS Number: Not applicable

16. OTHER INFORMATION

Intended Use: Laboratory Reagent Indicator for pH
References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991.
Revision Summary: Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Legend:

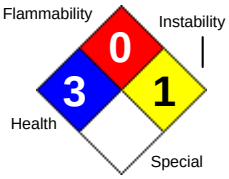
NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

MATERIAL SAFETY DATA SHEET
Klean-Strip Green Safer Muriatic Acid

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZ.	0
PPE	H



Printed: 01/27/2011
Revision: 06/10/2008

1. Product and Company Identification

Product Code: 903
Product Name: Klean-Strip Green Safer Muriatic Acid
Manufacturer Information
Company Name: W. M. Barr
2105 Channel Avenue
Memphis, TN 38113
Phone Number: (901)775-0100
Emergency Contact: 3E 24 Hour Emergency Contact (800)451-8346
Information: W.M. Barr Customer Service (800)398-3892
Web site address: www.wmbarr.com
Preparer Name: W.M. Barr EHS Department (901)775-0100
Synonyms

GKGM75006, GKGMOPC

Synonyms for muriatic acid: hydrochloric acid solution, hydrogen chloride, aqueous hydrogen chloride

2. Composition/Information on Ingredients

Hazardous Components (Chemical Name)	CAS #	Concentration	OSHA TWA	ACGIH TWA	Other Limits
1. Hydrochloric acid {Hydrogen chloride}	7647-01-0	<25.0 %	No data.	No data.	No data.

Hazardous Components (Chemical Name)	CAS #	OSHA STEL	OSHA CEIL	ACGIH STEL	ACGIH CEIL
1. Hydrochloric acid {Hydrogen chloride}	7647-01-0	No data.	5 ppm	No data.	2 ppm)

3. Hazards Identification

Emergency Overview

Poison! Causes severe burns to eyes. Skin irritant. May be fatal if swallowed. Vapor harmful.

OSHA Regulatory Status:

This material is classified as hazardous under OSHA regulations.

Potential Health Effects (Acute and Chronic)

Inhalation Acute Exposure Effects:
Inhalation of muriatic acid vapors can cause irritation of respiratory tract, burns, pulmonary edema, and coughing.

Inhalation long term exposure:
Long term exposure to muriatic acid can cause erosion of the teeth.

Skin Contact Acute Exposure Effects:
May cause severe burns, irritation, pain, and ulceration.

Skin contact learn term exposure:
May cause dermatitis.

Eye Contact Acute Exposure Effects:
May cause severe burns, eye damage, and blindness.

Eye contact long term exposure:
No effects are known.

Ingestion Acute Exposure Effects:
Poison. May be fatal if swallowed. May cause severe irritation, perforation of the intestinal tract, and burns in mouth, pharynx, and gastrointestinal tract. May cause intense pain, nausea, vomiting, bleeding, circulating collapse, and shock.

Signs and Symptoms Of Exposure

See Potential Health Effects.

Medical Conditions Generally Aggravated By Exposure

Respiratory system (including asthma and other breathing disorders)

4. First Aid Measures

Emergency and First Aid Procedures

Inhalation:
If user experiences breathing difficulty, move to air free of vapors. Administer oxygen or artificial respiration until medical assistance can be rendered. Obtain medical attention immediately.

Skin Contact:
Wash with soap and large quantities of water and remove contaminated clothing, jewelry, and shoes immediately. Wash for 15 minutes. If irritation persists, seek medical attention.

Eye Contact:
Immediately begin to flush with large quantities of water, remove any contact lens. Continue to flush with water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all of the eye and lid tissues. Flushing the eyes with water within several seconds is essential to achieve maximum effectiveness. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Give large amounts of water. Never give anything by mouth to an unconscious person. Call your poison control center, hospital emergency room or physician immediately for instructions. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops.

Note to Physician

Call your local poison control center for further information.

The absence of visible signs or symptoms of burns does not reliably exclude the presence of actual tissue damage. Probable mucosal damage may contraindicate the use of gastric lavage.

5. Fire Fighting Measures

Flash Pt: No data.

Explosive Limits: LEL: No data. UEL: No data.

Fire Fighting Instructions

Keep unnecessary people away, isolate hazard area and deny entry. Wear NIOSH approved positive -pressure self-contained breathing apparatus. Storage containers exposed to fire should be kept cool with water spray to prevent pressure build-up. Stay away from heads of containers that have been exposed to intense heat or flame. Move containers from fire if it can be done without risk.

Flammable Properties and Hazards

Non-flammable.

Hazardous Combustion Products

Hydrogen chloride

May release toxic gases.

Extinguishing Media

Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media

No data available.

6. Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled

Small Spills:

Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment. Take up liquid with sand, earth or other noncombustible absorbent material and place in a plastic container where applicable. Material may be neutralized with baking soda, soda ash, or dilute caustic soda. Stay upwind, out of low areas, and ventilate closed spaces before entering.

Large Spills:

Evacuation of surrounding area may be necessary for large spills. Wear appropriate personal protective equipment. Completely contain spilled material with dikes, sandbags, etc. Shut off ventilation system if needed. Reprocess or reuse if possible. Neutralize with soda ash or dilute caustic soda. Collect with appropriate absorbent and place into suitable container. Keep out of sewers and water supplies. This material is acidic and may lower the pH of the surface waters with low buffering capacity.

7. Handling and Storage

Precautions To Be Taken in Handling

Read carefully all cautions and directions on product label before use. Since empty container retains residue, follow all label warnings even after container is empty. Dispose of empty container according to all regulations. Do not reuse this container.

Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

When mixing, slowly add acid to water to minimize heat generation and spattering. Never add water to acid.

Keep container tightly closed when not in use. Keep container properly labeled.

Precautions To Be Taken in Storing

Keep container tightly closed when not in use. Store in a cool, dry place away from direct sunlight and heat to avoid can deterioration. Avoid storage at extreme high or low temperatures. Protect from freezing. Keep container properly labeled. Keep separated from incompatible substances.

Store in acid-resistant plastic, glass containers, or rubber-lined steel containers. Do not store in aluminum containers or use aluminum fittings or transfer lines.

8. Exposure Controls/Personal Protection

Respiratory Equipment (Specify Type)

Where vapor concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator with acid gas cartridges is required. When an air-purifying respirator is not adequate or for spills and/or emergencies of unknown concentrations, a NIOSH approved self-contained breathing apparatus or airline respirator with full-face piece is required. A respiratory protection program that meets 29 CFR 1910.134 must be

followed whenever workplace conditions warrant use of a respirator.

For OSHA controlled work place and other regular users. Use only with adequate ventilation under engineered air control systems designed to prevent exceeding appropriate TLV.

For occasional consumer use, where engineered air control is not feasible, use properly maintained and properly fitted NIOSH approved respirator. A dust mask does not provide protection against vapors.

Eye Protection

Safety glasses with side shields. Wearing chemical goggles with a face shield is recommended to safeguard against potential eye contact, irritation, or injury. Contact lenses should not be worn.

Provide an emergency eyewash station or quick drench shower in the immediate work area.

Protective Gloves

Wear impermeable gloves. Gloves contaminated with product should be discarded. Promptly remove clothing that becomes soiled with products.

Other Protective Clothing

Wear chemical resistant clothing and rubber boots when potential for contact with the material exists.

Various application methods can dictate use of additional protective safety equipment, such as impermeable aprons, etc., to minimize exposure.

Before reuse, thoroughly clean any clothing or protective equipment that has been contaminated by prior use. Discard any clothing or other protective equipment that cannot be decontaminated, such as gloves or shoes.

Engineering Controls (Ventilation etc.)

Use closed system when possible. Provide local exhaust ventilation where vapor or mist may be generated. Ensure compliance with applicable exposure limits.

Use only with adequate ventilation to prevent build-up of vapors. Open all windows and doors. Use only with a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea, burning sensations, or eye-watering -- Stop -- ventilation is inadequate. Leave area immediately.

Work/Hygienic/Maintenance Practices

A source of clean water should be available in the work area for flushing of eyes and skin.

Wash hands thoroughly after use and before eating, drinking, or smoking. Do not eat, drink, or smoke in the work area. Discard any clothing or other protective equipment that cannot be decontaminated.

9. Physical and Chemical Properties

Physical States:	[ ] Gas [X] Liquid [ ] Solid	
Melting Point:	-59 C	
Boiling Point:	110 C	
Autoignition Pt:	No data.	
Flash Pt:	No data.	
Explosive Limits:	LEL: No data.	UEL: No data.
Specific Gravity (Water = 1):	1.092 - 1.097	
Density:	9.09 LB/GA	
Bulk density:	No data.	

Vapor Pressure (vs. Air or mm Hg): 0.2 MM HG
Vapor Density (vs. Air = 1): > 1
Evaporation Rate (vs Butyl Acetate=1): < 1
Solubility in Water: 100 %
Percent Volatile: 100 % by weight.
Heat Value: No data.
Particle Size: No data.
Corrosion Rate: No data.
pH: < 1
Appearance and Odor

water white, free and clear

potential slight pungent odor

10. Stability and Reactivity

Stability: Unstable [ ] Stable [X]
Conditions To Avoid - Instability

No data available.

Incompatibility - Materials To Avoid

Incompatible with strong oxidizing agents, strong caustics, alkalis and alkali metals, mercuric sulfate, perchloric acid, carbides of calcium, cesium, rubidium, acetylides of cesium and rubidium, phosphides of calcium and uranium, lithium silicide, cyanides (which may produce lethal concentrations of hydrocyanic acid), and common and active metals (which produce flammable hydrogen gas).

Hazardous Decomposition Or Byproducts

Thermal decomposition may produce hydrogen chloride vapors and toxic gases.

Hazardous Polymerization: Will occur [ ] Will not occur [X]
Conditions To Avoid - Hazardous Polymerization

No data available.

11. Toxicological Information

No data available.

Carcinogenicity/Other Information

No data available.

Hazardous Components (Chemical Name)	CAS #	NTP	IARC	ACGIH	OSHA
1. Hydrochloric acid {Hydrogen chloride}	7647-01-0	n.a.	n.a.	A4	n.a.

12. Ecological Information

This material is believed to be toxic to aquatic life.

This material is inorganic and not subject to biodegradation.

13. Disposal Considerations

Waste Disposal Method

Dispose in accordance with applicable local, state, and federal regulations.

14. Transport Information

LAND TRANSPORT (US DOT)

DOT Proper Shipping Name UN1789, Hydrochloric Acid, 8, PGIII, LTD. QTY.

AIR TRANSPORT (ICAO/IATA)

ICAO/IATA Shipping Name UN1789, Hydrochloric Acid, 8, PGIII

MARINE TRANSPORT (IMDG/IMO)

IMDG/IMO Shipping Name UN1789, Hydrochloric Acid, 8, PGIII, LTD. QTY.

Additional Transport Information

For D.O.T. information, contact W.M. Barr Technical Services at 1-800-398-3892.

15. Regulatory Information

US EPA SARA Title III

Hazardous Components (Chemical Name)	CAS #	Sec.302 (EHS)	Sec.304 RQ	Sec.313 (TRI)	Sec.110
1. Hydrochloric acid {Hydrogen chloride}	7647-01-0	Yes 500 LB	Yes 5000 LB	Yes	No

US EPA CAA, CWA, TSCA

Hazardous Components (Chemical Name)	CAS #	EPA CAA	EPA CWA NPDES	EPA TSCA	CA PROP 65
1. Hydrochloric acid {Hydrogen chloride}	7647-01-0	HAP, ODC ()	No	Inventory	No

EPA Hazard Categories:

This material meets the EPA 'Hazard Categories' defined for SARA Title III Sections 311/312 as indicated:

[X] Yes [ ] No Acute (immediate) Health Hazard
[X] Yes [ ] No Chronic (delayed) Health Hazard
[ ] Yes [X] No Fire Hazard
[ ] Yes [X] No Sudden Release of Pressure Hazard
[X] Yes [ ] No Reactive Hazard

16. Other Information

Company Policy or Disclaimer

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: PRO LSPR 6PK 2X MRKNG FLUORESCENT ORANGE

Revision Date: 11/11/2013

Product Number: 266579

Product Use/Class: Marking Paint/Aerosols

Supplier:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Prepared by: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure. May cause eye, skin, or respiratory tract irritation. KEEP OUT OF REACH OF CHILDREN. Harmful if inhaled. Causes eye irritation. Use ventilation necessary to keep exposures below recommended exposure limits, if any. Vapor Harmful. Causes Eye, Skin, Nose, and Throat Irritation.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation. May cause skin irritation. Allergic reactions are possible.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Aspiration hazard if swallowed; can enter lungs and cause damage. Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Liquefied Petroleum Gas	68476-86-8	30.0	N.E.	N.E.	N.E.	N.E.
Aliphatic Hydrocarbon	64742-89-8	20.0	100 ppm	N.E.	100 ppm	N.E.
Limestone	1317-65-3	20.0	N.E.	N.E.	15 mg/m3 [Total Dust]	N.E.
Talc	14807-96-6	10.0	2 mg/m3	N.E.	0.1 mg/m3 [Respirable]	N.E.
Acetone	67-64-1	10.0	500 ppm	750 ppm	1000 ppm	N.E.
n-Butyl Acetate	123-86-4	5.0	150 ppm	200 ppm	150 ppm	N.E.
Hydrotreated Light Distillate	64742-47-8	5.0	200 mg/m3	N.E.	N.E.	N.E.

Naphtha, Petroleum, Hydrotreated Light	64742-49-0	5.0	200 mg/m3	N.E.	N.E.	N.E.
Xylene	1330-20-7	5.0	100 ppm	150 ppm	100 ppm	N.E.
Ethylbenzene	100-41-4	1.0	20 ppm	125 ppm	100 ppm	N.E.

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation.

FIRST AID - INGESTION: If swallowed, get medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

Extinguishing Media: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR!Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can. Closed containers may explode when exposed to extreme heat due to buildup of steam. No unusual fire or explosion hazards noted.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance. Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Contents under pressure. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F. Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials. Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep away from heat, sparks, flame and sources of ignition. Avoid excess heat.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation. Provide general dilution of local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below acceptable limits.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection. Use gloves to prevent prolonged skin contact.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application. Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

9. Physical and Chemical Properties

Vapor Density	Heavier than Air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than Ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.869	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition. Avoid contact with strong acid and strong bases.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Liquefied Petroleum Gas	N.E.	N.E.
Aliphatic Hydrocarbon	>5000 mg/kg (Rat, Oral)	N.E.
Limestone	>5000 mg/kg (Rat, Oral)	N.E.
Talc	N.E.	TCLo: 11 mg/m3 (Inhalation)
Acetone	5800 mg/kg (Rat)	50100 mg/m3 (Rat, 8Hr)
n-Butyl Acetate	13100 mg/kg (Rat, Oral)	2000 ppm (Rat, Inhalation, 4 Hr)
Hydrotreated Light Distillate	>3160 mg/kg (Skin)	N.E.
Naphtha, Petroleum, Hydrotreated Light	N.E.	N.E.
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)
Ethylbenzene	3500 mg/kg (Rat, Oral)	N.E.

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components. Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter waterways, wastewater. soil, storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)	TDG (Canada)
UN Number:	N.A.	1950	1950	N.A.
Proper Shipping Name:	Paint Products in Limited Quantities	Aerosols	Aerosols	Paint Products in Limited Quantities
Hazard Class:	N.A.	2.1	2.1	N.A.
Packing Group:	N.A.	N.A.	N.A.	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
Xylene	1330-20-7
Ethylbenzene	100-41-4
Ethylene Glycol Monobutyl Ether	111-76-2

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB5 D2A

16. Other Information

HMIS Ratings:

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	2	**Flammability:**	4	**Instability**	0

VOLATILE ORGANIC COMPOUNDS, g/L: 523

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Rust-Oleum Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Corporation makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product:	ORIGINAL PINE-SOL® BRAND CLEANER 1	
Description:	CLEAR, AMBER, THIN LIQUID WITH CHARACTERISTIC PINE ODOR	
Other Designations	**Distributor**	**Emergency Telephone Nos.**
EPA Reg. No. 5813-83	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies, call 1-800-446-1014. For Transportation Emergencies, call 1-800-424-9300 (Chemtrec).

II Health Hazard Data

Causes substantial but temporary eye injury.

No medical conditions are known to be aggravated by exposure to this product.

FIRST AID:

EYE CONTACT: Hold eye open and rinse with water for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. If irritation persists, call a doctor.

SKIN CONTACT: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. If irritation develops, call a doctor.

INGESTION: Call a poison control center or doctor immediately for treatment advice. Have person sip a glassful of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air. If breathing is affected, call a doctor.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
Pine oil CAS # 8002-09-3	8 - 10%	Not established.
Alkyl alcohol ethoxylates CAS # 127036-24-2	3 - 7%	Not established.
Isopropyl alcohol CAS #67-63-0	1 - 5%	200 ppm - TLV-TWA[a] 400 ppm - PEL[b] 400 ppm - TLV-STEL[c]
Sodium petroleum sulfonate CAS # 68608-26-4	1 - 5%	Not established.

[a]TLV-TWA = ACGIH Threshold Limit Value - Time Weighted Average

[b]PEL = OSHA Permissible Exposure Limit - Time Weighted Average

[c]TLV-STEL = ACGIH Threshold Limit Value - Short Term Exposure Limit

None of the materials in this product are on the IARC, OSHA, or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

Engineering Controls: Use general ventilation or local exhaust to minimize exposure to vapor or mist.

Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves if there is the potential for repeated or prolonged skin contact. In situations where exposure limits may be exceeded, a NIOSH-approved respirator is advised.

V Transportation and Regulatory Data

DOT: Not restricted per 49 CFR 173.120(a)(3) and Appendix H.

IMDG: Not restricted per IMDG Code Page 0016 Paragraph 5.1.3.1.1.

IATA: Not restricted per IATA D.G.R. Sections 3.3.1.2 and 3.3.5.

EPA - SARA Title III/CERCLA: This product is regulated under Sections 311/312. This product contains no chemicals which are regulated under Section 313 and contains benzoic acid (CAS #65-85-0, <1%) which is regulated under Section 304/CERCLA.

VI Spill Procedures/Waste Disposal

Spill Procedures: Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

VIII Fire and Explosion Data

Flash Point: 121° F (Tag closed cup).

Fire Extinguishing Agents: Dry chemical, carbon dioxide (CO_2), foam, or water spray.

IX Physical Data

pH..... 3.0 - 4.0

Specific gravity.....~1.0

Solubility in water .....Appreciable

DATE PREPARED 6/05

Material Safety Data Sheet # 349

Hercules Chemical Company Inc.
111 South Street
Passaic NJ 07055-7398
Information Telephone: 1-800 221-9330
Internet: www.herchem.com

NFPA	HMIS	PPE	Transport Symbol
			

Preparation Date Jan 7, 2008 **Revision Date 7/25/08** **Revision Number** 1

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identity: HERCULES PVC CEMENT CLEAR MEDIUM BDY, FAST SET
Intended Use: Solvent cement.

Manufacturer: Hercules Chemical Company, Inc.
111 South Street
Passaic, New Jersey 07055-7398

Information Telephone: (800) 221-9330

Internet: http://www.herchem.com

Emergency Phone: **CHEMTREC: (800) 424-9300**

2. HAZARDS IDENTIFICATION

This product is a clear viscous liquid with an ether-like odor.

EMERGENCY OVERVIEW

DANGER!

Extremely flammable liquid and vapor. Vapors may cause flash fires. May cause eye and skin irritation. Inhalation of vapors will cause irritation of mucous membranes, nose, eyes and throat coughing and difficulty breathing. Exposure to high level concentration may cause headache, dizziness, nausea, and narcosis. Prolonged skin contact causes common solvent defatting effect such as redness, itching, pain and may result to dermatitis. Harmful or fatal if swallowed.

Potential Health Effects.

Inhalation: May cause irritation of the nose, throat and upper respiratory tract. High concentrations may cause headache dizziness, nausea, shortness of breath and vomiting. Concentrations above TLV (Threshold Limit Value), may cause central nervous system depression and unconsciousness.
Ingestion: May produce abdominal pain and nausea. Aspiration into lungs can produce severe lung damage and is a medical emergency.
Eye: Causes painful burning or stinging of eyes and lids, watering of eyes and inflammation of conjunctiva.
Skin: Causes irritation of skin. Prolonged skin contact causes common solvent defatting effect such as redness, itching and pain.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Percentage	OSHA PEL	ACGIH TLV	Other limits
Tetrahydrofuran	109-99-9	40-70	200 ppm	200 ppm	
Methyl ethyl Ketone	78-93-3	5-10	200 ppm	200 ppm	
Cyclohexanone	108-94-1	5-10	50 ppm	20 ppm	
PVC Resin	9002-86-2	10-30	15 mg/m3	10 mg/m3	
Fumed Silica	112945-52-5	1-5	15 mg/m3	10 mg/m3	

HMIS Hazard Rating: 3 4 1 G

4. EMERGENCY AND FIRST AID PROCEDURES.

Eye: Immediately flush eyes with large quantities of water, for at least 15 minutes, holding the eyelids apart. Get immediate medical attention.
Skin: Wash with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse. If irritation develops, get medical attention.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, have qualified person administer oxygen,. Call a doctor.
Ingestion: DO NOT INDUCE VOMITING. If conscious, give 1-2 glasses of water to dilute. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Call a doctor immediately.

5. FIRE FIGHTING MEASURES

Flashpoint: 6°F (TCC) (Based on THF)
Flammable Limits: LEL: 2.0 % **UEL**: 11.8 %
Autoignition Temperature: Not determined
Extinguishing Media: Foam, Dry Chemical or Carbon Dioxide.
Unusual Fire or Explosion Hazards: Vapors are heavier than air, and will travel considerable distance to source of ignition causing a flashback. On long standing may form peroxides which may cause violent reactions especially upon evaporation to dryness.
Special Fire-Fighting Instructions: Handle as flammable liquid. Firefighters should wear positive pressure self-contained breathing apparatus and chemical goggles. Water may be ineffective but should be used to keep fire exposed containers cool.
Hazardous Combustion Products: Carbon Dioxide and Carbon Monoxide are formed. Irritating peroxide fumes are formed when heated to decomposition.

6. ACCIDENTAL RELEASE MEASURES

Eliminate all sources of ignition. Ventilate area. Wear appropriate personal protection equipment. Absorb with inert absorbing material and dispose of with solid waste according to Federal, State and Local regulations. Wash spill area with water. Do not flush wash water into confined areas.

7. HANDLING AND STORAGE

Handling: Do not get in eyes, on skin or clothing. Avoid breathing vapors. Keep product away from heat, sparks and open flames and all sources of ignition. Use with adequate ventilation. Wash thoroughly with soap and water after handling. Keep containers closed when not in use.

Storage: Store in a cool, dry, well ventilated area away from incompatible materials. Store only in original container. Keep containers closed when not in use, and away from open flame or other sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: In confined spaces, or in areas where adequate ventilation cannot be assured, use NIOSH-approved organic vapor respirator or a positive-pressure airline mask, or a self-contained breathing apparatus.
Engineering Controls: Use with general or local exhaust ventilation as required.
When using cements in areas with limited ventilation, use a ventilation device such as a fan or air mover to maintain safe air/vapor concentrations. All ventilation devices should be located such that they do not become sources of ignition.
Skin Protection: Avoid skin contact. Wear chemical resistant gloves such as PVA gloves. Rubber gloves are acceptable for short time usage.
Eye Protection: Safety glasses with side shields or Chemical Safety goggles when necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance And Odor: Clear viscous liquid with ether like odor

Physical State: Liquid	**Boiling Point:** 151º F (Based on THF)
Vapor Density: 2.0 to 2.5	**Vapor Pressure:** 143 @ 68º F (Based on THF)
Solubility In Water: 60-85%	**Evaporation Rate:** 7 to 11
Specific Gravity: 0.910 -/+ .03	**Volatile Components:** 65-75%
Melting Point: N/A	**VOC Content:** 510 g/L

10. STABILITY AND REACTIVITY

Stability: Stable under normal storage and handling conditions.
Conditions to avoid: Keep in closed containers and away from sparks and open flame.
Incompatibility: Strong oxidizing materials, Lithium Aluminum Hydride, Sodium Aluminum Hydroxide & Sodium & Potassium Hydroxides.
Hazardous Decomposition Products: Carbon Dioxide and Carbon Monoxide are formed. Irritating peroxide fumes formed when heated to Decomposition.
Hazardous Polymerization: Avoid excessive exposure to air and cationic initiators like Lewis Acids

11. TOXICOLOGICAL INFORMATION

HEALTH HAZARDS:
Ingestion: Swallowing may cause abdominal pain, nausea, vomiting and diarrhea. May cause kidney and liver damage. Aspiration during swallowing or vomiting, can cause chemical pneumonia and lung damage.
Inhalation: Inhalation of vapors will cause irritation of mucous membranes, nose, eyes and throat and difficult of breathing. High concentrations may cause headache, dizziness, narcosis and nausea.
Eye: May cause moderate to severe irritation. Eye injury is possible.
Skin: May cause irritation with redness itching and pain.
Sensitization: None of the components are known to cause sensitization.
Chronic: Prolonged or repeated contact or overexposure can cause skin defatting and dermatitis.
Carcinogenicity: None of the components is listed as a carcinogen or suspected carcinogen by IARC, NTP or OSHA.
Cyclohexanone is classified by ACGIH as “A3”, a confirmed animal carcinogen with unknown relevance to humans.
Mutagenicity: Methyl Ethyl Ketone is not considered genotoxic based on laboratory studies.
Medical Conditions Aggravated by Exposure: Pre-existing skin, lung, kidney or liver disorders may be at increased risk from exposure to this product.
Reproductive Toxicity: Methyl Ethyl Ketone and Cyclohexanone have been found to cause teratogenic effects in Laboratory animals. Tetrahydrofuran (THF) has been found to cause adverse developmental effects only when exposure levels cause other toxic effects to mother.

Acute Toxicity Values:
Methyl Ethyl Ketone: Oral Rat LD50: 2,737mg/kg, Inhalation Rat LC50: 23,500 mg/m³ /8 hour/, Skin Rabbit LD50: 6,480 mg/kg
Cyclohexanone: Oral Rat LD50: 1,620 mg/kg, Inhalation Rat LC50: 8,000 ppm/4hrs., Skin Rabbit LD50: 1 ml/kg
Tetrahydrofuran: Oral rat LD50: 1,650 mg/kg, Inhalation rat LC50: 21,000 ppm/3 hrs.

12. ECOLOGICAL INFORMATION

Environmental Toxicity: This product is not expected to be toxic to aquatic life.
Tetrahydrofuran: Not expected to bioaccumalate. 96-hr LC50: Fathead minnows, 2160 mg/L, Cyclohexanone: 96-hr LC50: fish >100 mg/L, Methyl Ethyl Ketone 96-hr LC50: fish >100 mg/L

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with local, state and federal environmental regulations.

14. TRANSPORT INFORMATION

Transportation of Dangerous Goods Description:

DOT	Less than 1 liter (0.3 gal)	Greater than 1 liter (0.3 gal)
Proper Shipping Name:	Consumer Commodity	Flammable Liquid, n.o.s (Tetrahydrofuran, Methyl Ethyl Ketone)
Hazard Class:	ORM-D	3
UN Number/Packing Group:	NONE	UN 1993 PGII
Labels Required:	NONE	Flammable Liquid Label
IMDG		
Proper Shipping Name:	Flammable Liquid, n.o.s(Contains - Tetrahydrofuran, Methyl Ethyl Ketone)	Flammable Liquid, n.o.s(Contains - Tetrahydrofuran, Methyl Ethyl Ketone)
Hazard Class:	3	3
UN Number/Packing Group	UN 1993/PGII	UN 1993/PGII
Label	None	Flammable Liquid
Flash Point	6ºF	6ºF

15. REGULATORY INFORMATION

Hazard Category for Section 311/312: Acute health - Yes, chronic health - Yes, Flammable – Yes.
Section 302 Extremely Hazardous Substances (TQP): This product does not contain chemicals regulated under SARA section 302.
Section 313 Toxic Chemicals: This product does not contain chemicals subject to SARA Title III Section 313 reporting requirements.
California Proposition 65: This product does not contain any chemicals subject to California Proposition 65 Regulation.
TSCA Inventory: All the components in this product are listed on the TSCA inventory.
Canada DSL list—yes

WHMIS Classification: Class B-2, flammable liquid
D-2A, Materials causing other toxic effects (very Toxic), D-2B Toxic material

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. OTHER INFORMATION

DISCLAIMER:
The information herein has been compiled from sources believed to be reliable, up-to-date, and is accurate to the best of our knowledge. However, Hercules cannot give any guarantees regarding information from other sources, and expressly does not make warranties, nor assumes any liability for its use.

Material Safety Data Sheet # 347

Hercules Chemical Company Inc.
111 South Street
Passaic NJ 07055-7398
Information Telephone: 1-800 221-9330
Internet: www.herchem.com

NFPA	HMIS	PPE	Transport Symbol
			

Preparation 11-30-07 **Revision Date 9/8/09** **Revision Number** 2

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identity: HERCULES PVC CLEAR PRIMER
Intended Use: To prime PVC pipe before applying Solvent cement.

Manufacturer: Hercules Chemical Company, Inc.
111 South Street
Passaic, New Jersey 07055-7398

Information Telephone: (800) 221-9330

Internet: http://www.herchem.com

Emergency Phone: **CHEMTREC: (800) 424-9300**

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Percentage	OSHA PEL	ACGIH TLV	Other limits
Tetrahydrofuran	109-99-9	15-20	200 ppm	200 ppm	
Methyl ethyl Ketone	78-93-3	25-35	200 ppm	200 ppm	
Cyclohexanone	108-94-1	10-15	50 ppm	20 ppm	
Acetone	67-64-1	40-50	1000 ppm	500 ppm	

HMIS Hazard Rating: 3 4 1 G

3. HAZARDS IDENTIFICATION

This product is a clear liquid with an ether-like odor.

EMERGENCY OVERVIEW

DANGER!

Extremely flammable liquid and vapor. Vapors may cause flash fires. May cause eye and skin irritation. Inhalation of vapors will cause irritation of mucous membranes, nose, eyes and throat, coughing and difficulty breathing. Exposure to high vapor concentration may cause headache, dizziness, nausea, and narcosis. May cause skin defatting and dermatitis with prolonged repeated contact. Harmful or fatal if swallowed

Potential Health Effects.

Inhalation: May cause irritation of the nose, throat and upper respiratory tract. High concentrations may cause headache dizziness, nausea, shortness of breath and vomiting. Concentrations above TLV, may cause central nervous system depression and unconsciousness.
Ingestion: May produce abdominal pain and nausea. Aspiration into lungs can produce severe lung damage and is a medical emergency.
Eye: Causes painful burning or stinging of eyes and lids, watering of eyes and inflammation of conjunctiva.
Skin: Causes irritation of skin. Prolonged skin contact causes common solvent defatting effect such as redness, itching and pain.

4. EMERGENCY AND FIRST AID PROCEDURES.

Eye: Immediately flush victim's eyes with large quantities of water, for at least 15 minutes, holding the eyelids apart. Get immediate medical attention.
Skin: Wash with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse. If irritation develops, get medical attention.
Inhalation: Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, have qualified person administer oxygen,. Call a doctor.
Ingestion: DO NOT INDUCE VOMITING. If conscious, give 1-2 glasses of water to dilute. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Call a doctor immediately.

5. FIRE FIGHTING MEASURES

Flashpoint: 0 to -4°F (TCC) (Based on Acetone)
Flammable Limits: LEL: 2.0 % **UEL**: 13.0 %
Autoignition Temperature: Not determined
Extinguishing Media: Foam, Dry Chemical or Carbon Dioxide.
Unusual Fire or Explosion Hazards: Vapors are heavier than air, and will travel considerable distance to source of ignition causing a flashback. On long standing may form peroxides which may cause violent reactions especially upon evaporation to dryness.
Special Fire-Fighting Instructions: Handle as flammable liquid. Firefighters should wear positive pressure self-contained breathing apparatus and chemical goggles. Water may be ineffective but should be used to keep fire exposed containers cool.
Hazardous Combustion Products: Carbon Dioxide and Carbon Monoxide are formed. Irritating peroxide fumes are formed when heated to decomposition.

6. ACCIDENTAL RELEASE MEASURES

Eliminate all sources of ignition. Ventilate area. Wear appropriate personal protection equipment. Absorb with inert absorbing material and dispose of with solid waste according to Federal, State and Local regulations. Wash spill area with water. Do not flush wash water into confined areas.

7. HANDLING AND STORAGE

Handling: Do not get in eyes, on skin or clothing. Avoid breathing vapors. Keep product away from heat, sparks and open flames and all sources of ignition. Use with adequate ventilation. Wash thoroughly with soap and water after handling. Keep containers closed when not in use.

Storage: Store in a cool, dry, well ventilated area away from incompatible materials. Store only in original container. Keep containers closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: In confined spaces, or in areas where adequate ventilation cannot be assured, use NIOSH-approved organic vapor respirator or a positive-pressure airline mask, or a self-contained breathing apparatus.
Engineering Controls: Use with general or local exhaust ventilation as required.
When using cements in areas with limited ventilation, use a ventilation device such as a fan or air mover to maintain safe air/vapor concentrations. All ventilation devices should be located such that they do not become sources of ignition.
Skin Protection: Avoid skin contact. Wear chemical resistant gloves such as PVA gloves. Rubber gloves are acceptable for short time usage.
Eye Protection: Safety glasses with side shields or Chemical Safety goggles when necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear liquid with ethereal and acetone like odor.

Physical State: Liquid	**Boiling Point:** 133º F (Based on Acetone)
Vapor Density: 2.0-2.5	**Vapor Pressure: 400**F @ 104º F (Based on Acetone)
Solubility In Water: 50-75%	**Evaporation Rate:** 7-11
Specific Gravity: 0.820 -/+ .03	**VOC Content:** 510 g/L

10. STABILITY AND REACTIVITY

Stability: Stable under normal storage and handling conditions.
Conditions to avoid: Keep in closed containers and away from sparks and open flame
Incompatibility: Strong oxidizing materials, Lithium Aluminum Hydride, Sodium Aluminum Hydroxide & Sodium & Potassium Hydroxides.
Hazardous Decomposition Products: Carbon Dioxide and Carbon Monoxide are formed. Irritating peroxide fumes formed when heated to Decomposition.
Hazardous Polymerization: Avoid excessive exposure to air and cationic initiators like Lewis Acids

11. TOXICOLOGICAL INFORMATION

HEALTH HAZARDS:
Ingestion: Swallowing may cause abdominal pain, nausea, vomiting and diarrhea. May cause kidney and liver damage. Aspiration during swallowing or vomiting, can cause chemical pneumonia and lung damage.
Inhalation: Inhalation of vapors will cause irritation of mucous membranes, nose, eyes and throat, coughing and difficult breathing. High concentrations may cause headache, dizziness, narcosis and nausea.
Eye: May cause moderate to severe irritation. Will cause painful burning or stinging of eyes and lids, watering of eyes, and inflammation of conjunctiva.
Skin: May cause irritation with redness itching and pain.
Sensitization: None of the components are known to cause sensitization.
Chronic: Prolonged or repeated overexposure can cause skin defatting and dermatitis.
Carcinogenicity: None of the components is listed as a carcinogen or suspected carcinogen by IARC, NTP or OSHA. ACGIH has classified Cyclohexanone as “A3”, confirmed animal carcinogen with unknown relevance to humans.
Mutagenicity: Methyl Ethyl Ketone is not considered genotoxic based on laboratory studies.
Medical Conditions Aggravated by Exposure: Pre-existing skin, lung, kidney or liver disorders may be at increased risk from exposure to this product.
Reproductive Toxicity: Methyl Ethyl Ketone and Cyclohexanone have been shown to cause teratogenic effects in Laboratory animals. Acetone and tetrahydrofuran have been found to cause adverse developmental effects only when exposure levels cause other toxic effects to mother.

Acute Toxicity Values:

Methyl Ethyl Ketone:	Oral Rat LD50: 2,737mg/kg,	Inhalation Rat LC50: 23,500 mg/m3 /8 hour/,	Skin Rabbit LD50: 6,480 mg/kg
Acetone:	Oral rat LD50: 5,800 mg/kg	Inhalation rat LC50: 50,100 mg/m3/8 hrs	
Cyclohexanone:	Oral Rat LD50: 1,620 mg/kg,	Inhalation Rat LC50: 8,000 ppm/4hrs	Skin Rabbit LD50: 1 ml/kg
Tetrahydrofuran:	Oral rat LD50: 1,650 mg/kg	Inhalation rat LC50: 21,000 ppm/3 hrs.	

12. ECOLOGICAL INFORMATION

Environmental Toxicity: This product is not expected to be toxic to aquatic life.
Acetone: 96-hr LC50: fish >100 mg/L,
Tetrahydrofuran: Not expected to bioaccumalate. 96-hr LC50: Fathead minnows , 2160 mg/L,
Cyclohexanone: 96-hr LC50: fish >100 mg/L,
Methyl Ethyl Ketone 96-hr LC50: fish >100mg/L

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local, state and federal environmental regulations.

14. TRANSPORT INFORMATION

Transportation of Dangerous Goods Description:

DOT	Less than 1 liter (0.3 gal)	Greater than 1 liter (0.3 gal)
Proper Shipping Name:	Consumer Commodity	Flammable Liquid, n.o.s (Contains Tetrahydrofuran, Methyl Ethyl Ketone)
Hazard Class:	ORM-D	3
UN Number/Packing Group:	NONE	UN 1993 PGII
Labels Required:	NONE	Flammable Liquid Label

IMDG	Less than 1 liter (0.3 gal)	Greater than 1 liter (0.3 gal)
Proper Shipping Name:	Flammable Liquid, n.o.s , "LTD.QTY"	Flammable Liquid, n.o.s
Hazard Class:	3	3
UN Number/Packing Group:	UN 1993/PGII	UN 1993 PGII
Labels Required:	NONE	Flammable Liquid Label
Flash Point	-4°F	-4°F

15. REGULATORY INFORMATION

Hazard Category for Section 311/312: Acute health, chronic health, Flammable
Section 302 Extremely Hazardous Substances (TQP): This product does not contain chemicals regulated under SARA section 302.
Section 313 Toxic Chemicals: This product does not contain chemicals subject to SARA Tittle III Section 313 reporting requirements.
California Proposition 65: This product does not contain any chemicals subject to California Proposition 65 Regulation
TSCA Inventory: All of the components of this product are listed on the TSCA inventory.

Canada DSL List—yes

WHMIS Classification: Class B-2, Flammable liquid, D-2A, Materials causing other toxic effects (very Toxic), D-2B toxic material.
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. OTHER INFORMATION

DISCLAIMER:
The information herein has been compiled from sources believed to be reliable, up-to-date, and is accurate to the best of our knowledge. However, Hercules cannot give any guarantees regarding information from other sources, and expressly does not make warranties, nor assumes any liability for its use.

MATERIAL SAFETY DATA SHEET

*** SECTION 1 * PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME – **Sweeney's Poison Peanuts Mole & Gopher Bait**
CAS NO.: 1314-84-7
MANUFACTURER – Senoret Chemical Company, Inc.
PREPARED BY – Senoret Chemical Company, Inc., 566 Leffingwell Avenue, Kirkwood, MO 63122
DATE RELEASED – July 2005

*** SECTION 2 * COMPOSTION, INFORMATION ON INGREDIENTS**

CHEMICAL FAMILY - Inorganic CHEMICAL NAME & SYNONYMS – Zinc Phosphide
CHEMICAL FORMULA – Zn3P2 TRADE NAME & SYNONYMS – Zinc Phosphide

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*** SECTION 3 * HAZARDOUS INGREGIENTS**

Active Ingredients – Zinc Phosphide 2.0% CURRENT TLV: N.E.

*** SECTION 4 * PHYSICAL DATA OF ACTIVE INGREDIENT**

APPEARANCE & ODOR – Crystalline powder, garlic-like odor
MOLECULAR WEIGHT – 258.09
MELT POINT - 420° C
SPECIFIC GRAVITY – 4.55 gm/ml
VAPOR DENSITY (AR=1) – N/A COLOR – Grey powder BULK DENSITY – N/A
BOILING POINT - 1100º C VAPOR PRESSURE - N/A SOLUBILITY – Insoluble in water
WATER REACTIVE – N/A EVAPORATION RATE – N/A

*** SECTION 5 * FIRE & EXPLOSION DATA OF PRODUCT**

FLASH POINT F (METHOD USED) – N/A FLAMMABLE LIMIT – N/A
AUTOIGNITION TEMP – N/A
EXTINGUISHING MEDIA – Extinguish with water, foam or inert gas.
SPECIAL FIRE FIGHTING PROCEDURES – None
UNUSUAL FIRE OR EXPLOSION HAZARDS – Avoid contact with acids.

*** SECTION 6 * REACTIVITY HAZARD DATA OR ACTIVE INGREDIENT**

STABILITY – Stable CONDITIONS TO AVOID – Keep dry and away from acids.
POLYMERIZATION – Will not occur.
CONDITIONS TO AVOID – N/A
INCOMPATIBILITY (MATERIALS TO AVOID) - Oxidizing agents and acids
HAZARDOUS DECOMPOSITION PRODUCTS – Phosphine gas

*** SECTION 7 * TOXICITY DATA**

LD50, ORAL (INGESTION) – (2% A1) [Rat] 1375 mg/kg
LD50, DERMAL (SKIN CONTACT) – 94% A1 [Rabbit] 2000 – 5000 mg/kg
INHALATION – LC50 (10% A1)>19.6 mg/l of air
FISH, LC50 (Lethal Concentration) – [Rainbow trout] 0.5 mg/kg (94% A1)
SKIN IRRITATION – Not considered to be an irritant.
OTHER – N/A

*** SECTION 8 * HEALTH HAZARD DATA OF PRODUCT**

PRIMARY ROUTE OR RENTRY ( ) Ingestion ( ) Inhalation ( ) Skin Absorption ( ) Skin & Eye Contact
MEDICAL CONDITIONS GENERALLY AGGRIVATED BY EXPOSURE – None
SIGNAL WORD – **CAUTION**

HEALTH HAZARDS – 1 – Caution – May be irritating
SIGNS & SYMPTOMS OF EXPOSURE – Nausea, abdominal pain, tightness in chest, chills.

EMERGENCY FIRST AID PROCEDURES – Any persons applying zinc phosphide products and experiencing signs and symptoms such as nausea, abdominal pain, tightness in the chest, or weakness should be seen by a physician immediately.

IF SWALLOWED:
Immediately call a Poison Control Center or physician, or transport the patient to the nearest hospital. Do not drink water. Do no administer anything by mouth or make the patient vomit unless advised to do so by a physician.

IF INHALED:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING:
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES:
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison center or doctor for treatment advice.

NOTE TO PHYSICIAN:
Gastric lavage followed by liquid petrolatum is indicated. Avoid digestive fats and oils. Supportive treatment for convulsions, delirium, hepatic and renal insufficiency should be given.

SPECIAL PROTECTION INFORMATION: Wash hands thoroughly after use.

*** SECTION 9 * CONTROL & PROTECTIVE MEASURES OF PRODUCT**

RESPIRATOR TYPE: NONE EYE PROTECTION: NONE GLOVES: NONE
VENTILLATION: NONE OTHER PROTECTIVE MEASURES: NONE

*** SECTION 10 * SPILL OR LEAK PROCEDURE OF PRODUCT**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: General clean-up.
WASTE DISPOSAL METHOD: If waste cannot be disposed of by use according to label instruction, call your local solid waste agency or 1-800-CLEANUP for disposal instructions.

*** SECTION 11 * SPECIAL PRECAUTIONS & STORAGE DATA OF PRODUCT**

STORAGE TEMPERATURE: Room temperature.
AVERAGE SHELF LIFE: Under exposed acid free conditions, will remain active for long periods of time.
SPECIAL SENSITIVITY (HEAT, LIFE, MOISTURE): Stable under dry conditions.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid acidic conditions – in presence of dilute acids phosphine gas is liberated.

***SECTION 12 * SHIPPING DATA OF PRODUCT**

D.O.T. SHIPPING NAME: SWEENEY'S POISON PEANUTS
TECHNICAL SHIPPING NAME: Rodenticides containing Zinc Phosphide.
D.O.T. HAZARD CLASSIFICATION: Non-hazardous
D.O.T. LABELS REQUIRED: None
FREIGHT CLASSIFICATION: Class 60
WARRANTY: The information provided in this Material Safety Data Sheet has been obtained from sources believed to be reliable. Senoret Chemical Company, Inc. provides no warranties, either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your consideration and investigation. You should satisfy yourself that you have all current data relevant to your particular use.

Spectrum Group
Division of United Industries Corp.
P. O. Box 142642
St. Louis, MO 63114-0642

Material Safety Data Sheet

Complies with OSHA's Hazard Communication Standard, 29 CFR 1910.1200

Hazardous Material Identification System – (HMIS)	
HEALTH – 1	REACTIVITY – 0
FLAMMABILITY – 2	PERSONAL –

I Trade Name: Spectracide Wasp & Hornet Killer$_3$

Product Type: Aerosol insecticide

Product Item Number: 57625

Formula Code Number: 21-0666/21-0815

EPA Registration Number	Manufacturer	Emergency Telephone Numbers
9688-190-8845	Chemsico Division of United Industries Corporation 8494 Chapin Industrial Drive St. Louis, MO 63114	**For Chemical Emergency:** 1-800-633-2873 **For Information:** 1-800-917-5438 **Prepared by:** Charlie Duckworth **Date Prepared:** November 21, 2006

II Hazards Ingredient/Identity Information

Chemical	%	OSHA PEL	ACGIH TLV
Mineral spirits CAS# 8012-95-1	4.00	100 ppm	100 ppm
Propylene glycol monobutyl ether CAS# 5131-66-8	6.00	None	None
Lambda-cyhalothrin CAS# 91465-08-6	0.01	NA	2000 mg/kg (skin)
Prallethrin CAS# 23031-36-9	0.025	NE	NE
Hydrocarbon Propellant blend CAS #75-28-5/106-97-8/ 74-98-6	3.50	NE	NE

III Physical and Chemical Characteristics

Appearance & Odor: Wet narrow fan spray with clear wet film and glycol ether odor.
Boiling Point: NA
Melting Point: NA
Vapor Pressure: 110 psig at 54° C/130° F
Specific Gravity: 0.993 (H_2O = 1)
Vapor Density: Greater than 1 (Air = 1)

Solubility in Water: Greater than 87%
Evaporation Rate: Less than 1 (Butyl Acetate = 1)

IV Fire and Explosive Hazards Data

Flash Point: 119° F (TCC) (liquid portion)
Flame Extension: 0-inches (Level 1 Aerosol)
Flammable Limits: NA
Autoignition Temperature: NA
Fire Extinguishing Media: Water fog, Carbon dioxide, Dry chemical
Decomposition Temperature: NA
Special Fire-Fighting Procedures: Keep cans cool. Use equipment or shielding to protect personnel against bursting, rupturing or venting cans.
Unusual Fire & Explosion Hazards: At elevated temperatures (over 54° C/130° F), cans may vent, rupture or burst. Also see Section V.

V Reactivity Data

Stability: Stable
Polymerization: Will not occur
Conditions to Avoid: Temperatures over 130° F
Incompatible Materials: NA
Hazardous Decomposition or Byproducts: Carbon dioxide, carbon monoxide

VI Health Hazard Data

Skin Contact: Avoid contact with skin and clothing. ***First Aid***: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a Poison Control Center or doctor for treatment advice.
Ingestion: First Aid: Immediately call a Poison Control Center or doctor. Do not induce vomiting unless told to do so by a Poison Control Center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.
Special Notes: Have the product container with you when calling a Poison Control Center or doctor, or going for treatment.
Health conditions Aggravated by Exposure: None known
Ingredients listed by NTP, OSHA, or IARC as Carcinogens or Potential Carcinogens: None

VII Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:
Avoid breathing vapors. Avoid contact with liquid. Remove ignition sources. Soak up spills with absorbent material.

Waste Disposal:
Do not puncture or incinerate containers. If empty: Place in trash or offer for recycling if available. If partly filled: Call local solid waste agency or 1-800-CLEANUP for disposal instructions.

Handling & Storage Precautions:
Do not store where temperatures can exceed 54° C/130° F.

VIII Control Measures

Read and follow label directions. They are your best guide to using this product effectively, and give necessary safety precautions to protect your health.

IX Transportation Data

DOT: Consumer Commodity, Hazard Class ORM-D (Limited Quantity Exception)
IMDG: Aerosols (Maximum 1 Liter), Hazard Class 2, UN-1950, Packing Group III
IATA: Aerosols, Flammable, Containing Substances in Division 6.1, Packing Group III (Each Not Exceeding 1 Liter Capacity), Hazard Class 2.1, UN-1950, Packing Group III

TOMCAT® MOUSE KILLER III MSDS

MANUFACTURER'S ADDRESS:	PREPARED BY:	TELEPHONE NO:	EMERGENCY PHONE NOS:
MOTOMCO 3699 Kinsman Blvd, Madison, WI 53704	JL/CAR	(608) 241-0202	**Medical** (877) 854-2494 **Transportation (Spills)** (800) 424-9300 CHEMTREC
PRODUCT NAME: TOMCAT® MOUSE KILLER III			
USE: Acute Rodenticide with refillable child resistant mouse bait station (Tier 3)	**BAIT FORM:** Formulated Dry Bait		**EPA REGISTRATION NO.** 12455-129-3240

SECTION I. HAZARDOUS INGREDIENTS

INGREDIENT NAME	% BY WEIGHT	CURRENT TLV
Bromethalin [N-Methyl-2,4-dinitro-N-(2,4,6-tribromophenyl)-6-(trifluoromethyl)benzenamine] CAS No. 63333-35-7	0.01 %	N/A

This product contains no components subject to the reporting requirements of Section 313 of the Superfund Amendment and Reauthorization Act (SARA) of 1986

SECTION II. PHYSICAL DATA

APPEARANCE: Polygonal Block in mouse bait station	**COLOR:** Bait: Green, Station: Black with translucent top	**ODOR:** Grain-like	**SPECIFIC GRAVITY:** 1.203 g/ml
VAPOR DENSITY: N/A	**MELTING POINT:** N/A	**WATER REACTIVITY:** N/A	**EVAPORATION RATE:** N/A
VAPOR PRESSURE: N/A	**BOILING POINT:** N/A	**SOLUBILITY:** Not soluble in water	**BULK DENSITY:** N/A

SECTION III. FIRE AND EXPLOSION DATA

FLASH POINT (Method Used):	FLAMMABLE LIMIT:	AUTOIGNITION TEMP:
N/A	Upper Limit: N/A Lower Limit: N/A	N/A

EXTINGUISHING MEDIA:
Extinguish with water, foam or inert gas.

SPECIAL FIREFIGHTING PROCEDURES:
Firefighters should be equipped with protective clothing and self-contained breathing apparatus.

UNUSUAL FIRE OR EXPLOSION HAZARDS:
None

SECTION IV. REACTIVITY HAZARD DATA

STABILITY: Stable	**CONDITIONS TO AVOID:** None
POLYMERIZATION: Will not occur	**CONDITIONS TO AVOID:** None
INCOMPATIBILITY (MATERIALS TO AVOID): Strongly alkaline materials	**HAZARDOUS DECOMPOSITION PRODUCTS:** Oxides of carbon and nitrogen, hydrobromic acid

SECTION V. TOXICITY DATA

LD50, ORAL (INGESTION):	LD50, DERMAL (SKIN CONTACT):	LC50, INHALATION:
>5000 mg/kg (rats)	> 5001 mg/kg (rats)	N/A
EYE IRRITATION: None (rabbits)	**SKIN IRRITATION:** None (rabbits)	**DERMAL SENSITIZATION:** Not considered a Sensitizer

TOMCAT® MOUSE KILLER III MSDS

SECTION VI. HEALTH HAZARDS

PRIMARY ROUTE OF ENTRY:	SIGNS & SYMPTOMS OF EXPOSURE:
Ingestion	Headache, confusion, personality change, tremors, convulsive seizures, respiratory distress.

EMERGENCY FIRST AID PROCEDURES:
Eyes: Flush with cool water for at least 15 minutes. If irritation develops, obtain medical assistance.
Skin: Wash with soap and water. If irritation develops, obtain medical assistance.
Ingestion: Call physician or emergency phone number immediately. Do not give anything by mouth or induce vomiting unless instructed by physician.
Inhalation: None.

NOTE TO PHYSICIAN: If ingested, limit absorption by either emesis or gastric lavage. Sublethal symptoms, if present, would be the result of cerebral edema and should be treated accordingly through administrations of an osmotic diuretic and corticosteroid.

SECTION VII. CONTROL AND PROTECTIVE MEASURES

RESPIRATOR TYPE:
Not required

EYE PROTECTION:	GLOVES (Recommended):	VENTILATION:
Not required	Rubber Gloves	Not required

OTHER PROTECTIVE MEASURES:
Not required

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:
HEALTH: 1 (Caution) **FIRE**: 0 (Will not burn) **REACTIVITY**: 0 (Stable) **SPECIFIC HAZARD**: None

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS) RATINGS:
HEALTH: 2 (Moderate) **FLAMMABILITY**: 0 (Minimal) **REACTIVITY**: 0 (Minimal) **PROTECTIVE EQUIPMENT:** B

SECTION VIII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN THE EVENT MATERIAL IS RELEASED OR SPILLED:
Sweep up spilled material, place in properly labeled container for disposal or re-use.

WASTE DISPOSAL METHOD:
Wastes resulting from use may be disposed of on-site or at an approved waste disposal facility. Dispose of all wastes in accordance with all Federal, state and local regulations.

SECTION IX. SPECIAL PRECAUTIONS AND STORAGE DATA

STORAGE TEMPERATURE:	AVERAGE SHELF LIFE:
Room temperature	Bait is stable for a minimum of 1 year when stored at room temperature.

SPECIAL SENSITIVITY (HEAT, LIGHT, MOISTURE):
Avoid exposure to light and extreme humidity.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
Store in a cool, dry place inaccessible to children, pets and wildlife. Keep container tightly closed when not in use. Avoid contamination of lakes, streams and ponds by use, storage or disposal. Wash thoroughly with soap and water after handling.

SECTION X. SHIPPING DATA

DOT SHIPPING NAME:	DOT HAZARD CLASSIFICATION:
None required	Non-hazardous
DOT LABELS REQUIRED:	**FREIGHT CLASSIFICATION:**
None required	LTL Class 60

Material Safety Data Sheet

1 - Chemical Product and Company Identification

Manufacturer: WD-40 Company **Address: 1061 Cudahy Place (92110)** **P.O. Box 80607** **San Diego, California, USA** **92138 –0607** **Telephone:** **Emergency only: 1-888-324-7596 (PROSAR)** **Information: 1-888-324-7596** **Chemical Spills: 1-800-424-9300 (Chemtrec)** **1-703-527-3887 (International Calls)**	**Chemical Name: Organic Mixture** **Trade Name: WD-40 Aerosol** **Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion** **MSDS Date Of Preparation: 3/11/10**

2 – Hazards Identification

Emergency Overview:
DANGER! Flammable aerosol. Contents under pressure. Harmful or fatal if swallowed. If swallowed, may be aspirated and cause lung damage. May cause eye irritation. Avoid eye contact. Use with adequate ventilation. Keep away from heat, sparks and all other sources of ignition.

Symptoms of Overexposure:
Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.
Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.
Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.
Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.
Chronic Effects: None expected.
Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory conditions may be aggravated by exposure.

Suspected Cancer Agent:
Yes No X

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent
Aliphatic Hydrocarbon	64742-47-8	45-50
Petroleum Base Oil	64742-58-1 64742-53-6 64742-56-9 64742-65-0	<25
LVP Aliphatic Hydrocarbon	64742-47-8	12-18
Carbon Dioxide	124-38-9	2-3
Surfactant	Proprietary	<2
Non-Hazardous Ingredients	Mixture	<10

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.
Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.

Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.
Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

5 – Fire Fighting Measures

Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.
Special Fire Fighting Procedures: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.
Unusual Fire and Explosion Hazards: Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

6 – Accidental Release Measures

Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area. Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.
Storage: Store in a cool, well-ventilated area, away from incompatible materials Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m3 TWA, 10 mg/m3 STEL ACGIH TLV 5 mg/m3 TWA OSHA PEL
LVP Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA (OSHA/ACGIH), 30,000 ppm STEL (ACGIH)
Surfactant	None Established
Non-Hazardous Ingredients	None Established

The Following Controls are Recommended for Normal Consumer Use of this Product
Engineering Controls: Use in a well-ventilated area.
Personal Protection:
Eye Protection: Avoid eye contact. Always spray away from your face.
Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.
Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended
Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:
Eye Protection: Safety goggles recommended where eye contact is possible.
Skin Protection: Wear chemical resistant gloves.
Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.
Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Boiling Point:	361 - 369°F (183 - 187°C)	Specific Gravity:	0.8 – 0.82 @ 60°F
Solubility in Water:	Insoluble	pH:	Not Applicable
Vapor Pressure:	95-115 PSI @ 70°F	Vapor Density:	Greater than 1
Percent Volatile:	70-75%	VOC:	412 grams/liter (49.5%)
Coefficient of Water/Oil Distribution:	Not Determined	Appearance/Odor	Light amber liquid/mild odor
Flash Point:	122°F (49°C) Tag Open Cup (concentrate)	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8.0%
Pour Point:	-63°C (-81.4°F) ASTM D-97	Kinematic Viscosity:	2.79-2.96cSt @ 100°F

10 – Stability and Reactivity

Stability: Stable
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.
Incompatibilities: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

The oral toxicity of this product is estimated to be greater than 5,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.
None of the components of this product is listed as a carcinogen or suspected carcinogen or is considered a reproductive hazard.

12 – Ecological Information

No data is currently available.

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information_

DOT Surface Shipping Description: Consumer Commodity, ORM-D
IMDG Shipping Description: Un1950, Aerosols, 2.1, LTD QTY

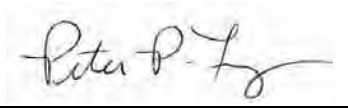
15 – Regulatory Information

U.S. Federal Regulations:

CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.
SARA TITLE III:
Hazard Category For Section 311/312: Acute Health, Fire Hazard, Sudden Release of Pressure
Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None
Section 302 Extremely Hazardous Substances (TPQ): None
EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory.
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not contain chemicals regulated under California Proposition 65.
VOC Regulations: This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.
Canadian Environmental Protection Act: One of the components is listed on the NDSL. All of the other ingredients are listed on the Canadian Domestic Substances List or exempt from notification.
Canadian WHMIS Classification: Class B-5 (Flammable Aerosol)
This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

16 – Other Information:

HMIS Hazard Rating:
Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Reactivity – 0 (minimal hazard)

SIGNATURE:  TITLE: Director of Global Quality Assurance

REVISION DATE: March 2010 SUPERSEDES: August 2009

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: PRO LSPR 6PK 2X MRKNG CAUTION BLUE

Revision Date: 2/27/2012

Identification Number: 266575

Supercedes Date: New MSDS

Product Use/Class: Topcoat/ Aerosol

Supplier:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing vapors or mists. High vapor concentrations are irritating to the eyes, nose, throat and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Substance may be harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Contains Titanium Dioxide. Titanium Dioxide is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC. Significant exposure is not anticipated during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of Titanium Dioxide in the formula. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Liquefied Petroleum Gas	68476-86-8	30.0	N.E.	N.E.	N.E.	N.E.
Acetone	67-64-1	25.0	500 ppm	750 ppm	1000 ppm	N.E.
Aliphatic Hydrocarbon	64742-89-8	15.0	100 ppm	N.E.	100 ppm	N.E.
Limestone	1317-65-3	10.0	3 mg/m3 (Respirable)	N.E.	5 mg/m3 (Respirable)	N.E.
Titanium Dioxide	13463-67-7	10.0	10 mg/m3	N.E.	15 mg/m3 (Total Dust)	N.E.

Xylene	1330-20-7	10.0	100 ppm	150 ppm	100 ppm	N.E.
Magnesium Silicate	14807-96-6	5.0	2 mg/m3	N.E.	0.1 mg/m3 (Respirable)	N.E.
Naphtha	8032-32-4	5.0	N.E.	N.E.	N.E.	N.E.
Toluene	108-88-3	5.0	20 ppm	N.E.	200 ppm	300 ppm
Ethylbenzene	100-41-4	5.0	100 ppm	125 ppm	100 ppm	N.E.

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

EXTINGUISHING MEDIA: Alcohol Foam, Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking.

9. Physical and Chemical Properties

Vapor Density	Heavier than air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.809	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Liquefied Petroleum Gas	N.E.	N.E.
Acetone	5800 mg/kg (Rat)	50100 mg/m3 (Rat, 8Hr)
Aliphatic Hydrocarbon	>5000 mg/kg (Rat, Oral)	N.E.
Limestone	N.E.	N.E.
Titanium Dioxide	>7500 mg/kg (Rat, Oral)	N.E.
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)
Magnesium Silicate	N.E.	TCLo: 11 mg/m3 (Inhalation)
Naphtha	>5000 mg/kg (Rat, Oral)	N.E.
Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)

Ethylbenzene	3500 mg/kg (Rat, Oral)	N.E.

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shipping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA ' Hazard Categories ' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

U.S. State Regulations :

NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
Modified Alkyd	Proprietary

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB5 D2A

16. Other Information

HMIS Ratings:

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	2	**Flammability:**	4	**Instability**	0

VOLATILE ORGANIC COMPOUNDS, g/L: 544

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: PRO LSPR 6PK 2X MRKNG FLUORESCENT GREEN

Revision Date: 2/27/2012

Identification Number: 266574

Supercedes Date: New MSDS

Product Use/Class: Marking Paint/Aerosol

Supplier:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing vapors or mists. High vapor concentrations are irritating to the eyes, nose, throat and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Substance may be harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Liquefied Petroleum Gas	68476-86-8	30.0	N.E.	N.E.	N.E.	N.E.
Aliphatic Hydrocarbon	64742-89-8	20.0	100 ppm	N.E.	100 ppm	N.E.
Limestone	1317-65-3	20.0	3 mg/m3 (Respirable)	N.E.	5 mg/m3 (Respirable)	N.E.
Toluene	108-88-3	15.0	20 ppm	N.E.	200 ppm	300 ppm
Magnesium Silicate	14807-96-6	10.0	2 mg/m3	N.E.	0.1 mg/m3 (Respirable)	N.E.
Polymer Anchored Green Dye Dispersion	Mixture	5.0	N.E.	N.E.	N.E.	N.E.
Hydrotreated Light Distillate	64742-47-8	5.0	200 mg/m3	N.E.	N.E.	N.E.

Naphtha, Petroleum, Hydrotreated Light	64742-49-0	5.0	200 mg/m3	N.E.	N.E.	N.E.
Xylene	1330-20-7	5.0	100 ppm	150 ppm	100 ppm	N.E.

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

EXTINGUISHING MEDIA: Alcohol Foam, Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking.

9. Physical and Chemical Properties

Vapor Density	Heavier than air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.877	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Liquefied Petroleum Gas	N.E.	N.E.
Aliphatic Hydrocarbon	>5000 mg/kg (Rat, Oral)	N.E.
Limestone	N.E.	N.E.
Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)
Magnesium Silicate	N.E.	TCLo: 11 mg/m3 (Inhalation)
Polymer Anchored Green Dye Dispersion	N.E.	N.E.
Hydrotreated Light Distillate	>3160 mg/kg (Skin)	N.E.
Naphtha, Petroleum, Hydrotreated Light	N.E.	N.E.
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shipping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA ' Hazard Categories ' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

U.S. State Regulations :

NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
Modified Alkyd	Proprietary

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB5 D2A

16. Other Information

HMIS Ratings:

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	2	**Flammability:**	4	**Instability**	0

VOLATILE ORGANIC COMPOUNDS, g/L: 549

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: PRO LSPR 6PK 2X MRKNG SAFETY RED

Revision Date: 2/27/2012

Identification Number: 266591

Supercedes Date: New MSDS

Product Use/Class: Topcoat/ Aerosol

Supplier: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing vapors or mists. High vapor concentrations are irritating to the eyes, nose, throat and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Substance may be harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Contains Titanium Dioxide. Titanium Dioxide is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC. Significant exposure is not anticipated during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of Titanium Dioxide in the formula. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Acetone	67-64-1	30.0	500 ppm	750 ppm	1000 ppm	N.E.
Liquefied Petroleum Gas	68476-86-8	30.0	N.E.	N.E.	N.E.	N.E.
Aliphatic Hydrocarbon	64742-89-8	15.0	100 ppm	N.E.	100 ppm	N.E.
Limestone	1317-65-3	10.0	3 mg/m3 (Respirable)	N.E.	5 mg/m3 (Respirable)	N.E.
Xylene	1330-20-7	10.0	100 ppm	150 ppm	100 ppm	N.E.

Magnesium Silicate	14807-96-6	5.0	2 mg/m3	N.E.	0.1 mg/m3 (Respirable)	N.E.
Naphtha	8032-32-4	5.0	N.E.	N.E.	N.E.	N.E.
Titanium Dioxide	13463-67-7	5.0	10 mg/m3	N.E.	15 mg/m3 (Total Dust)	N.E.
Ethylbenzene	100-41-4	5.0	100 ppm	125 ppm	100 ppm	N.E.
Toluene	108-88-3	5.0	20 ppm	N.E.	200 ppm	300 ppm

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

EXTINGUISHING MEDIA: Alcohol Foam, Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking.

9. Physical and Chemical Properties

Vapor Density	Heavier than air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.807	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Acetone	5800 mg/kg (Rat)	50100 mg/m3 (Rat, 8Hr)
Liquefied Petroleum Gas	N.E.	N.E.
Aliphatic Hydrocarbon	>5000 mg/kg (Rat, Oral)	N.E.
Limestone	N.E.	N.E.
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)
Magnesium Silicate	N.E.	TCLo: 11 mg/m3 (Inhalation)
Naphtha	>5000 mg/kg (Rat, Oral)	N.E.
Titanium Dioxide	>7500 mg/kg (Rat, Oral)	N.E.
Ethylbenzene	3500 mg/kg (Rat, Oral)	N.E.

Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shipping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA ' Hazard Categories ' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Reactive Hazard, Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

U.S. State Regulations :

NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
Modified Alkyd	Proprietary

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB5 D2A

16. Other Information

HMIS Ratings:

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	2	**Flammability:**	4	**Instability**	0

VOLATILE ORGANIC COMPOUNDS, g/L: 536

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: PRO LSPR 6PK 2X MRKNG FLUORSCNT RED ORNG

Identification Number: 266590

Product Use/Class: Marking Paint/Aerosols

Supplier: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

Revision Date: 2/27/2012

Supercedes Date: New MSDS

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing vapors or mists. High vapor concentrations are irritating to the eyes, nose, throat and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Substance may be harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Liquefied Petroleum Gas	68476-86-8	30.0	N.E.	N.E.	N.E.	N.E.
Aliphatic Hydrocarbon	64742-89-8	20.0	100 ppm	N.E.	100 ppm	N.E.
Limestone	1317-65-3	20.0	3 mg/m3 (Respirable)	N.E.	5 mg/m3 (Respirable)	N.E.
Toluene	108-88-3	15.0	20 ppm	N.E.	200 ppm	300 ppm
Magnesium Silicate	14807-96-6	10.0	2 mg/m3	N.E.	0.1 mg/m3 (Respirable)	N.E.
Hydrotreated Light Distillate	64742-47-8	5.0	200 mg/m3	N.E.	N.E.	N.E.
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	5.0	200 mg/m3	N.E.	N.E.	N.E.

Xylene	1330-20-7	5.0	100 ppm	150 ppm	100 ppm	N.E.

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

EXTINGUISHING MEDIA: Alcohol Foam, Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking.

9. Physical and Chemical Properties

Vapor Density	Heavier than air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.876	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Liquefied Petroleum Gas	N.E.	N.E.
Aliphatic Hydrocarbon	>5000 mg/kg (Rat, Oral)	N.E.
Limestone	N.E.	N.E.
Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)
Magnesium Silicate	N.E.	TCLo: 11 mg/m3 (Inhalation)
Hydrotreated Light Distillate	>3160 mg/kg (Skin)	N.E.
Naphtha, Petroleum, Hydrotreated Light	N.E.	N.E.
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shipping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA ' Hazard Categories ' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

U.S. State Regulations :

NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
Polymer Anchored Orange Dye Dispersion	Mixture
Modified Alkyd	Proprietary

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB5 D2A

16. Other Information

HMIS Ratings:

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	2	**Flammability:**	4	**Instability**	0

VOLATILE ORGANIC COMPOUNDS, g/L: 549

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be consulted
for specific requirements.

U.S Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)

Revenge Rodent Smoke Bomb **ID # 61110**

Date: April 20, 2012

Section I

Bonide Products, Inc.
6301 Sutliff Road
Oriskany, NY 13424

(800) 424-9300
(315) 736-8231

Section II - Ingredients

Hazardous Components (Specific Chemical Identity: Common Name(s)		OSHA PEL	ACGIH TLV	Other Limits	% (Optional)
Sulfur	CAS #7704-34-9				39.4%
Potassium Nitrate	CAS #7757-09-0				38.8%
Carbon	CAS #4014-0-0				9.3%
Inert - Dextrin	CAS #9004-53-9				6.0– 10.0%
Sawdust	N/A				6.0- 10.0%

Section III - Physical Data

SPECIFIC GRAVITY (H^2O=1): N/A
SOLUBILITY IN H^2O: 0.010g/100ml
PH: 9.22 at 21° C
ODOR: None
APPEARANCE: Dark Gray/Gray Scale
MISCIBILITY: Miscible with water

Section IV - Fire and Explosion Hazard Information

FLASH POINT (CLOSE CUP) RANGE: 405°F
FLAMMABLE LIMITS IN AIR, % BY VOLUME: N/A
EXPLOSION LIMIT (%): LOWER: Non Explosive
FIRE EXTINGUISHING MEDIA: Use water, foam or CO^2
AUTO IGNITION TEMPERATURE: No Data
FLAMMABLE LIMITS (STP) : No Data
SPECIAL FIRE FIGHTING PRODUCERS: Scott Pack to be used inside of a building
UNUSUAL FIRE & EXPLOSION HAZARDS: None

Section V - Reactivity Information

STABILITY: Stable under normal conditions.
MATERIAL INCOMPATIBLE WITH: Oxidizing Material.
HAZARDOUS DECOMPOSITION PRODUCTS: SO^2 SO^2
HAZARDOUS POLYMERIZATION: Will not occur

Section VI - Health Hazard

No long-term effects expected. Product to be used only outside. User needs to walk away if the gasses that are generated cause any irritation to the lungs, skin or eyes. According to all sources of our product, there are no carcinogen producing materials.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None

Section VII - Spill or Leak Procedures

Sweep up and bury in the soil. Wash away small amounts with water.

Section VIII - Disposal Methods

Sweep up and bury in the soil. Wash away small amounts with water.

Section IX - Handling and Storage

Store in a cool, dry place away from heat or flame. Complete instructions for the safe handling and use of the product are included on the product.

RESPIRATORY PROTECTION: None required
VENTILATION: N/A
PROTECTIVE CLOTHING: Not required.
EYE PROTECTION: Not required

Section X - Special Precautions

None

NOTICE: This information is believed to be accurate and reliable. However, no guarantee expressed or implied is made with respect to the information contained herein.

KEEP OUT OF REACH OF CHILDREN

ABBREVIATION KEY

N/A: NOT AVAILABLE OR APPLICABLE N/E: NOT ESTABLISHED ND: Not Determined
TLV: THRESHOLD LIMIT VALUE TWA: TIME WEIGHTED AVG./8 HOUR WORKDAY
STEL: SHORT TERM EXPOSURE LIMIT D.O.T.: DEPARTMENT OF TRANSPORTATION

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES
Buyer assumes all risks of use, storage and handling of this material not in strict accordance with directions given herewith.

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: PRO LSPR 6PK 2X MRKNG WHITE

Revision Date: 3/1/2012

Identification Number: 266593

Supercedes Date: New MSDS

Product Use/Class: Marking Paint/Aerosols

Supplier: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer: Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing vapors or mists. High vapor concentrations are irritating to the eyes, nose, throat and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Substance may be harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Contains Titanium Dioxide. Titanium Dioxide is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC. Significant exposure is not anticipated during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of Titanium Dioxide in the formula. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Acetone	67-64-1	30.0	500 ppm	750 ppm	1000 ppm	N.E.
Liquefied Petroleum Gas	68476-86-8	30.0	N.E.	N.E.	N.E.	N.E.
Aliphatic Hydrocarbon	64742-89-8	15.0	100 ppm	N.E.	100 ppm	N.E.
Titanium Dioxide	13463-67-7	10.0	10 mg/m3	N.E.	15 mg/m3 (Total Dust)	N.E.
Limestone	1317-65-3	10.0	3 mg/m3 (Respirable)	N.E.	5 mg/m3 (Respirable)	N.E.

Xylene	1330-20-7	10.0	100 ppm	150 ppm	100 ppm	N.E.
Magnesium Silicate	14807-96-6	5.0	2 mg/m3	N.E.	0.1 mg/m3 (Respirable)	N.E.
Naphtha	8032-32-4	5.0	N.E.	N.E.	N.E.	N.E.
Ethylbenzene	100-41-4	5.0	100 ppm	125 ppm	100 ppm	N.E.
Toluene	108-88-3	5.0	20 ppm	N.E.	200 ppm	300 ppm

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

EXTINGUISHING MEDIA: Alcohol Foam, Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking.

9. Physical and Chemical Properties

Vapor Density	Heavier than air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.829	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Acetone	5800 mg/kg (Rat)	50100 mg/m3 (Rat, 8Hr)
Liquefied Petroleum Gas	N.E.	N.E.
Aliphatic Hydrocarbon	>5000 mg/kg (Rat, Oral)	N.E.
Titanium Dioxide	>7500 mg/kg (Rat, Oral)	N.E.
Limestone	N.E.	N.E.
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)
Magnesium Silicate	N.E.	TCLo: 11 mg/m3 (Inhalation)
Naphtha	>5000 mg/kg (Rat, Oral)	N.E.
Ethylbenzene	3500 mg/kg (Rat, Oral)	N.E.

Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shipping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(B) components exist in this product.

U.S. State Regulations :

NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
Modified Alkyd	Proprietary

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB5 D2A

16. Other Information

HMIS Ratings:

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	2	**Flammability:**	4	**Instability**	0

VOLATILE ORGANIC COMPOUNDS, g/L: 536

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Rust-Oleum Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this material safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Corporation makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

1. Identification

Product Name: PRO LSPR 6PK 2X MRKNG HIGH VIS YELLOW

Identification Number: 266577

Product Use/Class: Marking Paint/Aerosol

Revision Date: 2/27/2012

Supercedes Date: New MSDS

Supplier:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Manufacturer:
Rust-Oleum Corporation
11 Hawthorn Parkway
Vernon Hills, IL 60061
USA

Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Harmful if swallowed. Extremely flammable liquid and vapor. Vapors may cause flash fire or explosion. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contents Under Pressure.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing vapors or mists. High vapor concentrations are irritating to the eyes, nose, throat and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Substance may be harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Contains Titanium Dioxide. Titanium Dioxide is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC. Significant exposure is not anticipated during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of Titanium Dioxide in the formula. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
Acetone	67-64-1	30.0	500 ppm	750 ppm	1000 ppm	N.E.
Liquefied Petroleum Gas	68476-86-8	25.0	N.E.	N.E.	N.E.	N.E.
Aliphatic Hydrocarbon	64742-89-8	15.0	100 ppm	N.E.	100 ppm	N.E.
Limestone	1317-65-3	10.0	3 mg/m3 (Respirable)	N.E.	5 mg/m3 (Respirable)	N.E.
Xylene	1330-20-7	10.0	100 ppm	150 ppm	100 ppm	N.E.

Titanium Dioxide	13463-67-7	10.0	10 mg/m3	N.E.	15 mg/m3 (Total Dust)	N.E.
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	5.0	200 mg/m3	N.E.	N.E.	N.E.
Magnesium Silicate	14807-96-6	5.0	2 mg/m3	N.E.	0.1 mg/m3 (Respirable)	N.E.
Ethylbenzene	100-41-4	5.0	100 ppm	125 ppm	100 ppm	N.E.
Toluene	108-88-3	5.0	20 ppm	N.E.	200 ppm	300 ppm

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

5. Fire-fighting Measures

Flash Point, °F -156 (Setaflash)

EXTINGUISHING MEDIA: Alcohol Foam, Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking.

9. Physical and Chemical Properties

Vapor Density	Heavier than air	**Odor:**	Solvent Like
Appearance:	Aerosolized Mist	**Evaporation Rate:**	Faster than ether
Solubility in Water:	Slight	**Freeze Point:**	N.D.
Specific Gravity:	0.825	**pH:**	N.A.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

Chemical Name	LD50	LC50
Acetone	5800 mg/kg (Rat)	50100 mg/m3 (Rat, 8Hr)
Liquefied Petroleum Gas	N.E.	N.E.
Aliphatic Hydrocarbon	>5000 mg/kg (Rat, Oral)	N.E.
Limestone	N.E.	N.E.
Xylene	4300 mg/kg (Rat, Oral)	5000 ppm (Rat, Inhalation, 4Hr)
Titanium Dioxide	>7500 mg/kg (Rat, Oral)	N.E.
Naphtha, Petroleum, Hydrotreated Light	N.E.	N.E.
Magnesium Silicate	N.E.	TCLo: 11 mg/m3 (Inhalation)
Ethylbenzene	3500 mg/kg (Rat, Oral)	N.E.

Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter storm drains or sewer systems.

14. Transport Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shipping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA ' Hazard Categories ' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

U.S. State Regulations :

NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name	CAS-No.
Modified Alkyd	Proprietary

PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
Modified Alkyd	Proprietary

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: AB5 D2A

16. Other Information

HMIS Ratings:

Health:	2*	**Flammability:**	4	**Physical Hazard:**	0	**Personal Protection:**	X

NFPA Ratings:

Health:	2	**Flammability:**	4	**Instability**	0

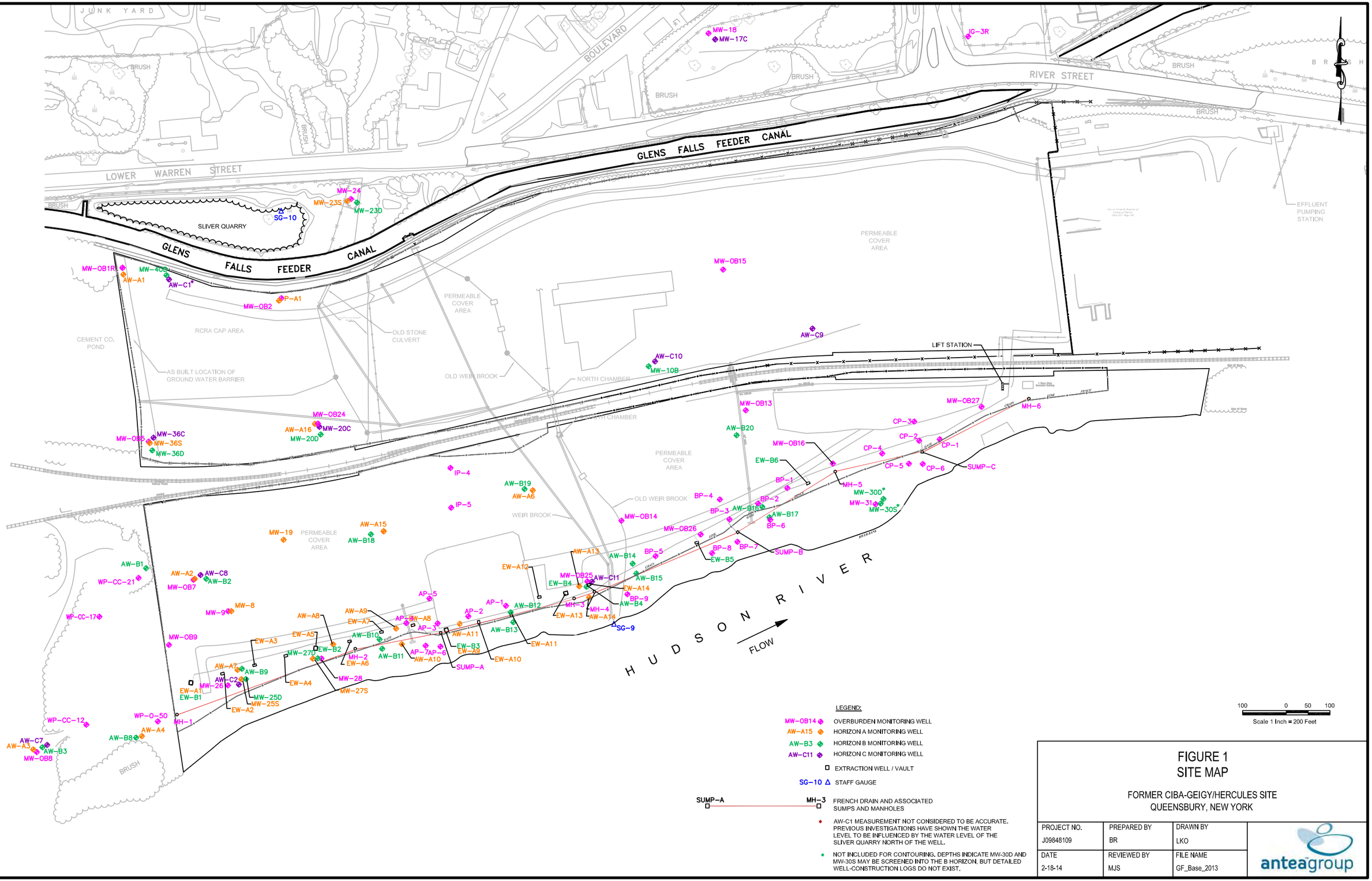
VOLATILE ORGANIC COMPOUNDS, g/L: 533

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

FIGURES

ROUTE TO HOSPITAL MAP
AND
SITE MAPS



LEGEND:

- MW-OB14 ◆ OVERBURDEN MONITORING WELL
- AW-A15 ◆ HORIZON A MONITORING WELL
- AW-B3 ◆ HORIZON B MONITORING WELL
- AW-C11 ◆ HORIZON C MONITORING WELL
- □ EXTRACTION WELL / VAULT
- SG-10 △ STAFF GAUGE
- SUMP-A — MH-3 FRENCH DRAIN AND ASSOCIATED SUMPS AND MANHOLES
- * AW-C1 MEASUREMENT NOT CONSIDERED TO BE ACCURATE. PREVIOUS INVESTIGATIONS HAVE SHOWN THE WATER LEVEL TO BE INFLUENCED BY THE WATER LEVEL OF THE SLIVER QUARRY NORTH OF THE WELL.
- * NOT INCLUDED FOR CONTOURING. DEPTHS INDICATE MW-30D AND MW-30S MAY BE SCREENED INTO THE B HORIZON, BUT DETAILED WELL-CONSTRUCTION LOGS DO NOT EXIST.

100 0 50 100
Scale 1 Inch = 200 Feet

FIGURE 1
SITE MAP

FORMER CIBA-GEIGY/HERCULES SITE
QUEENSBURY, NEW YORK

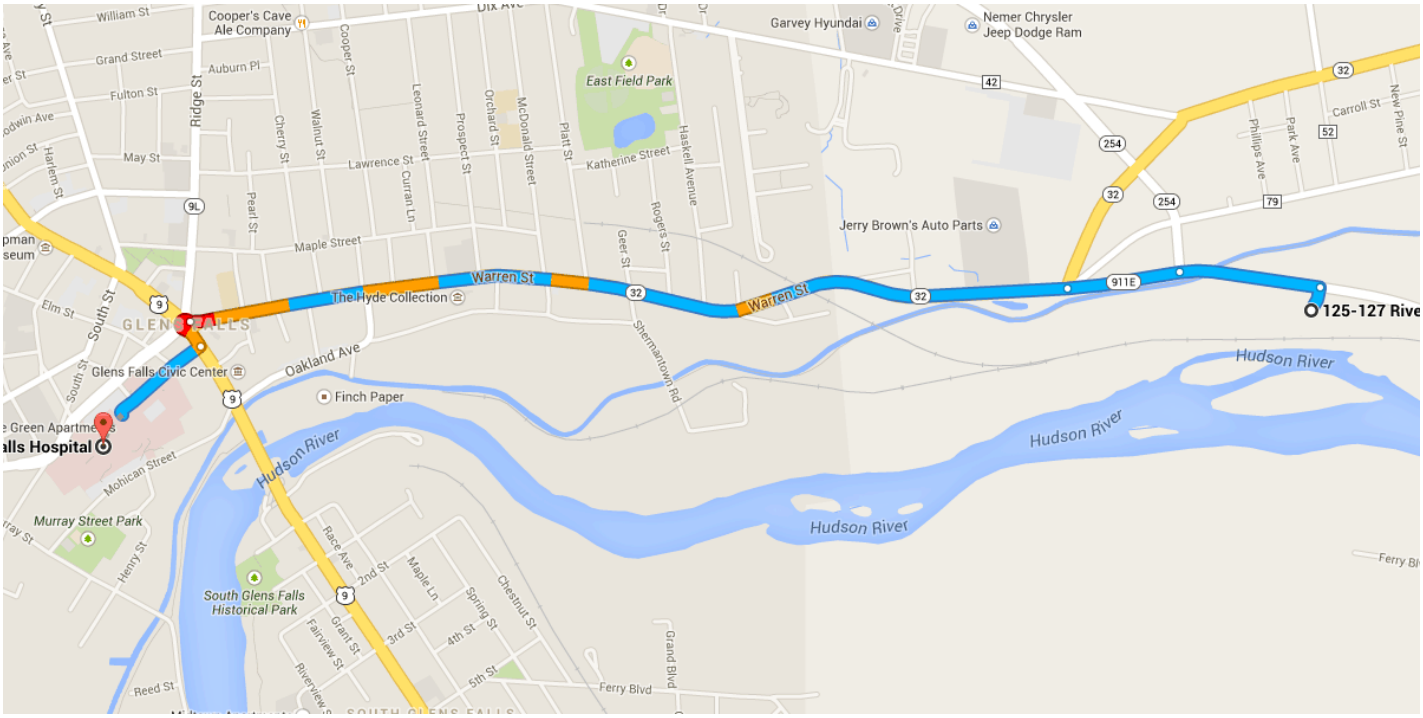
PROJECT NO.	PREPARED BY	DRAWN BY
J09848109	BR	LKO
DATE	REVIEWED BY	FILE NAME
2-18-14	MJS	GF_Base_2013

anteagroup

Google

Drive 2.4 miles, 7 min

Directions from **125-127 River St** to **Glens Falls Hospital**



125-127 River St

Queensbury, NY 12804

1. Head **northeast** toward **NY-254 E**

240 ft

2. Turn **left** onto **NY-254 W**

0.3 mi

3. Continue onto **NY-911E**

0.2 mi

4. Continue onto **NY-32 S/Warren St**

1.6 mi

5. At **Centennial Cir**, take the **4th** exit onto **Glen St**

420 ft

6. Turn **right** onto **Park St**

Destination will be on the right

0.2 mi

Glens Falls Hospital

100 Park St, Glens Falls, NY 12801

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Appendix E

Community Air Monitoring Plan (CAMP)

COMMUNITY AIR MONITORING PROGRAM

Former CIBA-GEIGY/HERCULES Plant Site
89 Lower Warren Street, Queensbury, NY
EPA ID: NYD002069748

Antea Group Project No. GLENSFA171
August 7, 2017

Prepared for:
Hercules LLC
5200 Blazer Pkwy
Dublin, OH 43017
&
BASF Corporation
227 Oak Ridge Pkwy
Toms River, NJ 08755

Prepared by:
Antea®Group
5788 Widewaters Parkway
Syracuse, NY 13214
+1 800 477 7411

Inogen Environmental Alliance

Table of Contents

Community Air Monitoring Program

Former CIBA-GEIGY/HERCULES Plant Site
Queensbury, New York

1.0 INTRODUCTION

1.1 GENERAL

This Community Air Monitoring Plan (CAMP) presents requirements for real-time community air monitoring and associated response actions (if required) during decommissioning and demolition activities associated with the aboveground storage tank (AST) system and associated infrastructure located within and outside of the Pretreatment Plant (PTP) Solid Waste Management Unit (SWMU) at the at the Former CIBA-GEIGY/Hercules Plant Site located in Queensbury, New York. This CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC). The plan follows procedures and practices outlined under the NYSDOH's Generic Community Air Monitoring Plan, dated June 2000.

The intent of this CAMP is to provide for a measure of protection of downwind communities from potential airborne releases of constituents of concern (COCs) during the decommissioning and demolition activities. As such, this CAMP specifies the potential air emissions, air monitoring procedures, monitoring schedule and data collection and reporting for the activities to be conducted as described below.

1.2 DECOMMISSIONING ACTIVITIES

In general, the proposed decommissioning activities will include the following tasks:

- Waste characterization sampling;
- Potential water/sludge removal;
- Asbestos containing materials and lead containing paint abatement;
- Decontamination of drains and sumps (pressure washing);
- Decommissioning of subgrade piping;
- Demolition of ASTs, ancillary equipment, above ground piping, support structures and buildings;
- Waste handling and disposal;
- Confirmatory sampling;

- Visual inspections; and,
- Site equipment cleaning and decontamination.

A more detailed description of these activities can be found in Section 5.0 of the AST & Pretreatment Plant Demolition Work Plan.

1.3 POTENTIAL AIR EMISSIONS RELATED TO DECOMMISSIONING ACTIVITIES

Activities which may affect air quality include asbestos containing materials and lead containing paint abatement, pressure washing the floor drain, sumps, piping and ancillary equipment, demolition of infrastructure, handling of waste, equipment decontamination and vehicular traffic on the site.

2.0 AIR MONITORING PROCEDURES

2.1 GENERAL

Real-time air monitoring will be implemented at the site for VOCs, and particulate matter less than 10 microns in diameter (PM_{10}). A site boundary will be established for the purpose of air monitoring. Upwind and downwind monitoring locations will be determined through visual observation (wind vane, windsock, or similar technique). Monitoring will occur at each cleaning location and will include the use of portable instruments capable of instantaneous readings, average readings (15 minute and 8 hour), and data logging. Baseline air monitoring will take place prior to the start of work.

2.2 MONITORING LOCATION SELECTION

Specific monitoring locations will be determined daily, based on visual observation of the wind direction, precipitation and work tasks. Air monitoring equipment will be placed upwind, downwind, and at current working locations as selected daily. Initial locations will be established at the start of the workday. If the wind direction during the workday shifts greater than 45 degrees from the original upwind direction, then new upwind and downwind sampling locations will be established and location changes will be documented in the field logbook. Monitoring locations will also be adjusted should work conditions change throughout the day (i.e. one phase of work is completed and work transitions to a new phase).

2.3 VOCs MONITORING

VOCs will be monitored continuously with instrumentation that is equipped with electronic data logging capabilities. A RAE® Systems MiniRAE 3000 (or equivalent) will be used to conduct the real-time VOC monitoring. All 15-minute readings will be recorded, as well as any instantaneous readings taken to facilitate activity decisions.

2.4 PARTICULATE MATTER MONITORING

Real-time particulate matter will be monitored continuously during site activities using instrumentation equipped with electronic data-logging capabilities. A TSI Inc. DustTrak™ II Aerosol Monitor 8530 (or equivalent) will be used to conduct the real-time PM_{10} monitoring. All 15-minute readings will be recorded, as well as any instantaneous readings taken to facilitate activity decisions.

2.5 ACTION LEVELS

The action levels provided below are to be used to initiate response actions, if necessary, based on real-time monitoring.

2.5.1 ACTION LEVELS FOR VOCs

If the ambient air concentration of total VOCs exceeds 5 parts per million (ppm) above the background (upwind location) for the 15-minute average, work activities will be temporarily halted while monitoring continues. If the total VOC concentration readily decreases (through observation of instantaneous readings) below 5 ppm above background, then intrusive site activities can resume with continuous monitoring.

If the ambient air concentrations of total VOCs persist at levels in excess of 5 ppm above background but less than 25 ppm above background, work activities will be halted, the source of the elevated VOC concentrations identified, corrective actions to reduce or abate the emissions undertaken, and air monitoring will be continued. Once these actions have been implemented, work activities can resume provided the following two conditions are met:

- The 15-minute average VOC concentrations remain below 5 ppm above background.
- The VOC level 200 feet downwind of the sample location, or half the distance to the nearest potential receptor or residential/commercial structure (whichever is less but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.

If the ambient air concentrations of total VOCs are above 25 ppm above background, the intrusive site activities will cease, and emissions control measures will be implemented.

2.5.2 ACTION LEVELS FOR PARTICULATE MATTER

If the ambient air concentration of PM_{10} at any one (or more) of the sampling locations is noted at levels in excess of 100 micrograms per cubic meter ($\mu g/m^3$) above the background (upwind location) for a 15-minute period, or if airborne mist, aerosol or dust is observed leaving the work area, site activities will be temporarily halted. The source of the elevated PM_{10} concentration will be identified, corrective actions to reduce or abate the emissions will be undertaken, and air monitoring will continue. Work may continue following the implementation of dust suppression techniques provided the PM_{10} levels do not exceed 150 $\mu g/m^3$ above background and provided no visible mist, aerosol or dust is migrating from the work area.

If, after implementation of dust suppression techniques, PM_{10} levels are greater than 150 $\mu g/m^3$ above background, work must be stopped and site activities must be re-evaluated. Work may only resume provided that the suppression measures and other controls are successful in reducing PM_{10} levels less than 150 $\mu g/m^3$ above background and in preventing visible dust from leaving the site.

If the ambient air concentration of PM_{10} is above 150 $\mu g/m^3$ above background, the site activities must cease and emissions control measures must be implemented.

2.6 METEOROLOGICAL MONITORING

Wind direction and precipitation are the only meteorological conditions considered relevant for the work activities and CAMP. Air monitoring may be waived on days where precipitation could affect air monitoring results. Wind direction monitoring will be conducted periodically at the site using a windsock, wind vane, or other appropriate equipment. Wind direction will be established at the start of each work day and may be re-established at any time during the work day if a significant shift in wind direction is noted.

2.7 INSTRUMENT CALIBRATION

Calibration of the VOC and PM_{10} instrumentation will occur in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. The VOC and PM_{10} monitors will be calibrated at least daily, and calibrations will be recorded in the field activity logbook.

3.0 MONITORING SCHEDULE AND DATA COLLECTION/REPORTING

3.1 GENERAL

The proposed monitoring schedule and data collection and reporting requirements are discussed below.

3.2 MONITORING SCHEDULE

Community air monitoring will be performed when site activities have the potential to create aerosol, dust, vapors, etc. as defined in Section 1.3 above and as meteorological conditions allow.

3.3 DATA COLLECTION AND REPORTING

Air monitoring data will be collected continuously from VOC and PM_{10} monitors during intrusive site activities by an electronic data logging system. The data management software will be set up so that instantaneous observed readings would be recorded by the electronic data acquisition system and averaged over 15-minute time periods. The 15-minute readings and instantaneous readings taken to facilitate activity decisions will be recorded and archived for review by NYSDOH and NYSDEC personnel.

Appendix F

Field Sampling Plan (FSP)

Field Sampling Plan

Former CIBA-GEIGY/HERCULES Plant Site
89 Lower Warren Street, Queensbury, NY
EPA ID: NYD002069748

Antea Group Project No. GLENSFA171
August 7, 2017

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Field Sampling Plan

Former CIBA-GEIGY/HERCULES Plant Site
Queensbury, New York

1.0 INTRODUCTION

This Field Sampling Plan (FSP) defines the methods and procedures for conducting sampling activities during decommissioning and demolition of the aboveground storage tank (AST) system, sand filter vessels, ancillary equipment, floor drain and sumps located within the Pretreatment Plant (PTP) Solid Waste Management Unit (SWMU) at the at the Former CIBA-GEIGY/Hercules Main Plant Site located in Queensbury, New York. In general, the proposed decommissioning and demolition activities will include the following tasks:

- Waste characterization sampling;
- Potential water/sludge removal;
- Asbestos containing materials and lead containing paint abatement;
- Decontamination of drains and sumps (pressure washing);
- Decommissioning of subgrade piping;
- Demolition of ASTs, ancillary equipment, above ground piping, support structures and buildings;
- Waste handling and disposal;
- Confirmatory sampling;
- Visual inspections;, and,
- Site equipment cleaning and decontamination.

A more detailed description of these activities can be found in Section 5.0 of the AST & Pretreatment Plant Demolition Work Plan.

2.0 OVERVIEW OF FIELD SAMPLING ACTIVITIES

The following field sampling activities will be performed as part of the decommissioning activities:

- Waste Characterization Sampling – Waste accumulation and water samples for waste classification and disposal purposes will be collected during the sump and drain cleaning activities. The samples will be collected at a frequency depending on specific requirements of the selected disposal facility. Laboratory

tests for characterization of each waste stream will be determined based on requirements of the accepting facility and typically include the RCRA hazardous characteristics of ignitability, corrosivity, reactivity and toxicity.

- Confirmatory Rinsate Samples – Confirmatory rinsate samples will be collected and analyzed during the decommissioning activities. For each sump and the floor drain, one rinsate sample will be collected from within each pit. One rinsate sample will be collected for every 25 feet of pipe run that will need to be cleaned or removed and will cover all ancillary equipment along the pipe run (e.g., valves, elbows, filters and gauges). The rinsate samples will be analyzed for site contaminants of concern, which include TAL metals, hexavalent chromium, vanadium, total cyanide.

3.0 FIELD DOCUMENTATION

All field activities will be documented in field logbooks. Entries will be of sufficient detail that a complete daily record of significant events, observations, and measurements is obtained. The field logbook will provide a record of the activities conducted at the Site. Accordingly:

- Field books will be assigned a unique identification number.
- Field books will be bound with consecutively numbered pages.
- Field books will be controlled by the Site Manager while fieldwork is in progress.
- Entries will be written with waterproof ink.
- Entries will be signed and dated at the conclusion of each day of fieldwork.
- Erroneous entries made while fieldwork is in progress will be corrected by the person that made the entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing the correction.
- Corrections made after departing the field will be made by the person who made the original entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing and dating the time of the correction.

At a minimum, daily field book entries will include the following information:

- Location of field activity;
- Date and time of entry;

- Names and titles of field team members;
- Names and titles of any site visitors and site contacts;
- Weather information, for example: temperature, cloud coverage, precipitation, wind speed and direction;
- Purpose of field activity;
- A detailed description of the field work conducted;
- Important conversations;
- Unusual circumstances;
- Listing and use of equipment which allows for quantification of production;
- Sample media (soil, sediment, groundwater, etc.);
- Sample collection method;
- Parameters collected (pH, temperature, etc.);
- Number and volume of sample(s) taken;
- Preservatives used;
- Analytical parameters;
- Date and time of sample collection;
- Sample identification number(s);
- Sample distribution (e.g., laboratory);
- Field observations;
- References for all maps and photographs of the sampling site(s);
- Information pertaining to sample documentation such as:
    - Bottle lot numbers;
    - Dates and method of sample shipments; and
    - Chain-of-Custody Record and if shipped, Air Bill numbers.

4.0 FIELD INSTRUMENT CALIBRATION

All field instruments will be calibrated immediately prior to each day's use and more frequently if required by the equipment manufacturer. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and as required by the project. All instrument calibrations will be documented in the project field book. Records of all instrument calibrations will be maintained by the Site Manager and will be subject to audit by the Project Manager. Copies of all of the instrument manuals and/or instruction sheets will be maintained on-site by the Site Manager.

The following types of portable field instruments are anticipated to be used during the field work:

- Photoionization Detector; and,
- Particulate Monitor (dust, smoke, fumes, and mists).

4.1 Photoionization Detector

The PID will be a RAE® Systems MiniRAE 3000 (or equivalent), equipped with a 10.6 eV lamp. The MiniRAE 3000 is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for the majority of the volatile organic compounds on the Target Compound List. The following calibration procedures will be followed for the MiniRAE 3000:

- Calibration will be performed at the beginning of each day of use with a standard calibration gas having an measured concentration of 100 parts per million (ppm) of isobutylene. If the unit experiences abnormal function or erratic readings, additional calibration will be required;
- All calibration data will be recorded in the field logbook; and,
- A battery check will be completed at the beginning and end of each working day.

4.2 Particulate Monitor

The particulate monitor will be a TSI Inc. DustTrak™ II Aerosol Monitor 8530 (or equivalent) device capable of detecting mists, dust and aerosols at the levels stipulated in the Community Air Monitoring Plan (CAMP). Meters at the perimeter community air monitoring stations will be set to collect and record readings at the unit's minimum frequency. The data will be logged using the instrument's internal memory and downloaded on a daily basis in the field. Readings from hand held units used in the work areas will be made at a minimum frequency of once every 15 minutes when activities capable of generating dust are ongoing, and recorded hourly in the field book. When visual

dust is observed during work activities, additional readings will be noted and appropriate actions will be taken in accordance with the CAMP.

5.0 GENERAL FIELD SAMPLING PROCEDURES

During the course of the decommissioning and demolition activities, the applicable procedures listed below will be followed for sample collection:

- Accurate and detailed field notes will be maintained including detailed descriptions of sample collection and handling procedures and sample characteristics. Sample characteristics for soil may include soil type, color, odor, moisture content, texture, grain size, shape and angularity, consistency, and any other observations, particularly relating to waste materials or unnatural materials. For water samples, the sample collector will describe color, odor, visual turbidity, and any observed phase separation.
- Sampling procedures will be performed with the overall intent of collecting representative samples and minimizing sample disturbance.
- Laboratory-supplied sample bottles (pre-preserved as applicable) will be labeled with the site name, project number, sample location, sample identification number, date and time of sampling, and initials of sampler prior to being filled with sample material.
- All sample collection, handling and shipping information will be recorded in the field notebook and chain-of-custody documents as appropriate.
- All non-dedicated sampling equipment will be cleaned before entry to the Site, between sampling locations and intervals, and prior to departure from the Site.
- Sample containers will be capped immediately after filling and placed into a chilled cooler containing sufficient ice or cold packs to cool the samples to 4°C during transport to the laboratory.

5.1 Waste Characterization Samples

Samples of waste accumulation and water contained in the sumps and/or floor drain will be collected as part of the decommissioning and demolition activities. The general procedures for sample collection are described below.

5.1.1 Water

5.1.1.1 Materials

The following materials will be available for water sampling activities.

- Water level indicator (accurate to 0.01 foot);
- New dedicated bailers or One-liter beaker (as an alternative to bailers);

- Polypropylene/nylon rope;
- PID;
- Sample bottles/labels;
- Chain-of-custody forms;
- Thermally insulated container with ice or cold packs;
- Sample preservation (may be added to bottle by analytical laboratory);
- Field book;
- Personal Protective Equipment (PPE) as needed (gloves, etc.); and
- Decontamination supplies (detergent, buckets, brushes, etc.).

5.1.1.2 Water Sampling Protocol

Water sampling protocol is described below.

- Water samples may be collected directly into the appropriate sample containers or be collected with dedicated or decontaminated sampling equipment and transferred to the sampling containers. The liquid column will be measured and noted prior to collection of samples. When a large quantity of water is present and effort will be made to collect liquid samples at the midpoint of the water column.
- A clean, dedicated, disposable bailer will be attached to a new dedicated polypropylene or nylon rope and lowered into each sump or drain for sample collection purposes. Both the rope and the bailer will be properly discarded upon completion of the sampling event.
- A sample will be collected for VOC analysis (if required). Care will be taken not to agitate the sample when transferring it from the bailer to the laboratory-supplied vials. Samples for any additional parameters will be collected subsequent to the VOC samples.
- VOC samples will be collected in 40 milliliter (mL) glass vials with zero headspace and will be preserved by the laboratory with hydrochloric acid to a pH of less than two (in accordance with the instructions provided in the Region II CERCLA QA Manual, Revision 1, October, 1989, p. 31). The sample bottles for all other analytical parameters will be properly preserved in the laboratory prior to sample collection. Care will be taken to not overfill the bottles during sample collection thereby ensuring proper sample preservation.
- Sample containers will be capped immediately after filling and placed into a chilled cooler for transport to the laboratory.

- All samples will be properly preserved, stored on ice and transported to the laboratory under the proper chain-of-custody.

5.1.2 Waste Accumulation

5.1.2.1 Materials

The following materials will be available for waste accumulation sampling activities.

- Sample retrieval device
- Polypropylene/nylon rope;
- Stainless steel spatulas, bowls, and scoops;
- Polyethylene sheeting;
- PID;
- Sample bottles/labels;
- Chain-of-custody forms;
- Thermally insulated container with ice or cold packs;
- Sample preservation (may be added to bottle by analytical laboratory);
- Field book;
- PPE as needed (gloves, etc.); and
- Decontamination supplies (detergent, buckets, brushes, etc.).

5.1.2.2 Waste Accumulation Sampling Protocol

Sludge sampling protocol is described below.

- Lower the sampling device until it is in contact with the waste accumulation surface. Gather as much sample material as device allows.
- Retrieve the sample device and empty contents into a bowl. Repeat the sampling procedure until the desired amount of sample material has been collected.
- Decant any free liquid and visually inspect it for any sheen or other evidence of potential contamination. After the liquid is decanted, collect and maintain samples as described below.
- Screen sample with a PID. Next, samples for volatile analysis will be collected directly from the bowl into the appropriate containers in a manner that minimizes headspace. All remaining sample material will then be homogenized using the coning and quartering method. This method includes removing any debris not considered part of the sample, thoroughly mixing the sample in the center

of a decontaminated stainless steel pan or bowl, then quartering and mixing the individual sample corners. The entire sample will be rolled to the center of the pan followed by a final mix. Sample collection will be conducted after homogenization. Soil samples will not require preservation except for maintaining the media to approximately 4°C.

- Sample containers will be capped immediately after filling and placed into a chilled cooler for transport to the laboratory.
- All samples will be properly preserved, stored on ice and transported to the laboratory under the proper chain-of-custody.

5.2 Confirmatory Rinsate Samples

Confirmatory rinsate samples will be collected as part of the decommissioning activities. The general procedures for sample collection are described below.

5.2.1 Materials

The following materials will be available for rinsate sampling activities.

- Rinsate dike (i.e. plastic sheeting) to contain final rinse water;
- One-liter beaker (as an alternate to the bailers);
- Multi-parameter water quality meter
- PID;
- Sample bottles/labels;
- Chain-of-custody forms;
- Thermally insulated container with ice or cold packs;
- Sample preservation (may be added to bottle by analytical laboratory);
- Field book;
- PPE as needed (gloves, etc.); and
- Decontamination supplies (detergent, buckets, brushes, etc.).

5.2.2 Confirmatory Rinsate Sampling Protocol

Confirmatory rinsate samples will be collected according to the following procedure:

- Identify area and number of locations to be sampled. When visual evidence of impacts are present the sample location will be biased towards that location(s).

- Rinsate samples may be collected directly into the appropriate sample containers or be collected with dedicated or decontaminated sampling equipment and transferred to the sampling containers.
- Rinsate water will consist of potable rinse water sprayed over the representative surface area.
- Temporary containment will be placed in areas to be sampled so that rinsate water can be contained. On horizontal surfaces, rinsate water will be contained within the temporary structure and must be in contact with the containers surface for a minimum of ten minutes of contact time before sampling.
- On vertical and sloped surfaces, rinsate will be sprayed up the wall and permitted to flow into a temporary containment structure. Surfaces will sprayed so that the entire area being sampled has contact with the rinsate water. In order to produce a representative sample, the rinsate water will be sprayed at the top of the proposed sample area at a lower pressure (to reduce misting) for a period of approximately ten minutes.
- Samples will be representative of the areas decontaminated.
- Sample containers will be capped immediately after filling and placed into a chilled cooler for transport to the laboratory.

All samples will be properly preserved, stored on ice and transported to the laboratory under the proper chain-of-custody.

6.0 SAMPLE CUSTODY PROCEDURES

The primary objective of the sample custody procedures is to create an accurate written record which can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition. For the purpose of this document, the USEPA Office of Enforcement and Compliance Monitoring, National Enforcement Investigation Center (NEIC) Policies and Procedures (May 1986) definition of custody applies. USEPA states that a sample is under custody if:

1. It is in one's possession, or
2. It is in one's view, after being in one's possession, or
3. It is locked up after being in one's possession, or
4. It is in a designated secure area.

The Site Manager or the field personnel collecting the samples will maintain custody for samples collected. The Site Manager or field personnel are responsible for documenting each sample transfer and maintaining custody of all samples until they are shipped to the laboratory.

A self-adhesive sample label will be affixed to each container before sample collection. These labels will be covered with clear waterproof tape if necessary to protect the label from water or solvents. The sample label will contain the following information:

- Laboratory Name
- Sample ID Number
- Sample Location
- Sample Matrix
- Date and Time of Sample Collection
- Designation as grab or composite
- Parameters to be tested
- Preservative Added
- Name of Sampler.

All sampling containers will be supplied by the laboratory, and are to be cleaned by the bottle supplier in accordance with standard laboratory procedures. Analytical proof of cleanliness will be available for review. Sample containers will be enclosed in clear plastic bags and packed with cushioning material (e.g. bubble wrap) inside the coolers.

The Site Manager will maintain custody of the sample bottles. Sample bottles needed for a specific sampling task will be properly preserved in the laboratory prior to sample collection. After the Site Manager has verified the integrity of the bottles and that the proper bottles have been assigned for the task, the bottles will be relinquished to the sampling team. The sampler will place a sufficient volume of sample in the appropriate laboratory-grade bottles for use as sample containers. Care will be taken to not overfill the bottles during sample collection, thereby ensuring proper sample preservation.

The samples collected for analysis will be stored in an insulated cooler for shipment to the laboratory. The laboratory should receive the samples within 48 hours of sampling. Field chain-of-custody records completed at the time of sample collection will be placed inside the cooler for shipment to the laboratory. These record forms will be sealed

in a zip-lock type plastic bag to protect them against moisture. Each cooler will contain sufficient ice or cold packs to insure that an approximate 4°C temperature is maintained, and will be packed in a manner to prevent damage to sample containers. Sample coolers will be sealed with packaging tape and the Site Manager will sign and date a custody seal and place it on the cooler in such a way that any tampering during shipment will be detected.

All coolers will be shipped by an overnight courier according to current US DOT regulations. Upon receiving the samples, the sample custodian at the laboratory will inspect the condition of the samples, compare the information on the sample labels against the field chain-of-custody record, assign a laboratory control number, and log the control number into the computer sample inventory system. The sample custodian will then store the sample in a secure sample storage cooler maintained at approximately 4°C and maintain custody until the sample is assigned to an analyst for analysis. Custody will be maintained until disposal of the analyzed samples.

The sample custodian will note any damaged sample vials, void space within the vials, or discrepancies between the sample label and information on the field chain-of-custody record when logging the sample. This information will also be communicated to field personnel so proper action can be taken. The chain-of-custody form will be signed by both the relinquishing and receiving parties and the reason for transfer indicated each time the sample custody changes.

An internal chain-of-custody form will be used by the laboratory to document sample possession from laboratory sample custodian to analysts and final disposition. All chain-of-custody information will be supplied with the data packages for inclusion in the document control file.

7.0 DECONTAMINATION PROCEDURES

7.1 General

Decontamination of all field investigation and sampling equipment will follow guidelines established in the USEPA Region II CERCLA Quality Assurance Manual, Final Copy, October 1989, and specific decontamination procedures detailed below.

Equipment cleaning areas will generally be established within or adjacent to the specific work area. The equipment cleaning procedures described below include pre-field, field and post-field cleaning of sampling equipment. The

non-disposable equipment will be cleaned after completing each sampling event. All rinse water will be contained and treated on site or sent to an approved disposal facility. The Site Manager will monitor cleaning procedures.

All solvents and water used in the decontamination process will be contained and collected for characterization and proper disposal. Solids (e.g., disposable gloves, disposable clothing, and other disposable equipment) generated from personnel cleaning procedures will be collected for proper disposal. Decontamination procedures will be fully documented in the field notebook.

7.2 Sample Equipment Decontamination

Typical sampling equipment cleaning materials may include:

- phosphate-free detergent solution soap;
- potable water (which will be obtained from a treated municipal water source);
- appropriate cleaning solvent if necessary (e.g., dilute nitric acid, pesticide grade hexane or methanol);
- buckets/wash basins;
- brushes;
- polyethylene sheeting;
- aluminum foil;
- large heavy duty garbage bags;
- spray bottles;
- plastic bags with "zip" type seals;
- paper towels/Hand wipes®; and
- non-phthalate, nitrile, disposable gloves. Note: These gloves will also be worn by the sampling team and changed between sample points.

All sampling equipment will be stored in a clean environment and, where appropriate, the equipment will be covered in aluminum foil.

Field decontamination procedures, as described below, will include the establishment of cleaning stations. These stations will be located away from the immediate work area so as not to adversely impact the cleaning procedure, but close enough to the sampling teams to keep equipment handling to a minimum.

A designated area will be established to conduct large scale cleaning. All heavy equipment will be inspected to determine if an initial cleaning at this location prior to use on-site is needed. The frequency of subsequent on-site cleaning will depend on actual equipment use in the collection of environmental samples or during remedial activities. All fluids and residues produced from the decontamination procedures will be collected and stored on-site until analyses can be conducted and a decision regarding final disposition of the materials is made pursuant to state and federal requirements.

All sampling equipment (e.g. hand-operated coring devices, hand-augers, and bowls) will be cleaned before each use and prior to leaving the site. The field sampling equipment-cleaning procedure when analyzing for organic constituents is as follows:

- Phosphate-free detergent solution;
- Potable water rinse;
- Deionized water rinse;
- Repeat water rinse twice (i.e., triple rinse) and allow to air dry; and
- Wrap equipment completely with aluminum foil to prevent contact with other materials during storage and/or transport to the sampling location.

The initial step, a soap and water wash, is to remove all visible particulate matter and residual oils and grease (this may be preceded by a steam cleaning to facilitate residuals removal). When analyzing for organic constituents when tools appear heavily contaminated, this may be followed by a potable water rinse to remove the detergent and a rinse sequence of solvent (e.g., hexane, and methanol) and deionized water.

All heavy equipment will be pressure washed prior to onsite usage, between locations if the equipment comes in direct contact with contaminated media, and prior to leaving the site. All down-hole equipment (augers and buckets) will be pressure washed between uses at each location. Equipment will be scrubbed manually as needed to remove heavy soils prior to steam cleaning. Clean equipment will be stored in an in-active work area on-site until use.

Appendix G

Quality Assurance Project Plan (QAPP)

REVISED QUALITY ASSURANCE PROJECT PLAN

Former CIBA-GEIGY/HERCULES Plant Site
89 Lower Warren Street, Queensbury, NY
EPA ID: NYD002069748

Antea Group Project No. GLENSFA171
September 27, 2017

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Quality Assurance Project Plan

Former CIBA-GEIGY/HERCULES Plant Site
Queensbury, New York

1.0 INTRODUCTION

This document represents the Quality Assurance Project Plan (QAPP), which is Appendix G of the AST & Pretreatment Plant Demolition Work Plan for the Former CIBA-GEIGY/HERCULES Site (hereinafter the "Site"). This QAPP describes the field and laboratory Quality Assurance (QA) and Quality Control (QC) measures to be implemented during the project. This QAPP was prepared in accordance with New York State Department of Environmental Conservation (NYSDEC's) guidance document entitled "DER-10: Technical Guidance for Site Investigation and Remediation", which is dated May 2010.

2.0 SITE GOALS

The objectives of this project are to properly decommission and demolish the aboveground storage tank (AST) system including all ancillary piping valves, sand filter vessels, sumps and other associated process related equipment located within the Pretreatment Plant (PTP) Solid Waste Management Unit (SWMU) at the Site. Decommissioning activities will generally consist of:

- Waste characterization sampling;
- Potential water/sludge removal;
- Asbestos containing materials and lead containing paint abatement;
- Decontamination of drains and sumps (pressure washing);
- Decommissioning of subgrade piping;
- Demolition of ASTs, ancillary equipment, above ground piping, support structures and buildings;
- Waste handling and disposal;
- Confirmatory sampling;
- Visual inspections; and,
- Site equipment cleaning and decontamination.

A more detailed description of these activities can be found in Section 5.0 of the AST & Pretreatment Plant Demolition Work Plan.

NYSDEC does not have published performance standards for target levels of contaminants of concern (COCs) that would demonstrate successful cleaning of the tank systems' and associated ancillary equipment and facilities. Therefore proposed criteria for demonstrating successful cleaning will be attainment of levels of COCs in confirmatory rinse water samples at concentrations that are at and/or below Part 703 Class GA groundwater quality standards for detected analytes. Site COCs include RCRA metals, hexavalent chromium, vanadium and cyanide.

3.0 QUALITY ASSURANCE OBJECTIVES

3.1 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQO) are qualitative and quantitative statements specifying the required quality of data necessary to support aboveground storage tank cleaning activities. Data quality is defined as the degree of certainty in a data set with respect to precision, accuracy, representativeness, completeness and comparability (PARCC). A description of PARCC parameters is described below.

Precision is a measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision is best expressed in terms of the standard deviation. Various measures of precision exist depending upon the "prescribed similar conditions".

Accuracy is the degree of agreement of a measurement (or an average of measurements) with an accepted reference or "true value". Accuracy is one estimate of the bias in a system.

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under correct normal conditions.

Comparability expresses the confidence with which one data set can be compared to another data set.

It is the responsibility of the field team to collect representative and complete samples. It is the responsibility of the analytical laboratory to analyze these samples using accepted protocols resulting in data that meet PARCC standards.

The following categories of data quality may be utilized during the decommissioning activities. These categories consistent with those outlined in the USEPA Guidance document entitled Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, dated October 1988, and are described below.

- DQO Level 1 - Field Screening Utilizing Portable Instrumentation: Data used for site health and safety monitoring and field screening during site characterization activities. The data generally determines the presence or absence of certain constituents and is generally qualitative rather than quantitative. Field screening data provides the lowest data quality.
- DQO Level 2 - Field Laboratory Analysis: Data used for field screening during site characterization activities, evaluation of remedial alternatives, engineering design and monitoring during implementation of alternatives. The data generally determines levels of certain constituents relative to a calibration standard and is generally qualitative or quantitative.
- DQO Level 3 – Engineering Level Data: Data used for site characterization, risk assessment, evaluation of alternatives, engineering design and monitoring during implementation of alternatives. The data is quantitative and is generated using EPA analytical laboratory procedures; however, it does not include full Contract Laboratory Protocol (CLP) documentation.
- DQO Level 4 - Laboratory Analysis: Data used for risk assessment, evaluation of alternatives and engineering design. The data is quantitative and is generated using EPA analytical laboratory procedures. All analyses require full Analytical Services Protocol (ASP)/CLP analytical protocols including Data Usability Summary Reports (DUSR). Only data generated to confirm effectiveness of the tank cleaning activities (confirmatory samples) will require DQO Level 4.
- DQO Level 5 – Non-Standard Special Analytical Services: Data for use when analysis by non-standard procedures is required to obtain specific or lower detection limits or analyses are not of a nature typically performed under the CLP Routine Analytical Service (RAS) Program.

DQOs have been developed for the tasks outlined in the AST and Pretreatment Plant Demolition Work Plan. The DQOs are designed to support tank cleaning operations and confirmatory sampling activities. During the cleaning process it is anticipated that DQO Levels 1 and 4 will primarily be utilized.

DQO Level 1 data (field screening) will be generated during cleaning operations including: air quality monitoring; and health and safety monitoring.

DQO Level 4 data (laboratory analysis by CLP/ASP Methods) will be generated during confirmatory sampling for the decontaminated tanks.

DQO Level 2 data (field analysis), DQO Level 3 data (engineering) and DQO Level 5 (non-standard) data are not expected to be generated as part of the initial cleaning activities. However, these data at these DQO levels may be generated during supplemental activities, if required.

3.2 FIELD SAMPLING QUALITY OBJECTIVES

The objectives with respect to field sampling activities are to maximize the confidence in the data. Field Internal Quality Control Checks will be utilized during this work through the use of field duplicates as presented below.

Precision will be calculated as relative percent difference (RPD) if there are only two analytical points, and percent relative standard deviation (%RSD) if there are more than two analytical points. Through the submission of field QC samples, the distinction may be made between analytical problems, sampling technique considerations, and sample matrix variability. This distinction will be made by the data reviewer based on industry guidelines and personal judgment.

To assure representativeness, a field sampling plan has been devised that estimates the number of samples to be collected. This plan is presented in the Field Sampling Plan (FSP). The data quality objective for the completeness of all data to be collected during this work is 100%. In other words, the objective is to collect samples from all of the locations noted in the FSP. In the event 100% is not obtained due to inaccessibility of sampling points or other field conditions, the effect that the missing data will have on the projects objectives will be evaluated. If necessary, corrective action will be initiated to resolve any data gaps that develop as a result of less than 100% data completeness. Every effort will be made to obtain valid data for all sampling points, particularly those identified by the Site Manager as critical points.

In order to establish a degree of comparability, such that observations and conclusions can be directly compared with all historical data, standardized methods of field analysis, sample collection, holding times, sample preservation and standard units of measurement for data will be used. In addition, field conditions will be documented and

considered when evaluating data to determine the effects of sample characteristics on analytical results. Whenever possible, the same sampling team will obtain all samples to reduce inconsistencies which may be caused by technique and time variables.

3.3 LABORATORY DATA QUALITY OBJECTIVES

The laboratory will demonstrate analytical precision and accuracy by adherence to accepted manufacture and procedural methodologies.

The performance of the laboratory will be evaluated by the Project Manager and Project Quality Assurance Officer during data reduction. The evaluation will include a review of all deliverables for completeness and accuracy when applicable.

4.0 QUALITY CONTROL PROCEDURES

This section presents a general overview of the quality assurance and quality control procedures that will be implemented during the tank cleaning operations. These quality control procedures are to be implemented as follows:

- at the factory for certain manufactured products;
- in the field; and
- In the laboratory utilized for selected sample analyses.

4.1 SAMPLING ACTIVITIES

Sampling and analysis will be conducted to characterize waste and confirm decontamination of the sumps and drains. General field sampling procedures are described in the FSP. Samples will be handled by all field and laboratory personnel in a manner, which allows for custody tracking and maintenance of the validity of the samples. Sample custody procedures are presented as Appendix A of this QAPP.

All sampling equipment, field measuring equipment and heavy equipment will be decontaminated according to the decontamination procedures presented in FSP.

All field activities will be documented in accordance with the FSP.

5.0 CALIBRATION PROCEDURES

Laboratory calibration and frequency for specific analytical methods and pieces of equipment are specified in USEPA SW846 and the laboratory's Standard Operating Procedures.

During the course of cleanup activities, samples may be screened with a photoionization detector (PID) in the field. A PID and particulate matter measuring device will be also be used to continuously monitor air quality upwind, downwind, and at the active cleaning location. A maintenance, calibration, and operation program will be implemented to ensure that routine calibration and maintenance is performed on all field instruments. This program will be monitored by the Site Manager. Trained team members will perform scheduled calibration, field calibrations, checks, and instrument maintenance prior to use each day. Additional calibrations will be conducted as necessary to ascertain that proper measurements are being taken.

Team members are familiar with the field calibration, operation, and maintenance of the equipment, and will perform the prescribed field operating procedures outlined in the operation and field manuals accompanying the respective instrument. Field personnel will keep records of all field instruments calibrations and field checks in the field logbooks. Calibration information recorded in field logbooks will include date, time, instrument model and serial number, a description of calibration or field check procedure, and any instrument deviations.

If on-site monitoring equipment should fail, the Site Manager will be contacted immediately. Replacement equipment will be provided or the malfunction will be repaired in a timely fashion.

6.0 ANALYTICAL PROCEDURES AND DATA EVALUATION

Confirmatory rinsate samples will be analyzed for site contaminants of concern (RCRA 8 metals, hexavalent chromium, vanadium and cyanide).

In general, laboratory analytical procedures will adhere to NYS ASP 2005 and/or to USEPA SW-846 methodologies as appropriate. The laboratory will adhere to the requirements of NYS ASP 2005 in conjunction with the CLP. Samples will be analyzed by a laboratory that is a NYSDOH ELAP certified laboratory that participates in the CLP and

is experienced in performing ASP analyses. A summary of the sampling program and analytical methods are shown in Table 6-1.

Upon receipt of analytical reports from the laboratory, the data packages will be evaluated to confirm that samples were analyzed within required holding time and at proper detection limits. Data validation will be conducted for all samples analyzed in accordance with ASP methodologies. The laboratory will provide ASP 2005 category B QA/QC backup for data packages with all confirmation sampling analytical reports. These packages will be reviewed for completeness and provided upon request.

Table 6-1

Analytical Methods/Quality Assurance Summary Table

Sample Matrix	Sample Location	Analytical Parameters	Analytical Methods	Preservation	Holding Time	Estimated Number of Samples	Duplicates and MS/MSD (1per 20)
Rinsate	<500 gal AST; Ancillary piping and equipment, sumps and drains	TAL Metals (includes RCRA 8)	EPA 6010; EPA 7470 (Mercury)	Nitric acid; pH<2. Cool to 4°C.	6 months, except Mercury (28 days)	40	2 of each
Rinsate	<500 gal AST; Ancillary piping and equipment, sumps and drains	Hexavalent Chromium	EPA 7196a	Cool to 4°C.	24 hours	40	2 of each
Rinsate	<500 gal AST; Ancillary piping and equipment, sumps and drains	Total Cyanide	SW-846 9012B	Sodium Hydroxide; pH>12. Cool to 4°C.	14 Days	40	2 of each
Rinsate	<500 gal AST; Ancillary piping and equipment, sumps and drains	Vanadium	EPA 6010	Nitric acid; pH<2. Cool to 4°C.	6 months	40	2 of each

Notes:

Sample Frequency:

1: Sumps/Drains – 1 per area

The project Quality Assurance/Quality Control (QA/QC) officer will review the data packages to confirm completeness of the ASP Category B deliverables and to prepare a Data Usability Summary Report (DUSR) in accordance with NYSDEC guidelines. The QA/QC officer will be independent from the analytical laboratory. At a minimum, the following information will be evaluated:

- chain-of-custody forms;
- date sampled/date analyzed;
- sample temperature at check-in;
- raw data;
- initial and continuing instrument calibrations;
- matrix spikes;
- laboratory duplicate analyses;
- surrogate recoveries (organics); and
- Laboratory control samples (inorganics).

Data reduction will consist of presenting analytical results on summary tables. Data resulting from rinsate analyses will then be used to confirm proper decontamination of the tank system and ancillary equipment. For this work, Antea Group has retained the services of Donald C. Anne of Alpha Geoscience. A resume has been provided in Appendix B.

7.0 PROJECT PERSONNEL

This Work Plan was prepared by a project team from Antea® Group (Antea Group) with extensive experience in site investigation and remediation, site development and construction management. The project team will consist of individuals from Antea Group. The project team will be responsible for implementation of the AST & Pretreatment Plant Demolition Work Plan. Key personnel to be assigned to this project, and their project role, will be provided prior to the start of work; professional profiles for these persons will also be provided prior to the start of work.

The laboratory analytical contractor will be a NYSDOH-certified laboratory with ASP/CLP experience to be selected upon completion and approval of the AST Decommissioning & Facility Demolition Work Plan. Site contractors will be selected upon completion and approval of the AST Decommissioning & Facility Demolition Work Plan.

8.0 SCHEDULE

The estimated work schedule is presented in Section 11.0 of the *AST & Pretreatment Plant Demolition Work Plan* document. A start date will be established based on NYSDEC approval of the Work Plan.

Appendix A

Sample Custody Procedures

SAMPLE CUSTODY PROCEDURES

The primary objective of the sample custody procedures is to create an accurate written record which can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition. For the purpose of this document, the USEPA Office of Enforcement and Compliance Monitoring, National Enforcement Investigation Center (NEIC) Policies and Procedures (May 1986) definition of custody applies. USEPA states that a sample is under custody if:

1. It is in one's possession, or
2. It is in one's view, after being in one's possession, or
3. It is locked up after being in one's possession, or
4. It is in a designated secure area.

The Site Manager or the field personnel collecting the samples will maintain custody for samples collected during this investigation. The Site Manager or field personnel are responsible for documenting each sample transfer and maintaining custody of all samples until they are shipped to the laboratory.

A self-adhesive sample label will be affixed to each container before sample collection. These labels will be covered with clear waterproof tape if necessary to protect the label from water or solvents. The sample label will contain the following information:

- Laboratory Name
- Sample ID Number
- Sample Location
- Sample Matrix
- Date and Time of Sample Collection
- Designation as grab or composite
- Parameters to be tested
- Preservative Added
- Name of Sampler

All sampling containers will be supplied by the laboratory, and are to be cleaned by the bottle supplier in accordance with standard laboratory procedures. Analytical proof of cleanliness will be available for review. Sample containers will be enclosed in clear plastic bags and packed with cushioning material (e.g. vermiculite) inside the coolers.

The Site Manager will maintain custody of the sample bottles. Sample bottles needed for a specific sampling task will be properly preserved in the laboratory prior to sample collection. After the Site Manager has verified the integrity of the bottles and that the proper bottles have been assigned for the task, the bottles will be relinquished to the sampling team. The sampler will place a sufficient volume of sample in the appropriate laboratory-grade bottles for use as sample containers. Care will be taken to not overfill the bottles during sample collection, thereby ensuring proper sample preservation.

The samples collected for analyses will be stored in an insulated cooler for shipment to the laboratory. The laboratory should receive the samples within 48 hours of sampling. Field chain-of-custody records completed at the time of sample collection will be placed inside the cooler for shipment to the laboratory. These record forms will be sealed in a zip-lock type plastic bag to protect them against moisture. Each cooler will contain sufficient ice or cold packs to insure that an approximate 4^0C temperature is maintained, and will be packed in a manner to prevent damage to sample containers. Sample coolers will be sealed with strapping tape and the Site Manager will sign and date a custody seal and place it on the cooler in such a way that any tampering during shipment will be detected.

All coolers will be shipped by an overnight courier according to current US DOT regulations. Upon receiving the samples, the sample custodian at the laboratory will inspect the condition of the samples, compare the information on the sample labels against the field chain-of-custody record, assign a laboratory control number, and log the control number into the computer sample inventory system. The sample custodian will then store the sample in a secure sample storage cooler maintained at approximately 4°C and maintain custody until the sample is assigned to an analyst for analysis. Custody will be maintained until disposal of the analyzed samples.

The sample custodian will note any damaged sample vials, void space within the vials, or discrepancies between the sample label and information on the field chain-of-custody record when logging the sample. This information will also be communicated to field personnel so proper action can be taken. The chain-of-custody form will be

signed by both the relinquishing and receiving parties and the reason for transfer indicated each time the sample custody changes.

An internal chain-of-custody form will be used by the laboratory to document sample possession from laboratory sample custodian to analysts and final disposition. All chain-of-custody information will be supplied with the data packages for inclusion in the document control file.

Appendix A

Sample Custody Procedures

SAMPLE CUSTODY PROCEDURES

The primary objective of the sample custody procedures is to create an accurate written record which can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition. For the purpose of this document, the USEPA Office of Enforcement and Compliance Monitoring, National Enforcement Investigation Center (NEIC) Policies and Procedures (May 1986) definition of custody applies. USEPA states that a sample is under custody if:

1. It is in one's possession, or
2. It is in one's view, after being in one's possession, or
3. It is locked up after being in one's possession, or
4. It is in a designated secure area.

The Site Manager or the field personnel collecting the samples will maintain custody for samples collected during this investigation. The Site Manager or field personnel are responsible for documenting each sample transfer and maintaining custody of all samples until they are shipped to the laboratory.

A self-adhesive sample label will be affixed to each container before sample collection. These labels will be covered with clear waterproof tape if necessary to protect the label from water or solvents. The sample label will contain the following information:

- Laboratory Name
- Sample ID Number
- Sample Location
- Sample Matrix
- Date and Time of Sample Collection
- Designation as grab or composite
- Parameters to be tested
- Preservative Added
- Name of Sampler

All sampling containers will be supplied by the laboratory, and are to be cleaned by the bottle supplier in accordance with standard laboratory procedures. Analytical proof of cleanliness will be available for review. Sample containers will be enclosed in clear plastic bags and packed with cushioning material (e.g. vermiculite) inside the coolers.

The Site Manager will maintain custody of the sample bottles. Sample bottles needed for a specific sampling task will be properly preserved in the laboratory prior to sample collection. After the Site Manager has verified the integrity of the bottles and that the proper bottles have been assigned for the task, the bottles will be relinquished to the sampling team. The sampler will place a sufficient volume of sample in the appropriate laboratory-grade bottles for use as sample containers. Care will be taken to not overfill the bottles during sample collection, thereby ensuring proper sample preservation.

The samples collected for analyses will be stored in an insulated cooler for shipment to the laboratory. The laboratory should receive the samples within 48 hours of sampling. Field chain-of-custody records completed at the time of sample collection will be placed inside the cooler for shipment to the laboratory. These record forms will be sealed in a zip-lock type plastic bag to protect them against moisture. Each cooler will contain sufficient ice or cold packs to insure that an approximate 4^0C temperature is maintained, and will be packed in a manner to prevent damage to sample containers. Sample coolers will be sealed with strapping tape and the Site Manager will sign and date a custody seal and place it on the cooler in such a way that any tampering during shipment will be detected.

All coolers will be shipped by an overnight courier according to current US DOT regulations. Upon receiving the samples, the sample custodian at the laboratory will inspect the condition of the samples, compare the information on the sample labels against the field chain-of-custody record, assign a laboratory control number, and log the control number into the computer sample inventory system. The sample custodian will then store the sample in a secure sample storage cooler maintained at approximately 4°C and maintain custody until the sample is assigned to an analyst for analysis. Custody will be maintained until disposal of the analyzed samples.

The sample custodian will note any damaged sample vials, void space within the vials, or discrepancies between the sample label and information on the field chain-of-custody record when logging the sample. This information will also be communicated to field personnel so proper action can be taken. The chain-of-custody form will be

signed by both the relinquishing and receiving parties and the reason for transfer indicated each time the sample custody changes.

An internal chain-of-custody form will be used by the laboratory to document sample possession from laboratory sample custodian to analysts and final disposition. All chain-of-custody information will be supplied with the data packages for inclusion in the document control file.

Appendix B

Chemist Resume

DONALD C. ANNÉ
SENIOR CHEMIST

EDUCATION: M.S., Chemical Oceanography, Florida Institute of Technology, 1981
B.A., Earth Sciences, Millersville University of Pennsylvania, 1975

SPECIAL TRAINING:
Certified 40-Hour OSHA Health and Safety
Certified 8-Hour OSHA Supervisory Course
Ground Water Geochemistry (NWWA)
Ground Water Pollution and Hydrology (Princeton Associates)
Quality Assurance Programs for Environmental Monitoring Data (Stat-A-Matrix)

PROFESSIONAL AFFILIATIONS: American Chemical Society (AFS), 1979-Present

EXPERIENCE SUMMARY:

Mr. Anné has more than 30 years of environmental chemistry experience specializing in data validation, environmental sampling, analytical methodologies, petroleum fingerprinting, laboratory audits, field sampling audits, and preparing Quality Assurance Project Plans and Quality Assurance Manuals. Mr. Anné's experience includes analytical laboratory work with gas chromatography, atomic absorption, infrared spectrometry and wet chemistry methods.

PROJECT EXPERIENCE:

Quality Assurance/Quality Control of Chemical Data

Mr. Anné has more than 30 years experience as a data validator and quality assurance officer. Mr. Anné has validated data for most EPA Regions and under several independent state programs, including the NYSDEC. He has performed laboratory and field audits as well as written Quality Assurance Project Plans. Mr. Anné has written, reviewed, and initiated laboratory Quality Assurance Manuals for laboratories to maintain their regulatory compliance. Typical project experience includes:

- Senior Chemist responsible for data validation. Reviewed chemical data for several projects under the New Jersey ISRA regulations. The clients included industry and utilities.

- Supervising Environmental Scientist responsible for data validation. Reviewed chemical laboratory data for adherence to QA/QC protocols for several key projects, including National Priorities List sites and RCRA Corrective Actions located in EPA Regions I, II, III, IV, V, and IX. Validated analytical data, outlined problems and actions to be taken, and qualified all affected data. Consulted with project managers on data usability, and recommended corrective actions to support project goals. Responded to comments made by regulators regarding data quality.

- Supervising Environmental Scientist recognized by the New York State Department of Environmental Conservation (NYSDEC) to perform third party data validation. Attended NYSDEC workshop on data validation as part of the requirements set forth by NYSDEC. Performed data validation in support of NYSDEC STARS and ASP programs as well as data in support of the NYSDEC Part 360 Regulations for landfills. Validated data for an Albany area municipal landfill.

- Supervising Environmental Scientist responsible for developing and preparing Quality Assurance Project Plans (QAPPs) for several state and federal Superfund sites and federal RCRA corrective action sites. Negotiated with regulators for the acceptance of the QAPPs. The sites were located throughout the eastern United States.

- Environmental Chemist responsible for developing a laboratory QA/QC program which fulfilled requirements of the EPA and agencies from the States of Texas and Louisiana. Implemented and managed the program throughout DOE's SPR Environmental laboratories. Received verbal commendations from EPA and the Texas Water commission on the QA/QC Program.

Environmental Chemistry

Mr. Anné is experienced in sampling soil, water, air, and wastes in accordance with federal and state guidelines. He has performed field sampling audits and prepared sampling plans for numerous projects in accordance with applicable programmatic requirements. Mr. Anné is familiar with the geochemical aspects of fate and transport of contaminants. Mr. Anné's typical project experience includes:

- Data manager for the Pennwalt Corporation's RCRA Corrective Action RFI Phase I program. The project included quantifying and characterizing soil contamination and hydrogeologic flow systems of 12 SWMUs at a fluorochemicals plant in Thorofare, New Jersey. Validated and prepared QA/QC reports for data generated during the project. Qualified all data in preparation of the final report. Work was performed under the direction of NJDEP.

- Project Chemist in charge of field sampling activities, including coordinating and scheduling all subcontracted laboratory work for more than 25 sites in Connecticut. Trained field teams in sampling techniques for soil, groundwater, and surface water; chain of custody requirements; sampling QA/QC protocols; and analytical requirements. Work was performed under the scrutiny of ConnDEP.

- Field Team Leader for a major hazardous waste drum excavation project. Supervised all field activities including site safety; excavation; removal, sampling, and over packing of drums; staging and sampling of contaminated soil; and preparation of samples. Coordinated excavation and laboratory subcontractors. Work was performed under the scrutiny of ConnDEP.

- Created an environmental monitoring program for the Bryan Mound site of DOE's Strategic Petroleum Reserve for testing ground water and surface water. Developed sampling protocols, frequency of sampling, and lists of target analytes. This program was designed to provide baseline data for pre-spill conditions in the event of a release. The site was under scrutiny by EPA Region V and the Texas Water commission.

- Project Chemist responsible for developing analytical QA/QC program that included sampling and chemical analyses of surface water, groundwater, soil, and sediment matrices as part of a Remedial Investigation/Feasibility Study (RI/FS). The RI/FS involved more than 25 sites throughout the State of Connecticut. Work was under the guidance of ConnDEP.

Analytical Chemistry

Mr. Anné has experience working in both fixed-base and mobile laboratories. His experience includes the use of gas chromatography, atomic absorption spectrometers, infrared spectrometers, and numerous wet chemistry and preparation equipment methods. He has served in the laboratory as an analyst, laboratory advisor, and QA officer. He has interfaced with regulators in the area of analytical chemistry and has experience in petroleum fingerprinting techniques and methods. Typical projects include:

- Performed bench scale experiments for St. Lawrence Zinc in order to obtain the optimum level of Phlotec necessary to treat discharged water to resolve an N.O.V. for the SPDES outfall. The optimum level of Phlotec would precipitate enough dissolved zinc for the water to meet the discharge requirement. Also performed routine analyses of samples after implementing the treatment, to insure that the proper concentration was being used.

- Environmental Chemist in charge of project to design updates for the DOE's laboratories at its SPR facilities. Evaluated IR and FT-IR instrumentation and personal computers to link with existing and future instrumentation. Wrote procedures for the acceptance of an alternative oil & grease method for NPDES permit monitoring by EPA Region V. Coordinated all site activities necessary for implementing upgrades.

- Environmental Chemist in charge of replacing obsolete total organic carbon (TOC) analyzers for the SPR laboratories. Evaluated state-of-the-art TOC analyzers and recommended replacement TOC analyzer. Negotiated with supplier and wrote technical specification for the bid process required by DOE. Supervised installation and set-up of all new TOC analyzers.

- Analytical Chemist for Berkley Products Company responsible for product development. Analyzed competitor's products and formulated new coatings with equal or better quality. Responsible for solvent operations which included managing the waste solvent recovery operations, solvent formulation, and manufacturing QA/QC. Worked with sales and manufacturing staff to address and resolve client complaints. Received two cash bonuses for suggestions on the manufacture of products which saved the company money.

- Analytical Chemist for the mobile laboratory responsible for sample preparation in support of several projects for a range of clients located in three EPA regions and in conjunction with several state agencies. Extracted, concentrated, and prepared water and soil samples for analyses by GC/FIND, GC/ECD, GC/PID, and GC/MS. Samples were prepared for PCB, pesticide, polynuclear aromatic hydrocarbon, and petroleum hydrocarbon analyses.

EMPLOYMENT:

2005 - present, Alpha Geoscience
1998 - 2005, Alpha Environmental Consultants, Inc.
1990 - 1998, McLaren/Hart
1986 - 1990, Fred C. Hart Associates
1985 - 1986, Boeing Petroleum Services
1982 - 1985, Petroleum Operations and Support Services
1981 - 1982, Dravo Utility Constructors
1979 - 1981, Florida Institute of Technology
1975 - 1979, Berkley Products Company