

# APPENDIX F

## HEALTH AND SAFETY PLAN (HASP)

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SAUER DUMP SITE  
DUNDALK, BALTIMORE COUNTY, MARYLAND

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Response Action Plan

October 13, 2006



# HEALTH AND SAFETY PLAN

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# **1 INTRODUCTION**

## **1.1 Purpose**

Malcolm Pirnie Inc. (Malcolm Pirnie) developed this Health and Safety Plan (HASP) to reflect current health and safety procedures with regard to performing Removal Action Plan (RAP) field activities at the Sauer Dump Site, 4225 Lynhurst Road located in Dundalk, Baltimore County, Maryland (Site).. This HASP identifies procedures designed to reduce the risk of exposure to chemical substances that may be present in the soil, water, air and other physical, environmental, and biological hazards associated with Malcolm Pirnie's RAP field activities at the Site. This HASP is being submitted as part of the Response Action Plan to the United States Environmental Protection Agency (USEPA).

This HASP provides the minimum health and safety requirements for contractors and subcontractors conducting RAP field activities. The procedures set forth herein were developed in accordance with the provisions of 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response). Contractors and subcontractors conducting field activities shall develop their own HASP. Contractors and/or subcontractors performing RAP activities may choose to use this HASP as a guide in developing their own plan, or may choose to adopt and comply in full with this HASP when performing the RAP field activities identified in Section 1.5 at the Site. At a minimum, all provisions of this HASP will be followed. If the contractor and/or subcontractor adopts this HASP, all personnel assigned to field activities for the project must read and sign the HASP Acknowledgment Form (Exhibit A) before commencing Site activities. Malcolm Pirnie reserves the right to review and revise this HASP at any time.

Malcolm Pirnie notes employees, subcontractors, and other ancillary personnel conducting activities at the Site for or associated with the owner are bound by the procedures presented in this HASP. Malcolm Pirnie does not accept any liability or responsibility for the actions of the owner. All activities will, however, be coordinated with the owner prior to implementation. Inadequate health and safety precautions can be the cause for Malcolm Pirnie to suspend the Site work and ask the contractor and/or subcontractor to evacuate the hazard area or Site.

## **1.2 Site Location and History**

The Site is an inactive, privately owned, un-permitted, former dump. The historical use of the Site as a salvage/dump operation from the 1960's through the 1980's resulted in the improper storage and disposal of hazardous substances. The Site is 2.48 acres in size at an elevation from just above mean sea level (AMSL) to 17 feet AMSL. Back River, a tributary of the Chesapeake Bay, borders the Site to the

south. A tidal wetland area is present along the southern border of the Site adjacent to Back River. Non-tidal wetland areas are present on adjacent properties along the northwestern, southwestern, and southeastern borders of the Site. A pond is present in the non-tidal wetland area northwest of the Site. The static groundwater level of the majority of the Site is within the waste fill. During past investigations, salvage items such as scrap metal, empty tanks and drums, abandoned trucks, tractor-truck trailers, open roll-off containers, heavy construction equipment, and junked cars were observed at the Site. In addition to the dumped debris and salvage items, charred areas, burned paint waste, a wood chip mound, and large-diameter circular concrete conduit sections were observed at the Site. Oily sheen/oil spill areas were observed on-site and in adjacent wetland areas. Early reports suggest that the Site had been used to store up to 250 drums, which were thought to have contained residual quantities of motor oil and lubricants.

## Potential Removal Action Plan Field Activities

The potential RAP field activities anticipated at this time are summarized as follows:

- Site Walk(s);
- Site Survey;
- Monitoring Well Sampling;
- Soil, Sediment and Surface Water Sampling;
- Test Pit Installation; and
- Monitoring Well Installation.

### 1.3 Key Regulations

Key regulations that are or may be applicable to the proposed RAP field activities are listed below. Field activities and operations associated with this project (if applicable) will be conducted in general accordance with these regulations.

Government Regulations	Subject
29 CFR 1904	Recording and Reporting Occupational Injuries and Illness
29 CFR 1910.120	Hazardous Waste Site Operations
29 CFR 1910.20	Record Keeping/Recording
29 CFR 1910.1000	OSHA Permissible Exposure Limits

29 CFR 1926.62

Lead in Construction

29 CFR 1910.134

Respiratory Protection

#### **1.4 HASP Organization**

The remainder of this HASP, which describes project activities, is formatted into the following sections:

- Section 2.0 - Key Personnel and Management;
- Section 3.0 - Training;
- Section 4.0 - Medical Monitoring;
- Section 5.0 - Project Hazard Analysis;
- Section 6.0 - Air Monitoring;
- Section 7.0 - Personal Protective Equipment;
- Section 8.0 - Decontamination; and
- Section 9.0 - Medical Emergencies

## **2 KEY PERSONNEL AND MANAGEMENT**

### **2.1 Project Officer**

The Project Officer (PO) is ultimately responsible for project performance. The PO seeks and gets appropriate approvals for risk management decisions (e.g. from Regional/Practice Director(s), Legal Council, Corporate Health and Safety), and selects and effective and qualified project team. The PO supports the Project Manager or Deputy Project Manager with appropriate resources

### **2.2 Project Manager**

The Project Manager (PM) has the responsibility for executing the project in accordance with the scope of work and good engineering practice. The PM will supervise the allocation of resources and staff to implement specific aspects of this HASP and may delegate authority to expedite and facilitate any application of the program. The PM implements and executes an effective program of site-specific personnel protection and accident prevention. The Project Manager reports to the Project Officer.

### **2.3 Deputy Project Manager**

Deputy Project Managers (DPM) are assigned all duties and responsibilities of the Site Safety Officer in his/her absence

### **2.4 Corporate Health & Safety**

Corporate Health and Safety is responsible for Malcolm Pirnie's overall Health and Safety Program and provides project guidance on air monitoring methodology, data interpretation and assistance in determining appropriate project engineering controls, work practices, and personal protective equipment. Corporate Health and Safety also reviews and approve HASPs in accordance with Section 1.

### **2.5 Site Safety Officer**

The Site Safety Officer (SSO) is responsible for interpreting and implementing the site health and safety provisions set out in this HASP, and will guide the efforts of field team personnel in their day-to-day compliance with this HASP. The SSO has the ability and authority to make necessary changes or additions to this HASP and provide technical assistance to field team personnel on problems relating to worksite safety. The SSO has the authority to correct safety-related deficiencies in materials or practice and to call a Project STOP in the most serious cases.

## **2.6 Alternate Site Safety Officer**

Alternate Site Safety Officer (ASSO) is assigned all duties and responsibilities of the Site Safety Officer in his/her absence

## **2.7 Public Information Officer**

The Public Information Officer (PIO) is responsible for all public, press and other news media request for information, and is the only person authorized to provide such information

## **2.8 Site Recordkeeper**

The Site Record keeper is responsible for the documentation of all related health and safety data documentation, including but not limited to metrological data, instrument calibration, accident and injury reports, and air monitoring data.

## **2.9 Field Manager**

The Field Manager (FM) is responsible for leading “on-site” activities of field team personnel, and to ensure field team personnel perform only those tasks that have been identified in this HASP.

## **2.10 Field Team Personnel**

Field personnel have the following health and safety responsibilities:

- Implement the procedures set forth in the HASP;
- Take all reasonable precautions to prevent injury to themselves and their fellow employees; and
- Perform only those tasks that they believe they can do safely, and immediately report any accidents and/or unsafe conditions.



## **3 TRAINING**

### **3.1 Personnel Training**

Site workers (such as equipment operators, general laborers, and supervisory personnel) engaged in hazardous substance activities or other RD field activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of health and safety training (29 CFR 1910.120) off the Site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. Supervisors shall have received an additional 8 hours of specialized supervisory training. Additionally, 8 hours of refresher training is required annually for all Site personnel. The Project Manager may provide exemptions to this requirement, e.g., decreasing the number of training hours to 24, is possible for workers, like surveyors, who are doing non-intrusive work or workers conducting activities entirely in the support zone. An exemption may be provided by the Malcolm Pirnie Project Manager for visitors to the Site who will not be performing intrusive activities and will be accompanied by trained personnel at all times. A more detailed discussion of training requirements is included in Exhibits B. Documentation of personnel meeting the required training will be maintained by the Field Manager.

This HASP will be distributed to all project personnel prior to the start of field activities. A pre-operation meeting for each task will be held to discuss the contents of the HASP. Specialty training will be provided on an as necessary basis based on task and responsibility. All training of personnel will be conducted under direct supervision of a trained SSO or his/her designee.

### **3.2 Site-Specific Training Topics**

All personnel entering the Site will be trained, as applicable, on the following site-specific topics:

- Site hazards;
- Emergency procedures;
- Insect and animal hazards;
- Personal protective equipment (PPE);
- Heat Stress and Cold Stress;
- Chemical Hazards;
- Heavy Equipment Topics;

- Safe work practices; and
- Decontamination procedures.

### **3.3 Medical Monitoring**

Personnel conducting intrusive RAP field activities associated with this project will be active participants in a medical monitoring program. Malcolm Pirnie has implemented a medical monitoring program that complies with the requirements of 29 CFR 1910.120. Documentation of the medical monitoring program for each individual is maintained at Malcolm Pirnie's corporate office.

Contractors and subcontractor will be required to adhere to the applicable medical monitoring requirement of CFR 1910.120 and provide documentation and compliance. Exemptions to this requirement may be granted in specific situations where this monitoring is determined to be unnecessary by the Project Manager or SSO. An example of such an exemption would be a delivery driver who makes a delivery to the Site in an area which has been characterized as having no contamination or no significant potential for exposure to constituents. General information on medical monitoring is provided in Exhibit C.

Medical monitoring in accordance with 29 CFR 1926.62 will also be required.

### **3.4 Project Hazard Analysis**

This section discusses chemical, physical, and environmental hazards with respect to performing RAP field activities on the Site.

### **3.5 Chemical Hazards**

Table-1 identifies the most significant Constituents of Concern (COC) at the Site. To provide appropriate protection, employees shall wear appropriate PPE when undertaking Site activities as detailed in Section 7.0. See Table-2 for Hazard Controls.

Levels of PPE for employees working on this project will be selected and utilized based on the direct reading of monitoring instruments (as necessary), physical/health hazards and on-site assessment by the PM or Site Safety Officer (SSO).

### **3.6 Physical Hazards**

Physical hazards which may be encountered when conducting specific activities on-site are described in Table 3. In order to minimize physical hazards, standard safety procedures which are also described in this table will be followed at all times.

Failure to comply with safety procedures or continued negligence of these policies will result in expulsion of an employee from the project Site.

The work practices of all employees will be carefully monitored by the SSO to ensure that all work is performed in a safe and professional manner.

### **3.7 Environmental Hazards**

#### **3.7.1 Heat Stress**

Due to the possible combination of warm ambient temperature and wearing of cumbersome protective clothing, the potential for heat stress is a concern.

An action level for heat stress has been established at 80 degrees Fahrenheit ambient temperatures. Whenever workers are exposed to ambient temperatures of 80 degrees Fahrenheit or above, or if the SSO determines that a condition may exist that would expose workers to heat stress, the SSO shall alert the workers of the potential hazards of heat stress and review the symptoms that may be attributed to heat stress at the daily safety meetings. The SSO shall make available liquid replenishment for all field personnel to prevent dehydration.

During times when heat stress situations may occur, workers will break at a minimum of every 2 hours for 10 to 15 minute rest periods. During rest periods, workers shall remain inactive and drink fluids to replenish fluids lost during strenuous work. In addition, workers will be required to notify the SSO or FM and to take rests whenever they experience any symptoms attributed to heat stress. The SSO and/or the FM shall determine the frequency of breaks based on observations made of worker's performance.

#### **Temperature/Pulse Rate Monitoring:**

When individuals are subject to potential heat stress and are wearing personal protective equipment (PPE) which may restrict heat loss from the body (i.e., Tyvek®/respirator) or as directed by the SSO, heat stress monitoring shall be conducted.

The intent of heat stress monitoring is to maintain a body core temperature below 100.4 degrees F. This is accomplished by measuring temperature with an infrared thermometer and/or measuring pulse rate at the beginning and at the end of each break in work. A target maximum temperature is set at 99.6 degrees; the target pulse rate is less than 120. Work/rest regiments shall be adjusted so that the target values are not exceeded when entering a rest period. The rest period should

be of sufficient duration to allow elevated measurements to return to below the target values before returning to work. Worker exposure to heat stress will be monitored using a battery operated thermometer which can be inserted into the ear to check the person's core temperature.

### 3.7.2 Cold Stress

People exposed to low temperatures are subject to cold stress. The extremities of the body such as fingers, toes, ears, and nose are the most susceptible to injury due to cold.

### 3.7.3 Hypothermia

Hypothermia is the drop in body core temperature which is usually the result of failure to escape from low temperature environments after initial symptoms are detected. Workers should be protected so that core temperatures do not drop below 96.8 degrees F. Maximum shivering takes place at 95 degrees F. and should be taken as a sign of danger and cold exposure should be immediately terminated. Symptoms of the progression of hypothermia usually include:

- Pain or numbness in extremities
- Shivering
- Apathy, reduction in decision making, rational thinking
- Loss of consciousness, slowed pulse and respiration
- Loss of respiration and heartbeat
- Frostbite

Frostbite is the cooling and eventual freezing of body tissues due to exposure to cold. Characteristics of frostbite include:

- Whitening of skin
- Waxy appearance
- Cold, pale, solid tissue

The following first aid will be used for frostbite:

- Take victim to warm area and rewarm affected areas quickly in warm, not hot water (102 - 105 degrees F).
- Give warm fluids. Stimulants such as coffee, tea or cigarettes should be avoided.

- Wrap injured area in clean soft gauze and protect from injury. Do not allow blisters to be broken.
- Take individual for medical attention.
- Do not allow injured area to be refrozen before obtaining medical help.

Worker exposure to cold stress will be monitored, as necessary, using a battery operated thermometer which can be inserted into the ear to check the person's core temperature. This will be done routinely for workers exhibiting symptoms of cold stress. Workers whose core body temperature drops below 96.8 F. will be removed from the cold environment until their core body temperature returns to normal (98.6 F.).

#### 3.7.4 Biological Hazards

The procedures presented in this section shall only be administered by persons certified in first aid tactics and trained in the OSHA Bloodborne Pathogens Standard. Due to the nature of the proposed work, it is not anticipated that personnel will come into contact with the biological hazards discussed below.

##### 3.7.4.1 Nonpoisonous Snakebites

A nonpoisonous snake leaves a horseshoe shape of tooth marks on the victim's skin. If you are not positive about a snake, assume it was venomous. Some so-called nonpoisonous North American snakes, such as hognose and garter snakes, have venom that can cause painful local reactions but no systemic (whole body) symptoms.

What to do

- Gently wash the bite site with soap and water.
- Care for the bite as you would a minor wound.
- Seek medical advice.

##### 3.7.4.2 Other Poisonous Bites

###### Spiders

Spiders in the United States are generally harmless, with two notable exceptions: the Black Widow spider (*Latrodectus Mactans*) and the Brown Recluse or violin spider (*Lox Osceles Reclusa*).

The symptoms of such a spider bite are: slight reaction, severe pain produced by nerve toxin, profuse sweating, nausea, painful cramps in abdominal muscles, and difficulty in breathing and speaking. Victims recover in almost all cases, but an occasional death is reported. The bite of a Black Widow spider is the more painful and often the more deadly of the two.

Field personnel should exercise caution when lifting covers off manholes or sumps or rummaging through wood, rock, or brush piles, etc. since both the Black Widow and Brown Recluse spiders are typically found in these areas.

#### 3.7.4.3 Tickborne Diseases

##### Lyme Disease

Lyme disease is an illness caused by a bacterium which may be transmitted by the bite of a tick (*Ixodes Dammini*), commonly referred to as the "Deer Tick." The tick is about the size of a sesame seed, as distinguished from the Dog Tick, which is significantly larger. The Deer Tick is principally found along the Atlantic Coast, living in grassy and wooded areas, and feeds on mammals such as mice, shrews, birds, raccoons, opossums, deer, and humans. Not all ticks are infected with the bacterium, however. When an infected tick bites, the bacterium is passed into the bloodstream of the host, where it multiplies. The various stages and symptoms of the disease are well recognized and, if detected early, can be treated with antibiotics.

Removal of ticks is best accomplished using small tweezers. Do not squeeze the tick's body. Grasp it where the mouth parts enter the skin and tug gently, but not firmly, until it releases its hold on the skin. Save the tick in a jar with the date, body location of the bite, and the place where it may have been acquired. Wipe the bite thoroughly with an antiseptic and seek medical attention as soon as possible.

The illness typically occurs in the summer and is characterized by a slowly expanding red rash, which develops a few days to a few weeks after the bite of an infected tick. This may be accompanied by flu-like symptoms along with headache, stiff neck, fever, muscle aches, and/or general malaise. At this stage, treatment by a physician is usually effective; but if left alone, these early symptoms may disappear and more serious problems may follow. The most common late symptom of the untreated disease is arthritis. Other problems which may occur include meningitis and neurological and cardiac abnormalities. It is important to note that some people do not get the characteristic rash but progress directly to the later manifestations. Treatment of later symptoms is more difficult than early symptoms and is not always successful.

When in an area suspected of harboring ticks (grassy, bushy, or woodland area) the following precautions can minimize the chances of being bitten by a tick:

- Wear long pants and long-sleeved shirts that fit tightly at the ankles and wrists.
- Wear light colored clothing so ticks can be easily spotted.
- Wearing tick repellents may be useful.
- Inspect clothing frequently while in tick habitat.
- Inspect your head and body thoroughly when you return from the field.
- Remove any attached ticks by tugging with tweezers where the tick's mouth parts enter the skin. Do not squeeze or crush it.

### Rocky Mountain Spotted Fever

In the eastern and southern United States this tickborne disease is transmitted by the infected Dog Tick (*Dermacentor Variabilis*). It is important to note that the Dog Tick is significantly larger than the Deer Tick. Nearly all cases of infection occur in the spring and summer, generally several days after exposure to infected ticks. The onset of illness is abrupt and often accompanied by high fever, headache, chills, and severe weakness. After the fourth day of fever, victims develop a spotted pink rash that usually starts on the hands and feet and gradually extends to most of the body. As with Lyme disease, early detection and treatment significantly reduces the severity of illness. The disease responds to antibiotic therapy with tetracycline or chloramphenicol.

### Other Tickborne Diseases

Ticks transmit several other diseases, most of which are rare and occur only in specific areas. Babesiosis occurs mainly in the Cape Cod area and eastern Long Island. Colorado tick fever is similarly regional and occurs only among those who live or work at altitudes above 4,000 feet.

## 3.7.5 Poisonous Plants

### Characteristic Reactions

The majority of skin reactions following contact with offending plants are allergic in nature and are characterized by general symptoms of headache and fever, itching, redness, and a rash. Some of the most common and most severe allergic reactions result from contact with plants of the Poison Ivy group including Poison Oak and Poison Sumac. The most distinctive features of Poison Ivy and Poison Oak are their leaves, which are composed of three leaflets each. Both plants also have greenish-white flowers and berries that grow in clusters. Poison Sumac is a shrub or a small

tree with 6-12 leaflets arranged in pairs, and an additional single leaflet at the end of the mid-rib. Poison Sumac has small yellowish green flowers, borne in clusters, mature into whitish green fruits that hang in loose clusters.

Such plants produce a severe rash characterized by redness, blisters, swelling and intense burning and itching. The victim can also develop a high fever and become very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

#### First Aid Procedure

- Remove contaminated clothing.
- Wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol.
- Apply calamine or other soothing skin lotion if the rash is mild.
- Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.

### 3.8 AIR MONITORING

#### 3.8.1 Introduction

For designated RAP field activities, an air monitoring program will be performed for the following reasons:

- To determine the presence of hazardous atmospheres and ensure that workers are wearing appropriate PPE. (PPE requirements are discussed in Section 7.0). As discussed in Section 7.0, workers during the RA field activities will be wearing Level D PPE at the initiation of work.
- To document the potential migration of dust and demonstrate whether adequate dust suppression methods are being employed.

This section identifies the procedures, instruments, and analytical methods to be used during the air monitoring program.

The SSO shall be responsible for all aspects of the air monitoring program including sample collection and informing the FM of results. On-site calibrations of instruments will be performed as necessary and appropriate by the SSO in accordance with the instructions of the equipment manufacturer.

Table-1 identifies the main COCs during intrusive RAP activities at the Site. The following sections discuss the air monitoring program to be conducted during designated RAP field activities.



### 3.8.2 Organic Compounds

Select RAP Field Activities associated with the project may create conditions, such as the release of organic vapors into the breathing space or contact with impacted groundwater. However, the hazard associated with these conditions is suspected to be low. The most significant compounds found in Table-1 that may be associated with project based on toxicity, reported results, and likelihood of exposure due to scheduled RAP field task are PCBs, SVOCs/VOCs and metals.

The Air Monitoring Program will consist of real-time organic air monitoring during intrusive field activities. The intrusive RAP field activities with respect to organic vapors include, but are not limited to:

Monitoring of airborne vapors using photoionization detector (PID) will be performed to evaluate SVOCs and VOCs during the above intrusive operations. Air monitoring within the breathing zone will be conducted at the initiation of each intrusive operation presented above, then on an as-needed basis for each intrusive Site activity, as determined by the SSO.

Explosivity will be monitored during RAP Field Activities any time organic vapors exceed 500 ppm within the well or breathing space. Measurements obtained from the PID and Combustible Gas Indicator/Oxygen meter will be used a criteria for institution of additional precautions, Site evacuation, and PPE selection.

Personal protective levels will be increased in the event organic vapors and/or explosivity are measured above. The specified action levels are presented in Table-1.

### 3.9 Personal Protective Equipment

All personnel must be provided with appropriate personal safety equipment and protective clothing. Each individual will be properly trained in the use of this safety equipment before the start of field activities. Safety equipment and protective clothing shall be used as directed by the SSO. All such equipment and clothing will be cleaned and maintained in proper condition by project personnel. The SSO will monitor the maintenance of personal protective equipment (PPE) to ensure proper procedures are followed

This section identifies the required PPE to be used on this project and may be modified, as appropriate, by the SSO. The initiation and anticipated PPE requirements for all RAP field activities conducted on-site is Level "D" PPE. Upgrades to PPE monitoring will be based on air monitoring readings as discussed below and presented in Table -1.

### 3.9.1 Level D PPE

It is anticipated that all activities on-site will be conducted in Level D PPE. Personnel conducting Site activities in Level D will wear the following:

1. Cotton coveralls or long sleeve shirts and pants, unless otherwise directed by the SSO.
2. Washable boots/shoes (may use plastic or rubber booty cover), steel toe and shank
3. Safety glasses with side shields or goggles (ANSI approved)
4. Hard hat (ANSI approved)
5. Ear plugs will be worn when working near noisy equipment
6. Nitrile gloves at a minimum for all hazardous or potentially hazardous material handling activities.

### 3.9.2 Level C PPE

Level D PPE will be upgraded to Level C if air sampling indicates the following in the breathing zone:

- Organic vapor meter results indicate vapors in the breathing zone are greater than 1 ppm and less than 25 ppm.

Personnel conducting Site activities in Level C will wear the following:

1. Full-face air purifying respirators equipped with combination HEPA/organic vapor filter cartridges (NIOSH approved).
2. Chemical-resistant clothing (disposable chemical-resistant coveralls).
3. Gloves, nitrile.
4. Boots, steel toe and shank.
5. Boot-covers, outer, chemical-resistant (disposable or washable).
6. Hard hat (ANSI approved).
7. Ear plugs will be worn when working near heavy equipment.

### 3.9.3 Level B PPE

Malcolm Pirnie does not anticipate the need to upgrade from Level C to Level B on this project. PPE levels will be upgraded from Level C to Level B if the following are measured in the breathing zone:

- Volatile organic vapors greater than 25 ppm.

As described below, Level B PPE includes a positive pressure, full face piece self-contained breathing apparatus (SCBA).

Personnel conducting Site activities will wear the following Level B protection. Positive pressure, full-face piece SCBA, or positive pressure supplied air respirator with escape SCBA (NIOSH approved).

1. Hooded chemical-resistant clothing (disposable chemical-resistant coveralls).
2. Gloves, outer, nitrile (neoprene for personnel handling drums).
3. Gloves, inner, latex.
4. Boots, steel toe and shank.
5. Boot-covers, outer, chemical-resistant (disposable).
6. Hard hat (ANSI approved).
7. Ear plugs will be worn when working near heavy equipment.
8. Five minute escape pack.

#### 3.9.4 Modifications To PPE Level

The level of protection utilized for all tasks shall be adjusted and/or confirmed after the initial Site survey or as significant new information becomes available. Any changes or adjustments will be amended in this HASP.

#### 3.9.5 Respiratory Protection

All respiratory protection equipment and cartridges used on this project shall be NIOSH/MSHA approved or equivalent. Workers required to wear respiratory protection shall be trained in the use, maintenance and limitations of their assigned respirators. This review will include the information described below.

#### 3.9.6 Supplied-Air Respirators

If it is necessary to upgrade to level B, depending on the Site demography and specific tasks involved, workers shall be issued either a self-contained breathing apparatus (SCBA) or an air line respirator. In addition, workers shall be equipped with a 5-minute escape bottle.

#### 3.9.7 Breathing-Air Quality

Code of Federal Regulations 29 CFR 1910.134 states breathing air shall meet the requirements of the specification for Grade "D" breathing air as described in the

compressed Gas Association Specification G 7-1966. Malcolm Pirnie will require a certificate of analysis from vendors of breathing air in order to show that the air meets this standard.

All compressed air cylinders must be tested in accordance with the US Department of Transportation (USDOT) (49 CFR 178) and labeled to identify their contents in accordance with ANSI standard Z48.1, Federal Specifications BB-A-103a, or Interim Federal Specification GG-B-00675b.

Airline couplings must be incompatible with other gas systems to prevent accidental introduction of non-respirable gases.

The preferred method for creating breathing air shall be to mix liquid oxygen and liquid nitrogen. Air compressors located at project sites are not acceptable because of possible contamination at the intake of the pump and excessive analytical costs of sampling the air.

#### 3.9.8 Air-Purifying Respirators

All air purifying respirators used by personnel working at the Site shall meet NIOSH/MSHA approval. Air purifying respirators used on this project shall include full-face, negative pressure, and full-face, powered air purifying respirators.

#### 3.9.9 Filter Cartridge Changes

All filter cartridges will be changed a minimum of once daily. However, water saturation of the HEPA filter or duty conditions may necessitate more frequent changes. Changes will occur when personnel begin to experience increased inhalation resistance, or breakthrough of a chemical warning property.

#### 3.9.10 Inspection and Cleaning

Respirators shall be checked periodically by a qualified individual and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after use. It is the responsibility of the wearer to clean and maintain his/her respirator.

#### 3.9.11 Fit Testing

Fit testing will be done annually for all employees required to wear a negative pressure respirator.

Qualitative fit testing will be performed using the Irritant Fume Protocol as detailed in 29 CFR 1926.1101, and the Malcolm Pirnie Respiratory Protection Program.

### **3.9.12 Facial Hair**

No personnel with facial hair which may interfere with the respirators sealing surface will be permitted to wear a respirator.

### **3.9.13 Medical Certification**

Only workers who have been medically cleared by a physician as being physically capable of wearing a respirator will be issued a respirator.

## **3.10 Decontamination**

This section describes the decontamination procedures to be used for the various tasks to be performed on-site.

### **3.10.1 Personnel Decontamination: Level B, C and D Work**

Personnel involved with hazardous material handling may be exposed to compounds in a number of ways, despite the most stringent protective procedures. Personnel may come in contact with vapors, gases, mists or particulates in the air, or may come in contact with site media while performing specific work tasks. Use of monitoring instruments and equipment can also result in exposure to hazardous substances.

In general, decontamination involves scrubbing with a non-phosphate soap/water solution followed by clean water rinses. All disposable items will be disposed of in a dry container. Certain parts of contaminated respirators, such as harness assemblies and leather or cloth components, are difficult to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in soap and water and scrubbed with a brush. In addition to being decontaminated, all respirators, non-disposable protective clothing, and other personal articles must be sanitized before they can be used again unless they are assigned to individuals. The manufacturer's instructions should be followed in sanitizing the respirator masks. The SSO or their designee will be responsible for supervising the proper decontamination of protective equipment.

The decontamination sequence for each level of protection to be used on-site is presented below. Workers assisting in decontamination procedures shall don a level of protection that is one grade below that of field personnel utilizing the Contaminant Reduction Zone (CRZ).

<b>Level B</b>	<b>Level C</b>	<b>Level D</b>
Step 1 Wash outer boots	Wash outer boots	Wash boots
Step 2 Remove outer gloves	Remove outer gloves	Remove nitrile gloves
Step 3 Wash inner gloves	Remove coveralls	Wash hands/face
Step 4 Remove coveralls	Remove boots	
Step 5 Remove boots	Remove respirator	
Step 6 Remove respirator	Remove inner gloves	
Step 7 Remove inner gloves	Wash hands/face	
Step 8 Wash hands/face	Clean respirator	
Step 9 Clean respirator		

### 3.10.2 Tools And Equipment

Tools and equipment should be decontaminated prior to removal from the exclusion zone. Decontamination procedures shall include washing with a low pressure sprayer and a mild detergent such as Alconox. Tools and equipment that cannot be decontaminated properly should be discarded.

### 3.10.3 Respirators And PPE

Employees shall be responsible for cleaning and maintaining their respirators. A clean area shall be established to clean and store respirators. Respirators should be cleaned with mild soap and warm water.

Reusable PPE will be stored at the CRZ in drums or plastic bags and will be decontaminated at the end of each shift by a designated individual at the CRZ using water and Alconox.

#### 3.10.3.1 Heavy Equipment

Heavy equipment such as drill rigs, trucks, bulldozers and backhoes that are used inside the exclusion zone shall be decontaminated. Decontamination of heavy equipment will be conducted using a pressure washer and a non-phosphate detergent wash. Prior to using the pressure washer, gross contamination (i.e., soil in wheels or tracks) will be minimized by removal with hand tools (shovels)

## MEDICAL EMERGENCIES

### Hospital Directions

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury is minor, full

decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the Site. This information is included in Tables HASP-2 and HASP-3 of this HASP. A map to the North Penn Hospital can be found in Figure-1 along with the emergency phone numbers shown in Table -1.

Directions to Johns Hopkins Bayview Medical Center the closest (primary) hospital in Dundalk, MD are as follows:

Start out going north on Lynhurst Road toward Beachwood Road.

Turn left onto Beachwood Road.

Turn slight left to stay on Beachwood Road.

Turn right onto North Point Road /MD-20.

Turn right onto North Point Blvd /MD-151N.

Take the Eastern Blvd. /MD-150 ramp.

Merge onto Eastern Avenue.

End at Johns Hopkins Bayview Medical Center. Time: 13 minutes Distance: 6.44 miles

#### **3.10.4 Incident Reporting**

All accidents regardless of severity shall be reported immediately to the FM or SSO and an incident report must be completed. This report shall be immediately forwarded to the Malcolm Pirnie Project Manager for investigation and follow up. The SSO is responsible for ensuring corrective action(s) are taken to reduce the potential for recurrence.

### **3.11 Special Precautions And Procedures**

The Site poses potential exposure risks to both chemical and physical hazards. The chemical risks have been explained in the previous sections. The potential for chemical exposure to hazardous substances is significantly reduced through the use of personal protective clothing, engineering controls, and implementation of safe work practices.

Other potential hazards that are associated with the site activities include working around heavy equipment, underground utilities, heat stress or cold exposure (depending on time of year), and site debris. Precautionary measures have been established to reduce these risks to a minimum during site activities.

### **3.12 Heavy Machinery/Equipment**

All site employees must remain aware of those site activities that involve the use of heavy equipment and machinery. Respiratory protection and protective eye wear may be worn during site activities. This protective equipment significantly reduces peripheral vision of the wearer. Therefore, it is essential that all employees at the site exercise extreme caution during operation of equipment and machinery to avoid physical injury to themselves or others.

### **3.13 Power Hand-Operated Tools**

Specific RAP activities may require the use of power hand-operated tools for ground penetration including but not limited to: hammer drills, jackhammers or concrete coring machines. Protective eye wear and steel-toed safety shoes are required for personnel operating this equipment. Additionally, all jewelry and loose fitting clothing should also be removed during the operation of this equipment to minimize interference with the operating mechanism of the machine. Consequently, the use of respiratory protection may also be necessary when operating power hand-operated tools.

### **3.14 Confined Space Entry**

Confined space is considered to be any area that is not sufficiently ventilated such that poisonous gases or flammable vapors can accumulate, or where an oxygen deficient atmosphere can develop and where there is a limited means to escape the area. Confined spaces include but are not limited to tanks, vaults, trenches and pits exceeding 5 feet in depth. Confined space entry occurs when the head is placed within an area defined as a confined space. Given the potential for buildup of toxic or combustible vapors or fumes within these areas, and the requirement that personnel enter these areas, it is necessary to establish appropriate confined space entry procedures for these special operations.

Permit-required confined space entry is not anticipated during field activities at the former Site. However, if confined space entry activities develop as part of the Site project work, the field activities and operations associated with this work will be conducted in accordance with the permit-required confined space regulations (29 CFR 1910.146).



### **3.15 Underground Utilities**

All site employees must remain aware of those site activities that involve the digging around underground utilities. Prior to any subsurface field activities, underground site utilities will be located through Miss Utility (410-712-0056) utility locating service. Authorized personnel and equipment in the work areas surrounding the underground utilities should be minimized. Warning signs will be posted and maintained in areas where work around potential utilities is occurring. The barriers and/or guarding will ensure that the area is not used as a passageway during periods of work. All known utilities in the work area will be locked out and tagged out, as necessary. The person performing the work in the area of the utilities will hold all lock out keys or combinations. All personnel working in the area where the exact location of electric underground utilities are unknown will be required to wear insulated protective gloves.

### **3.16 Additional Safety Practices**

The following are important safety precautions that will be enforced during the RA activities when contact with potential hazardous waste materials is possible.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any field task work area.
2. Hands and face must be thoroughly washed using soap and water or wet towelette packets provided at the site upon leaving the work area and before eating, drinking, or any other activity.
3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after departing the site. At a minimum, personnel will be required to wash face and hands thoroughly upon departing the site.
4. No facial hair that interferes with the effectiveness of a respirator will be permitted on personnel required to wear respiratory protection equipment. Moustaches will be allowed provided they do not alter the seal of the respirator. The respirator must seal against the face so that the wearer receives air only through the air purifying cartridges attached to the respirator. Fit testing shall be performed prior to respirator use to ensure a proper seal is obtained by the wearer.
5. Medicine and alcohol can exacerbate the effect from exposure to certain compounds. On-site personnel should consult with their physician regarding the use of prescribed drugs during the RA field activities. Alcohol on the former P & C site will not be permitted.

6. Authorized personnel and equipment in the work areas should be minimized, consistent with effective site operations.
7. Work areas for various operational activities should be established.
8. Procedures for leaving the work area must be planned and implemented prior to going to the site. Work areas and decontamination procedures must be established on the basis of prevailing site conditions.
9. Respirators will be issued for the exclusive use of one worker and will be cleaned and disinfected after each use by the worker.
10. Safety gloves and boots, if applicable, shall be taped to the disposable, chemical protective suits as necessary.
11. Noise mufflers or ear plugs may be required for all field personnel working around heavy equipment. This requirement will be at the discretion of the SSO. Disposable, form-fitting plugs are preferred but other options are available on an as needed basis.
12. Cartridges for air-purifying respirators (if applicable) in use will be changed as directed by the SSO. Change out frequency will be based on the anticipated burn through rate calculated for the most toxic constituent at the site.

**HEALTH AND SAFETY PLAN**  
**TABLES**

## **HEALTH AND SAFETY PLAN**

### **FIGURES**

**HEALTH AND SAFETY PLAN**  
**EXHIBITS**

**HEALTH AND SAFETY PLAN  
EXHIBIT A  
Acknowledgement**

I have read, understood, and agreed with the information set forth in this Health and Safety Plan and will adhere to the protocols specified herein. I have been trained in accordance with OSHA 1910.120 and participate in a medical monitoring program.

Site Field Manager	Signature	Date
Site Safety Officer	Signature	Date
Site Worker	Signature	Date
Site Worker	Signature	Date
Site Worker	Signature	Date
Site Worker	Signature	Date
Site Worker	Signature	Date
Site Worker	Signature	Date
Site Worker	Signature	Date

**SUBCONTRACTORS/VISITORS:**

Name	Signature	Date
Name	Signature	Date
Name	Signature	Date
Name	Signature	Date

**HEALTH AND SAFETY PLAN**  
**EXHIBIT B**  
**Personnel Training**

General Site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance activities or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of classroom instruction, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. The training course must have included the following material at a minimum:

1. Health and Safety Officer and Site Management Responsibilities - personnel must understand Health and Safety Officer and Site Management responsibilities and authority.
2. Site-Specific Health and Safety Hazards - personnel must be informed of specific hazards related to Site and Site operations.
3. Personal Protection Equipment (PPE) - personnel must be trained in proper use of personal protective equipment.
4. Safe Work Practices/Engineering Controls - personnel must be informed of appropriate work practices and engineering controls that will reduce the risk of exposure to Site hazards.
5. Safety Equipment Use - personnel must understand the use of monitoring instruments and other safety equipment.
6. Medical Surveillance Program - personnel must be informed of requirements for medical surveillance of hazardous waste Site employees.
7. Site Control Methods - personnel must understand Site methods used to reduce exposure to on-site personnel.
8. Decontamination Procedures - personnel must be trained in proper decontamination operation and procedures.
9. Emergency Response - personnel must be trained in proper emergency response operation and procedures.
10. Confined Space Entry/Special Hazards - personnel involved in specific hazardous activities, such as confined space entry and drum handling, must receive training in appropriate techniques to employ during such operations.

**HEALTH AND SAFETY PLAN**  
**EXHIBIT B**  
**Personnel Training (continued)**

Workers on-site only occasionally for a specific limited task (such as, but not limited to, land surveying or Site walk through) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of classroom instruction and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers regularly on-site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits, where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the Site and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers with 24 hours of training who meet the criteria for 24 hour training cited above, and who become general Site workers or who are required to wear respirators, shall have the additional 16 hours and two days of field training necessary to total the training specified for the 40 hour training criteria.

Health and Safety training programs shall comply with criteria set forth by OSHA as per final regulation 29 CFR 1910.120. This program will instruct employees on general health and safety principles and procedures, proper operation of monitoring instruments, and use of personal protective equipment.

In addition, field employees will undergo site-specific training prior to the start-up of any given task. As activities change at a particular Site, related training will address potential hazards and associated risks, Site operating procedures, emergency response, and Site control methods to be employed. Specialized training will be provided as dictated by the nature of the project activities. Specialized training will be provided for activities such as confined space entry, excavations and handling of unidentified substances.

This Health and Safety Plan must be distributed to all contractor/subcontractors prior to the start of field activities. A pre-operation meeting will be held to discuss the contents of the Plan. Specialty training will be provided as determined by task and responsibility. All training of Malcolm Pirnie personnel will be conducted under direct supervision of the SSO or their designee. Exemption from training may be approved by the SSO in conjunction with the Project Manager.



**HEALTH AND SAFETY PLAN  
EXHIBIT C  
Medical Monitoring**

The Occupational Safety and Health Administration (OSHA) has established requirements for a medical surveillance program designed to monitor and reduce health risks for employees potentially exposed to hazardous materials (29 CFR 1910.120). This program has been designed to provide baseline medical data for each employee involved in hazardous waste operations including field activities, and to determine his/her ability to wear respiratory protection and be medically certified before he/she performs designated duties. Where medical requirements of 20 CFR 1910.120 overlap those of 29 CFR 1910.134, the more stringent of the two will be enforced.

The medical examination must be administered on a pre-employment and annual basis and as warranted by symptoms of exposure or specialized activities. These examinations shall be provided by employers without cost or loss of pay to the employee.

The medical examination utilized by Malcolm Pirnie includes the following:

1. Medical History and Physical, including:
  - Medical questionnaire;
  - Completion of medical history with occupational risk factor analysis;
  - Examination by physician;
  - Evaluation of test results; and
  - Brief report sent to employer covering specific requested areas as well as pertinent positive findings; report sent to family physician and employee by request.
2. Pulmonary Function Testing;
3. Electrocardiogram (baseline, and at the discretion of examining physician);
4. Chest X-Ray (baseline, and at the discretion of examining physician);
5. Lab Tests, including:
  - Urinalysis;
  - Blood Chemistry Profile;
  - Complete blood count with differential;

**HEALTH AND SAFETY PLAN  
EXHIBIT C  
Medical Monitoring (continued)**









6. Vision Screen; and
7. Audiogram.

The examining physician is required to make a report to the employer of any medical condition which would place such employee at increased risk of wearing a respirator or other personal protective equipment. Each employer engaged in Site work shall assume the responsibility of maintaining Site personnel medical records as regulated by 29 CFR 1910.120, where applicable. Exemption from the medical surveillance program may be allowed by the SSO in conjunction with the Project Manager. These exemptions will be based on their interpretation of the requirements of 1910.120 relative to each individual exemption request.

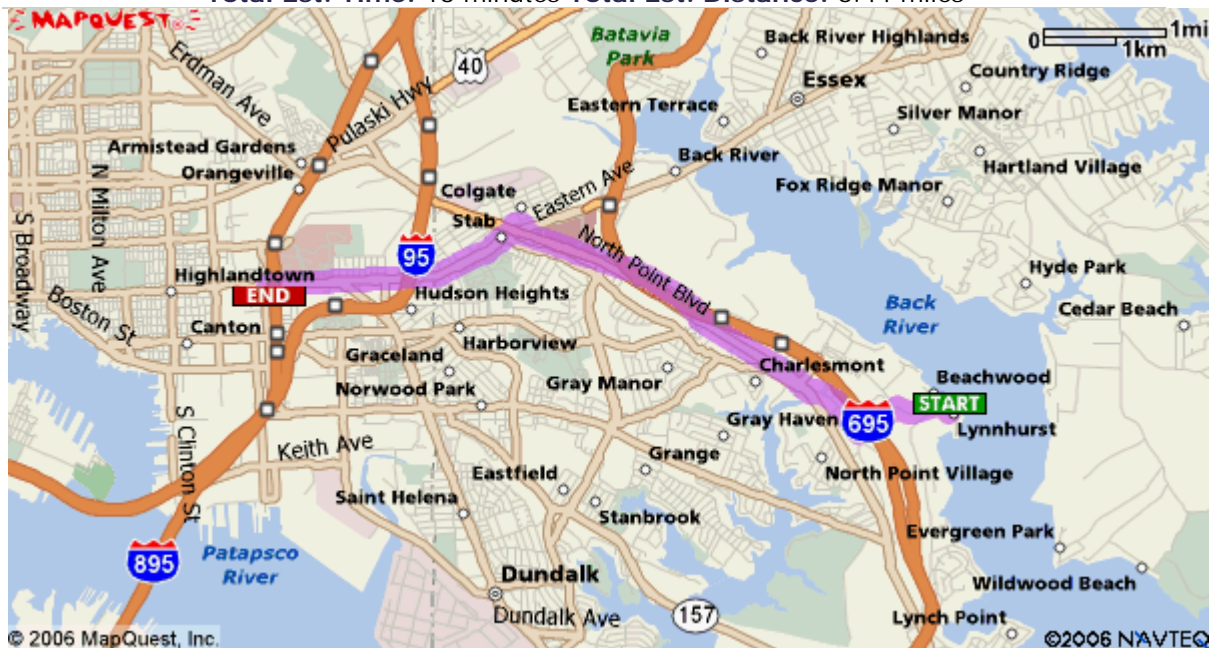
Basically, an employee is required by federal regulation to have medical monitoring if the employee is or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits for these substances, without regard to the use of respirators, for 30 days or more a year.

All employers contracted to work at the Site designated by this plan will be responsible to ensure their employees have received the proper medical tests as regulated by 29 CFR 1910.120 and shall provide Malcolm Pirnie with certification of same.

Figure-F1  
Directions to John Hopkins Bayview Medical Center  
4940 Eastern Avenue  
Baltimore, MD

Directions	Distance
<b>Total Est. Time: 13 minutes Total Est. Distance: 6.44 miles</b>	
 1: Start out going NORTH on LYNHURST RD toward BEACHWOOD RD.	<0.1 miles
 2: Turn LEFT onto BEACHWOOD RD.	0.3 miles
 3: Turn SLIGHT LEFT to stay on BEACHWOOD RD.	0.3 miles
 4: Turn RIGHT onto NORTH POINT RD / MD-20.	0.5 miles
 5: Turn RIGHT onto NORTH POINT BLVD / MD-151 N.	2.7 miles
 6: Take the EASTERN BLVD / MD-150 W ramp.	0.1 miles
 7: Merge onto EASTERN AVE.	2.1 miles
 8: End at <b>Johns Hopkins Bayview Med Center:</b> 4940 Eastern Ave, Baltimore, MD 21224, US	

**Total Est. Time: 13 minutes Total Est. Distance: 6.44 miles**



**Table F1**  
**Air Monitoring Instrumentation and Action Levels**  
**Sauer Dump Superfund Site**  
**Baltimore County, MD**

(A) The following environmental monitoring instruments shall be used on site at the specified intervals and recorded in the site logbook.

EQUIPMENT			MONITORING PERIOD				ACTION LEVEL
Combustible Gas Indicator		<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Hourly	<input type="checkbox"/> x Day	<input type="checkbox"/> Other	<u>See Below</u>	
O <sub>2</sub> Meter		<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Hourly	<input type="checkbox"/> x Day	<input type="checkbox"/> Other	<u>See Below</u>	
Toxics:	√ CO      √ H <sub>2</sub> S	<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Hourly	<input type="checkbox"/> x Day	<input type="checkbox"/> Other	<u>See Below</u>	
PID (Lamp	<u>11.2</u> eV)	<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Hourly	<input type="checkbox"/> x Day	<input type="checkbox"/> Other	<u>See Below</u>	
Respirable Dust Meter		<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Hourly	<input type="checkbox"/> x Day	<input type="checkbox"/> Other	<u>See Below</u>	

(B) Monitoring equipment is to calibrated according to manufacturers' instructions. Record calibration data and air concentrations in the Health and Safety on-site log book.

(C) Recommended Action Levels for Upgrade or Downgrade of Respiratory Protection, or Site Shutdown and Evacuation. These are average values. Consideration should be given to the potential for release of highly toxic compounds from the waste or from reaction by-products. Levels are for persistent (> 10 min) breathing zone measurements in non-confined spaces. **For unexpected conditions, stop all work and contact Corporate Health and Safety.**

Oxygen Levels

Less than 19.5%

19.5% to 23.5%

Greater than 23.5%

Level B necessary for work to start / continue. Consider toxicity potential.

Work may start / continue. Investigate changes. Continuous monitoring.

PROHIBITED WORK CONDITION

Flammability / Explosive Hazards

Less than 10% of LEL

10% to 25% of LEL

Greater than 25% of LEL

Work may start / continue. Consider toxicity potential.

Work may start / continue. Continuous monitoring.

PROHIBITED WORK CONDITION.

Uncharacterized Airborne Organic Vapors or Gases

Background\*

Up to 5 meter units (m.u. or "ppm") above background

Work may start / continue. Continue to monitor conditions.

Level C necessary for work to start / continue. Continuous monitoring. Use Colorimetric tubes to characterize vapors.

Up to 50 m.u. above background

Greater than 50 m.u.

Level B necessary for work to start / continue. Continuous monitoring.

PROHIBITED WORK CONDITION.

**\* Off-site clean air measurement**

Characterized Airborne Organic Vapors or Gases\*\*

Up to 50% of TLV, or PEL or REL

Up to 25 times the TLV, or PEL or REL

Up to 500 times the TLV, or PEL or REL

Greater than 500 times the TLV, or PEL or REL

Work may start / continue. Continue to monitor conditions.

Level C necessary for work to start / continue. Continuous monitoring.

Level B necessary for work to start / continue. Continuous monitoring.

PROHIBITED WORK CONDITION.

**\*\* Use mixture calculations (% allowed = 3C<sub>N</sub>EL<sub>N</sub>) if more than one contaminant is present.**

**Table F2**  
**Sauer Dump Site - Baltimore, MD**  
**Hazard Controls**

<b>Hazard</b>	<b>Engineering Controls</b>	<b>Administrative Controls</b>	<b>Personal Protective Equipment</b>
<b>Chemical Exposure (Inhalation)</b>	Monitor Potential for Exposure	Hazard Communication Training	Full-face respirator with appropriate cartridges if air monitoring warrants
		Air Monitoring	
<b>Chemical Exposure (Contact)</b>	Eye Wash Station	Hazard Communication Training	equipment
	Deluge Shower	First Aid Kit	Splash shield and/or goggles
	Triage Eye Wash Bottle	Wash hands and face	Appropriate gloves (cuffed)
			Impermeable clothing
<b>Chemical Exposure (Ingestion)</b>		Hazard Communication Training	equipment
		Wash hands and face	Utilize splash shield and/or goggles
<b>Cold Stress</b>	Postpone field work if temperatures below freezing	Cold Stress signs and symptoms field refresher	Dress appropriately for conditions
	Provide warm-up area in vehicle, trailer or building	Limit exposure time	changes
		Call 911 if any signs or symptoms of hypothermia or frost bite are suspected	Wear a hat (hard hat liner) and gloves and wear underwear that will wick water away from body (polypropylene)
		Monitor during extreme temperature and windchills in accordance with Table 3	Perform work during warmest part of the day
			Work in pairs
			Drink warm, sweet beverages: avoid caffeine
			Take frequent short breaks in dry shelters to allow body to warm up
<b>Struck-by Drilling Equipment</b>	Do not operate or assist with the operation of equipment	Know where kill switch(s) are	Hard hat
		Avoid moving equipment	Safety Glasses
			Hearing protection
<b>Falls</b>	Guard rails	Avoid climbing improperly erected ladders	Four-point harness and lanyard attached to appropriate equipment
	Guard or cover ground openings	guard rails	Wear boots that have soles with good traction
	Ladders erected properly and tied-off	Avoid working near unguarded floor/ground openings	
		Daily safety checks	
		Avoid walking on deteriorated elevated walking surfaces	
<b>Heat Stress</b>	Postpone field work if temperatures above 90 degrees F	Heat Stress signs and symptoms field refresher	Wear clothing that transmits water vapor (cotton)
	Provide cool-down area such as a vehicle or trailer	Limit exposure time	Ice vests
	Have adequate supplies of potable water and other noncarbonated, noncaffeine liquids	Monitor worker temperature when air temperature and relative humidity are in the yellow or red zones in Table 3	Light Clothing
	Utilize a canopy or other shade device	Drink 16 oz Of water or dilute fluids before the start of shift	
		Drink an additional 8 oz of water or dilute fluids each hour	
		Work assignment rotation	
<b>Equipment Cleaning - Decontamination</b>	Substitute less toxic compound if possible	Hazard Communication Training	Use appropriate personal protection equipment
	Eye Wash Station	First Aid Kit	Splash shield and/or goggles
	Deluge Shower	Wash hands and face	Appropriate gloves (cuffed)
	Triage Eye Wash Bottle	MSDSs	Impermeable clothing
<b>Flying Insects</b>		Avoid working at times when mosquitoes and other fly insects swarm (dawn and dusk)	Cover as much of the skin as possible by wearing shirts with long sleeves, long pants and socks whenever possible
			Use insect repellents containing DEET

**Table F2**  
**Sauer Dump Site - Baltimore, MD**  
**Hazard Controls**

<b>Biting Insects</b>		Awareness Training including Lyme Disease	
		Inspect your body for ticks and other parasites at least once each day	Cover as much of the skin as possible by wearing shirts with long sleeves, long pants and socks whenever possible
		Wear light colored clothing so that a tick can be seen more easily	Use insect repellents containing DEET
		Change clothes when you return from an area where ticks	
		Shower to wash off any loose ticks	
		Inspect areas where spiders might hide before use	
		Inspect clothing and footwear left out prior to donning	
<b>Noise - above 85 dBA</b>	Replace all covers and shields to reduce noise generation	Minimize the time spent in the noisy area	Optional use of hearing protectors with an NRR rating that is twice what is required to reduce the noise exposure to 80 dBA or less
	Monitor Potential for Exposure	Work as far from the noise source as possible	Mandatory uses of hearing protection to reduce noise exposure below 85dBA
		Enter Hearing Conservation program including pre-exposure and periodic hearing tests, and hearing conservation training	
<b>Impact Noise</b>	Enclose or reduce noise where possible	Work in areas with impact noise levels in excess of 125 dBA is prohibited	Mandatory use of hearing protectors with an NRR rating that is twice what is required to reduce the noise exposure to 85 dBA or less
<b>Overhead Hazards</b>	Avoid working below areas without protective railing and kick plates	Be aware of people working above you	Hard Hat
		Stay at least 10 feet away from overhead power lines	Safety glasses
		Stay out from under suspended loads	
		Stay as far as possible from heavy equipment	
<b>Poisonous/Irritating Plants</b>	Hire a profession landscaping firm to remove poisonous plants where possible	Plant identification and avoidance	Cover as much of the skin as possible by wearing shirts with long sleeves, long pants and socks whenever possible
		Change clothes when you return from an area where poisonous/irritating plants may be located	Apply barrier creams to exposed skin
		Shower to wash off any plant materials	Keep rubbing alcohol accessible It removes the oily resin up to 30 minutes after exposure
		Educate workers on the identification of poison ivy, oak, and sumac plants	
		Educate workers on signs and symptoms of contact with poisonous ivy, oak, and sumac	
<b>Walking Surfaces - Sharp Objects</b>	Designate and mark clear travel pathways	General housekeeping to remove lumber with protruding nails, broken glass, or other sharp objects from travel pathways	Rubber over boots with steel sole inserts
		Stay within marked travel pathways	
<b>Walking Surfaces - Slippery</b>	Designate and mark clear travel pathways	Keep shoe soles dry and free of grease or oil	Wear proper footwear with lug soles in good repair
	Maintain travel pathways free of ice and snow	Keep one hand on handrails or hand holds when walking on potentially slippery surfaces	Wear shoe chains or spikes when working on icy surfaces
	Provide hand rails or other hand holds	Stay in designated walkways	clean

**Table F2**  
**Sauer Dump Site - Baltimore, MD**  
**Hazard Controls**

<b>Walking Surfaces - Uneven</b>	Designate and mark clear travel pathways	Keep one hand on handrails or hand holds when walking on potentially slippery surfaces	Wear proper footwear with lug soles in good repair
	Provide hand rails or other hand holds	Stay in designated walkways	
		Do not carry heavy objects or objects alone or objects that obscure your view of the ground	
	Cover or fill-in drilled or excavated areas immediately		
<b>Poisonous Snakes</b>	Designate and mark clear travel pathways	Stay observant	High-topped leather boots
		Step on, not over, logs	Long pants
		If you observe a snake, back away and take another route	Antidotes if contact likely
		Know the types of snakes you are likely to come in contact with (see H&S website)	
<b>Potentially Rabid Animals</b>		Avoid wild animals that are acting strangely, are aggressive or unusually friendly	Pepper spray or mace where exposure is likely and use is legal
		Avoid nocturnal animals that are out in the daytime	Walking Stick
		If you are bit, wash the wound with soap and water for 10 minutes and then seek medical attention	
		Avoid contact with the animal's saliva	
		If the animal dies or is killed in the confrontation, using gloves, bag the animal and bring it to the local health authorities for testing	
<b>Potential Sunburn</b>			Coat exposed skin with SPF 45 cream or higher according to directions
			Cover up exposed skin to extent possible
			Use lip balm to prevent chapping as necessary
<b>Potential Windburn</b>			Us SPF 45 cream on exposed skin
			Cover up exposed skin to extent possible
			Use lip balm to prevent chapping as necessary
<b>Traffic - side streets</b>	Park vehicles between on-coming traffic and work area	Place one to two flagpersons to control traffic	Hardhats
	Place warning cones at least 100 feet in the direction of on-coming traffic and at sufficient intervals to guide cars around work area	Notify local authorities of work locations, times, and potential traffic disruptions	Safety glasses
	Do not work at dawn or dusk	Flagperson should be trained in duties and procedures	Sturdy work shoes
			Leather palm gloves
<b>Underground Utilities</b>	Use ground-penetrating radar	Assure that the local "call before you dig" technicians have marked the site	Safety glasses
	Use magnetometers	representatives	Sturdy work shoes
	Hand dig to below utility level	View utility entrance points from with nearby buildings	Leather palm gloves
			Reflective vests
<b>Overhead Utilities</b>	De-energize and ground overhead electrical lines	Lines 50kV and below - approach no closer than 10 feet	Safety glasses
		Lines 50kV and higher - approach no closer than 10 feet plus 025 inches for each 1kV above 50 kV	Sturdy work shoes
		Employee Training	Leather palm gloves
			Reflective vests