DRAFT

INTERIM REMEDIAL MEASURES WORK PLAN

SOUTHSIDE STATION, INC.
704-744 FOOTE AVENUE
JAMESTOWN, NY 14701

Prepared for:

Southside Station, Inc.
11501 Northlake Drive
Cincinnati, Ohio 45249

January 16, 2013

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1.0 INTRODUCTION

This Interim Remedial Measures Work (IRM) outlines the design, installation, and monitoring of a Sub-Slab Depressurization System (SSDS) to be installed at the Southside Station Inc. (hereinafter referred to as the "Subject Property") located at 704-744 Foote Avenue, Jamestown, New York (see Figure 1).

The Subject Property represents the northern portion of a redeveloped strip mall which was occupied by two former drycleaners, one formerly located at 736 Foote Avenue on the Subject Property and the other formerly located at 750 Foote Avenue on the adjoining southern portion of the strip mall identified as Southside Foote Avenue Plaza (SFAP). The current owner of the Subject Property, Southside Station, Inc. (SSI) has volunteered to enter the Subject Property into the Brownfield Cleanup Program (BCP). SSI is seeking a No Further Action Letter for the Subject Property from the New York State Department of Environmental Conservation (NYSDEC) following completion of investigation and subsequent remedial action activities. This IRM Work Plan represents the interim remedial action requirements of the BCP to address potential vapor intrusion, as requested by the NYSDEC.

1.1 Objectives

This IRM Work Plan outlines the design, installation, and monitoring of a SSDS to mitigate the potential intrusion of drycleaning solvent vapors detected in and around the existing onsite building at the Subject Property. Submittal of a formal Remedial Action Plan for the BCP program will take place after full characterization of the Subject Property has been completed.

1.2 Overview of IRM Work Plan Documents

This IRM Work Plan includes a Subject Property description, environmental history, IRM Work Plan objectives, and SSDS design, installation, monitoring, and implementation schedule. Figures included are a Site Location Map (Figure 1), a Subject Property Map (Figure 2), a Historical Drycleaner Location Map (Figure 3), a Vapor Sampling Locations Map (Figure 4), and a Proposed SSDS Configuration Map (Figure 5). Historical vapor analytical results are provided as Table 1. The Health and Safety Plan (HASP) for this IRM Work Plan is provided in Appendix A. A copy of the SSDS Maintenance Checklist is provided in Appendix B.

1.3 Subject Property Description

The Subject Property is addressed as 704-744 Foote Avenue and is adjoined by the SFAP property, addressed as 748-780 Foote Avenue. Both properties make up a contiguous commercial strip mall known as Southside Plaza. The properties are currently divided between the Tops Market tenant on the SSI property to the north and the Salon 1 tenant on the SFAP property to the south (see Figure 2).

Southside Plaza was developed in stages with the original buildings developed from 1955 to 1958 and additions to the development added in the 1960s, 1970s, and 1980s. The Subject Property currently operates as the northern portion of the contiguous retail strip mall with seven commercial tenant spaces including one anchor tenant space (Tops Market), and an outparcel (McDonalds) north of the strip mall.

Based on research of Sanborn Maps, City Directories, and City of Jamestown municipal records, it was determined that from approximately 1956 until 1969, the tenant space located at 736 Foote Avenue was occupied by two drycleaners, Triangle Cleaners and Anderson Cleaners. Triangle Cleaners ceased operations between 1961 and 1966. Anderson Cleaners moved from the 736 tenant space between 1969 and 1979 to the 750 Foote Avenue tenant space occupied by Whirley-Wash Laundromat, located on the SFAP property. Anderson Cleaners operated in the 750 Foote Avenue tenant space in conjunction with Whirley-Wash until 1981, when Anderson Cleaners relocated to 812 Foote Avenue south of Southside Plaza. A Whirley-Wash Dry Cleaners is documented along with Whirley-Wash Laundromat in the 750 Foote Avenue tenant space from 1988 until 1994. The former Triangle and Anderson Cleaners tenant space at 736 Foote Avenue has been redeveloped along with several adjoining tenant spaces into the current anchor tenant space occupied by Tops Market. The historical locations of the 736 and 750 Foote Avenue tenant spaces are shown in Figure 3.

2.0 SUBJECT PROPERTY ENVIRONMENTAL HISTORY

Several environmental assessments have been completed at the Subject Property. Following is a summary of these assessment activities related to investigating the vapor intrusion exposure pathway at the Subject Property. Vapor analytical results for all vapor intrusion assessment samples are provided on Table 1. Sub-slab vapor, soil-gas, and indoor air sampling locations are shown in Figure 4.

2.1 Limited Site Investigation

At the request of SSI, Apex performed a Limited Site Investigation (LSI) at the Subject Property in August 2008. The LSI included the collection of soil-gas and sub-slab vapor samples in the area where the former drycleaner was believed to have been located (at that time, the exact location had not been determined). Sub-slab vapor samples (SS-1 and SS-2) and soil-gas samples (SV-1 and SV-2) were collected during this LSI to evaluate the Subject Property for the potential release of drycleaning chemicals. Results from these sub-slab vapor and soil-gas samples indicate that concentrations of chlorinated solvents, specifically 1,1,1-trichloroethane (1,1,1-TCA), tetrachloroethene (PCE), and trichloroethene (TCE) were detected in the sub-slab vapor and soil-gas samples in the concentration range where the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006, recommends continued monitoring. However, the concentration of PCE from one sample, the soil-gas sample SV-1, fell into the concentration range where the NYSDOH recommends mitigation. The detection of these chlorinated solvents suggested that further assessment was warranted.

2.2 Additional Site Investigation

Apex performed Additional Site Investigation (ASI) activities at the Subject Property in March 2010. This ASI included the collection of additional sub-slab vapor and indoor air samples at the Subject Property. The sub-slab sample location was selected to investigate an area that was rumored to have been the location of the former dry cleaner. Results from the ASI indicate that no VOCs were detected in the indoor air samples (IA-QM1, IA-QM2 and IA-UPS) or from the sub-slab vapor sample (SS-UPS) above laboratory method detection limits (MDLs), with the exception of PCE. PCE was detected in SS-UPS above the MDL, but below the NYSDOH No Further Action (NFA) guidance level. However, in the case of IA-QM1 and IA-UPS, the MDL for 1,1,1-TCA, carbon tetrachloride (CT), PCE, and TCE fell into the concentration range where NYSDOH guidance recommended monitoring.

2.3 Sub-Slab Vapor Assessments

Apex performed a sub-slab vapor assessment in March 2012 to better define the source area of the drycleaning solvents identified in previous investigations. This investigation included collection of sub-slab vapor samples from five sample locations (SS-1 through SS-5) on the Subject Property. Analytical results indicated that drycleaning solvents, including PCE and TCE, were detected at their highest concentrations along the southern property boundary of the Subject Property adjoining the SFAP property, suggesting an offsite source of drycleaning solvents. Levels of PCE, TCE, and cis-1,2-DCE fell into the concentration range

where NYSDOH guidance recommended mitigation.

Based on the analytical results from March 2012, Apex obtained access and performed an additional sub-slab vapor assessment on the SFAP property in July 2012. Analytical results indicated that drycleaning solvents, including PCE and TCE, were detected in the sub-slab vapor samples collected from the SFAP property. The highest sub-slab vapor concentrations were collected from vapor probes installed in the Salon 1 tenant space, addressed as 748 Foote Avenue, located immediately south of the Subject Property. The concentration of PCE detected in one of these offsite sub-slab samples (SS-6) collected from the SFAP property is the highest sub-slab vapor concentration detected in investigations at the two properties, suggesting that the source of drycleaning solvent impact may have originated from the former offsite Anderson Cleaners and/or Whirley-Wash Drycleaners located at 750 Foote Avenue and not from the former onsite drycleaner previously located in the northern portion of the Subject Property.

3.0 SSDS DESIGN, INSTALLATION, AND MONITORING

The SSDS design, installation, and monitoring will comply with the NYSDOH document, "Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006." The design objective of the SSDS is to achieve a negative pressure environment beneath the concrete slab of the Subject Property adjacent to the former location of the Anderson Cleaners and Whirley-Wash Drycleaners to minimize the infiltration of dry cleaning solvent vapors. This will be achieved by designing a SSDS system which creates a vacuum sufficient to pull a minimum of 0.004 water column inches (WCI) within the radius of influence of the system.

3.1 Pre-Installation Communication Test

In order to design an effective SSDS, Apex will perform a communication test at the Subject Property in accordance with NYSDOH Guidance. This test will be performed to evaluate the sub-slab connectivity and to determine the appropriate vacuum which must be applied to the SSDS to ensure that design criteria is achieved. The communication test will conducted by drilling several test holes through the concrete slab of the Subject Property and applying a fixed vacuum to a centrally located hole. Measurements will be collected at test holes using a digital manometer to measure the resulting vacuum.

3.2 SSDS Design and Installation

The SSDS for the Subject Property will consist of three (3) suction points constructed of 3-inch Schedule 40 PVC pipe originating in one cubic-foot sub-slab cavities sealed at the concrete surface, where practical. These sub-slab cavities will be located along the southern boundary of the Tops Market tenant space, where practical, to meet the design objectives of the SSDS. Final locations of the suction points will be contingent upon the interior layout of the tenant space and upon coordination with SSI.

The 3-inch PVC pipes will rise from the suction points to 4-inch Schedule 40 PVC pipe which will be suspended from the upper structural steel roof of the tenant space. The 4-inch PVC pipe will be connected to a rear wall, exterior-mounted in-line fan and exhausted above the roof. In addition, an in-line mounted U-tube oil-filled manometer will be installed in each suction line and connected to a remote gauge at the rear of the building to allow for a visual check of the system's vacuum performance. Urethane sealant will be used at concrete slab joints, cracks, and penetrations in the vicinity of each suction point to prevent "short circuiting" of the SSDS pressure field. The SSDS will be "hard-wired" into the Subject Property's main electrical circuitry so as to avoid accidental shut down of the system by individual tenants. The approximate location of the proposed SSDS is provided as Figure 5. Following completion of SSDS installation, Apex will arrange for preparation of a set of "as-built" drawings for the system.

3.3 Post-Installation Pressure Field Extension Test

Similar to the communication test, following installation, Apex will perform a Pressure Field Extension Test to confirm the operation of the installed SSDS. This test will be performed during SSDS operation by collecting vacuum measurements from the same previously installed test holes used during the communication test. Pressure Field Extension Test data will be evaluated against the minimum vacuum design requirement of 0.004 WCI.

4.0 SSDS MAINTENANCE AND SAMPLING

4.1 Post-Installation Maintenance

The SSDS system is designed to operate with minimal monitoring and maintenance. Routine maintenance on the SSDS will occur approximately 18 months following installation and will occur every 12 months thereafter. Maintenance and evaluation will include the following items:

- Conduct a visual inspection of all system components, including the vent fan, piping, U-tube style manometers, and labeling, to ensure that no components appear damaged or in need of replacement or repair.

- Inspect the concrete floor slab which is influenced by the vacuum of the SSDS to ensure that no cracks or penetrations have been introduced through the slab, thus short circuiting the system.

- Verify that no air intakes have been installed post-installation of the SSDS system within 10 feet of the SSDS exhaust point.

- Interview existing tenant space occupants regarding observations and comments on the operation of the SSDS system.

In addition to the above items, a monthly inspection of the in-line mounted manometer will be performed to ensure proper system operation. A SSDS Maintenance Checklist is provided in Appendix B.

4.2 Post-Installation Sampling

Approximately 30 days following installation of the SSDS, Apex will collect post-installation indoor air samples. Two indoor air samples will be collected from inside the Tops Market adjacent to the southern wall of the subject property. Samples will be collected in accordance with NYSDOH Guidance and will be submitted for laboratory analysis of PCE and its breakdown products. Analytical results will be compared with applicable screening levels.

5.0 SCHEDULE

Installation of the SSDS will take approximately one week and is contingent upon approval of this IRM Work Plan. Installation can begin within four (4) weeks following NYSDCE approval. Assuming approval of this IRM Work Plan by February 1, 2013, Apex presents the following schedule:

- Pre-Installation Communication Test to be performed the week of February 11 through February 15, 2013.

- Installation of the SSDS the week of March 4 through March 8, 2013.

- Post-Installation Pressure Field Extension Test to be performed the week of March 18 through March 22, 2013.

- Post-Mitigation Sampling to be performed the week of April 8 through April 12, 2013 and again the following quarter the week of July 8 through July 12, 2013.

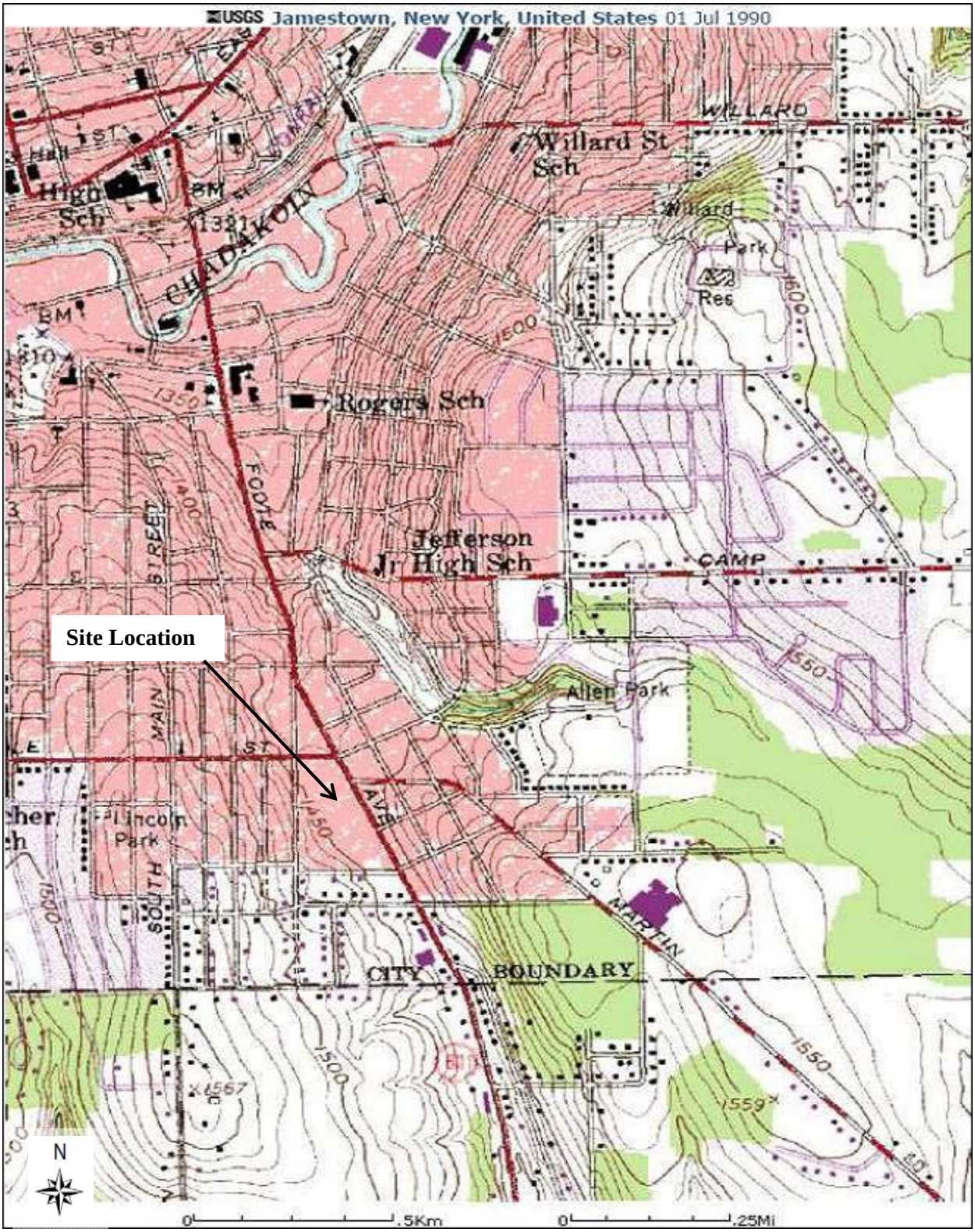
- Post-Mitigation Maintenance to be performed initially 18 months following installation, in September 2014. Annual Maintenance will begin September 2015 and every 12 months following.

6.0 CERTIFICATION

I, Jeff Lower, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical guidance for Site Investigation and Remediation (DER-10).

Mr. Jeff Lower
Project Manager, P.E.

FIGURES



APEX

155 Tri-County Parkway, Suite 250, Cincinnati, Ohio 45246

Southside Station, Inc.
704-744 Foote Avenue
Jamestown, NY 14701

Figure 1: Site Location Map

Legend

= Approximate Property Boundary

N

APEX

155 Tri-County Parkway, Suite 250, Cincinnati, Ohio 45246

Southside Station, Inc.
704-744 Foote Avenue
Jamestown, NY 14701

Figure 2: Subject Property Map

Legend

= Approximate Property Boundary

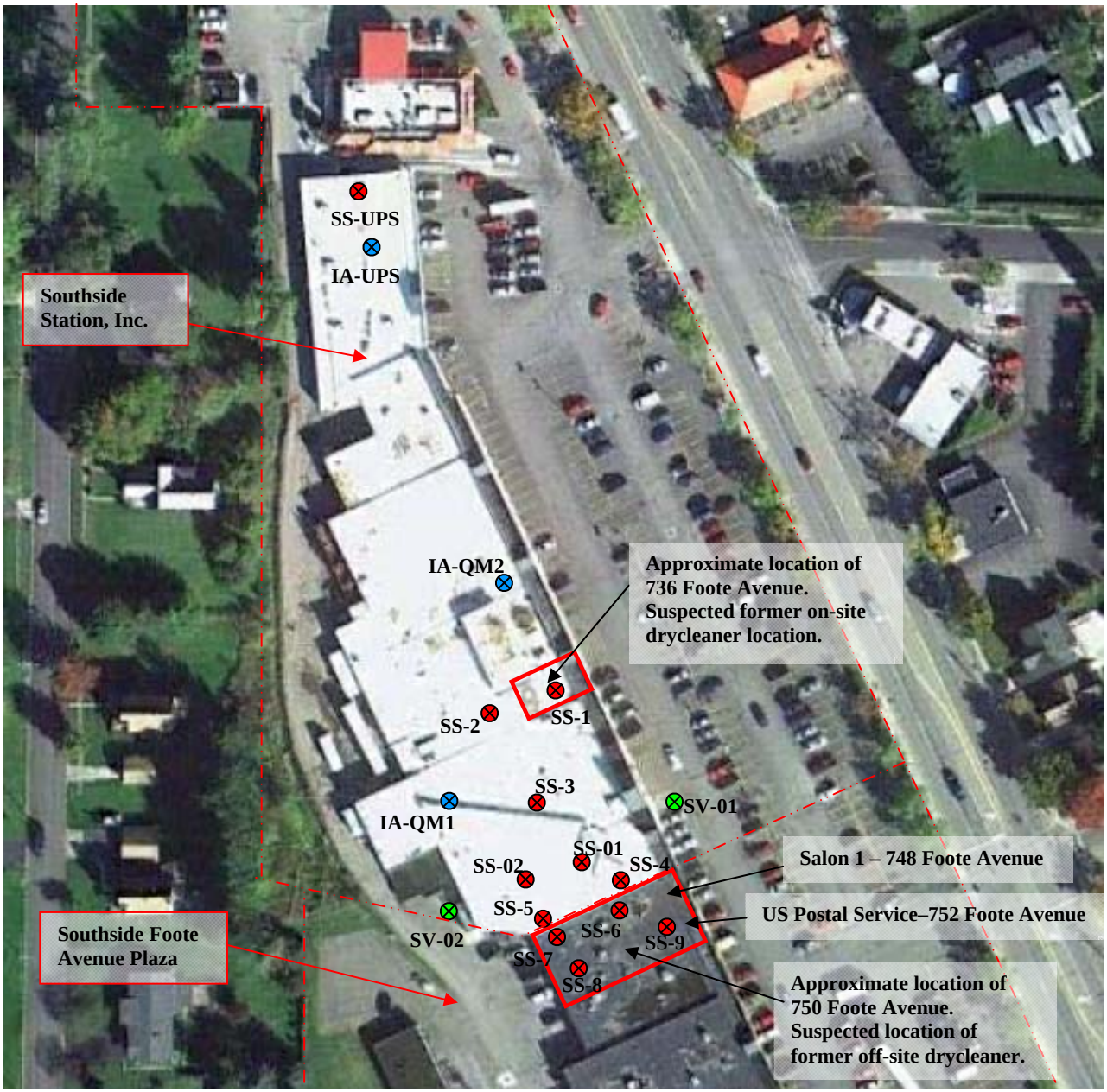
N

APEX

155 Tri-County Parkway, Suite 250, Cincinnati, Ohio 45246

Southside Station, Inc.
704-744 Foote Avenue
Jamestown, NY 14701

Figure 3: Historical Drycleaner Location Map



Legend

= Sub-Slab Vapor Sample Location

= Soil Gas Sample Location

= Indoor Air Sample Location

= Approximate Property Boundary

N

APEX

155 Tri-County Parkway, Suite 250, Cincinnati, Ohio 45246

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Figure 4: Vapor Sampling Locations

Legend

= Proposed Sub-Slab Depressurization System area

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APEX

155 Tri-County Parkway, Suite 250, Cincinnati, Ohio 45246

Southside Station, Inc.
704-744 Foote Avenue
Jamestown, NY 14701

Figure 5: Proposed Sub-Slab Depressurization System Location

TABLES

Table 1
Vapor Analytical Results

Southside Plaza
704-780 Foote Avenue
Jamestown, New York

Sample Type	Southside Station, Inc. Property								NYSDOH Guidance Action* (µg/m3)		
	Soil-Gas		Sub-Slab Vapor			Indoor Air					
Sample Date	8/18/2008	8/18/2008	8/18/2008	8/18/2008	3/31/2010	3/31/2010	3/31/2010	3/31/2010			
Analyte Concentration (µg/m^3)	SV-01	SV-02	SS-01	SS-02	SS-UPS	IA-QM1	IA-QM2	IA-UPS	NFA**	Monitor	Mitigate
1,1-dichloroethene	<7.42	<1.48	<1.43	<14.5	<3.5	<93	<4.1	<760	< 100	100 to < 1,000	≥ 1,000
1,1,1-trichloroethane	<10.2	<2.03	***161***	< 19.8	<4.9	<130	<5.7	***630***	< 100	100 to < 1,000	≥ 1,000
carbon tetrachloride	<11.7	<2.34	< 2.25	< 22.9	<5.6	<150	<6.5	<1,200	< 50	50 to < 250	≥ 250
cis-1,2-dichloroethene	***137***	<1.48	<1.43	<14.5	<3.5	<93	<4.1	<760	< 100	100 to < 1,000	≥ 1,000
tetrachloroethylene	**1,310**	34.5	***152***	***104***	6.7	<160	<7	<1,300	< 100	100 to < 1,000	≥ 1,000
trichloroethylene	***224***	7.65	16.9	<19.5	<4.8	<130	<5.6	<1,000	< 50	50 to < 250	≥ 250
vinyl chloride	<4.76	<0.952	<0.915	<9.29	<2.3	<60	<2.7	<490	< 50	50 to < 250	≥ 250

Sample Type	Southside Station, Inc. Property					Southside Foote Avenue Plaza Property				NYSDOH Guidance Action* (µg/m^3)		
	Sub-Slab Vapor											
Sample Date	3/21/2012	3/21/2012	3/21/2012	3/21/2012	3/21/2012	7/3/2012	7/3/2012	7/3/2012	7/3/2012			
Analyte Concentration (µg/m^3)	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	NFA**	Monitor	Mitigate
1,1-dichloroethene	<0.68	<0.65	<0.68	<62	<700	<760	<17	<0.75	<0.74	< 100	100 to < 1,000	≥ 1,000
1,1,1-Trichloroethane	<0.93	<0.88	<0.92	<84	<950	<1000	<24	<1	<1	< 100	100 to < 1,000	≥ 1,000
carbon tetrachloride	0.42	0.48	0.40	<9.8	<110	<120	<2.8	0.52	0.51	< 50	50 to < 250	≥ 250
cis-1,2-dichloroethene	<0.68	<0.65	<0.68	<62	**4,300**	<760	<17	<0.75	<0.74	< 100	100 to < 1,000	≥ 1,000
tetrachloroethylene	2.8	18	22	**7,000**	**65,000**	**88,000**	**2,100**	17	***140***	< 100	100 to < 1,000	≥ 1,000
trichloroethylene	<0.093	0.32	0.15	***240***	**1,100**	**1,200**	6.7	0.16	0.18	< 50	50 to < 250	≥ 250
vinyl chloride	<0.093	<0.088	0.11	<8.4	<95	<100	<2.4	<0.10	<0.10	< 50	50 to < 250	≥ 250

Notes :
Bold/Italics - Result detected above NYSDOH Monitor Guidance Action Concentrations.
Bold/Underlined - Result detected above NYSDOH Mitigate Guidance Action Concentrations.
* New York State Department of Health Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 and June 25, 2007. Values presented assume indoor ai concentrations of <3 ug/m3.
** NFA = No Further Action

APPENDIX A

Health and Safety Plan

SITE SPECIFIC HEALTH AND SAFETY PLAN

Sub-Slab Depressurization System Installation

Southside Station, Inc.
704-744 Foote Road
Jamestown, New York

January 2013

PREPARED BY: Adam Flege
TITLE: Geologist

REVIEWED BY: Janet Rullman
TITLE: Certified Industrial Hygienist

APEX PROJECT NO.: 1200202.004

The information contained in this HASP is provided for the protection of the health and safety of Apex Companies, LLC personnel and subcontractors working under the direct supervision and control of Apex Companies, LLC on projects involving hazardous waste operations. The information included in this document is designed to identify, evaluate and control safety and health hazards, and provide for emergency response for site activities. This HASP will remain on the project site for reference by workers during each phase of the project. Apex Companies, LLC assumes no liability for, or responsibility to, any other parties for the accuracy or completeness of information included in the HASP or reliance upon this HASP by any other party.

Health and Safety Plan Acknowledgement

This form is to be signed by each Apex employee and contractor/subcontractor who will be present during this project. This Health and Safety Plan Acknowledgement must be signed prior to the person commencing work at the project site.

By signing this form, personnel acknowledge that they have read and understand the contents of this site specific Health and Safety Plan (HASP) and the hazards associated with the project, the control measures and procedures to follow to protect site personnel, property and the community during the course of this project.

Personnel also understand that on a daily basis, mandatory safety meetings will be held prior to starting the day's activities and attended by all on-site project personnel. Project personnel also acknowledge that they agree to perform all activities in a safe manner in accordance with the SSHASP. The purpose of the daily tailgate safety meetings is to discuss potential hazards, control measures and other pertinent information needed for communicating potential project hazards of daily activities at the site.

NAME	SIGNATURE	DATE

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1.0 INTRODUCTION

This non-comprehensive site specific Health and Safety Plan (HASP) has been developed for installation of a sub-slab depressurization system where hazardous substances and/or dry cleaning solvents may be present.

2.0 SITE HISTORY AND DESCRIPTION

Apex Companies, LLC (Apex) was retained by Phillips Edison and Company (PECO) to install a sub-slab depressurization system (SSDS) adjacent to the location of a former dry cleaner at Southside Station, Inc., 704-744 Foote Road, Jamestown, New York.

Previous Vapor Assessments have indicated the presence of dry cleaning solvents in sub-slab vapor beneath the building footprint. Southside Station, Inc. has entered voluntarily into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program. Per direction of the NYSDEC, Apex is overseeing the installation of this SSDS.

Based on the findings from previous investigations, the following contaminants are anticipated to be encountered at the project site:

CONTAMINANT	MEDIA	CONCENTRATION RANGE OF CONTAMINANT	COMMENTS
Tetrachloroethene (PCE)	Air, sub-slab vapor	Variable	Previously identified in groundwater and/or soil
Trichloroethene (TCE)	Air, sub-slab vapor	Variable	Previously identified in groundwater and/or soil
1,2 Dichloroethene (DCE) (cis & trans)	Air, sub-slab vapor	Variable	Previously identified in groundwater and/or soil
Vinyl Chloride	Air, sub-slab vapor	Variable	Previously identified in groundwater and/or soil

Generic material safety data sheets or other safety and health information for these possible contaminants have been provided as a reference in **Appendix C.**

This HASP is being prepared for Apex personnel to use, as guidance in conducting work activities at the site in a safe manner. Known or anticipated hazardous areas or conditions for the site have been tabulated below:

Known or Anticipated Hazardous Areas or Conditions

- VOCs in sub-slab vapor
- Slips, trips, and falls
- Operation of power tools

3.0 WORKPLAN ELEMENTS

The work plan tasks and task objectives for this project are tabulated below.

PROJECT TASKS AND OBJECTIVES

TASK #	DESCRIPTION	OBJECTIVE
1	Oversite of SSDS installation	Oversee installation to ensure safe work environment and proper installation.

4.0 HAZARD ANALYSIS AND CONTROL MEASURES

A variety of potential hazards are believed associated with the project scope of work. The following table can be used to identify anticipated hazards for the project based on the project scope of work and site conditions. The hazards have been checked for the project tasks. This hazard checklist has been provided as a guide for developing control measures to be implemented to protect worker health and safety.

HAZARD ANALYSIS MATRIX

HAZARD	SSDS Installation Oversite
CHEMICAL	X
BIOHAZARD	
RADIATION	
HEAT STRESS	
COLD STRESS	X
INSECT BITES	
ANIMAL/SNAKE BITES	
WATER DROWNING	
POISONOUS PLANTS	
NOISE	X
CONFINED SPACES	
UNDERGROUND UTILITIES	X
OVERHEAD UTILITIES	X
VEHICULAR TRAFFIC	
CONSTRUCTION	X
MECHANICAL	X

ELECTRICAL	X
LANDFILL or SEWER GASES	
RADON or OTHER GASES	
SLIPS/FALLS	X
INCLEMENT WEATHER	
DRUM HANDLING	
PHYSICAL/BACK INJURY	X
HIGH CRIME AREA	
FLAMMABLE MATERIALS	
STATIC ELECTRICITY	
WELDING, CUTTING or BRAZING	
HIGH PRESSURE STEAM, WATER, or AIR	
DUSTY CONDITION	X

CONTROL MEASURES FOR ANTICIPATED WORK ACTIVITIES HAZARDS

TASK	HAZARD	CONTROL MEASURE
Hand-held power tool drilling	Equipment hazards	Maintain safe distance from person using tools. Use extreme caution when using power tools. Follow manufacturers safety precautions
	Noise	Hearing protection
All tasks	Slip/trip/fall	Move carefully
		Keep work area neat and tidy by putting away tools when not in use
		Carefully manage cords and system materials

CONTROL MEASURES FOR ANTICIPATED CONTAMINATION HAZARDS

TASK	HAZARD	CONTROL MEASURE
Slab drilling	Direct contact with VOCs in soil and soil vapor	Workers will don appropriate PPE (Modified Level D)
SSDS and vapor point installations	Direct contact with VOCs	Workers will don appropriate PPE (Modified Level D)

5.0 PROJECT STANDARD OPERATING PROCEDURES AND PRACTICES

All site personnel must adhere to the following standard operating procedures and practices.

1. All safety equipment and protective clothing is to be kept clean and well maintained.
2. All prescription eyeglasses in use will be safety glasses and will be compatible with respirators, if needed. Respirators are not anticipated to be needed for this work. Contact lenses should not be worn in areas where there is a potential for injury to the eye due to particulate, fume, vapors, gases or other air contaminant.
3. Level D disposable nitrile gloves or reusable leather or work gloves are to be worn on the site during all SSDS installation work. Appropriate cutting gloves are to be used during any cutting activities, including the use of knives or saws.
4. Footwear used on site will include steel toed boots during all system installation activities.
5. All personal protective equipment (PPE) used on site will be decontaminated or disposed of at the end of the workday.
6. All project personnel shall have a vision or corrected vision to at least 20/40 in one eye.
7. On-site personnel found to be disregarding any provisions of the HASP will, at the request of the Safety Officer, be barred from the project.
8. Used disposable outerwear will be removed upon completion of the system installation or at the end of each shift or the work day and will be placed inside disposable containers provided for that purpose. These containers will be stored at the site at the designated staging area and the Contractor will be responsible for proper disposal of these materials at the completion of the project.
9. Tyvek™ suits, or other outer garments, which become torn or badly soiled will be replaced immediately.
10. Eating, drinking, chewing gum or tobacco, smoking, etc., will be prohibited in the work zone and contamination reduction zones.
11. All personnel will thoroughly cleanse their hands, face, forearms and other exposed areas prior to eating smoking, drinking, or using the toilet facilities.
16. No alcohol or drugs (without prescription) will be allowed on-site at any time. Firearms are only allowed for security purposes, if allowed by the local law enforcement agency.
17. All personnel who are on medication should report it to the Safety Officer who will make a determination whether or not the individual be allowed to work and in what capacity. The Safety Officer may require a letter from the individual's personal physician stating what limitations, if any, the medication may impose on the individual.
18. At least one copy of these work practices shall be available for review at the job work site.
19. Legible and understandable, precautionary labels shall be affixed prominently to containers of contaminated scrap, waste, debris and clothing.
20. Removal of contaminated soil from protective clothing or equipment by blowing, shaking or any other means that disperse contaminants into the air is prohibited.
21. Transportation and disposal of contaminated materials shall comply with all applicable local, state, and federal regulations. The transporter and disposer will address these items.
22. Drummed contaminated materials shall be stored in tightly closed containers in well-ventilated areas.

23. Containers shall be moved only with the proper equipment and shall be secured to prevent dropping or loss of control during transport.
24. All trenching, shoring and excavation work must comply with all federal OSHA rules.
25. Portable eyewash stations shall be located near work activities and routinely checked to ensure that the equipment is functioning.
26. Before daily site operations begin, a tailgate safety meeting will be held to review the HASP concerns for the work activities and emergency response procedures. The Daily Tailgate Safety Meeting Logs will be maintained as part of the HASP and are provided in Appendix E.
27. Smoking is not permitted on the site during site work activities.
28. Field personnel should not stand with their head directly over a container of hazardous material or well when it is being opened.
29. Events surrounding accidents/injuries will be recorded in the daily log. Document the incident on Apex's Incident Report (Appendix F) and submit copies within 24 hours to the Corporate Human Resources Representative and Corporate Health and Safety Officer.
30. First aid kit(s) and fire extinguisher(s) will be available in all company vehicles and on project sites for responding to emergency situations.
31. Workers will use appropriate ladders during site work activities.
32. Apex personnel will confirm that all welding, cutting, burning, grinding or other open flame work in close proximity to the environmental/construction work site will require the issuance of a "Hot Work Permit".
33. Apex personnel will confirm that lockout-tag out procedures will be followed prior to performing any work on equipment for controlling hazardous energy.
34. Apex personnel will confirm that only authorized entrants, attendants and supervisors trained in confined space entry procedures will be permitted to enter and conduct work in confined spaces. OSHA confined space entry standard requirements must be complied with. Apex does not anticipate any confined spaces to be entered during this site work.
35. Use of a "buddy system" will be used during all site work activities.

6.0 VIOLATIONS OF THE SITE SPECIFIC HEALTH AND SAFETY PLAN

Apex will not tolerate violations of the HASP including standard operating procedures. Apex has the right to remove any individual who violates safety practices. Disciplinary measures are at the discretion of the Safety Officer and will be commensurate with the severity of the infraction. It is the responsibility of each individual to understand and comply with safety procedures and request clarification as needed. Supervisors carry additional oversight and enforcement responsibilities and, consequently, disciplinary measures will be more severe. The following guidelines apply for minor infractions for Apex employees and Apex contract employees:

- First infraction: verbal warning with no further action if individual corrects infraction immediately and acknowledges the infraction.

- Second infraction: written warning and possible time off site without pay to review safety procedures.

- Third infraction: individual banned from the site.

For serious or imminent hazards, safety violations will result in temporary or permanent banishment from the site.

7.0 PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING

The minimum level of PPE to be worn for this project is Level D. All work activities will commence in Modified Level D PPE. Categories of PPE are listed below.

CATEGORIES OF PPE

LEVEL OF PPE	PERSONAL PROTECTIVE EQUIPMENT
A	Positive pressure full face-piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved) Totally encapsulating chemical –protective suit Coveralls[1] Long underwear[1] Gloves, outer, chemical-resistant Gloves, inner, chemical-resistant Boots, chemical-resistant, steel toe and shank Hard hat (under suit)[1] Disposable protective suit, gloves and boots (depending on suit construction, may be worn over totally-encapsulating suit)
B	Positive pressure, full-face piece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved) Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls) Coveralls[1] Gloves, outer, chemical-resistant Gloves, inner, chemical-resistant

	Boots, outer, chemical-resistant, steel toe and shank Boot-covers, outer, chemical-resistant (disposable)[1] Face shield[1] Hard hat[1]
C	Full-face or half-mask, air purifying respirators (NIOSH approved) Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls) Coveralls[1] Gloves, outer, chemical-resistant Gloves, inner, chemical-resistant Boots, outer, chemical-resistant steel toe and shank[1] Boot-covers, outer, chemical-resistant (disposable)[1] Hard hat[1] Escape mask[1] Face shield[1]
D	Coveralls Gloves Boots/shoes, chemical-resistant steel toe and shank Boots, outer, chemical-resistant (disposable) Safety glasses with side shields, or chemical splash goggles Hard hat Escape mask[1] Face shield[1] Traffic vest[1] Cooling vest[1]

[1] optional, as applicable

TYPES OF HAZARDS FOR WHICH LEVELS A, B, C AND D PROTECTION ARE APPROPRIATE

PPE LEVEL	WHEN TO USE
A	The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either the measured, or potential for, high concentration of atmospheric vapors, gases, or particulates of materials that are harmful to skin; The site operation and work functions involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the skin; Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible; or, Operations are being conducted in confined, poorly ventilated areas, and the absence of conditions requiring Level A have not yet been determined.
B	The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection; The atmosphere contains less than 19.5% oxygen; or, The presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin. Use of Level B involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent a sever skin hazard, or do not meet the criteria for use of air-purifying respirators.
C	The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin**;** The types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and, All criteria for the use of air-purifying respirators are met.
D	The atmosphere contains no known hazard; and, Work functions preclude splashes, immersion, or the potential for unexpected inhalation of, or contact with hazardous levels of any chemicals.

Combinations of personal protective equipment other than those described for Levels A, B, C, and D protection may be more appropriate and may be used to provide the proper level of protection.

The table below lists the minimum initial level of personal protective equipment required for each task of the project scope of work.

MINIMUM PPE LEVEL FOR EACH TASK

TASK	LEVEL OF PPE	COMMENTS
Slab Drilling	D	
SSDS and communication point installation	D	

Decontamination equipment-includes water, Alconox™ soap, spray bottle and paper towels.

8.0 EMERGENCY RESPONSE/PLANNING

8.1 Emergency Telephone Numbers/Directions to Hospital

The following telephone numbers and directions to the hospital from the site are provided to expedite emergency assistance if needed at the site.

Nearest Hospital: WCA Hospital
207 Foote Road
Jamestown, New York, 14701
716-487-0141
Emergency/general Tel. No.: or 911

See **Appendix B** for map and directions to hospital.

Fire Department: 911
Police Department: 911
Ambulance: 911

CHEMTREC (Chemical Transportation Emergency Center)
2501 M Street, NW
Washington, D. C. 20037

Tel. No.: 800-424-9300

Poison Control Center: 800-336-6997

Project Manager: Adam Flege (513) 771-3617 (office); (513) 417-3727

Client Contact: none on site

Corporate Health and Safety: Harold Heckman
(484) 429-5104

8.2 Evacuation Procedures

If evacuation from the site is required due to an emergency such as a fire or explosion, the following action should be taken:

- First person recognizing need for evacuation will immediately notify all on-site personnel via voice or other means.
- Leave the area and report to a designated rally point established by the Safety Officer. This evacuation point may vary daily based upon site activities and weather conditions and location should be discussed at the Daily Tailgate Safety Meeting.
- Notify emergency medical services, if appropriate at 911.
- Account for all site personnel.
- Contact the Apex project manager and Safety Officer, and Client contact as soon as practical.
- Establish site security and control measures for the neighborhood safety until emergency responders arrive and take control.

8.3 Medical Emergency

Response to a medical emergency:

- Initially survey the situation; do not enter an area that could jeopardize your safety.
- Establish the level of consciousness and then call for help, informing the Emergency Medical Service (EMS) of the patient's condition.
- If the person is unconscious, perform a primary assessment by checking for arousal, airway, breathing and circulation (only trained First Aid/CPR personnel should perform these tasks; state that you are medically trained).
- Conduct a secondary assessment to the conscious patient by checking for bleeding (control with direct pressure) and monitoring for vital signs.
- Do not move the person unless the location is hazardous.
- Provide First Aid to the level trained.
- Contact the project manager and Safety Officer as soon as practical and document the incident in a report to the Safety Officer.
- See **Appendix A**, Emergency First Aid Procedures for additional response measures.

8.4 Fire Emergency

Response to a fire emergency:

- Evacuate the area immediately and notify EMS.
- Extinguish small fires with an all-purpose fire extinguisher and provided that you have had training in the use of an extinguisher.
- Contact the project manager and Safety Officer and document the incident; document for the project file and send a copy to the Safety Officer.

8.5 Spill/Release of a Hazardous Material

Response to a spill or release of hazardous material:

- Wear appropriate PPE and stay upwind of the incident.
- Turn off all sources of ignition and shut down pumps and valves to equipment in the immediate area; if possible, plug leaks and collect drippings in a container.
- Place absorbent around the incident site to soak up hazardous material.
- Call the fire department if potential for a fire exists.
- Determine if the client wants to repair the damage and whether a contractor has to be used.
- Advise the client of any release notification requirements for state or federal agencies and determine who is to complete and submit forms. Submit or report to regulatory agencies only if authorized to do so by client. Completely document interaction with client and regulatory agency. The project manager must contact the client or generator of the spill/release.
- Do not approve for transport, or transport contaminated environmental media until appropriate manifest or shipping paper have been completed and approved. Do not sign any manifest as a generator of waste. Discuss waste transportation issue with Corporate and Division representative prior to resolution for disposal.
- Notification must be made by the client, or by Apex, with permission from the client, to the proper governmental agencies. Spills/releases entering waterways must be reported to **the Coast Guard and the National Response Center at 800-424-8802.**

9.0 TRAINING REQUIREMENTS

Site workers must have completed the following training programs **(first 4 only for RCRA sites)**:

- Field personnel must complete 40 hours of hazardous waste activity instruction (OSHA 29 CFR 1910.120/1926.65);
- Field personnel must complete 24 hours of supervised field instruction (29 CFR 1910.120/1926.65);
- Field personnel must complete 8 hours of refresher training each year (29 CFR 1910.120/1926.65);
- On-site supervisors/managers directly responsible for employees engaged in hazardous waste operations must have an additional 8 hours of supervisory training (29 CFR 1010.120/1926.65);
- All site personnel must attend and participate in “Daily Safety Tailgate Meeting and document attendance (29 CFR 1910.120);
- Hazard communication training on any hazardous substance’s chemical and physical properties (29 CFR 1910.1200);
- Personal protective equipment training for personnel required to wear protective clothing (29 CFR 1910.132 and 134);
- Personnel required to extinguish small fires on site are required to be trained in the proper use of a fire extinguisher (29 CFR 1910.156/1926.150);

- All site personnel must review this HASP and be able to obtain emergency information, if needed. They must also be familiar with established emergency response and evacuation procedures for the site. This information is to be reviewed with all project personnel prior to commencement of field activities (29 CFR 1910.120);
- Other training, as required, to comply with OSHA health and safety standards.

10.0 MEDICAL SURVEILLANCE

Medical surveillance consisting of a baseline, annual and termination examination are required of all Apex employees whose job may require working in environments with potential exposure to health hazards such as hazardous waste, petroleum products, materials, noise, lead and crystalline silica. Examination criteria and frequency will be determined by Apex's occupational physicians based upon guidance and regulatory requirements provided in the applicable OSHA Hazardous Waste Operation and Emergency Response Regulation (29 CFR 1910.120 or 29 CFR 1926.65). More frequent examinations may be performed at the recommendation of a qualified occupational physician.

Apex is also required to retain and provide employee access to medical and exposure monitoring records in compliance with OSHA 29 CFR 1910.1020 or 1926.33, Access to Employee Exposure and Medical Records.

10.1 Heat Stress Evaluation

Heat stress is anticipated to be a significant health and safety issue associated with this project due to the nature of the hazards anticipated to be encountered or because of the time of the year the work is being conducted. The four forms of heat stress include heat rash, heat cramps, heat exhaustion and heat stroke. It is very important to be able to recognize symptoms associated with the various forms of heat stress and to know first aid measures. A table listing forms and symptoms of heat stress is located below. This information should be reviewed with employees prior to commencing the project.

FORMS AND SYMPTOMS OF HEAT STRESS

FORM	SYMPTOMS	FIRST AID MEASURES
Heat Rash	Prickly heat Slight to extensive skin irritation could occur	Keep skin clean and dry for at least 12 hours per day Change wet clothing
Heat Cramps	Skin is sweaty Painful muscle spasms Body temperature is normal	Provide fluids Gently massage cramped muscles
Heat Exhaustion	Clammy or pale skin Weakness and fatigue Profuse sweating Nausea, vomiting Disorientation Headache	Remove from heat Loosen clothing Sponge skin with cool water Fan victim; stop if victim shivers or develops goose bumps

	Normal or slightly elevated body temperature	Give fluids; give victim a drink solution of one pint water and one teaspoon salt every 30 minutes until recovers Obtain medical help if victim does not improve
Heat Stroke	Unconsciousness or mental confusion Dizziness Staggered walk Appears to be agitated Hot, dry skin Extremely high body temperature; could reach 105° F	Get emergency medical aid immediately Remove victim from heat Remove clothing, place victim in a cool bath, or apply cool compresses Do not give any fluids Do not leave victim alone Do not allow victim to become so cold that victim shivers Do not give aspirin or other medication in an attempt to lower fever

10.2 Cold Stress Evaluation

The stress of working in a cold environment can cause a variety of strains on the body including constriction of blood vessels of the skin, shivering, localized frostbite or frostnip, and generalized hypothermia. The frequency of accidents may be higher in cold environments. Nerve impulses are slowed, exposed workers react sluggishly, fumble with their hands and become clumsy. There are also safety problems common to cold environments. They include ice, snow blindness, reflection from snow and the possibility of burns from contact with cold metal surfaces.

Thermal injury due to cold exposure can become a problem for project field personnel. Systemic cold exposure is known as hypothermia. Localized cold exposure is generally considered to be categorized as frostbite.

Hypothermia is caused by a decrease in core body temperature below 96ºF. The central (brain and spinal cord) and peripheral (skin and muscle) activity normally maintains the body temperature. Interference with any of these mechanisms can result in hypothermia, even in the absence of what is usually considered a “cold” ambient temperature. Symptoms of hypothermia include shivering, apathy, listlessness, sleepiness, and unconsciousness.

Frostbite is both a general and medical term given to areas of local cold injury. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperature drops below freezing and usually less than 2ºF. Symptoms of frostbite include a sudden blanching or whitening of the skin. The skin has a waxy or white appearance and is firm to the touch. Affected tissues are cold, pale and solid.

Prevention of cold-related illness can be aided by educating workers on recognizing the symptoms of frostbite and hypothermia and by identifying and limiting known risk factors. The workers should be provided with enclosed, heated shelters on, or adjacent to, the worksite, dry changes of clothing and warm drinks. When working in extremely cold climates, frequent work breaks should be encouraged.

To monitor site personnel for cold-related illnesses, commence oral temperature recordings at the job site:

- At the supervisor's discretion when suspicion is based on changes in a worker's performance or mental status;
- When a worker requests monitoring;
- As a screening measure, at least twice per shift, under extremely hazardous climatic conditions (for example, when the wind-chill is less than 20ºF, or wind-chill is less than
  30ºF with precipitation); and
- As a screen measure whenever any person develops hypothermia.
- Workers developing moderate hypothermia, in which the core temperature drops to 92ºF, should not return to work for at least 48 hours, if adverse weather conditions continue.

The following table provides symptoms associated with a drop in core body temperature.

PROGRESSIVE CLINICAL SYMPTOMS OF HYPOTHERMIA

CORE BODY TEMPERATURE (ºF)	SYMPTOMS
99.6	Normal core body temperature
96.8	Metabolic rate increases
95.0	Maximum shivering
93.2	Victim conscious and responsive
91.4	Severe hypothermia
89.6-87.8	Consciousness clouded, blood pressure difficult to obtain, pupils dilated but react to light, shivering ceases
86.0-84.2	Progressive loss of consciousness, muscular rigidity increases, pulse and blood pressure difficult to get, respiratory rate decreases
78.8	Victim is seldom conscious
64.4	Lowest accidental hypothermia victim to recover

Apex employees must be trained to minimize the risk of the hazards of working in cold environments and periodically reinforced in the recognition of the physiologic responses of the body to cold stress. The use of insulated work clothing, warm shelters and work/warming regimens should be used to minimize the potential hazards of cold stress. Also, special attention should be given to equipment warm-up time and freeze protection for vessels, piping, equipment, tools, and walking/working surfaces. The American Conference of Governmental Industrial Hygienists (ACGIH) TLVs for cold stress should be used as a guideline.
Control measures to prevent cold related symptoms include:

- Prevent continuous exposure of skin when the wind-chill factor results in an equivalent temperature of -32< C (-26< F). Workers exposed to air temperatures of 2< C (35.6< F) or lower who become immersed in water or whose clothing gets wet should change into dry clothing immediately and be treated for hypothermia.
- Use heated warming shelters such as tents and cabins when work is performed continuously in an equivalent chill temperature of -7< C (20< F) or below.
- Ensure frequent intake of warm, sweet, caffeine-free, non-alcoholic drinks or soup.
- Minimize sitting still or standing for long periods of time.
- Ensure use of appropriate PPE.

The correct clothing depends on the specific cold stress situation. It is important to preserve the air space between your body and the outer layer of clothing in order to retain body heat. The more air pockets each layer of clothing has, the better the insulation. However, the insulating effect is negated if the clothing interferes with the evaporation of sweat, or if the skin or clothing is wet.

11.0 ENVIRONMENTAL MONITORING PROGRAM

11.1 Air Monitoring

Due to the nature of the project and unlikelihood of encountering contamination to levels that would warrant air monitoring, no air monitoring will be conducted**.**

12.0 DECONTAMINATION PROCEDURES

Field equipment and personal protective equipment may become contaminated with residual VOCs during the site activities. It is important to halt the spread of contamination to vehicles, personnel and support areas by using appropriate decontamination procedures. Due to the nature of the work being conducted, it is anticipated that work clothing of personnel on projects would not become badly soiled. As such, it is anticipated that only gloves, boots, and coveralls used for site activities would be contaminated from site constituents. In the event contaminated soils or groundwater come into contact with the personnel's clothing, the employee should change clothing before entering a vehicle or leaving the site.

All PPE used may be disposed of with household waste.

The following decontamination procedures can be used:

Field Equipment: Equipment such as hand tools, drill augers, system installation equipment and other items can be decontaminated with a solution of detergent and water. Equipment should be rinsed with clean water prior to leaving the site. Protect clean materials from exposure by covering with disposable covers such as plastic to minimize required decontamination activities. For example, a small plastic bag can be taped around not-critical portions of air monitoring instrumentation, to protect from damaging electronics by water.

13.0 SPILL CONTAINMENT PROGRAM

See Section 8.5.

14.0 EXCAVATION ACTIVITIES

There are no excavation activities associated with this project.

15.0 RECORD KEEPING REQUIREMENTS

This is a short-term project, which will be completed in one week of field work. At a minimum, the following records should be maintained at the project site in Apex's possession: (select only those items that are appropriate for the project)

- The site specific Health and Safety Plan including emergency response, contingency, evacuation plans and Acknowledgement page
- Daily Tailgate Safety Meeting logs and summaries of meetings (in project field book)
- Material Safety Data Sheets or other references for hazardous materials on the project site
- Hazard Assessment for PPE (usually part of HASP)
- Emergency phone numbers (in HASP)

16.0 ENVIRONMENTAL, SAFETY AND HEALTH ROLES AND RESPONSIBILITIES OF PROJECT PERSONNEL

The following table summarizes personnel responsibilities at the job site. This information should be reviewed with all project personnel prior to commencing site activities.

Roles and Responsibilities of Project Personnel

PERSONNEL	ROLES AND RESPONSIBILITIES
Program Managers	Provides direction, management and resources to achieve goals and objectives of project Responsible for developing and implementing systems to ensure employees follow the HASP Responsible for general safety performance of employees and implementing a phased disciplinary program for employees violating health and safety programs Assigns and communicates safety and health responsibility to subordinates and holds subordinates accountable for their performance
Project Managers	Ensures that specific work tasks are properly prioritized, planned and conducted in a safe manner Verifies all site workers meet OSHA regulatory requirements Provides resources and equipment necessary to conduct and execute assigned tasks in a safe manner Designates an adequate number of health and safety specialists with the

PERSONNEL	ROLES AND RESPONSIBILITIES
	necessary authority and responsibility to develop and implement the HASP and to verify its effectiveness Provides periodic health and safety program reviews/audits to ensure program effectiveness and quality
Safety Officer	Provides technical expertise necessary to carry out requirements and support work activities Provides training on the HASP, Hazard Communication, and other project specific health and safety training Implements and enforces HASP requirements, with project personnel assigned to work under their jurisdiction Ensures that adequate safety controls are maintained Obtains related information on suspect hazardous materials to facilitate preparation of hazardous material abatement Ensures that appropriate health and safety-related project documentation is maintained for the project
Site Laborers	Conduct work in a safe manner in accordance with the HASP, other applicable safe work procedures Appropriately uses assigned personal protective equipment Observes their work area surroundings for potential safety issues Reports unsafe work conditions or practices to the health and safety specialist/site safety and health officer Initiates feasible personal action to eliminate/mitigate unsafe conditions
Visitors	Remain outside designated work zones unless authorized by Project Manager to enter hot or contamination reduction zones wearing appropriate PPE Comply with all site specific HASP requirements including safe practices and levels of PPE Comply with training, medical surveillance and other requirements of the HASP, if access is permitted on the site

APPENDICES

APPENDIX A

Emergency First Aid Procedures for Certified Personnel

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Tools for healthier lives

Original Article:http://www.mayoclinic.com/health/first-aid-cpr/FA00061

Cardiopulmonary resuscitation (CPR): First aid

Cardiopulmonary resuscitation (CPR) is a lifesaving technique useful in many emergencies, including heart attack or near drowning, in which someone's breathing or heartbeat has stopped. CPR involves a combination of mouth-to-mouth rescue breathing and chest compression that keeps oxygenated blood flowing to the brain and other vital organs until more definitive medical treatment can restore a normal heart rhythm.

When the heart stops, the absence of oxygenated blood can cause irreparable brain damage in only a few minutes. Death will occur within eight to 10 minutes. Time is critical when you're helping an unconscious person who isn't breathing.

To learn CPR properly, take an accredited first-aid training course, including CPR and how to use an automated external defibrillator (AED).

Before you begin
Assess the situation before starting CPR:

- Is the person conscious or unconscious?
- If the person appears unconscious, tap or shake his or her shoulder and ask loudly, "Are you OK?"
- If the person doesn't respond, call 911 (or your local emergency number), or have someone else do it. But if you're alone and the victim is an infant or a child age 1 to 8 who needs CPR, perform two minutes of CPR before calling for help.

Remember the ABCs
Airway, Breathing and Circulation — to remember the steps explained below.

AIRWAY: Clear the airway

1. Put the person on his or her back on a firm surface.

2. Kneel next to the person's neck and shoulders.
3. Open the person's airway using the head tilt-chin lift. Put your palm on the person's forehead and gently push down. Then with the other hand, gently lift the chin forward to open the airway.
4. Check for normal breathing, taking no more than 10 seconds: Look for chest motion, listen for breath sounds, and feel for the person's breath on your cheek and ear. Do not consider gasping to be normal breathing. If the person isn't breathing normally or you aren't sure, begin mouth-to-mouth breathing.

BREATHING: Breathe for the person

Rescue breathing can be mouth-to-mouth breathing or mouth-to-nose breathing if the mouth is seriously injured or can't be opened.

1. With the airway open (using the head tilt-chin lift), pinch the nostrils shut for mouth-to-mouth breathing and cover the person's mouth with yours, making a seal.
2. Prepare to give two rescue breaths. Give the first rescue breath — lasting one second — and watch to see if the chest rises. If it does rise, give the second breath. If the chest doesn't rise, repeat the head tilt-chin lift and then give the second breath.
3. Begin chest compressions — go to "CIRCULATION" below.

CIRCULATION: Restore blood circulation

1. Place the heel of one hand over the center of the person's chest, between the nipples. Place your other hand on top of the first hand. Keep your elbows straight and position your shoulders directly above your hands.
2. Use your upper body weight (not just your arms) as you push straight down on (compress) the chest 1 1/2 to 2 inches. Push hard and push fast — give two compressions per second, or about 100 compressions per minute.
3. After 30 compressions, tilt the head back and lift the chin up to open the airway. Prepare to give two rescue breaths. Pinch the nose shut and breathe into the mouth for one second. If the chest rises, give a second rescue breath. If the chest doesn’t rise, repeat the head tilt-chin lift and then give the second rescue breath. That's one cycle. If someone else is available, ask that person to give two breaths after you do 30 compressions.
4. If the person has not begun moving after five cycles (about two minutes) and an automated external defibrillator (AED) is available, open the kit and follow the prompts. If you're not trained to use an

AED, a 911 operator may be able to guide you in its use. Trained staff at many public places are also able to provide and use an AED. Use pediatric pads, if available, for children ages 1 to 8. If pediatric pads aren't available, use adult pads. Do not use an AED for infants younger than age 1. If an AED isn't available, go to Number 5 below.

5. Continue CPR until there are signs of movement or until emergency medical personnel take over.

To perform CPR on a child:

The procedure for giving CPR to a child age 1 through 8 is essentially the same as that for an adult. The differences are as follows:

- Perform five cycles of compressions and breaths on the child — this should take about two minutes — before calling 911 or the local emergency number, unless someone else can call while you attend to the child.
- Use only one hand to perform heart compressions.
- Breathe more gently.
- Use the same compression/breath rate as is used for adults: 30 compressions followed by two breaths. This is one cycle. Following the two breaths, immediately begin the next cycle of compressions and breaths. Continue until the victim moves or help arrives.

To perform CPR on a baby:

Most cardiac arrests in infants occur from lack of oxygen, such as from drowning or choking. If you know the infant has an airway obstruction, perform first aid for choking. If you don't know why the infant isn't breathing, perform CPR.

To begin, assess the situation. Stroke the baby and watch for a response, such as movement, but don't shake the child.

If there's no response, follow the ABC procedures below and time the call for help as follows:

- If you're the only rescuer and CPR is needed, do CPR for two minutes — about five cycles — before calling 911 or your local emergency number.
- If another person is available, have that person call for help immediately while you attend to the baby.

AIRWAY: Clear the airway

1. Place the baby on his or her back on firm, flat surface, such as a table. The floor or ground also will do.
2. Gently tip the head back by lifting the chin with one hand and pushing down on the forehead with the other hand.
3. In no more than 10 seconds, put your ear near the baby's mouth and check for breathing: Look for chest motion, listen for breath sounds, and feel for breath on your cheek and ear.

If the infant isn't breathing, begin mouth-to-mouth breathing immediately.

BREATHING: Breathe for the infant

1. Cover the baby's mouth and nose with your mouth.
2. Prepare to give two rescue breaths. Use the strength of your cheeks to deliver gentle puffs of air (instead of deep breaths from your lungs) to slowly breathe into the baby's mouth one time, taking one second for the breath. Watch to see if the baby's chest rises. If it does, give a second rescue breath. If the chest does not rise, repeat the head tilt-chin lift and then give the second breath.
3. If the chest still doesn't rise, examine the mouth to make sure no foreign material is inside. If the object is seen, sweep it out with your finger. If the airway seems blocked, perform first aid for a choking infant.
4. Begin chest compressions — go to "CIRCULATION" below.

CIRCULATION: Restore blood circulation

1. Imagine a horizontal line drawn between the baby's nipples. Place two fingers of one hand just below this line, in the center of the chest.
2. Gently compress the chest to about one-third to one-half the depth of the chest.
3. Count aloud as you pump in a fairly rapid rhythm. You should pump at a rate of about 100 times a minute.
4. Give two breaths after every 30 chest compressions.
5. Perform CPR for about two minutes before calling for help unless someone else can make the call while you attend to the baby.
6. Continue CPR until you see signs of life or until a professional relieves you.

By Mayo Clinic Staff
Jan 16, 2006

FA00061

MayoClinic.com
Tools for healthier lives

Original Article:http://www.mayoclinic.com/health/first-aid-severe-bleeding/FA00038

Severe bleeding: First aid

If possible, before you try to stop severe bleeding, wash your hands to avoid infection and put on synthetic gloves. Don't reposition displaced organs. If the wound is abdominal and organs have been displaced, don't try to push them back into place. Cover the wound with a dressing.

For other cases of severe bleeding, follow these steps:

1. **Have the injured person lie down.** If possible, position the person's head slightly lower than the trunk or elevate the legs. This position reduces the risk of fainting by increasing blood flow to the brain. If possible, elevate the site of bleeding.
2. **While wearing gloves, remove any obvious dirt or debris from the wound.** Don't remove any large or more deeply embedded objects. Don't probe the wound or attempt to clean it at this point. Your principal concern is to stop the bleeding.
3. **Apply pressure directly on the wound.** Use a sterile bandage, clean cloth or even a piece of clothing. If nothing else is available, use your hand.
4. **Maintain pressure until the bleeding stops.** Hold continuous pressure for at least 20 minutes without looking to see if the bleeding stopped. You can maintain pressure by binding the wound tightly with a bandage (or even a piece of clean clothing) and adhesive tape.
5. **Don't remove the gauze or bandage.** If the bleeding continues and seeps through the gauze or other material you are holding on the wound, don't remove it. Instead, add more absorbent material on top of it.
6. **Squeeze a main artery if necessary.** If the bleeding doesn't stop with direct pressure, apply pressure to the artery delivering blood to the area of the wound. Pressure points of the arm are on the inside of the arm just above the elbow and just below the armpit. Pressure points of the leg are just behind the knee and in the groin. Squeeze the main artery in these areas against the bone. Keep your fingers

flat. With your other hand, continue to exert pressure on the wound itself.

7. **Immobilize the injured body part once the bleeding has stopped.** Leave the bandages in place and get the injured person to the emergency room as soon as possible.

If you suspect internal bleeding, seek emergency help. Signs of internal bleeding may include:

- Bleeding from body cavities (such as the ears, nose, rectum or vagina)
- Vomiting or coughing up blood
- Bruising on neck, chest, abdomen or side (between ribs and hip)
- Wounds that have penetrated the skull, chest or abdomen
- Abdominal tenderness, possibly accompanied by rigidity or spasm of abdominal muscles
- Fractures
- Shock, indicated by weakness, anxiety, thirst or skin that's cool to the touch

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By Mayo Clinic Staff
Jan 12, 2006

FA00038

APPENDIX B

Hospital Route Map and Directions

MAPQUEST.

Notes

Trip to WCA Hospital

207 Foote Ave, Jamestown, NY 14701 - (716) 487-0141
0.71 miles - about 2 minutes

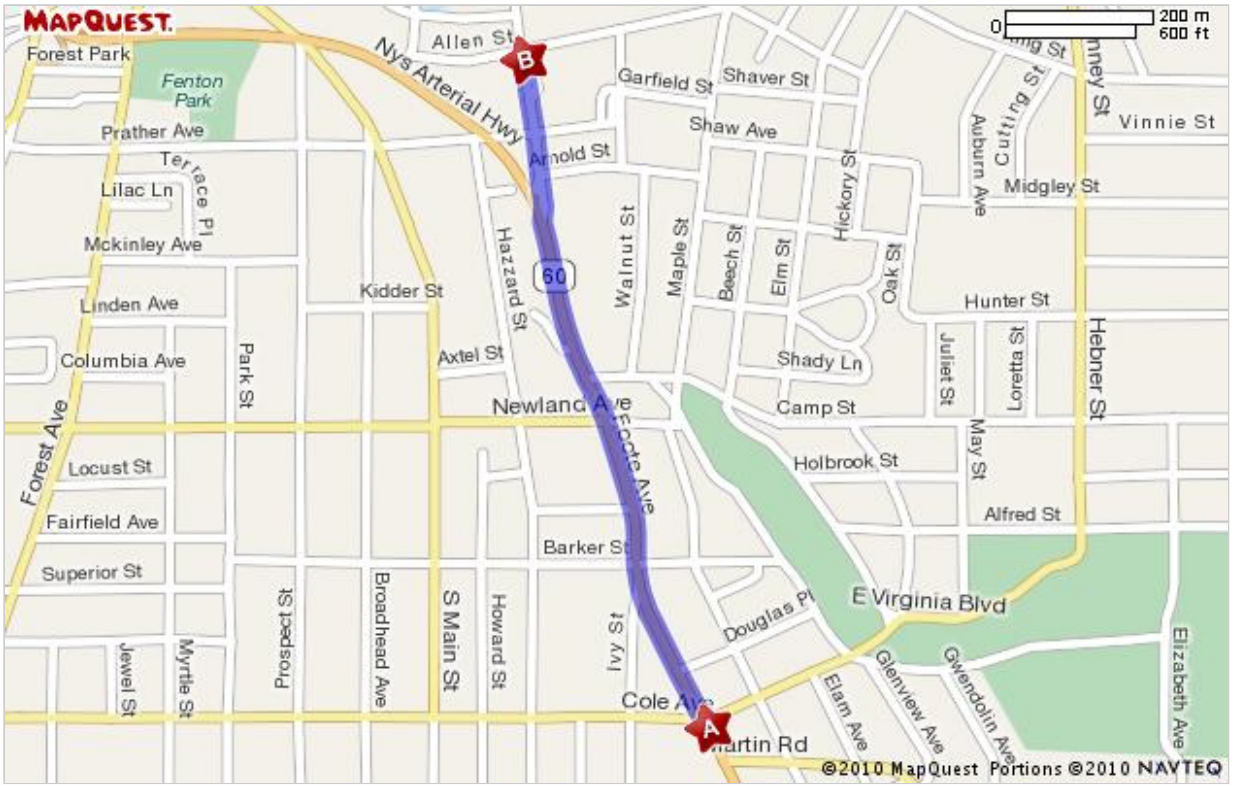
A 704 Foote Ave, Jamestown, NY 14701-8225

START	1. Start out going **NORTH** on **FOOTE AVE / NY-60** toward **COLE AVE**.	go 0.5 mi
	2. Turn **SLIGHT RIGHT** onto **FOOTE AVE**.	go 0.2 mi
END	3. **207 FOOTE AVE** is on the **RIGHT**.	go 0.0 mi

B WCA Hospital - (716) 487-0141
207 Foote Ave, Jamestown, NY 14701

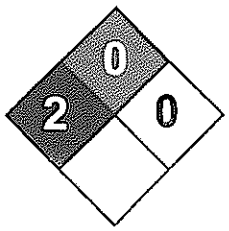
Total Travel Estimate : 0.71 miles - about 2 minutes

Route Map Hide



APPENDIX C

Safety Data Sheets (SDS) and Related Safety and Health Information for Hazardous Materials Anticipated to be found at the Job Site



Health	2
Fire	0
Reactivity	0
Personal Protection	G

Material Safety Data Sheet
Tetrachloroethylene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Tetrachloroethylene

Catalog Codes: SLT3220

CAS#: 127-18-4

RTECS: KX3850000

TSCA: TSCA 8(b) inventory: Tetrachloroethylene

CI#: Not available.

Synonym: Perchloroethylene; 1,1,2,2-Tetrachloroethylene; Carbon bichloride; Carbon dichloride; Ankilostin; Didakene; Dilatin PT; Ethene, tetrachloro-; Ethylene tetrachloride; Perawin; Perchlor; Perclene; Perclene D; Percosolvel; Tetrachloroethene; Tetraleno; Tetralex; Tetravec; Tetroguer; Tetropil

Chemical Name: Ethylene, tetrachloro-

Chemical Formula: C2-Cl4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Tetrachloroethylene	127-18-4	100

Toxicological Data on Ingredients: Tetrachloroethylene: ORAL (LD50): Acute: 2629 mg/kg [Rat]. DERMAL (LD): Acute: >3228 mg/kg [Rabbit]. MIST(LC50): Acute: 34200 mg/m 8 hours [Rat]. VAPOR (LC50): Acute: 5200 ppm 4 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of eye contact (irritant), of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (anticipated carcinogen) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, peripheral nervous system, respiratory tract, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with skin. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection:
Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 25 (ppm) from OSHA (PEL) [United States] TWA: 25 STEL: 100 (ppm) from ACGIH (TLV) [United States] TWA: 170 (mg/m3) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Ethereal.

Taste: Not available.

Molecular Weight: 165.83 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 121.3°C (250.3°F)

Melting Point: -22.3°C (-8.1°F)

Critical Temperature: 347.1°C (656.8°F)

Specific Gravity: 1.6227 (Water = 1)

Vapor Pressure: 1.7 kPa (@ 20°C)

Vapor Density: 5.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 5 - 50 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.4

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Miscible with alcohol, ether, chloroform, benzene, hexane. It dissolves in most of the fixed and volatile oils. Solubility in water: 0.015 g/100 ml @ 25 deg. C It slowly decomposes in water to yield Trichloroacetic and Hydrochloric acids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Oxidized by strong oxidizing agents. Incompatible with sodium hydroxide, finely divided or powdered metals such as zinc, aluminum, magnesium, potassium, chemically active metals such as lithium, beryllium , barium. Protect from light.

Special Remarks on Corrosivity: Slowly corrodes aluminum, iron, and zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2629 mg/kg [Rat]. Acute dermal toxicity (LD50): >3228 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5200 4 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of ingestion.

Special Remarks on Toxicity to Animals:
Lowest Publishe Lethal Dose/Conc: LDL [Rabbit] - Route: Oral; Dose: 5000 mg/kg LDL [Dog] - Route: Oral; Dose: 4000 mg/kg LDL [Cat] - Route: Oral; Dose: 4000 mg/kg

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects(teratogenic). May affect genetic material (mutagenic). May cause cancer.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation with possible dermal blistering or burns. Symtoms may include redness, itching, pain, and possible dermal blistering or burns. It may be absorbed through the skin with possible systemic effects. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. Eyes: Contact causes transient eye irritation, lacrimation. Vapors cause eye/conjunctival irritation. Symptoms may include redness and pain. Inhalation: The main route to occupational exposure is by inhalation since it is readily absorbed through the lungs. It causes respiratory tract irritation, . It can affect behavior/central nervous system (CNS depressant and anesthesia ranging from slight inebriation to death, vertigo, somnolence, anxiety, headache, excitement, hallucinations, muscle incoordination, dizziness, lightheadness, disorentiation, seizures, enotional instability, stupor, coma). It may cause pulmonary edema Ingestion: It can cause nausea, vomiting, anorexia, diarrhea, bloody stool. It may affect the liver, urinary system (proteinuria, hematuria, renal failure, renal tubular disorder), heart (arrhythmias). It may affect behavior/central nervous system with symptoms similar to that of inhalation. Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact may result in excessive drying of the skin, and irritation. Ingestion/Inhalation: Chronic exposure can affect the liver(hepatitis,fatty liver degeneration), kidneys, spleen, and heart (irregular heartbeat/arrhythmias, cardiomyopathy, abnormal EEG), brain, behavior/ central nervous system/peripheral nervous system (impaired memory, numbness of extremeties, peripheral neuropathy and other

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 18.4 mg/l 96 hours [Fish (Fatthead Minnow)]. 18 mg/l 48 hours [Daphnia (daphnia)]. 5 mg/l 96 hours [Fish (Rainbow Trout)]. 13 mg/l 96 hours [Fish (Bluegill sunfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Tetrachloroethylene UNNA: 1897 PG: III

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Tetrachloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Tetrachloroethylene Connecticut hazardous material survey.: Tetrachloroethylene Illinois toxic substances disclosure to employee act: Tetrachloroethylene Illinois chemical safety act: Tetrachloroethylene New York release reporting list: Tetrachloroethylene Rhode Island RTK hazardous substances: Tetrachloroethylene Pennsylvania RTK: Tetrachloroethylene Minnesota: Tetrachloroethylene Michigan critical material: Tetrachloroethylene Massachusetts RTK: Tetrachloroethylene Massachusetts spill list: Tetrachloroethylene New Jersey: Tetrachloroethylene New Jersey spill list: Tetrachloroethylene Louisiana spill reporting: Tetrachloroethylene California Director's List of Hazardous Substances: Tetrachloroethylene TSCA 8(b) inventory: Tetrachloroethylene TSCA 8(d) H and S data reporting: Tetrachloroethylene: Effective date: 6/1/87; Sunset date: 6/1/97 SARA 313 toxic chemical notification and release reporting: Tetrachloroethylene CERCLA: Hazardous substances.: Tetrachloroethylene: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R40- Possible risks of irreversible effects. R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S23- Do not breathe gas/fumes/vapour/spray S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37- Wear suitable gloves. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: g

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

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:29 PM

Last Updated: 11/01/2010 12:00 PM

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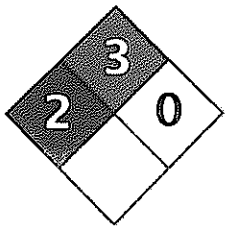

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
1,2-Dichloroethane MSDS

Section 1: Chemical Product and Company Identification

Product Name: 1,2-Dichloroethane

Catalog Codes: SLD2521, SLD3721

CAS#: 107-06-2

RTECS: KH9800000

TSCA: TSCA 8(b) inventory: 1,2-Dichloroethane

CI#: Not available.

Synonym: Ethylene dichloride

Chemical Formula: C2H4CL2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
{1,2-}Dichloroethane	107-06-2	100

Toxicological Data on Ingredients: 1,2-Dichloroethane: ORAL (LD50): Acute: 670 mg/kg [Rat]. 413 mg/kg [Mouse]. DERMAL (LD50): Acute: 2800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 1414.2 ppm 4 hour(s) [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Extremely hazardous in case of ingestion. Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant). Corrosive to skin and eyes on contact. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
Very hazardous in case of ingestion, of inhalation.
CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified 2B (Possible for human.) by IARC. Classified 2 (Reasonably anticipated.) by NTP.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.

The substance is toxic to lungs, the nervous system, liver, mucous membranes.
Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical got on the victim's exposed skin, such as the hands : Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 413°C (775.4°F)

Flash Points: CLOSED CUP: 13°C (55.4°F). OPEN CUP: 18°C (64.4°F).

Flammable Limits: LOWER: 6.2% UPPER: 15.6%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks.
Slightly flammable to flammable in presence of oxidizing materials.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.
Slightly explosive to explosive in presence of oxidizing materials.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Corrosive liquid.
Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. Never add water to this product In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 10 CEIL: 75 (ppm) from ACGIH (TLV)
TWA: 40 CEIL: 300 (mg/m3) from ACGIHConsult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 98.96 g/mole

Color: Not available.

pH (1% soln/water): Not available.

Boiling Point: 83.5°C (182.3°F)

Melting Point: -35.3°C (-31.5°F)

Critical Temperature: Not available.

Specific Gravity: 1.2351 (Water = 1)

Vapor Pressure: 61 mm of Hg (@ 20°C)

Vapor Density: 3.42 (Air = 1)

Volatility: Not available.

Odor Threshold: 26 ppm

Water/Oil Dist. Coeff.: The product is equally soluble in oil and water; log(oil/water) = 0

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether, n-octanol, acetone.

Solubility:
Easily soluble in methanol, diethyl ether, n-octanol, acetone.
Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
Acute oral toxicity (LD50): 413 mg/kg [Mouse].
Acute dermal toxicity (LD50): 2800 mg/kg [Rabbit].
Acute toxicity of the vapor (LC50): 1414.2 ppm 4 hour(s) [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified 2B (Possible for human.) by IARC. Classified 2 (Reasonably anticipated.) by NTP.
The substance is toxic to lungs, the nervous system, liver, mucous membranes.

Other Toxic Effects on Humans:
Extremely hazardous in case of ingestion.
Very hazardous in case of inhalation.
Hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Passes through the placental barrier in animal. Excreted in maternal milk in human.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Class 3: Flammable liquid.

Identification: : Ethylene dichloride : UN1184 PG: II

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: 1,2-Dichloroethane
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: 1,2-Dichloroethane
Pennsylvania RTK: 1,2-Dichloroethane

Massachusetts RTK: 1,2-Dichloroethane
TSCA 8(b) inventory: 1,2-Dichloroethane
CERCLA: Hazardous substances.: 1,2-Dichloroethane

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
CLASS E: Corrosive liquid.

DSCL (EEC):
R11- Highly flammable.
R20/22- Harmful by inhalation and if swallowed.
R38- Irritating to skin.
R41- Risk of serious damage to eyes.
R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

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

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves.
Lab coat.
Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:17 PM

Last Updated: 11/06/2008 12:00 PM

Scott Specialty Gases

AIR LIQUIDE

Material Safety Data Sheets
MSDS No: 156-59-2
Date: 03/09/2001

SUPPLIER ADDRESS: 6141 Easton Road, Bldg. 1
PO Box 310
Plumsteadville, PA 18949-0310

EMERGENCY PHONE NUMBER: (215) 766-8861

1. CHEMICAL PRODUCT

PRODUCT NAME: 1,2-DICHLOROETHYLENE (CIS) SYNONYMS: cis-Dichloroethylene

2. COMPOSITION, INFORMATION ON INGREDIENTS

				Exposure Limits (PPM)			
Ingredient Name	Formula	CAS #	Concentration	ACGIH TLV	OSHA PEL	MAC	Other STEL
1,2-DICHLOROETHYLENE (CIS)	C2H2CL2	156-59-2	99+%	200	NE	NE	NE

Note: NE = NONE ESTABLISHED S/A = SIMPLE ASPHYXIANT

3. HAZARD INDENTIFICATION

* * * EMERGENCY OVERVIEW * * *
Flammable liquid and vapor.
Can form explosive mixtures with air.
Can cause irritation to eyes, skin and respiratory tract.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation , Ingestion

ACUTE EFFECTS: Vapor or mist is irritating to the eyes, skin, mucous membrane, and upper respiratory tract. Skin and eye irritation may occur. High concentrations may have a narcotic effect.

CHRONIC EFFECTS: Kidney and liver damage.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPORSURE: None

CARCINOGENICITY (US ONLY):

NTP - No
IARC MONOGRAPHS - No
OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If

breathing is difficult, give oxygen.

EYE CONTACT: Immediately flush with copious amounts of water for at least 15 minutes.

SKIN CONTACT: Immediately flush with copious amounts of water for at least 15 minutes while removing contaminated clothing.

INGESTION: Never give anything by mouth to an unconscious person. Have conscious and alert person drink 1 to 2 glasses of water. Induce vomiting after victim drinks water.

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: None

5. FIRE FIGHTING MEASURES

FLASH POINT: 2 deg.C

AUTOIGNITION TEMPERATURE: 460 deg. C

FLAMMABLE LIMITS: Vol.%

LOWER: 5.6
UPPER: 12.80

EXTINGUISHING MEDIA: Carbon dioxide, foam, or dry chemical.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray.

HAZARDOUS COMBUSTION PRODUCTS: Toxic carbon monoxide, hydrogen chloride and phosgene.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cylinder rupture may occur under fire conditions. Emits toxic fumes under fire conditions. Vapors may travel a considerable distance to the source of ignition and flash back.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off source if possible and remove source of heat. Absorb with sand or vermiculite and place in closed containers for disposal.

SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders. Use only in a well-ventilated area.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Keep valve protection cap on cylinders when not in use. Store away from oxidizers, combustible materials, and source of ignition or heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure and flammable limits.

EYE / FACE PROTECTION: Goggles. A safety shower and eyewash station should be readily available.

SKIN PROTECTION: Wear suitable protective clothing.

RESPIRATORY PROTECTION: Use a self-contained breathing apparatus in case of emergency or non-routine use.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Pleasant aromatic odor

PHYSICAL PRESSURE: Liquid

VAPOR PRESSURE: @41 deg.C: 400 mm Hg

VAPOR DENSITY (AIR=1): 3.34

BOILING POINT (C): 59

SOLUBILITY IN WATER: Insoluble

SPECIFIC GRAVITY (H2O=1): @20 deg.C: 1.284

EVAPORATION RATE: N/Av

ODOR THRESHOLD: N/Av

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source.

MATERIALS TO AVOID: Oxidizing agents, air and moisture. Nitrogen dioxide, sodium, potassium hydroxide.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: HCl gas, phosgene gas, CO and oxides of chlorine.

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC50): None established

LETHAL DOSE 50 (LD50): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place. Waste can be burned in an approved incinerator equipped with an afterburner and scrubber.

14. TRANSPORT INFORMATION

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Flammable liquids, n.o.s.
HAZARD CLASS: 3 (flammable), Packing Group I
INDENTIFICATION NUMBER: UN1993
REPORTABLE QUANTITIES: 1000 lb.
LABELING: FLAMMABLE LIQUID

ADR / RID (EU Only): Class 3, 3(b)

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Material is not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for material is 10,000 lbs.

EU NUMBER: N/Av

NUMBER IN ANNEX 1 OF DIR 67/548: Material is listed in annex 1.

EU CLASSIFICATION: N/Av

R: 22-33-35-64

S: 15-22-23-27-36-65-71-76-104

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS: N/Ap - Not Applicable N/Av - Not Available SA - Simple Asphyxiant NE - None Established

DISCLAIMER: Information included in this document is given to the best of our knowledge, however, no warranty is made that the information is accurate or complete. We do not accept any responsibility for damages by the use of the document.

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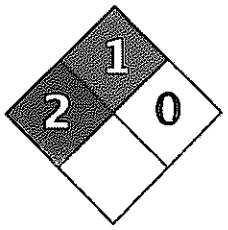

Health	2
Fire	1
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Trichloroethylene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Trichloroethylene

Catalog Codes: SLT3310, SLT2590

CAS#: 79-01-6

RTECS: KX4560000

TSCA: TSCA 8(b) inventory: Trichloroethylene

CI#: Not available.

Synonym:

Chemical Formula: C2HCl3

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Trichloroethylene	79-01-6	100

Toxicological Data on Ingredients: Trichloroethylene: ORAL (LD50): Acute: 5650 mg/kg [Rat]. 2402 mg/kg [Mouse]. DERMAL (LD50): Acute: 20001 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract.
Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact:
After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 420°C (788°F)

Flash Points: Not available.

Flammable Limits: LOWER: 8% UPPER: 10.5%

Products of Combustion: These products are carbon oxides (CO, CO2), halogenated compounds.

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the

product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

Storage:
Keep container dry. Keep in a cool place. Ground all equipment containing material. Carcinogenic, teratogenic or mutagenic materials should be stored in a separate locked safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 50 STEL: 200 (ppm) from ACGIH (TLV)
TWA: 269 STEL: 1070 (mg/m3) from ACGIH
Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 131.39 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Boiling Point: 86.7°C (188.1°F)

Melting Point: -87.1°C (-124.8°F)

Critical Temperature: Not available.

Specific Gravity: 1.4649 (Water = 1)

Vapor Pressure: 58 mm of Hg (@ 20°C)

Vapor Density: 4.53 (Air = 1)

Volatility: Not available.

Odor Threshold: 20 ppm

Water/Oil Dist. Coeff.: The product is equally soluble in oil and water; log(oil/water) = 0

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether, acetone.

Solubility:
Easily soluble in methanol, diethyl ether, acetone.
Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity:
Extremely corrosive in presence of aluminum.
Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
Acute oral toxicity (LD50): 2402 mg/kg [Mouse].
Acute dermal toxicity (LD50): 20001 mg/kg [Rabbit].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH.
The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Passes through the placental barrier in human. Detected in maternal milk in human.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Trichloroethylene : UN1710 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Trichloroethylene
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Trichloroethylene
Pennsylvania RTK: Trichloroethylene
Florida: Trichloroethylene
Minnesota: Trichloroethylene
Massachusetts RTK: Trichloroethylene
New Jersey: Trichloroethylene
TSCA 8(b) inventory: Trichloroethylene
CERCLA: Hazardous substances.: Trichloroethylene

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC).
CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R36/38- Irritating to eyes and skin.
R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: h

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

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves.
Lab coat.
Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:54 PM

Last Updated: 11/06/2008 12:00 PM

Linde Gas

Linde Gas LLC (216) 642-6600
P.O. Box 94737
Cleveland, Ohio 44101
www.us.lindegas.com

MATERIAL
SAFETY
DATA SHEET

No. 155

PRODUCT NAME Vinyl Chloride	CAS # 75-01-4
TRADE NAME AND SYNONYMS Vinyl chloride, inhibited (D.O.T.)	DOT I.D. No.: UN 1086; RQ 1.0 (0.454)
CHEMICAL NAME AND SYNONYMS Vinyl Chloride, Chloroethylene; Chloroethene	DOT Hazard Class: Division 2.1
ISSUE DATES AND REVISIONS Revised january 1995	Formula C_2H_3Cl or CH_2CHC
	Chemical Family: Halogenated Alkene

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT

TWA = 5 molar ppm with an A1 Carcinogen Rating (ACGIH 1994-1995). Al is a confirmed human carcinogen. OSHA 1993. 1910.1017, 8 Hr. TWA = 1 Molar PPM (Continued on Page 4)

SYMPTOMS OF EXPOSURE

Inhaling high concentrations causes mild symptoms of drowsiness, blurred vision, staggering gate and tingling and numbness in the extremities.

Liquid vinyl chloride may cause severe irritation or burns on skin or eye contact.

TOXICOLOGICAL PROPERTIES

Several workers who handled and used vinyl chloride developed a rare form of liver cancer.

IARC, NTP and OSHA all list vinyl chloride as a carcinogen.

Persons in ill health where such illness would be aggravated by exposure to vinyl chloride should not be allowed to work with or handle this product.

RECOMMENDED FIRST AID TREATMENT

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO VINYL CHLORIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

(Continued an Page 4)

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Vinyl chloride polymerizes on exposure to sunlight, heat or in the presence of oxygen or air. The addition of phenol or hydroquinone inhibits the polymerization. It is flammable in air.

PHYSICAL DATA

BOILING POINT 7.3°F (-13.7°C)	LIQUID DENSITY AT BOILING POINT 60.6 lb/ft³ (971 kg/m³)
VAPOR PRESSURE @ 70°F (21.1°C) = 52 psia (360 kPa)	GAS DENSITY AT 70°F, 1 atm @ 77°F (25°C) = .164 lb/ft³ (2.63 kg/m³)
SOLUBILITY IN WATER Slightly Soluble	FREEZING POINT -244.8°F (-153.8°C)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) @ 77°F (25°C) = 2.22
APPEARANCE AND ODOR Colorless gas with a pleasant, sweet odor	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) -108°F (CC)	AUTO IGNITION TEMPERATURE 882°F (472°C)	FLAMMABLE LIMITS % BY VOLUME (See Page 4) LEL 3.6 UEL 33
EXTINGUISHING MEDIA Water, dry chemical, carbon dioxide		ELECTRICAL CLASSIFICATION Class 1, Group Not Specified

SPECIAL FIRE FIGHTING PROCEDURES
Attempt to stop the flow of vinyl chloride. Use water spray to cool surrounding containers.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Vinyl chloride vapors are heavier than air and may travel a considerable distance to a source of ignition. Should fire be extinguished and flow of gas continue, increase ventilation to prevent formation of flammable mixtures in low areas or pockets.

REACTIVITY DATA

STABILITY Unstable		CONDITIONS TO AVOID None
Stable	X	

INCOMPATIBILITY (Materials to avoid) Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS None

HAZARDOUS POLYMERIZATION May Occur	X	CONDITIONS TO AVOID It is inhibited with phenol or hydroquinone to prevent polymerization.
Will Not Occur		

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact your closest supplier location or call the emergency telephone number listed herein.

WASTE DISPOSAL METHOD
Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to your supplier. For emergency disposal assistance, contact your closest supplier location or call the emergency telephone number listed herein.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.	
VENTILATION Hood with forced ventilation	LOCAL EXHAUST To prevent accumulation above the TWA	SPECIAL N/A
	MECHANICAL (Gen.) In accordance with electrical codes	OTHER N/A
PROTECTIVE GLOVES Most materials except natural rubber		
EYE PROTECTION Safety goggles or glasses		
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash "fountain," transparent face shield		

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION

DOT Shipping Name: Vinyl chloride, inhibited	I.D. No.:	UN 1086; RQ 1.0(0.454)
DOT Shipping Label: Flammable Gas	DOT Hazard Class:	Division 2.1

SPECIAL HANDLING RECOMMENDATIONS

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connectinn cylinder to lower pressure (<150 psiq) pipinq or systems. Do not heat cylinder by any means to increase tne discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Association's Pamphlets I P-1 and P-10.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits.

Do not allow the temperature where cylinders are stored to exceed 125F (52C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders beins stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional storage recommendations, consult Compressed Gas Association's Pamphlet P-1 and P-10.

SPECIAL PACKAGING RECOMMENDATIONS

Most metals except copper and its alloys may be used with vinyl chloride. Copper and its alloys could form explosive acetylides by reacting with the acetylene impurity in the product.

Teflon® is the preferred gasketing material.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Earth-ground and bond all lines and equipment associated with the vinyl chloride system. Electrical equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of federal Law (49CFR).

(Continued on Page 4)

*Various Government Agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.

HEALTH HAZARD DATA

TWA DATA: (continued)

(<5 Molar PPM averaged over any period not exceeding 15 minutes) with the prohibition of any personal direct contact with vinyl chloride liquid and it is classified as a cancer suspect agent.

RECOMMENDED FIRST AID TREATMENT: (Continued)

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO VINYL CHLORIDE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids with fingers to assure complete flushing. Continue for minium of 15 minutes. An eye specialict should be summoned promptly.

Skin Contact: Flush affected areas with copious quantities of water. Remove affected clothing as rapidly as possible. A physician should see the patient. Follow the water flush with a soap and water wash.

SPECIAL PRECAUTIONS

OTHER RECOMMENDATIONS OR PRECAUTIONS: (Continued)

Always secure cylinders in an upright position before transporting them. Never transport cylinders in trunks OT vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cyclinders secured in open flatbed or in open pick-up type vehicles.

Vinyl chloride is a toxic chemical and it is subject to the reporting requirements of SARA, Title III, Section 313.

APPENDIX D

Site Map

Legend

= Proposed Sub-Slab Depressurization System area

N

APEX

155 Tri-County Parkway, Suite 250, Cincinnati, Ohio 45246

Southside Plaza
704-744 Foote Avenue
Jamestown, NY 14701

Figure 1: Proposed Sub-Slab Vapor Sampling Locations and SSDS Location

APPENDIX E

Daily Tailgate Safety Meeting Logs

DAILY TAILGATE SAFETY MEETING FORM

Instructions:

- **Conduct a Daily Tailgate Safety Meeting with site personnel prior to commencing daily activities. Safety topics can be selected from the attached table.**
- **Address potential hazards and controls for tasks that will be conducted.**
- **Discuss air monitoring, training, PPE and other appropriate requirements.**
- **Follow-up on noted items and document the resolution of any action items.**

Date: _____

Meeting conducted by: _____

Project/Site: _____

Safety topics/information reviewed: _____

_____

_____

_____

_____

_____

Follow-up action items/comments: _____

_____

_____

_____

_____

_____

Attendance:

NAME	SIGNATURE	COMPANY/AGENCY/OTHER ORG.

DAILY TAILGATE SAFETY MEETING TOPICS GUIDE

1. ACCIDENT REPORTING
2. AIR MONITORING
3. AIR MONITORING AND ACTION LEVELS
4. ALCOHOL CONSUMPTION AND WORKSITE SAFETY
5. COLD STRESS
6. CONFINE SPACE ENTRY
7. CRANE SAFETY
8. DAILY WORK TASK HAZARDS
9. DECONTAMINATION
10. DISCIPLINARY POLICY FOR NOT FOLLOWING SAFETY RULES/SAFE WORK PRACTICES
11. DRILL RIG SAFETY
12. ELECTRICAL SAFETY
13. EMERGENCY RESPONSE
14. ERGONOMICS
15. EXCAVATION/TRENCHING HAZARDS
16. EYE WASH STATION LOCATION (S)
17. FALL PROTECTION
18. FIRE SAFETY/BONDING-GROUNDING TECHNIQUES
19. FIRST AID/CPR
20. FUGITIVE DUST CONTROL
21. GENERAL SITE SAFETY RULES
22. HAND TOOL HAZARDS
23. HAZARD COMMUNICATION/LOCATION OF MSDS/REVIEW OF HAZMAT PROPERTIES
24. HEALTH AND SAFETY PLAN
25. HEARING PROTECTION
26. HEAT STRESS
27. HEAVY MACHINERY
28. HOSPITAL DIRECTIONS
29. HOUSEKEEPING
30. MATERIAL HANDLING
31. MECHANICAL HAZARDS/GUARDING/LOTO
32. OVERHEAD HAZARDS
33. PERSONAL PROTECTIVE EQUIPMENT
34. RESPIRATORY PROTECTION AND FILTER CHANGE-OUT SCHEDULE
35. ROLES AND RESPONSIBILITIES
36. SITE SECURITY
37. SMOKING AND BREAK AREAS
38. TANK REMOVAL SAFETY
39. UNDERGROUND UTILITIES
40. USE OF “BUDDY SYSTEM”

41. VAPOR CONTROL
42. WATER HAZARDS
43. WELDING SAFETY
44. WORK STOPPAGE

APPENDIX F

Apex Incident Report Form

APEX INCIDENT REPORT

This Apex Incident Report (AIR) Form is to be completed by the Apex employee experiencing any of the incident types listed on this form. This form is to be completed for motor vehicle accidents/incidents involving personal or rented/leased vehicles, environmental incidents, injuries or illness, fires, property damage, thefts, community complaints, utility interruptions and other incidents deemed important for review by Apex management. All near miss incidents are to be reported using the separate Near Miss Report Form.

The AIR must be submitted within 24 hours. (You can hit F1 on some of the fields and a help box will appear.)

☐ MOTOR VEHICLE

Injury involved? ☐Yes ☐No

Please complete this block prior to submitting for Motor Vehicle accidents and describe the incident and corrective actions in the space provided at the end of this report. If injury is involved, please complete the Injury section of this report.

☐ Apex company vehicle ☐ Personal vehicle ☐ Rental vehicle

Rental company notified? ☐ Yes ☐ No ☐ NA Please attach copy of the rental agreement.

Vehicle Year/Make/Model: _____ VIN number _____

Was another vehicle involved? ☐ Yes ☐ No

Other driver's name: _____ License plate # _____

Other driver's insurance: _____ Policy # _____

Police report filed? ☐ Yes ☐ No Police report # _____

Police dept. name: _____ Police dept. phone: _____

Location of accident: _____

City _____ State __

Date of accident: _____ Time of accident: _____ Time you began work today:: _____

Witness name: _____ Telephone # _____

Witness name: _____ Telephone # _____

Email addresses if available _____

***Attach witness statement if possible *Attach police report if available *Attach photos if available**

☐ PROPERTY DAMAGE ☐ THEFT

Please complete this block prior to submitting for Property Damage and Theft and describe the incident and corrective actions in the space provided at the end of this report.

Property description: _____ Estimated value: _____

Police report must be filed for all thefts over $200. ☐ Yes ☐ No Police report # _____

Police dept. name: _____ Police dept. phone: _____

Location of accident: _____

City _____ State __

Date of damage/theft: _____ Time of damage/theft: _____ Time you began work today: _____

☐ **INJURY** **Please complete this block prior to submitting for Injuries and describe the incident and corrective actions in the space provided at the end of this report.**

☐ Treated at ER ☐ Non emergency ☐ Self/No treatment needed

Date of treatment or admitted: _____ Admitted to hospital? ☐ Yes ☐ No

Name of medical facility: _____ Telephone # _____
Medical facility address: _____

Injury involve a subcontractor: ☐ Yes ☐ No Sub employee name: _____
Sub company name: _____
Contact info for sub: _____

Describe injury (body part): _____
Location of incident: _____
City _____ State __
Date of accident: _____ Time of accident: _____ Time you began work today: _____

Witness name: _____ Telephone # _____
Email addresses if available _____
**Attach witness statement if possible*

**** Include (or forward to HR) all hospital and doctor paperwork. (i.e. hospital discharge papers; work release form; prescriptions)***

Please complete this block prior to submitting for other types of incidents and describe the incident and corrective actions in the space provided at the end of this report.

****Note- All near miss incidents are to be reported using the separate Near Miss Report Form.***

☐ Utility interruption ☐ Environmental ☐ Fire ☐ Other

☐ Community complaint ☐ Subcontractor
Subcontractor company name/contact info: _____
Subcontractor employee name: _____

Location of accident: _____
City _____ State __
Date of accident: _____ Time of accident: _____ Time you began work today: _____

DESCRIBE THE INCIDENT AND CONTRIBUTING FACTORS:

_____

CORRECTIVE MEASURES OR RECOMMENDED ACTIONS:

_____

***All information must be completed!**

EMPLOYEE INFORMATION

Apex employee name: _____ Apex employee ID # _____
Additional employee involved: _____
Apex office location: _____ Division #: __
Today's Date: _____

I certify that the information submitted by me is true and correct, and I understand that providing false information is grounds for disciplinary action up to and including termination of employment.

Any person who knowingly, and with intent to defraud, any insurance company, files a statement of claim containing any false information, or conceals, for the purpose of misleading, information concerning any fact material thereto, commits a fraudulent insurance act, which is a crime.

Sending this email meets the signature requirements for reporting.

Email to: incidents@apexcos.com

If you do not have access to email you may fax the incident report form to:

Manager, Corporate Health & Safety
Hal Heckman - hheckman@apexcos.com
Phone: 610-722-9050 x 216
Fax: 610-722-9010

Please note, the incident report form is the tool used to track and follow property damage claims, insurance claims, worker's compensation claims, statistical data required for report purposes, and the OSHA requirement for certain incidents.

APPENDIX B

SSDS Maintenance Checklist

Sub-Slab Depressurization System Maintenance Checklist

Southside Station Inc. 704-744 Foote Avenue, Jamestown, New York

Inspector Name: _____ Date:_____

System Component Inspection				
Is the Vent Fan Operational?		Yes		No
Are the Manometers reading a vacuum?		Yes		No
Is the Vacuum reading around 0.5 water column inches (wci) on the manometer?		Yes		No
Is all system piping in good condition with no visible cracks or evidence of damage?		Yes		No
Are all system components labeled properly to avoid accidental damage during remodeling/demolition?		Yes		No
Is contact information on labels up to date?		Yes		No
Have any air intakes been installed within 10 feet of the SSDS discharge point?		Yes		No
Describe if any:				
Concrete Floor Inspection				
Has the concrete floor of the tenant space cracked since the previous inspection?		Yes		No
Note location if any:				
Has any exposed crack sealant cracked or become unglued?		Yes		No
Explain:				
Has the sealant around the sump cavities cracked or become unglued?		Yes		No
Explain:				

Have any utilities been installed into or removed from the concrete floor since the previous inspection		Yes		No
Explain:				
Tenant Interview				
Is the system too noisy or have new noises developed?		Yes		No
Describe new noises and where located.				
Any indoor air quality issues noted? (new smells/odors)		Yes		No
Describe:				
Any comments or observations from the tenant about the system operation.				
Site Conditions				
Any changes in tenant space occupants?		Yes		No
Describe:				
Any changes in tenant space construction?		Yes		No
Describe:				
Any changes in HVAC system?		Yes		No
Describe:				

Please forward completed annual inspection form to Apex Companies, 155 Tri-County Parkway, Suite 250, Cincinnati, Ohio 45246. Fax (513) 771-3723.