



Appendix C – Health and Safety Plan



Project No.: 0003197-04

Site Specific Health and Safety Plan For Sites in North America

Site Name: Emerson Power Transmission – Ithaca, NY

Site Location:

Street Address: 620 South Aurora Street

City: Ithaca

State and Zip Code: New York, 14850

Location of Work:

Street Address: East Spencer Street

City: Ithaca

State and Zip Code: New York, 14850

Site Representative/Owner: Scott Gibson/Derek Chase

Phone Number: 607-272-1717/1-416-254-7452

Start Date of Site Work: August 1, 2011

Projected End Date of Site Work: September 9, 2011

HASP Prepared by: Scott Petersen

HASP Reviewed by: Jim Bulman

<u>Personnel</u>	<u>Responsibilities</u>
<u>Jim Bulman</u>	<u>General Supervisor/Project Manager</u>
<u>Kevin Sullivan</u>	<u>General Supervisor/Project Manager</u>
<u>Scott Petersen</u>	<u>Site Health and Safety Officer</u>
<u>Scott Petersen</u>	<u>Task # 1 Field Personnel</u>

Site Information

Site Description (at a minimum include: current site operations, major structures, site topography, access by road and air):

The EPT facility is located at 620 South Aurora Street in Ithaca, New York. The facility site comprises approximately 110 acres within the City of Ithaca and the Town of Ithaca in Tompkins County and includes the New York State Electric and Gas substation property to the west (Figure 1). The area surrounding the facility consists mostly of residential homes. The campus of Ithaca College borders the site on the east across South Aurora Street. The southern portion of the property is unused and vacant. Wooded land and residential areas border the property to the west, and residential areas are located to the north. Cayuga Lake is approximately 2 miles north of the site. None of the offsite work zones can be reasonably accessed by air. The work zones located at the EPT facility can be accessed by road from entrances located along South Aurora Street and at the northern End of Turner place. The northernmost extent of the EPT property is an open field, which can be accessed by air.

Site History (at a minimum include past site operations, and source [if known], location, and media affected by chemicals of concern, specific chemicals of concern, and known concentrations of chemicals of concern):

The original building at the EPT site was built in 1906 by Morse Industrial Corporation, which manufactured steel roller chain for the automobile industry. From approximately 1928 to 1983, Borg-Warner Corporation owned the property and manufactured automotive components and power transmission equipment. A more detailed description of the site history and construction dates of the various buildings at the site is detailed in the report entitled *Onsite Assessment of the Former Borg Warner – Morse Chain Facility* (ESC 2005). Up until the late 1970s, Borg-Warner Corporation used trichloroethene (TCE), a widely used solvent at the time, for degreasing metal parts. Solvents appear to have been flushed into the plant's sanitary sewer system which connects to the municipal sewer along Turner Place and Cayuga Street. It is believed that solvents leaked from the sewer system through cracks and joints. In addition, results of soil vapor sampling show that solvent releases have occurred from sewer lines originating at the former NCR facility located at 950 Danby Road (currently owned by South Hill Business Campus, LLC) and Therm, Inc., facility located at 100 Hudson Street Extension. The NCR sewer line extends across the south east portion of the EPT property, then north along South Aurora Street, west along Columbia Street, and connects to the sewer on Turner Place and East Spencer Street. The sewer line originating from the Therm facility connects to the South Aurora/Columbia Street sewer line, which in turn, connects to the sewer line along Turner Place and East Spencer Street.

In 1983, Emerson purchased Morse Industrial Corporation from Borg-Warner Corporation and became known as Emerson Power Transmission. EPT manufactured roller chain, bearings, and clutching for the power transmission industry until December 2010 when operations ceased. TCE was never used by EPT at the facility.

Based on previous investigations, knowledge of releases, and the Sewer Manhole Assessment Report (WSP 2008) chemicals of concern (COC) likely to be encountered along the sewer line are 1,1,1-Trichloroethane, 1,2-Dichloroethane, cis-1,2-Dichloroethylene, Methylene Chloride, Tetrachloroethene, trans-1,2-Dichloroethene, Trichloroethene, and Vinyl Chloride.

Proposed Onsite Activities (*this is your comprehensive work plan*):

Introduction

Operable Unit (OU) No. 3 is a section of sanitary sewer located in the South Hill neighborhood of Ithaca NY. As detailed in the South Hill Sanitary Sewer Network Alternatives Analysis report dated September 3, 2009, results of investigations showed that the highest concentration of TCE were detected in soil vapor along the OU No. 3 section. The remedy for OU No. 3 is to remove potentially impacted bedding plane material (and sewer pipe material) along an approximate 300-foot section of the sanitary sewer extending from the intersection of Turner Place, MH-9, and along East Spencer Street. The replacement pipe will be air-tight and bedded with highly permeable granular material. A perforated pipe will be placed in the bedding material to vent the 300-foot trench to atmosphere via a single exhaust stack equipped with a wind turbine.

Task 1:

Sanitary Sewer Bypass and Temporary Service Shut-Off

Prior to the start of the remedy work in OU No. 3 the City of Ithaca DPW will construct a bypass system for the sanitary sewer in the work area. The bypass system will pump sanitary water from a manhole near the base of Turner Place to a manhole beyond the remedy area on East Spencer Street. Also, the City DPW will establish temporary sanitary sewer connections to bypass the work zone, and will maintain this system throughout the duration of the remedy work.

As necessary, water and natural gas supply laterals from main supply lines to homes in the work area will be temporarily shut off. Residents will be notified at least 24 hours prior to any temporary service interruption and such interruptions will be restored at the completion of each work day.

NYSEG will undertake measures to protect utility poles and maintain electricity service to residences in the work area. Preliminary plans for the sewer remedy have been provided to NYSEG and a filed reconnaissance was held with NYSEG representatives. Once a firm schedule for the work is established NYSEG will undertake appropriate actions.

Task 2:

Removal and Replacement of the Sanitary Sewer

Excavation will start along Section 2 at the lowest point on East Spencer Street at MH-17, approximately 30 feet south of the end of Section 2, and proceed north along East Spencer Street to MH-18. At this point the excavation will proceed to the east along Section 1 toward Turner Place to MH-9. Each day the excavation work will be limited to the length of sewer pipe that can be removed and replaced. Asphalt will be cut, removed, and loaded into a roll-off container. Overburden soil above the sanitary sewer line will be removed and placed in a roll-off. The sanitary sewer and surrounding bedding material will be excavated and staged in a separate roll-off base on photoionization detector readings.

Task 3:

Venting System

A venting pipe consisting will be installed in the bedding material above or along the site depending on the space available for the replacement sewer line. Perforations will be at least a 1/4-inch diameter, no more than 18-inches apart with sets of three perforations every 18-inches

interval (i.e. 0 degrees, 120 degrees, 240 degrees). A second venting pipe will be utilized to connect the Section 1 venting pipe to the exhaust stack.

A 45 mil ethylene propylene diene monomer (EPDM) rubber will be installed directly on top of the bedding material and approximately 1-inch above the venting pipe. The EPDM rubber will eliminate direct water infiltration into the bedding material and vent pipe.

The perforated venting pipe will be connected to an approximately 5-inch diameter steel pipe which will serve as the exhaust stack. The stack will be approximately 25 feet high. A rubber gasket, or similar, will be installed between the outside of the HDPE pipe and exhaust stack at the top of the exhaust stack foundation. The stack will be equipped with a sample port to allow for monitoring. The sample port will be lockable to inhibit unauthorized access to the port. The installation of the exhaust stack will also ensure the venting pipe is installed at a lower elevation than the inlet to the bottom of the exhaust stack to ensure air flow can rise freely and condensation in the exhaust stack can drain. A wind turbine will be installed on top of the exhaust stack. The foundation of the steel utility pole will be installed to manufacturer specifications. Bollards will be constructed adjacent to the exhaust stack to prevent damage by vehicles parking on the gravel parking.

Clean fill free of rock or gravel larger than 2 inches in any dimension will be placed above the EPDM. Backfill material will be placed around the sewer line exiting MH-9, between Section 1 and the exhaust stack, and between the end of Section 2 and MH-18. Along Section 1 on East Spencer Street, No. 2 Run of Crusher base material will be placed followed by asphalt consisting of Type 3 asphalt binder and Type 6 asphalt. The sewer along Section 2 will be backfilled up to approximate grade with clean fill and will then be finished to match existing grade (i.e. gravel, grass, or sidewalk).

It is anticipated that four (4) water supply laterals will be encountered during the sewer replacement work. If necessary, the water line laterals will be removed and replaced. The water supply laterals will be completed with a grout collar that will encompass the new and existing water supply lateral connections. The grout collar will serve as a vapor dam that will segregate the trench from bedding material of the pipe.

Task 4:

Stormwater Management

Best management practices will be employed during the sewer excavation and replacement work with respect to stormwater management. Sediment and erosion controls will be utilized to mitigate stormwater impact. Specific methods and materials for erosion control will conform to the "New York State Standards and Specifications for Erosion and Sediment Control" (NYSDEC, 2005).

A stormwater catch basin within the work area along East Spencer Street will need to be removed during the sewer replacement work. Connecting pipes will be cut back and plugged so that stormwater does not enter the excavation. A bypass pump will be available to redirect stormwater drainage to a catch basin further south on East Spencer Street. Run-off water along the street will be diverted around the work area using sandbags.

Task 5:

Site Restoration

At the end of each work day, the work area will be restored and covered with stone. Adjacent pavement will be swept to remove dust or soil. The final asphalt pavement placed along East Spencer Street will match the original grade. All sidewalks removed will be restored to City code.

Task 6:

Management of Excavated Materials

Excavated overburden and bedding soil will be placed in separate roll-off containers. Sewer pipe and any debris that is removed will be placed in the roll-off containing bedding material. Roll-offs will be covered and staged at the EPT facility at the end of each day. Samples will be collected of overburden and bedding soil in roll-offs and analyzed by a New York State certified laboratory for characterization purposes. The characterization sampling results will be used to determine appropriate disposition of the soils.

Task 7:

Decontamination and Demobilization Equipment

All equipment and reusable tools and supplies will be cleaned by scraping off bulk residuals. Equipment other than heavy machinery also will be within a temporary decontamination pad that will be constructed at the EPT facility. Wash water will be collected in 55-gallon DOT-approved drums and staged at the EPT facility for subsequent characterization and disposal. Disposable equipment and materials will be collected and disposed of according to state and federal regulations. All construction equipment will be demobilized from the site.

Hazard Evaluations

Task 1: Sanitary Sewer Bypass and Temporary Service Shut-Off

Description: Oversight of sewer bypass and temporary shut-off of natural gas lines.

Waste Types: Vapor Liquid Solid Sludge

Characteristics: Corrosive Ignitable Radioactive

Volatile Toxic Reactive

Identification of Hazards/Hazard Assessment:

- Potential dermal contact and/or inhalation of vapors or particulate associated with contaminated soil or bedrock
- Potential dermal contact and/or inhalation of vapors from the sewer bypass
- Slip, trip and fall hazards
- Working around large equipment (tracked excavator)
- Elevated noise levels above PELs
- Working outdoors with potential overexposure to UV radiation, heat stress (see Appendix E), cold stress, and insects such as ticks
- Outdoor physical hazards such as poisonous plants, and wildlife

Primary potential hazards are volatile compounds, heat stress, explosion/flammable, organic chemicals, physical stress, and general splashes. Be aware and watchful of the locations of equipment and people; be aware of slip and trip hazards; always practice safe lifting techniques. Take frequent breaks and drink plenty of fluids.

Task 2: Removal and Replacement of the Sanitary Sewer

Description: Oversight of the removal of the sanitary sewer and natural gas laterals. Possible removal of water line laterals. Oversight of the installation of a new sewer line and gas laterals.

Waste Types: Vapor Liquid Solid Sludge

Characteristics: Corrosive Ignitable Radioactive
 Volatile Toxic Reactive

Identification of Hazards/Hazard Assessment:

- Potential dermal contact and/or inhalation of vapors or particulate associated with contaminated soil or bedrock
- Splash hazards
- Explosion hazards due to natural gas lines
- Working around heavy equipment (Caterpillar 308 SB Excavator, Komatsu WA320 Front End Loader, etc.)
- Elevated noise levels above PELs
- Working outdoors with potential overexposure to UV radiation, heat stress, cold stress, and insects such as ticks
- Working in and near active public roadways with unpredictable local traffic
- Working in the vicinity of caustic materials (grout)
- Contact with overhead hazards such as trees and power lines
- Working on private property

Task 3: Venting System

Description: Installation of the venting system and exhaust stack.

Waste Types: Vapor Liquid Solid Sludge

Characteristics: Corrosive Ignitable Radioactive
 Volatile Toxic Reactive

Identification of Hazards/Hazard Assessment:

- Potential dermal contact and/or inhalation of vapors or particulate associated with contaminated soil or bedrock
- Working around heavy equipment (Caterpillar 308 SB Excavator, Komatsu WA320 Front End Loader, etc.)
- Working around overhead equipment (for installation of the exhaust stack)
- Elevated noise levels above PELs
- Working outdoors with potential overexposure to UV radiation, heat stress, cold stress, and insects such as ticks
- Working in and near active public roadways with unpredictable local traffic
- Contact with overhead hazards such as trees and power lines

Task 4: Stormwater Managment

Description: Oversight of the redirecting of storm water around the work area.

Waste Types: Vapor Liquid Solid Sludge

Characteristics: Corrosive Ignitable Radioactive
 Volatile Toxic Reactive

Identification of Hazards/Hazard Assessment:

- Potential dermal contact and/or inhalation of vapors or particulate associated with contaminated soil or bedrock
- Splash and slip hazards
- Elevated noise levels above PELs
- Working outdoors with potential overexposure to UV radiation, heat stress, cold stress, and insects such as ticks
- Working in and near active public roadways with unpredictable local traffic
- Working in erosion zones during setup of erosion control protections

Task 5: Site Restoration

Description: Oversight of the backfilling and paving of the road. Oversight of the reseeding and landscaping of the work area.

Waste Types: Vapor Liquid Solid Sludge

Characteristics: Corrosive Ignitable Radioactive
 Volatile Toxic Reactive

Identification of Hazards/Hazard Assessment:

- Working around heavy equipment (Caterpillar 308 SB Excavator, Komatsu WA320 Front End Loader, etc.)
- Elevated noise levels above PELs
- Working outdoors with potential overexposure to UV radiation, heat stress, cold stress, and insects such as ticks
- Working in and near active public roadways with unpredictable local traffic

Task 6: Management of Excavated Materials

Description: Sampling and monitoring (with a PID) soil as it is removed from the excavation.

Waste Types: Vapor Liquid Solid Sludge

Characteristics: Corrosive Ignitable Radioactive
 Volatile Toxic Reactive

Identification of Hazards/Hazard Assessment:

- Potential dermal and/or inhalation of vapors or particulate associated with contaminated soil or bedrock
- Splash hazards
- Slips, trips, and falls
- Working around heavy equipment (Caterpillar 308 SB Excavator, Komatsu WA320 Front End Loader, etc.)
- Elevated noise levels above PELs
- Working outdoors with potential overexposure to UV radiation, heat stress, cold stress, and insects such as ticks

Task 7: Decontamination and Demobilization

Description: Oversight of the decontamination of equipment.

Waste Types: Vapor Liquid Solid Sludge

Characteristics: Corrosive Ignitable Radioactive
 Volatile Toxic Reactive

Identification of Hazards/Hazard Assessment:

- Potential dermal and/or inhalation of vapors or particulate associated with contaminated soil or bedrock
- Splash hazards

- Working outdoors with potential overexposure to UV radiation, heat stress, cold stress, and insects such as ticks

Required Personal Protective Equipment

The following levels of personal protection have been designated for the following tasks:

Task 1: Sanitary Sewer Bypass and Temporary Service Shut-Off

Respiratory: None for Level D, upgrade to Level C if action level triggered

Clothing: Shirt with sleeves and long pants

Gloves: Nitrile gloves for sampling

Boots: Steel Toe

Other: Hi-vis traffic vest, hard hat, safety glasses, hearing protection, sunscreen and insect repellent.

Task 2: Removal and Replacement of the Sanitary Sewer

Respiratory: None for Level D, upgrade to Level C if action level triggered

Clothing: Shirt with sleeves and long pants

Gloves: Nitrile gloves for sampling

Boots: Steel Toe

Other: Hi-vis traffic vest, hard hat, safety glasses, hearing protection, sunscreen and insect repellent.

Task 3: Venting System

Respiratory: None for Level D, upgrade to Level C if action level triggered

Clothing: Shirt with sleeves and long pants

Gloves: Nitrile gloves for sampling

Boots: Steel Toe

Other: Hi-vis traffic vest, hard hat, safety glasses, hearing protection, sunscreen and insect repellent.

Task 4: Stormwater Management

Respiratory: None for Level D, upgrade to Level C if action level triggered

Clothing: Shirt with sleeves and long pants

Gloves: Nitrile gloves for sampling

Boots: Steel Toe
Other: Hi-vis traffic vest, hard hat, safety glasses, hearing protection, sunscreen and insect repellent.

Task 5: Site Restoration

Respiratory: None for Level D, upgrade to Level C if action level triggered
Clothing: Shirt with sleeves and long pants
Gloves: Nitrile gloves for sampling
Boots: Steel Toe
Other: Hi-vis traffic vest, hard hat, safety glasses, hearing protection, sunscreen and insect repellent.

Task 6: Management of Excavated Materials

Respiratory: None for Level D, upgrade to Level C if action level triggered
Clothing: Shirt with sleeves and long pants
Gloves: Nitrile gloves for sampling
Boots: Steel Toe
Other: Hi-vis traffic vest, hard hat, safety glasses, hearing protection, sunscreen and insect repellent.

Task 7: Decontamination and Demobilization

Respiratory: None for Level D, upgrade to Level C if action level triggered
Clothing: Shirt with sleeves and long pants
Gloves: Nitrile gloves for sampling
Boots: Steel Toe
Other: Hi-vis traffic vest, hard hat, safety glasses, hearing protection, sunscreen and insect repellent.

NO CHANGES TO THE SPECIFIED LEVEL OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SITE HEALTH AND SAFETY OFFICER AND THE PROJECT GENERAL SUPERVISOR/PROJECT MANAGER.

Monitoring Procedures

Site Monitoring Equipment:

PID OVA Aerosol Dust Monitor

Colorimetric Tube Radiation Dosimeters

Action Levels for Protective Equipment Upgrades (assume all work begins in Level D):

C B

Dust and PID monitoring will be monitored, at a minimum, in accordance with the CAMP prepared for OU-3.

Action Level Calculation based upon: The PEL for vinyl chloride is 1 ppm as a TWA. Therefore, the action level for respiratory upgrade is 0.5 ppm (half of the PEL for vinyl chloride).

Description of action level calculation, monitoring procedures, and PPE upgrade procedures:

Vinyl chloride was detected in groundwater. All injection and sampling activities will be initiated in Level D protection. A PID with a 10.6 eV lamp will be used to monitor total volatile organic concentrations in the breathing zone and in the headspace of monitoring wells and piezometers in each test area. If PID readings of 0.5 ppm (one half of the PEL of vinyl chloride) are monitored for a sustained period of 5 minutes, work shall cease until engineering controls (e.g., ventilation) are instituted to prevent vapors from reaching the breathing zone and compound-specific analysis can be conducted. An upgrade to Level C PPE may be instituted. If vinyl chloride is detected at concentrations equal to or greater than 0.5 ppm by colorimetric analysis, site activities will cease until constituent-specific personal monitoring (i.e., an OSHA Reference Method or NIOSH reference method) is conducted to determine if an upgrade to Level B PPE is necessary. If constituent-specific monitoring indicates that Level B PPE is required, site activities will cease. The NIOSH reference guide is included in Appendix B.

*All breathing zone monitoring will be conducted continuously with the exception of colorimetric tubes.

*All equipment will be calibrated per the manufacturer's recommendations. A battery and field check of each instrument will be made before it is used.

Personal Protective Equipment and Personnel Decontamination Procedures

Detergent and water will be used as the decontamination solution unless otherwise specified.

Decontamination procedures will include the following (describe onsite decon procedures for PPE and personnel; for example [e.g., boot wash]):

- Nitrile glove removal, field wash.

Equipment Decontamination Procedures will be conducted in accordance with WSP's Standard Operating Procedures 15 through 19

Onsite Control

The prevailing wind conditions are unknown (cardinal direction). No CRZ or support zone will be established downwind of a work/exclusion zone.

All WSP employees are responsible for onsite control. During work activities, the following zones will be established:

Work/Exclusion Zone *(describe specific location in which no unauthorized person will be permitted):*

The Work/Exclusion zone will be defined as a 15-foot perimeter surrounding the excavation location during active work.

Contamination Reduction Zone *(describe specific location in which all decon procedures will be performed):*

The Contamination Reduction zone will be located at the periphery of Work/Exclusion Zone.

Support Zone *(describe specific location in which no contaminated media is present where administrative tasks will be performed):*

All other areas not included in Work/Exclusion and Contaminant Reduction Zones will be defined as the Support Zone.

Standard Operating Procedures

1. Whenever possible, use the buddy system.
2. Conduct a pre-entry briefing before beginning site activities each day and record in field book
3. Practice contamination avoidance. Never sit down or kneel, never lay equipment on the ground, avoid obvious sources of contamination such as puddles, and avoid unnecessary contact with onsite objects.
4. Do not eat, drink, or use tobacco products outside the designated support zone.
5. Whenever possible, do not use contact lenses while onsite.
6. Thoroughly wash hands and face before eating, drinking, etc.
7. Keep copies of the health and safety plan available in the support zone.
8. In the event PPE is ripped or torn, stop work and remove and replace PPE as soon as possible.
9. In the event of direct skin contact, immediately wash the affected area with soap and water.
10. Ensure that all subcontractors have a site specific HASP that is maintained onsite
11. Report all accidents, injuries, and environmental releases as required by WSP Environmental Global Directives 3 and 4.

Confined Space Entry

No WSP employee may conduct permit required confined space entries. All non-permit required confined space entries will be approved by the WSP Corporate Health and Safety Officer or His/Her designee.

Approved by: _____ (***no approval means no entry***)

 X No attempt will be made to enter any type of confined space including utility trenches

Medical Surveillance

All employees, regardless of the exposure involved, are required to participate in the medical monitoring program established by WSP. OSHA regulations state that employees involved in certain activities that may expose them to hazardous materials at or above permissible exposure limits (PELs) or above the published exposure limit for greater than 30 days per year, or all employees who wear a respirator are required to participate in the monitoring program.

The purposes of the medical monitoring program are to identify any illness or condition that might be aggravated by exposure to hazardous materials or work conditions; to certify that each employee can use negative-pressure respirators as required by OSHA and withstand heat or cold stress; to ensure that employees are able to physically perform their assigned tasks and to establish and maintain a medical record to monitor for abnormalities that may be related to work exposure that could increase injury risk for the employee. WSP's medical monitoring program includes the following:

- a baseline physical examination
- a medical determination of fitness for duty, including work restrictions after any injury or illness that may affect employee safety
- a review of potential exposures to determine the need for specific biological and medical monitoring

List any site specific medical monitoring/needs here, based on the hazard analysis, if applicable: (e.g., severe allergies of site personnel to flora/fauna, need for an epinephrine pen, additional testing during annual physicals [e.g., PCBs, pesticides]):

Communication Procedures

All onsite personnel will practice constant communication with other WSP personnel, subcontractors, and facility personnel during active work. Generally, verbal and/or cellular telephone communication will be used while onsite.

Special Communication Procedures (e.g., two-way radios for large sites with multiple workers):

None

If the site is an active facility, WSP will follow established onsite evacuation procedures.

Facility evacuation procedures have been reviewed (if applicable)

Verification initials (by a person assigned to the project): _____

(no review means no work can be conducted)

Emergency Hand Signals

The following standard hand signals will be used in case injury or circumstance does not allow for verbal or other communication:

Hand gripping throatOut of air, can't breathe
Grip partner's wrist or both hands around waist..... Leave area immediately
Hands on top of head..... Need assistance
Thumbs up Ok, I'm all right, I understand
Thumbs down No, negative

Emergency Procedures

The following standard emergency procedures will be used by onsite personnel. The site health and safety officer shall be notified of any onsite emergency and shall be responsible for ensuring that the appropriate procedures are followed. The reporting of accidents and injuries is included in Appendix D.

Air Release or Fire/Explosion

On notification of an air release or a fire/explosion, all personnel will travel at a right angle to the upwind direction. The site health and safety officer will then account for all personnel and notify the proper emergency agencies.

If the site health and safety officer is not available, the task manager or appropriate field personnel will assume these responsibilities.

Personal Injury in the Work/Exclusion Zone With Buddy System

If onsite personnel require emergency medical treatment, and the buddy system is used, the following steps will be taken:

1. Evaluate the nature of the injury and obtain the onsite copy of this HASP
2. Contact local emergency service
3. Decontaminate to the extent possible before administration of first aid
4. Stay with the injured person.

Personal Injury in the Work/Exclusion Zone While Working Alone

If onsite personnel are working alone, the following steps will be taken:

Before beginning work each day:

1. A cellular telephone will be kept with the employee at all times (before starting work, ensure that there is emergency service at a minimum)
2. Inform an onsite contact (if they will be present throughout all active work activities) or senior member of WSP of your plans for the day and your expected active work schedule.

If an injury has occurred:

1. Evaluate the injury and decide whether emergency services are required
2. Contact emergency services if necessary
3. If emergency services are not necessary, attempt first aid alone or contact an onsite contact or WSP contact for assistance.

Basic First Aid Procedures

Skin Contact: Remove any contaminated clothing. Wash immediately with water for at least 15 minutes.

Inhalation: Remove from contaminated atmosphere. Contact emergency services.

Ingestion: Never induce vomiting on an unconscious person. Never induce vomiting when acids, alkalis, or petroleum products are suspected. Contact the poison control center.

Personal Protective Equipment Failure

If any worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his or her buddy shall immediately leave the exclusion zone. Reentry shall not be permitted until the equipment has been replaced or repaired.

Emergency Information and Telephone Numbers

To obtain medical assistance as soon as possible in case of an emergency, the following telephone numbers, addresses, and directions for the nearest medical treatment facilities will be posted in each on-site vehicle:

Nearest Telephone: Inside facility or Cell Phone

Ambulance (name): Bangs Ambulance

Phone: 911

Hospital (name): Cayuga Medical Center

Phone: 607-274-4411

Police (local or state): Ithaca Police Department

Phone: 911

Fire Department (name): Ithaca Fire Department

Phone: 911

State Poison Control Center: Poison Control Center Central NY

Phone: 1-800-252-5655

DIRECTIONS TO HOSPITAL:

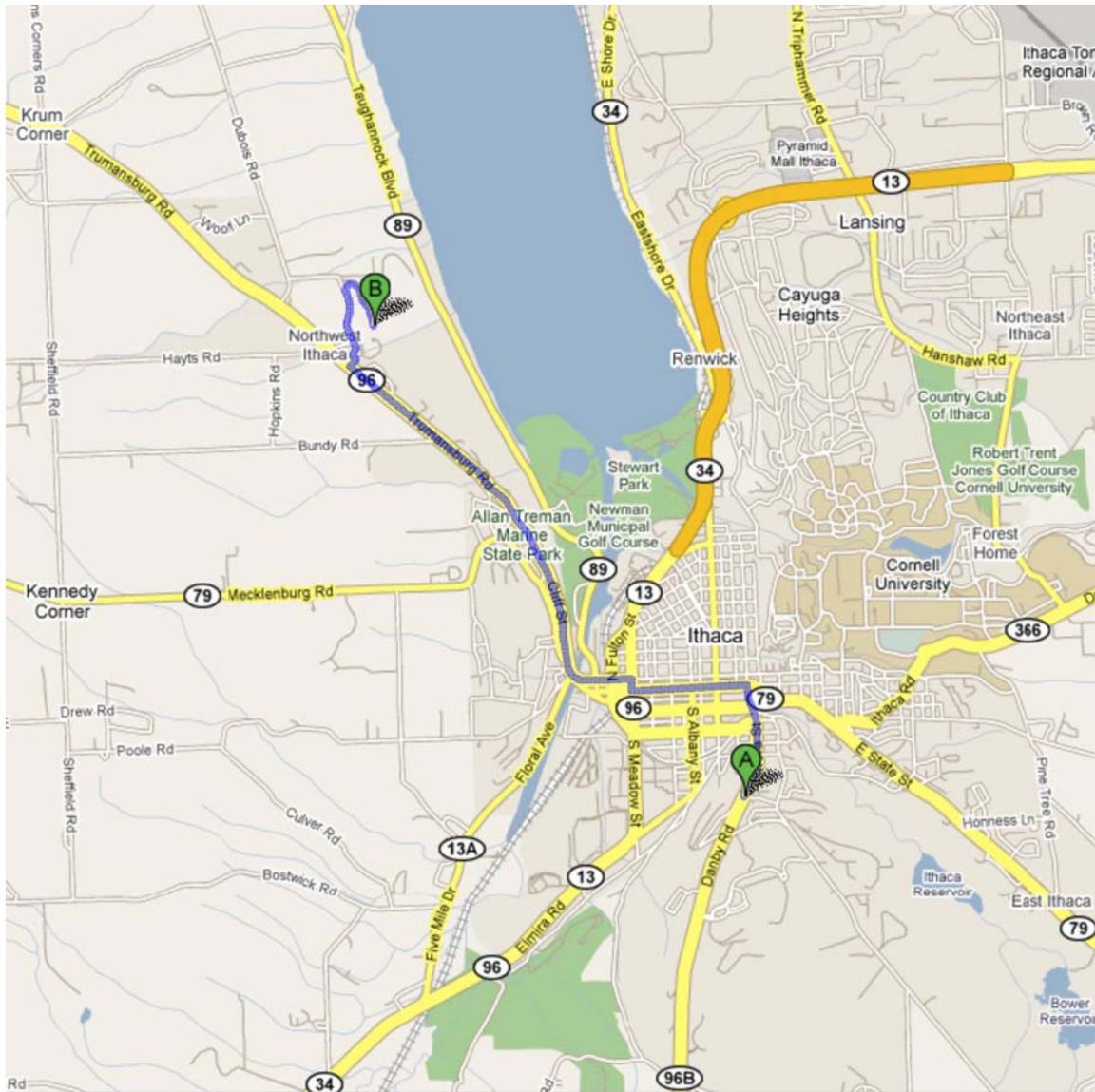
1. Start at 620 S AURORA ST, ITHACA going toward HILLVIEW PL - go 0.4 mi
2. Turn Left on E SENECA ST(RT-79 W) - go 0.5 mi
3. Turn Right on N CORN ST
4. Turn Left on W BUFFALO ST - go 0.5 mi
5. Continue on CLIFF ST(RT-96) - go 1.0 mi
6. Continue to follow RT-96 - go 1.2 mi
7. Turn Right on HARRIS B DATES DR
8. Turn Left on HARRIS B DATES DR
9. Arrive at CAYUGA MEDICAL CENTER, 101 DATES DR, ITHACA, NY 14850 on the Right

Total Estimated Time: 12 minutes Total Estimated Distance: 3.81 miles

A copy of the route is included in Appendix A.

In an emergency situation, all WSP personnel will take direction from the site health and safety coordinator. The Contractor's site health and safety coordinator is responsible for notifying the appropriate emergency organization. The names and phone numbers of all personnel and agencies that could be involved in an emergency response will be determined by the Contractor's site health and safety coordinator and will be readily available at the site.

Appendix A – Route to nearest Hospital/Emergency Room



Distance: **3.81 miles** Time: **12 mins**

1. Start at 620 **S AURORA ST**, ITHACA going toward **HILLVIEW PL** - go **0.4 mi**
2. Turn Left on **E SENECA ST**(RT-79 W) - go **0.5 mi**
3. Turn Right on **N CORN ST**
4. Turn Left on **W BUFFALO ST** - go **0.5 mi**
5. Continue on **CLIFF ST**(RT-96) - go **1.0 mi**
6. Continue to follow **RT-96** - go **1.2 mi**
7. Turn Right on **HARRIS B DATES DR**
8. Turn Left on **HARRIS B DATES DR**
9. Arrive at **CAYUGA MEDICAL CENTER, 101 DATES DR, ITHACA, NY 14850** on the Right

Appendix B – NIOSH Pocket Guide to Hazardous Chemicals Pages
(include a page for each chemical of concern reviewed during the hazard assessment)

Methyl chloroform		CAS 71-55-6	
CH₃CCl₃		RTECS KJ2975000	
Synonyms & Trade Names Chloroethene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)		DOT ID & Guide 2831 160	
Exposure Limits	NIOSH REL: C 350 ppm (1900 mg/m ³) [15-minute] See Appendix C (Chloroethanes)		
	OSHA PEL †: TWA 350 ppm (1900 mg/m ³)		
IDLH 700 ppm See: 71556		Conversion 1 ppm = 5.46 mg/m ³	
Physical Description Colorless liquid with a mild, chloroform-like odor.			
MW: 133.4	BP: 165°F	FRZ: -23°F	Sol: 0.4%
VP: 100 mmHg	IP: 11.00 eV		Sp.Gr: 1.34
Fl.P: ?	UEL: 12.5%	LEL: 7.5%	
Combustible Liquid, but burns with difficulty.			
Incompatibilities & Reactivities Strong caustics; strong oxidizers; chemically-active metals such as zinc, aluminum, magnesium powders, sodium & potassium; water [Note: Reacts slowly with water to form hydrochloric acid.]			
Measurement Methods NIOSH 1003 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH/OSHA Up to 700 ppm: (APF = 10) Any supplied-air respirator* (APF = 50) Any self-contained breathing apparatus with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage			
Target Organs Eyes, skin, central nervous system, cardiovascular system, liver			

Ethylene dichloride		CAS 107-06-2	
C₁H₂Cl₂		RTECS K10525000	
Synonyms & Trade Names 1,2-Dichloroethane; Ethylene chloride; Glycol dichloride		DOT ID & Guide 1184 131	
Exposure Limits	NIOSH REL: Ca TWA 1 ppm (4 mg/m ³) ST 2 ppm (8 mg/m ³) See Appendix A See Appendix C (Chloroethanes)		
	OSHA PEL †: TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]		
IDLH Ca [50 ppm] See: 107062		Conversion 1 ppm = 4.05 mg/m ³	
Physical Description Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.]			
MW: 99.0	BP: 182°F	FRZ: -32°F	Sol: 0.9%
VP: 64 mmHg	IP: 11.05 eV		Sp.Gr: 1.24
Fl.P: 56°F	UEL: 16%	LEL: 6.2%	
Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.			
Incompatibilities & Reactivities Strong oxidizers & caustics; chemically-active metals such as magnesium or aluminum powder, sodium & potassium; liquid ammonia [Note: Decomposes to vinyl chloride & HCl above 1112°F.]			
Measurement Methods NIOSH 1003 ; OSHA 3 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, ingestion, skin absorption, skin and/or eye contact			
Symptoms Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]			
Target Organs Eyes, skin, kidneys, liver, central nervous system, cardiovascular system Cancer Site [in animals: forestomach, mammary gland & circulatory system cancer]			

Tetrachloroethylene		CAS 127-18-4	
Cl₂C=CCl₂		RTECS KX3850000	
Synonyms & Trade Names Perchloroethylene, Perchloroethylene, Perk, Tetrachloroethylene		DOT ID & Guide 1897 160	
Exposure Limits	NIOSH REL: Ca Minimize workplace exposure concentrations. See Appendix A		
	OSHA PEL †: †: TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm		
IDLH Ca [150 ppm] See: 127184		Conversion 1 ppm = 6.78 mg/m ³	
Physical Description Colorless liquid with a mild, chloroform-like odor.			
MW: 165.8	BP: 250°F	FRZ: -2°F	Sol: 0.02%
VP: 14 mmHg	IP: 9.32 eV		Sp.Gr: 1.62
Fl.P: NA	UEL: NA	LEL: NA	
Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.			
Incompatibilities & Reactivities Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash			
Measurement Methods NIOSH 1003 ; OSHA 1001 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]			
Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system Cancer Site [in animals: liver tumors]			

Trichloroethylene		CAS 79-01-6	
CICH=CCl₂		RTECS KX4550000	
Synonyms & Trade Names Ethylene trichloride, TCE, Trichloroethene, Trilene		DOT ID & Guide 1710 160	
Exposure Limits	NIOSH REL: Ca See Appendix A See Appendix C		
	OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)		
IDLH Ca [1000 ppm] See: 79016		Conversion 1 ppm = 5.37 mg/m ³	
Physical Description Colorless liquid (unless dyed blue) with a chloroform-like odor.			
MW: 131.4	BP: 189°F	FRZ: -99°F	Sol(77°F): 0.1%
VP: 58 mmHg	IP: 9.45 eV		Sp.Gr: 1.46
Fl.P: ?	UEL(77°F): 10.5%	LEL(77°F): 8%	
Combustible Liquid, but burns with difficulty.			
Incompatibilities & Reactivities Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)			
Measurement Methods NIOSH 1022 , 3800 ; OSHA 1001 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]			
Target Organs Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system Cancer Site [in animals: liver & kidney cancer]			

Nickel metal and other compounds (as Ni)		CAS 7440-02-0 (Metal)	
Ni (Metal)		RTECS QR5950000 (Metal)	
Synonyms & Trade Names Nickel metal: Elemental nickel, Nickel catalyst Synonyms of other nickel compounds vary depending upon the specific compound.		DOT ID & Guide	
Exposure Limits	NIOSH REL*: Ca TWA 0.015 mg/m ³ See Appendix A [*Note: The REL does not apply to Nickel carbonyl.]		
	OSHA PEL*†: TWA 1 mg/m ³ [*Note: The PEL does not apply to Nickel carbonyl.]		
IDLH Ca [10 mg/m ³ (as Ni)] See: 7440020		Conversion	
Physical Description Metal: Lustrous, silvery, odorless solid.			
MW: 58.7	BP: 5139°F	MLT: 2831°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.90 (Metal)
Fl.P: NA	UEL: NA	LEL: NA	
Metal: Combustible Solid; nickel sponge catalyst may ignite SPONTANEOUSLY in air.			
Incompatibilities & Reactivities Strong acids, sulfur, selenium, wood & other combustibles, nickel nitrate			
Measurement Methods NIOSH 7300 , 7301 , 7303 , 9102 ; OSHA ID121 , ID125G See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: No recommendation Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily		First Aid (See procedures) Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, ingestion, skin and/or eye contact			
Symptoms Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]			
Target Organs Nasal cavities, lungs, skin Cancer Site [lung and nasal cancer]			

Methylene chloride		CAS 75-09-2	
CH₂Cl₂		RTECS PA8050000	
Synonyms & Trade Names Dichloromethane, Methylene dichloride		DOT ID & Guide 1593 160	
Exposure Limits	NIOSH REL: Ca See Appendix A		
	OSHA PEL: [1910.1052] TWA 25 ppm ST 125 ppm		
IDLH Ca [2300 ppm] See: 75092	Conversion 1 ppm = 3.47 mg/m ³		
Physical Description Colorless liquid with a chloroform-like odor. [Note: A gas above 104°F.]			
MW: 84.9	BP: 104°F	FRZ: -139°F	Sol: 2%
VP: 350 mmHg	IP: 11.32 eV		Sp.Gr: 1.33
Fl.P: ?	UEL: 23%	LEL: 13%	
Combustible Liquid			
Incompatibilities & Reactivities Strong oxidizers; caustics; chemically-active metals such as aluminum, magnesium powders, potassium & sodium; concentrated nitric acid			
Measurement Methods NIOSH 1005 , 3800 ; OSHA 59 , 80 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations (See Appendix E) NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numbness, tingle limbs; nausea; [potential occupational carcinogen]			
Target Organs Eyes, skin, cardiovascular system, central nervous system Cancer Site [in animals: lung, liver, salivary & mammary gland tumors]			

Lead		CAS 7439-92-1	
Pb		RTECS OF7525000	
Synonyms & Trade Names Lead metal, Plumbum		DOT ID & Guide	
Exposure Limits	NIOSH REL*: TWA (8-hour) 0.050 mg/m ³ See Appendix C [*Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.]		
	OSHA PEL*: [1910.1025] TWA 0.050 mg/m ³ See Appendix C [*Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.]		
IDLH 100 mg/m ³ (as Pb) See: 7439921	Conversion		
Physical Description A heavy, ductile, soft, gray solid.			
MW: 207.2	BP: 3164°F	MLT: 621°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 11.34
Fl.P: NA	UEL: NA	LEL: NA	
Noncombustible Solid in bulk form.			
Incompatibilities & Reactivities Strong oxidizers, hydrogen peroxide, acids			
Measurement Methods NIOSH 7082 , 7105 , 7300 , 7301 , 7303 , 7700 , 7701 , 7702 , 9100 , 9102 , 9105 ; OSHA ID121 , ID125G , ID206 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contaminated Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations (See Appendix E) NIOSH/OSHA Up to 0.5 mg/m³: (APF = 10) Any air-purifying respirator with an N100, R100, or P100 filter (including N100, R100, and P100 filtering facepieces) except quarter-mask respirators. Click here for information on selection of N, R, or P filters. (APF = 10) Any supplied-air respirator Up to 1.25 mg/m³: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode (APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter Up to 2.5 mg/m³: (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters. (APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode (APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter (APF = 50) Any self-contained breathing apparatus with a full facepiece (APF = 50) Any supplied-air respirator with a full facepiece Up to 50 mg/m³: (APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode Up to 100 mg/m³: (APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on			

selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
[Important additional information about respirator selection](#)

Exposure Routes

inhalation, ingestion, skin and/or eye contact

Symptoms

Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension

Target Organs

Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue

Copper (dusts and mists, as Cu)		CAS 7440-50-8	
Cu		RTECS GL5325000	
Synonyms & Trade Names Copper metal dusts, Copper metal fumes		DOT ID & Guide	
Exposure Limits	NIOSH REL*: TWA 1 mg/m ³ [*Note: The REL also applies to other copper compounds (as Cu) except Copper fume.]		
	OSHA PEL*: TWA 1 mg/m ³ [*Note: The PEL also applies to other copper compounds (as Cu) except copper fume.]		
IDLH 100 mg/m ³ (as Cu) See: 7440508		Conversion	
Physical Description Reddish, lustrous, malleable, odorless solid.			
MW: 63.5	BP: 4703°F	MLT: 1981°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.94
Fl.P: NA	UEL: NA	LEL: NA	
Noncombustible Solid in bulk form, but powdered form may ignite.			
Incompatibilities & Reactivities Oxidizers, alkalis, sodium azide, acetylene			
Measurement Methods NIOSH 7029 , 7300 , 7301 , 7303 , 9102 ; OSHA ID121 , ID125G See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH/OSHA Up to 5 mg/m³: (APF = 5) Any quarter-mask respirator. Click here for information on selection of N, R, or P filters.* Up to 10 mg/m³: (APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100. Click here for information on selection of N, R, or P filters.* (APF = 10) Any supplied-air respirator* Up to 25 mg/m³: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode* (APF = 25) Any powered air-purifying respirator with a high-efficiency particulate filter.* Up to 50 mg/m³: (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters. (APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter* (APF = 50) Any self-contained breathing apparatus with a full facepiece (APF = 50) Any supplied-air respirator with a full facepiece Up to 100 mg/m³: (APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on			

selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
[Important additional information about respirator selection](#)

Exposure Routes

inhalation, ingestion, skin and/or eye contact

Symptoms

Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing

Target Organs

Eyes, skin, respiratory system, liver, kidneys (increase(d) risk with Wilson's disease)

Cadmium dust (as Cd)		CAS 7440-43-9 (metal)	
Cd (metal)		RTECS EU9800000 (metal)	
Synonyms & Trade Names Cadmium metal: Cadmium Other synonyms vary depending upon the specific cadmium compound.		DOT ID & Guide 2570 154 (cadmium compound)	
Exposure Limits	NIOSH REL*: Ca See Appendix A [*Note: The REL applies to all Cadmium compounds (as Cd).]		
	OSHA PEL*: [1910.1027] TWA 0.005 mg/m ³ [*Note: The PEL applies to all Cadmium compounds (as Cd).]		
IDLH Ca [9 mg/m ³ (as Cd)] See: IDLH INDEX		Conversion	
Physical Description Metal: Silver-white, blue-tinged lustrous, odorless solid.			
MW: 112.4	BP: 1409°F	MLT: 610°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.65 (metal)
Fl.P: NA	UEL: NA	LEL: NA	
Metal: Noncombustible Solid in bulk form, but will burn in powder form.			
Incompatibilities & Reactivities Strong oxidizers; elemental sulfur, selenium & tellurium			
Measurement Methods NIOSH 7048 , 7300 , 7301 , 7303 , 9102 ; OSHA ID121 , ID125G , ID189 , ID206 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: No recommendation Eyes: No recommendation Wash skin: Daily Remove: No recommendation Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations (See Appendix E) NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, ingestion			
Symptoms Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]			
Target Organs respiratory system, kidneys, prostate, blood Cancer Site [prostatic & lung cancer]			

Arsenic (inorganic compounds, as As)		CAS 7440-38-2 (metal)	
As (metal)		RTECS CG0525000 (metal)	
Synonyms & Trade Names Arsenic metal: Arsenia Other synonyms vary depending upon the specific As compound. [Note: OSHA considers "Inorganic Arsenic" to mean copper acetoarsenite & all inorganic compounds containing arsenic except ARSINE.]		DOT ID & Guide 1558 152 (metal) 1562 152 (dust)	
Exposure Limits	NIOSH REL: Ca C 0.002 mg/m ³ [15-minute] See Appendix A		
	OSHA PEL: [1910.1018] TWA 0.010 mg/m ³		
IDLH Ca [5 mg/m ³ (as As)] See: 7440382	Conversion		
Physical Description Metal: Silver-gray or tin-white, brittle, odorless solid.			
MW: 74.9	BP: Sublimes	MLT: 1135°F (Sublimes)	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 5.73 (metal)
Fl.P: NA	UEL: NA	LEL: NA	
Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of dust when exposed to flame.			
Incompatibilities & Reactivities Strong oxidizers, bromine azide [Note: Hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.]			
Measurement Methods NIOSH 7300 , 7301 , 7303 , 7900 , 9102 ; OSHA ID105 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations (See Appendix E) NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted acid gas canister having an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, skin absorption, skin and/or eye contact ingestion			
Symptoms Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, [potential occupational carcinogen]			
Target Organs Liver, kidneys, skin, lungs, lymphatic system Cancer Site [lung & lymphatic cancer]			

1,2-Dichloroethylene		CAS 540-59-0	
CICH=CHCI		RTECS KV9360000	
Synonyms & Trade Names Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene		DOT ID & Guide 1150 130P	
Exposure Limits	NIOSH REL: TWA 200 ppm (790 mg/m ³)		
	OSHA PEL: TWA 200 ppm (790 mg/m ³)		
IDLH 1000 ppm See: 540590		Conversion 1 ppm = 3.97 mg/m ³	
Physical Description Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor.			
MW: 97.0	BP: 118-140°F	FRZ: -57 to -115°F	Sol: 0.4%
VP: 180-265 mmHg	IP: 9.65 eV		Sp.Gr(77°F): 1.27
Fl.P: 36-39°F	UEL: 12.8%	LEL: 5.6%	
Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.			
Incompatibilities & Reactivities Strong oxidizers, strong alkalis, potassium hydroxide, copper [Note: Usually contains inhibitors to prevent polymerization.]			
Measurement Methods NIOSH 1003 ; OSHA 7 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately	
Respirator Recommendations NIOSH/OSHA Up to 1000 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode ^E (APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) ^E (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s) (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister (APF = 50) Any self-contained breathing apparatus with a full facepiece (APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, ingestion, skin and/or eye contact			
Symptoms Irritation eyes, respiratory system; central nervous system depression			
Target Organs Eyes, respiratory system, central nervous system			

Vinyl chloride		CAS 75-01-4	
CH₂=CHCl		RTECS KU9625000	
Synonyms & Trade Names Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)		DOT ID & Guide 1086 116P (inhibited)	
Exposure Limits	NIOSH REL: Ca See Appendix A		
	OSHA PEL: [1910.1017] TWA 1 ppm C 5 ppm [15-minute]		
IDLH Ca [N.D.] See: IDLH INDEX		Conversion 1 ppm = 2.56 mg/m ³	
Physical Description Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]			
MW: 62.5	BP: 7°F	FRZ: -256°F	Sol(77°F): 0.1%
VP: 3.3 atm	IP: 9.99 eV	RGasD: 2.21	
Fl.P: NA (Gas)	UEL: 33.0%	LEL: 3.6%	
Flammable Gas			
Incompatibilities & Reactivities Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]			
Measurement Methods NIOSH 1007 ; OSHA 4 , 75 See: NMAM or OSHA Methods			
Personal Protection & Sanitation (See protection codes) Skin: Frostbite Eyes: Frostbite Wash skin: No recommendation Remove: When wet (flammable) Change: No recommendation Provide: Frostbite wash		First Aid (See procedures) Eye: Frostbite Skin: Frostbite Breathing: Respiratory support	
Respirator Recommendations (See Appendix E) NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus Important additional information about respirator selection			
Exposure Routes inhalation, skin, and/or eye contact (liquid)			
Symptoms Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]			
Target Organs Liver, central nervous system, blood, respiratory system, lymphatic system Cancer Site [liver cancer]			

Appendix C – WSP Personnel Applicable OSHA Certificates
(at a minimum include the latest valid HAZWOPER refresher, First Aid/CPR, and Respirator Fit
Test certificates)

Certificate of Completion

awarded to

Mr. Scott B. Petersen

8-Hour Refresher Training in Hazard Communication, Hazardous Waste Operations and Emergency Response (HAZWOPER), and Permit-Required Operations

in accordance with OSHA Standards

29 CFR 1910.120, .146, .1200 and 29 CFR 1926.20, .21, .25, .50, .65, .104, .200, .202, .203

Conducted on May 9, 2011, in Cazenovia, New York

Accreditation Expires: May 9, 2012

presented by



Keith E. Green

Keith E. Green, CIH CSP
Instructor

Respirator Qualitative Fit Test Worksheet

Fit Test Expiration Date:	8-May-12
Test Result: (Circle one)	<input checked="" type="radio"/> Pass <input type="radio"/> (a) Fail
Notes:	Examiner Init <i>Kate E. Green</i> Examiner Init.:

Employee: Scott Petersen

Employee Number: 708

Employee WSP Office: Cazenovia

Fit-Test Date: 9-May-11

WSP E & E Office: Cazenovia
(Where testing was conducted)

Fit Testing Agent: Irritant Smoke (Stanic Chloride)

Agent Recognition (circle one): Yes No

Respirator Information:

Type (Circle one): Full face Half face

Spectacle Kit? (Circle one): Yes No

Manufacturer: MSA Model: Advantage 1000

Size (Circle one): Small Medium Large X-Large

(b) Comfort of fit (Circle one): Comfortable Not Comfortable

Employee Signature: *Scott Petersen* Examiner's Signature: *Kate E. Green*

a/if test fails, record possible cause of failure in notes column, complete form for records, and re-test
 b/if fit is not comfortable, complete form for records as failed test, re-test with different size/model respirator

Certificate of Completion

awarded to

Mr. Kevin Sullivan

8-Hour Refresher Training in Hazard Communication, Hazardous Waste Operations and Emergency Response (HAZWOPER), and Permit-Required Operations

in accordance with OSHA Standards

29 CFR 1910.120, .146, .1200 and 29 CFR 1926.20, .21, .25, .50, .65, .104, .200, .202, .203

Conducted on May 9, 2011, in Cazenovia, New York

Accreditation Expires: May 9, 2012

presented by



Keith E. Green

Keith E. Green, CIH CSP
Instructor

Appendix D-Reporting of Incidents and Accidents

Immediate Reporting of Accidents and Incidents

The following accidents and incidents need to be reported to as soon as possible and in any case within 24 hrs. A telephone contact plus an email, providing brief of the event must be submitted to the WSPE Global MD and WSPE Global HSE Director. Note that this notification requirement is in addition to any local crisis arrangements and national reporting requirements.

Fatality	A fatality is defined as the death of any person (all employees, visitors, members of the public or contractors), as a result of a work related incident or acute exposure event, occurring within one year of the accident or exposure. This includes death from an occupational illness within one year of the illness being diagnosed.
Serious Injury	A serious injury in any work related injury or acute exposure as detailed in the accompanying list
Serious Environmental incident	A serious environmental incident includes any incident, which: <ul style="list-style-type: none">• Requires immediate action by the emergency services or any other external agency to avoid or mitigate the effects of the incident• Produces obvious detrimental environmental effects off-site (e.g. fish kill, visible pollution of water course etc)• Any environmental incident that results in regional or national media coverage
Major Incident	As detailed in the accompanying list
Regulatory Enforcement Action	Regulatory enforcement action includes formal notice of prosecution, the prohibition of any operations on ground of HSE (for any period), or a formal notice (an enforcement notice) requiring improvements to plant, equipment, procedures, training etc)
Occupational Ill Health	A case of occupational ill health is any illness which requires notification under relevant national regulations

Serious Injury

- Any work related injury or acute exposure which results in the hospitalization of any employees, visitors, members of the public or contractors for greater than 24 hours
- Any fracture, other than to the fingers, thumbs or toes
- Any amputation, involving part or all of any bone but not flesh removal from the finger tip
- Dislocation of the shoulder, hip, knee or spine
- Loss of sight (whether temporary or permanent)
- A chemical or hot metal burn to the eye or any penetrating injury to the eye
- Any injury resulting from an electric shock or electrical burn (including any electrical burn caused by arcing or arcing products) leading to unconsciousness or requiring resuscitation or admittance to hospital for more than 24 hours

- Any other injury:
 - Leading to hypothermia, heat-induced illness or to unconsciousness
 - Requiring resuscitations, or
 - Requiring admittance to hospital for more than 24 hours
- Loss of consciousness caused by asphyxia or by exposure to a harmful substance or biological agent
- Acute illness, which requires medical treatment, or loss of consciousness resulting from the absorption or any substance by inhalation, ingestion or through the skin
- Acute illness which requires medical treatment where there is reason to believe that this resulted from exposure to a biological agent or its toxins or infected material

Major incidents

- Explosion or fire
- Lifting equipment failure
- Failure of pressure
- Contact with overhead electrical lines

Employee	Employees include all personnel, whether temporary or permanent, who are directly employed by WSP, including trainees, agency staff (under the direct control of WSP staff). Includes those staff within business partners/ joint ventures
Contractors / Subcontractors	Contractors or subcontractors including any persons providing services to WSP
Visitors	Visitors include any persons on a WSP site/facility who are neither employees nor contractors

Appendix F – Heat Stress

Heat Stress and Heat Stress Monitoring

Heat is one of the most common (and potentially serious) illnesses at hazardous waste sites where PPE is worn; therefore, regular monitoring and other preventive precautions are vital. Shelter from the sun will be provided during rest periods. Below is a list of the signs and symptoms of heat stress. Initial work schedules will be approximately 90 minutes of work followed by 15 minutes of rest. Work intervals will be adjusted to shorter periods based on the assessment of the Site Health and Safety Coordinator. Monitoring for heat stress will be conducted by visual observation by the individual team members.

Signs and Symptoms of Heat Stress

- **Heat rash** may result from continuous exposure to heat or humid air.
- **Heat cramps** are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:
 - muscle spasms
 - pain in the hands, feet, and abdomen
- **Heat exhaustion** occurs from increased stress on various body organs, including inadequate blood circulation caused by cardiovascular insufficiency or dehydration. Signs and symptoms include:
 - pale, cool, moist skin
 - heavy sweating
 - dizziness
 - nausea
 - fainting
- **Heat stroke** is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms include:
 - red, hot, usually dry skin
 - lack of or reduced perspiration
 - nausea
 - dizziness and confusion
 - strong, rapid pulse
 - coma

First-aid remedies for heat stress and heat stroke include removing the worker to a cool place, providing cool water or a commercial sport drink, loosening tight clothing, and calling for an ambulance if victim vomits or starts to lose consciousness.