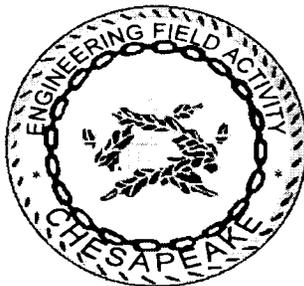


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SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR SOIL VAPOR EXTRACTION PILOT-
SCALE TEST SITE 57 NSWC INDIAN HEAD MD
9/1/1996
BROWN AND ROOT ENVIRONMENTAL

Site-Specific Health and Safety Plan
for
Soil Vapor Extraction
Pilot-Scale Test
Indian Head Division
Naval Surface Warfare Center
Indian Head, Maryland



Engineering Field Activity Chesapeake
Naval Facilities Engineering Command

Northern Division Contract Number N62472-90-D-1298

Contract Task Order 0209

September 1996

**SITE-SPECIFIC HEALTH AND SAFETY PLAN
FOR
SOIL VAPOR EXTRACTION PILOT-SCALE TEST
INDIAN HEAD DIVISION
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MARYLAND**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:
Engineering Field Activity Chesapeake
Environmental Branch Code 18
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
Washington, D.C. 20374-2121**

**Submitted by:
Halliburton NUS Corporation
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**CONTRACT NUMBER N62472-90-D-1298
CONTRACT TASK ORDER 0209**

SEPTEMBER 1996

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1.0 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Building 292

Address: Indian Head, Maryland

Effective Date: September 20, 1996

Purpose of Site Visit: Pilot scale testing of a soil vapor extraction process at building 292. This pilot-scale test will be conducted to identify performance characteristics of the vadose zone soil, and to evaluate the effectiveness of soil vapor extraction for the removal of TCE.

Proposed Dates of Work: October 25 - November 7, 1996

Project Team:

B&R ENVIRONMENTAL Personnel:

Discipline/Tasks Assigned:

George Latulippe P.E.

Project Manager

Craig Farkos

Field Operations Leader (FOL)/Geologist

Craig Farkos

Site Safety Officer (SSO)

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Geologist/Sampler

Subcontractor Personnel:

TBA

Pilot-Test subcontractor

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Follow Up Report:

Responsible Person: Craig Farkos

1.1 INTRODUCTION

This Draft Health and Safety Plan (HASP) has been developed to provide the minimum safety procedures for Brown & Root Environmental (B&R Environmental) a Division of Halliburton NUS Corporation and subcontractor personnel engaged in multi-media sampling and surveying activities at Building 292 at NAVSURFWARCEN IHDIV. This plan was developed using available information regarding known/suspected chemical contaminants and physical hazards that may be encountered during the planned activities and will be prepared in final form prior to the initiation of field activities. If additional information becomes available prior to or throughout the course of field activities, this document will be modified accordingly. Modifications will be determined by the B&R Environmental Site Safety Officer (SSO) and will be immediately communicated to appropriate personnel. This HASP is intended to be in compliance with 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response".

This HASP is structured, and may be presented, as a stand-alone document. Although the information herein is designed to function independently, it may be used in conjunction with previously generated HASPs. If this document is used in this manner, and conflicting information becomes evident, this plan will take precedence.

2.0 DESCRIPTION AND BACKGROUND

2.1 GENERAL BACKGROUND INFORMATION

NAVSURFWARCEN IHDIV covers 2500 acres and is bounded by the Potomac River to the northwest, Mattawoman Creek to the southwest, Chicamuxen Creek, the town of Indian Head to the northeast. It is situated in the northwestern section of Charles County, Maryland, 25 miles southwest of Washington, D.C.

The mission of NAVSURFWARCEN IHDIV is to provide material and technical support for assigned weapons systems, weapons, or components and to perform additional tasks as directed by the Naval Sea Systems Command. These tasks may include research, development, engineering, production, and quality surveillance for weapons systems, propulsion, unconventional explosives, cartridge-actuated and propellant-actuated devices, and chemicals. Disciplines represented at NAVSURFWARCEN IHDIV include expertise in weapons systems, propulsion, explosives development, and propellant and explosives chemistry.

NAVSURFWARCEN IHDIV hosts two major tenants: the Naval Explosive Ordnance Disposal Technology Division Center (NAVEODTECHDIV) and the Naval School Explosive Ordnance Disposal (NAVSCOLEOD). NAVTECHDIV was established to develop procedures for rendering safe conventional and special weapons, guided missiles, biological and chemical munitions, tools, and equipment. The mission of NAVSCOLEOD is to train officers and enlisted personnel in methods and procedures for recovery, evaluation, rendering safe, and disposal of surface, underwater, conventional, and nuclear explosive ordnance.

2.2 EXISTING INFORMATION OF THE BUILDING 292 SITE

TCE was first detected in February 1994 at 53 mg/l (equivalent to parts per billion, ppb) at the storm sewer outfall serving the drainage basin that includes Building 292 (designated outfall IW-80). This initial sampling for priority volatile organics (EPA Method 624) was conducted because of an odor reported at IW-80. A sample collected from the same outfall in May 1994 detected 60.2 mg/l TCE. The Navy notified the Maryland Department of the Environment (MDE) of the TCE discharge on June 17, 1994. In addition, the Navy submitted a revised National Pollutant Discharge Elimination System (NPDES) permit application on November 4, 1994 to MDE requesting approval of a 100 mg/l TCE discharge limit. Since May 1994, the Navy has conducted several rounds of storm sewer sampling for TCE in an attempt to locate the source of TCE. The Building 292 area is believed to be one potential source of TCE in the storm water.

Building 292 operations reportedly included a 1,900-gallon TCE vapor degreaser used from the mid 1960s until 1989. Large solvent dip tanks used for general cleaning until the mid 1970s are also present at Building 292. Spent TCE was piped to drums outside Building 292 via a ball valve through the wall of the building. Drums were reportedly stored on a grass covered area near the ball valve and near MH-1. The use of TCE at the facility was reportedly stopped in 1989.

3.0 SCOPE OF WORK

This section outlines the work to be performed at the site by B&R Environmental personnel and subcontractors and, therefore defines the work covered by this HASP. If site work other than that listed below must be performed, B&R Environmental will revise this HASP accordingly.

3.1 SCOPE AND OBJECTIVES

Approximately 10 to 25 geoprobes will be installed according to a preselected pattern into the vadose zone near Building 292 and used as monitoring points for the pilot-scale soil vapor extraction system. A vacuum will then be inducted through a single, centrally located, vacuum extraction point, and the concentrations of volatized hydrocarbon contained in the extracted air will be continuously monitored using a portable GC unit.

All extracted air will be treated by vapor phase GAC prior to discharge to the atmosphere. One or two soil samples will be collected from the vadose zone and sent to a fixed-base laboratory for analysis of geotechnical parameters.

4.0 HAZARD ASSESSMENT

This section describes the chemical and physical hazards that are associated either directly or indirectly with the tasks and operations described in Section 3.0 of this HASP. Measures to control the hazards presented below can be found in Sections 5.0, 6.0, 7.0, and 10.0 of this plan.

In addition to the requirements and restrictions specified in this HASP, all site work will also be performed in conformance with the Station's requirements specified in the (attached) Summary, Contractor and Safety Requirements, Naval Ordnance Station, Indian Head, MD for All Maintenance, Repair, or Construction.

4.1 CHEMICAL HAZARDS

As discussed earlier, trichloroethylene (TCE) was used in Building 292 as a degreaser. The building contains a 1900-gallon vapor degreaser and large solvent dip tanks that used TCE. TCE has been widely used as an industrial solvent, particularly in metal degreasing and extraction processes. It has some use as a chemical intermediate and to a greater extent as an anesthetic. Decomposition of TCE to a more toxic compound, dichloroacetylene, has occasionally occurred in vapor degreasers, but occurs more frequently in recycling operations using caustic scrubbers.

There is an overwhelming volume of literature on the toxicological and pharmacological effects of TCE. Central Nervous System (CNS) depression is the predominant acute response to TCE. In addition to CNS depression, other acute response in humans include visual disturbances, mental confusion, fatigue, and sometimes nausea and vomiting. Sensitization of the heart to adrenaline-type compounds has been reported. Degreaser's flush, in which the skin of the face and arms becomes extremely red, occurs occasionally, if alcohol is consumed shortly before or after exposure to TCE. Some indications of injury to the liver and kidneys may be observed as a result of exposure to TCE. Carcinogenic properties of TCE have been extensively debated due to the fact that the organs affected in different animal species appear to be related to the high susceptibility of those organs and their metabolic capacity. Smaller epidemiological studies have given inconsistent results, suggesting certain cancers in exposed humans. Larger studies fail to show significant or persuasive association for any cancer.

The predominant route of exposure to TCE is through inhalation. TCE is only mildly irritating to the skin and is not readily absorbed. TCE is irritating to the eyes but is not expected to cause permanent injury provided the eyes are thoroughly flushed after contact. Additional information regarding TCE and its associated degradation products can be found in Table 4-1.

**TABLE 4-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
INDIAN HEAD - TCE INVESTIGATION**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
1,2-Dichloroethylene	540-59-0	I.P. 9.65 eV, High response with PID and 10.2 eV lamp	50% response with FID	Air sample using charcoal tube and carbon disulfide, OSHA 07; NIOSH Method 1003	OSHA, NIOSH, ACGIH 200 ppm TWA, Adequate- odor threshold 0.085-17 ppm. Use organic vapor/acid gas cartridges for exceedances above the TWA up to 1,000 ppm. >1,000 ppm should use pressure-demand supplied air respirator above exposure limits. Recommended glove: nitrile	Boiling Pt: 117°F; 47°C Melting Pt: 7°F; -13.8°C Solubility: 0.4% Flash Pt: 36°F; 2.2°C LEL/LFL: 5.6% UEL/UFL: 12.8% Vapor Density: 2.0 Vapor Pressure: 180-260 mm Hg Specific Gravity: 1.27 @ 90°F; 32°C Incompatibilities: Strong oxidizers, alkalis, potassium hydroxide, and copper. When heated to decomposition temperatures will emit toxic fumes of phosgene. Appearance and Odor: Colorless liquid with an acrid odor.	Overexposure may result in CNS depression potential to cause sleepiness, hallucinations, distorted perceptions, and stupor (narcosis). Systemically, symptoms may result in nausea, vomiting, weakness, tremors, and cramps. May also irritate the eyes, skin, and mucous membranes. Chronic exposures may result in dermatitis, liver, kidney, and lung damage.
1,2-Dichloroethane	107-06-2	I.P. 11.05 eV	80% response with FID	Air sample using charcoal sorbent tube and carbon disulfide desorption with gas chromatography-flame ionization detector; NIOSH 1003	OSHA 50 ppm; ACGIH 10 ppm; NIOSH 1 ppm IDLH ~ 1000 ppm Inadequate - This compound has poor warning properties OSHA allows the use of organic vapor cartridges in certain circumstances. Recommended glove - Polyvinyl alcohol	Boiling Pt: 182°F; 83°C Melting Pt: N/A Solubility: 0.9% Flash Pt: 56°F; 13°C LEL/LFL: 6.2% UEL/UFL: 16% Vapor Density: Not available Vapor Pressure: 64 mm Hg @ 68°F; 20°C Specific Gravity: 1.24 Incompatibilities: Strong oxidizers and caustics, chemically active metals such as aluminum or magnesium powder, sodium and potassium. Appearance and Odor: Colorless liquid with a pleasant, chloroform-like odor.	Exposure to this substance may cause CNS depression, nausea, vomiting, dermatitis, and irritation of the eyes. Chronic overexposure may result in damage to the kidneys, liver, eyes, skin and CNS.

**TABLE 4-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
INDIAN HEAD - TCE INVESTIGATION**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Trichloroethylene	79-01-6	I.P. 9.45 eV, High response with PID and 10.2 eV lamp	70% Response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07, or NIOSH Method 1022 or 1003	OSHA 50 ppm PEL 200 ppm STEL ACGIH 50 ppm TLV-TWA 100 ppm STEL NIOSH 25 ppm REL IDLH~ 1000 ppm	Inadequate - Odor threshold 82 ppm. APRs with organic vapor/acid gas cartridges may be used for escape purposes. Exceedances over the exposure limits require the use of positive pressure-demand supplied air respirator. Recommended gloves: PV Alcohol unsupported; Silver shield; Teflon; or Viton	Boiling Pt: 188°F; 86.7°C Melting Pt: -99°F; -73°C Solubility: 0.1% @ 77°F; 25°C Flash Pt: 90°F; 32°C LEL/LFL: 8% @ 77°F; 25°C UEL/UFL: 10.5 @ 77°F; 25°C Vapor Density: 4.53 Vapor Pressure: 100 mm @ 32°C Specific Gravity: 1.46 Incompatibilities: Strong caustics and alkalis, chemically active metals (barium, lithium, sodium, magnesium, titanium, and beryllium) Appearance and Odor: Colorless liquid with a chloroform type odor. Combustible liquid, however, burns with difficulty.	Central nervous system effects including euphoria, analgesia, anesthesia, paresthesia, headaches, tremors, vertigo, and somnolence. Damage to the liver, kidneys, heart, lungs, and skin have also been reported. Contact may result in irritation to the eyes, skin, and mucous membranes. Ingestion may result in GI disturbances including nausea, and vomiting. NIOSH lists this substance a potential human carcinogen.
Vinyl chloride	75-01-4	I.P. 9.99 eV, High response with PID and 10.2 eV lamp	40% response with FID	Air sample using charcoal or Anasorb CMS sorbent tube and carbon disulfide desorption with gas chromatography-flame ionization detector; NIOSH 1007, OSHA 75	OSHA 1.0 ppm PEL 5.0 ppm Ceiling, ACGIH 5 ppm TLV-TWA, NIOSH Lowest Feasible Concentration	Inadequate - Odor threshold 10-20 ppm. Gas Mask with a vinyl chloride Type N canister may be employed for concentrations up to 25 ppm. Canisters employed must have a minimum service life of 4-hrs. Exceedances over 25 ppm, must use a positive pressure demand, open-circuit, self-contained breathing apparatus, pressure demand type, with full facepiece. Refer to 29 CFR 1910.1017(g) for specific requirements based on atmospheric concentrations of vinyl chloride. Recommended gloves: Silver shield, nitrile, or Viton	Boiling Pt: 7°F; -13.9°C Melting Pt: -256°F; -160°C Solubility: 0.1% @ 77°F; 25°C Flash Pt: 18°F; -8°C LEL/LFL: 3.6% UEL/UFL: 33% Vapor Density: 2.21 Vapor Pressure: 3.3 atm Specific Gravity: N.A. Incompatibilities: Oxidizers, copper, aluminum, peroxides, iron, steel, Appearance and Odor: Colorless gas or liquid (below 56°F) with a pleasant odor at high concentrations.	A severe skin, eye, and mucous membrane irritant(Liquid: frostbite). Narcotic effect causing weakness, abdominal pains, GI bleeding, and pallor skin or cyanosis. Chronic exposure has been linked to the formation of malignant tumors originating from blood lymphatic vessels in the liver (associated enlargement of the liver), and kidneys (angiosarcoma and nephroblastoma). Listed as a carcinogen by NTP, IARC and ACGIH.

**TABLE 4-1
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA
INDIAN HEAD - TCE INVESTIGATION**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
1,1-Dichloroethane	75-34-3	I.P. 11.06 eV	80% Relative Response with FID	Air sample using charcoal tube and carbon disulfide desorption, OSHA 07-B / NIOSH 1003	OSHA, NIOSH and ACGIH have established a TWA of 100 ppm IDLH 4000 ppm	Questionable warning properties - Odor threshold 49 - 1359 ppm. APRs may be employed for escape only. Exceedances over the exposure limits are recommended to use airline or airline/APR combination type respirator. Recommended glove: Butyl; Polyvinyl alcohol; Viton	Boiling Pt: 135°F; 57°C Melting Pt: -143°F; -97°C Solubility: 0.6% Flash Pt: 2°F; -17°C LEL/LFL: 5.6% UEL/UFL: 11.4% Vapor Density: NA Vapor Pressure: 182 mm Hg Specific Gravity: 1.18 Incompatibilities: Strong oxidizers, strong caustics Appearance and odor: Colorless, oily liquid with a chloroform-like odor.	Overexposure may result in CNS depression, skin and eye irritation, and damage to the liver, kidneys, and lungs.

Personal protective equipment (PPE), proper decontamination, site control, and standard work practices contained within this plan will be used when necessary to help reduce or eliminate exposures and therefore reduce the potential for adverse health effects.

4.2 PHYSICAL HAZARDS ON-SITE

During the execution of the proposed scope of work (see Section 3.0) certain physical hazards may be encountered by field personnel while engaged in on-site activities. Based on the hazard analysis, it is anticipated the physical hazards could involve the following items:

- Contact with Energized Sources
- Exposure to moving machinery
- Strain sprains or muscle pulls
- Noise in excess of 85 dBA
- Ambient temperature extremes
- Natural hazards (Ticks, Snakes, and other indigenous creatures)
- Inclement weather

Control efforts for these potential hazards shall employ a variety of safety measures to mitigate these hazards. These measures shall be discussed individually with each area of concern mentioned above.

4.2.1 Contact with Energized Sources

To avoid hazards of this type, no drilling mast, boom or other such projecting items shall be permitted within a 20-foot radius of any energized source. Also, any areas targeted for subsurface activities shall first be investigated to determine the presence of underground utilities.

4.2.2 Exposure to Moving Machinery

Personnel shall also be advised of the hazards presented due to working in a close proximity of moving machinery (i.e. geoprobe). Safety measures employed to overt hazards of this nature will include proper fitting personal protective equipment to avoid possible entanglement in moving parts, employing lockout/tagout procedures prior to performing maintenance functions on equipment, and lastly, all equipment, prior to use, then periodically afterwards, will be inspected by the on-site health and safety representative to ensure all guards, protective cages, and emergency shut-off devices are in place and function properly. Particular care must be exercised when operating the geoprobe to ensure that fingers and hands are not pinched when positioning the hydraulic piston over the probe.

4.2.3 Strain, Sprains, and/or Muscle Pulls

During execution of this scope of work, there is potential for strains, sprains, and/or muscle pulls due to the physical demands and nature of this task. To avoid injury, personnel are to lift with the force of the load carried by their legs and not their backs. When lifting or handling heavy material or equipment, use an appropriate number of personnel.

4.2.4 Noise in Excess of 85 dBA

There is the potential for noise levels to exceed the OSHA Permissible Noise Exposure of 85 dBA. Personnel who are repeatedly overexposed could experience a permanent reduction in their ability to hear normal conversation. It will be the responsibility of the SSO to determine the need for hearing protection.

4.2.5 Ambient Temperature Extremes

Ambient temperature extremes (hot or cold working environments) may occur during the performance of this work depending on the project schedule. Work performed when ambient air temperatures are below 50°F may result in varying levels of cold stress (frost nip, frost bite, and/or hypothermia) depending on environmental factors such as temperature, wind speed, and humidity; physiological factors such as metabolic rate and moisture content of the skin; and other factors such as work load and the protective clothing being worn. Work performed when ambient temperatures exceed 70°F may result in varying levels of heat stress (heat rash, heat cramps, heat exhaustion, and/or heat stroke) depending on factors similar to those presented above for cold stress.

In either case, these conditions can be debilitating and, when extreme, they can be fatal. An understanding of the importance in preventing heat/cold stress, coupled with the worker's awareness of the signs and symptoms of overexposure, can significantly reduce the potential for adverse health effects. This awareness is typically a part of each employee's 40-hour hazardous waste operations training. If this hazard is present during site operations, each worker will be provided with information necessary to protect themselves and site management will be instructed to permit frequent breaks in mild temperature rest areas having hot/cold fluids available for consumption. In extreme cases, biological monitoring may be performed and data compared to the most recent recommendations of the American Conference of Industrial Hygienists. Additional information regarding heat/cold stress is provided in Attachment A.

4.2.6 Natural Hazards (ticks, snakes, mosquitos, etc.)

Natural hazards such as poisonous plants, bites from poisonous or disease carrying animals or insects (i.e., snakes, ticks, mosquitos) cannot be avoided within this type of environment. However, in an effort to offset the impact of this hazard, field personnel will have access to commercially available snake bite kits and insect repellents if necessary. Nesting areas in and about sampling points shall be avoided. Lastly, within recent years a marked increase in Lyme Disease has been reported. Ticks are considered the primary vector in the transmission of this disease. In an effort to control this hazard, close attention must be given during operations and personal hygiene to detect and remove ticks once they have adhered to the body. Attachment D may be referenced for additional information.

4.2.7 Inclement Weather

As all work will be conducted outdoors, inclement weather may be encountered. As conditions may vary, it will be at the discretion of the FOL acting as the health and safety representative on the team to terminate work or continue work if these conditions present themselves. All activities shall be terminated in the event of electrical storms.

5.0 AIR MONITORING AND ACTION LEVELS

This section presents the requirements for the use of real time monitoring instruments during site activities. It establishes the types of instruments to be used, techniques for their use, and action levels for employing the results obtained through their use. Additionally, methods for instrument maintenance and calibration are described.

5.1 INSTRUMENTS AND USE

5.1.1 Photoionization Detector (HNU-PI101 PID or equivalent)

A photoionization detector (PID) with a 10.2 eV lamp will be used to monitor potential source areas and to screen the breathing zones (BZ) of employees during soil sampling activities. A 10.2 eV lamp has been selected since TCE is considered the primary contaminant. Degradation products with ionization potentials greater than 10.2 eV are not anticipated to be in significant concentrations as compared to the contaminant TCE. The PID has been selected because it is capable of detecting organic gases and vapors and some inorganic gases and vapors. Detection is based on the contaminant's ionization potential in comparison to the lamp energy, which has to be equal to or greater than the ionization potential of the contaminant. When calibrated with isobutylene, the PID has a one-to-one/ correspondence with benzene.

Prior to the commencement of any field activities, the background levels of the site must be determined and noted. Daily background readings must be taken away from areas of potential contamination to obtain accurate results. These readings, any influencing conditions (i.e., weather, temperature, humidity, etc.) and location will also be documented in the Health and Safety Logbook as a matter of reference.

Any positive instrument responses observed above background levels will be considered to indicate contaminant release. As such, the following actions will be taken:

- Monitor work areas continuously, concentrating on worker BZ areas (head and face regions) when positive source results are reported. If readings are observed at these areas to be at background levels, continue monitoring work efforts.
- If sustained or repeated intermittent readings in the workers' BZ are above background, workers are to retreat to an unaffected area and remain until further direction from the FOL. If readings do not subside, qualitative and quantitative determinations as to the source of the reading must be made.

5.2 AIR MONITORING REQUIREMENTS - HNu and OVA

Air monitoring with the PID will be initiated at potential sources of vapor emissions. The following potential sources are anticipated.

- All intrusive activities (e.g., soil gas survey and soil sampling)
- Decontamination procedures
- Any time chemical odors are perceived
- All potential sources of exposure

5.2.1 Air Monitoring Frequency

All site readings (including indications of no positive readings) must be recorded on the direct reading instrument response sheet provided in Table 5-2. Site readings may alternatively be recorded in the Health and Safety Logbook provided that the same information is recorded as in Table 5-1.

The following schedule used in conjunction with Table 4-1 will be followed, but not limited to, for air monitoring activities as specified for each activity:

**TABLE 5-1
AIR MONITORING TYPE AND FREQUENCY**

TASK(S)	ATMOSPHERIC HAZARD(S)	MONITORING TYPE & FREQUENCY
<ul style="list-style-type: none"> • Soil gas surveying • Sampling activities: Subsurface soil Groundwater Storm water 	<p>The site may contain the following atmospheric hazards:</p> <ul style="list-style-type: none"> • Toxic • Particulates 	<p>For all intrusive activities, monitoring will be used to detect hot spots and respective airborne concentrations.</p> <p>PID - During all intrusive activities (i.e., soil gas survey and soil sampling) and during the initial opening of well casings or areas of surface water, then periodically if conditions so dictate.</p>

5.3 ACTION LEVELS

The following action levels will apply to this project:

INSTRUMENT	ACTION LEVEL	RESULTANT ACTION
PHOTOIONIZATION DETECTOR	Any elevated readings at potential source areas will require monitoring in workers' breathing zones. Any sustained readings above the established background level in workers' breathing zones	Continue monitoring efforts concentrating on the workers' breathing zones. Observe workers for signs and symptoms of exposure. If readings do not subside, retreat to an unaffected area until background levels are obtained. Note: TCE is not easily perceived through the sense of smell at low concentrations. The odor threshold for TCE ranges from 22 ppm to 82 ppm. Given the poor warning properties of TCE, air-purifying respirators are not recommended for protection. However, given the operations that are to be performed and the available information regarding TCE contamination, excessive levels of TCE vapors in the workers' breathing zone are highly unlikely. If airborne concentrations in the workers' breathing zone do not subside to background levels, the Project HSO shall be notified to determine further actions.

5.4 INSTRUMENT CALIBRATION AND MAINTENANCE

Air monitoring instruments are pre-field calibrated and maintained at the B&R Environmental equipment warehouse. Field calibrations will be performed prior to each daily use in accordance with the manufacturers' recommendations and B&R Environmental Standard Operating Procedures. Field maintenance will consist of daily cleaning of the outer surfaces of the instruments with a damp cloth and overnight charging of batteries.

5.5 INSTRUMENT USE

Air monitoring instruments will be used primarily as screening tools during sampling activities or any other intrusive activity which might release emissions of toxic contaminants. Any positive readings at the source will require air monitoring in the workers' BZ.

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

This section presents requirements for the use of personal protective equipment for each of the activities being conducted as defined in Section 3.0 of this HASP. This section includes anticipated levels of protection for each of the activities, the criteria used for selecting various levels of protection, and criteria for modifying levels of protection based on monitoring instrument readings and personal observations.

6.1 ANTICIPATED LEVELS OF PROTECTION

Most work associated with this project is anticipated to be performed in a Level D Protection, as defined in Appendix B of OSHA Standard 29 CFR 1910.120 - "Hazardous Waste Operations and Emergency Response." Sampling activities presenting potentials for direct contact with site media will require the use of dermal protection as presented in the task breakdown which follows. Where activities overlap, the more protective requirements will be applied. If action levels discussed in Section 5.3 of this HASP are exceeded, the Project HSO shall be notified to determine further actions. In certain scenarios, upgrading the level of protection for B&R Environmental personnel will be reserved to the discretion of the FOL and SSO based on extenuating circumstances in addition to monitoring results and information, activities, and site conditions.

6.1.1 Minimum Requirements (All Tasks)

Minimum requirements include steel-toe and steel-shank work boots, with standard field dress consisting of long pants and long-sleeved shirts. Hard hats and safety glasses will be worn when overhead or eye hazards exist based on the task or if working in and around machinery. It will be at the discretion of the FOL or the SSO based on tasks, site conditions, and other influencing factors for the use of optional equipment. This is of course providing action levels or the requirements of this plan are not compromised when additional elements of personal protection are required.

6.1.2 Mobilization/Demobilization and Site Reconnaissance

As mobilization and demobilization activities present limited potentials for contacting the suspected hazardous materials associated with some tasks, the minimum requirements (as required in 6.1.1) will be adhered to for this task.

6.1.3 Operation of the Geoprobe

Minimum requirements will include hard hats, safety glasses, steel-toe and shank work boots, Tyvek coveralls (as necessary), latex inner gloves, nitrile outer gloves, and disposable boot covers (as necessary).

6.1.4 Soil Sampling

Minimum requirements shall include steel-toe and shank work boots, latex inner gloves, nitrile outer gloves, Tyvek coveralls (as necessary), and disposable boot covers (as necessary). Soil sampling that is performed in the vicinity of the Geoprobe will require the use of hard hats and safety glasses in addition to those items mentioned above.

6.1.5 Decontamination Activities

The PPE requirements for decontamination activities will include the minimum requirements for all tasks (See Section 6.1.1), the use of Tyvek coveralls with nitrile outer and latex inner gloves if the potential for saturation of work clothing exists, and splash shield as necessary depending on potentials for contact with water/wash spray.

6.2 PPE SELECTION CRITERIA

Based on the proposed site activities, the relatively low volatility of the principle contaminants of concern, the low concentrations anticipated to be encountered, and the dispersion of potential vapors via natural ventilation (i.e. wind currents), vapor concentrations in worker breathing zones are not anticipated to be at levels which would warrant respiratory protection. Nitrile and latex gloves were selected to provide protection against the potential site contaminants that could be encountered and to help reduce the amount of contaminants ingested as a result of incidental hand to mouth contact. These types of gloves have been determined to be an adequate barrier material based on the low concentrations assumed to be directly contacted. Hard hats, safety glasses, and work boots were selected to provide protection against some of the physical hazards associated with the proposed operations and disposable boot covers were selected to help minimize the spread of contamination. Tyvek coveralls were selected to minimize the potential for contamination of street clothes and polyvinyl chloride (PVC) or polyethylene (PE) coated Tyvek coveralls were selected for use in the event that sampling activities have the potential to result in the saturation of work clothes.

6.3 PPE MODIFICATION CRITERIA

This section presents criteria for upgrading and downgrading chemical protective clothing. Where uncertainties arise, the more protective requirement will apply.

6.3.1 Chemical Protective Clothing Modification Criteria

Tyvek coveralls and boot covers must be worn anytime there is a reasonable potential for contamination of street clothes. PVC or PE-coated Tyvek coveralls must be worn anytime there is a reasonable potential for saturation of work clothes. Nitrile gloves must be worn anytime there is a reasonable potential for contact with site contaminants.

6.3.2 Respiratory Protection

Respiratory protective measures will not be able to be determined due to the poor warning properties associated with the site contaminants. In order for respiratory protection to be adequately assigned, the airborne concentrations of contaminants must be identified qualitatively and quantitatively.

7.0 DECONTAMINATION

Decontamination is the procedure to remove and/or neutralize site contaminants encountered through the execution of the scope of work. This procedure will be employed for the purpose of preventing cross contamination, protecting on-site personnel, and protecting the individuals outside this operation from the spread of contamination.

7.1 STANDARD PROCEDURES

1. As part of each site's mobilization activity, the SSO will establish a personnel decontamination station suitable to handle the activities, the type and the amount of anticipated contamination, and the level of protection to be used. This area will be located adjacent to the exclusion zone or work area, and will consist of the stations described in section 7.2.
2. Upon leaving the contamination area (exclusion zone), all personnel shall proceed through the appropriate contamination reduction sequence.
3. All protective gear should be left on-site during any lunch break following decontamination procedures.
4. All discarded materials (i.e., PPE, decontamination fluids, etc.) will be drummed, labeled, and staged to await analysis and/or disposal under client's direction.

7.2 PERSONNEL DECONTAMINATION REQUIREMENTS

The decontamination of personnel and their protective clothing shall be performed in sequential stages. These stages shall include:

- Removing contamination from protective clothing and equipment with a detergent/water solution and soft bristle scrub brushes.
- Removal of protective clothing (disposable items shall be discarded into a container conspicuously marked "Potentially Contaminated Clothing").
- Workers washing hands and face with potable water and soap whenever they remove PPE and leave the exclusion zone.

The maximum decontamination layout is described in the following table. Within this format, the **bolded** sections represent the minimum requirements for all tasks conducted in an established exclusion zone. Should the task or scope require use of the material identified as optional, those sections will become mandatory (at the discretion of the on-site safety representative).

Maximum/Minimum Measures for Decontamination

Station 1:	Segregated Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different plastic-lined containers. Segregation at the drop reduces the probability of cross contamination.
Station 2:	Boot Cover and Glove Wash	Scrub outer boot covers and gloves with detergent and water.
Station 3:	Boot Cover and Glove Rinse	Rinse off from Station 2 using as much water as necessary.
Station 4:	Coverall Removal (if worn)	With the helper's assistance, remove disposable coveralls. Deposit it in a plastic-lined container.
Station 5:	Boot Cover Removal	Remove boot covers, and deposit them in the plastic-lined container for decontamination and reuse.
Station 6:	Outer Glove Removal	Remove outer gloves, and deposit them in a plastic-lined container for disposal.
Station 7:	Cartridge or Mask Change (Level C usage). As applicable, not all operations will require respiratory protection.	If worker leaves exclusion zone to change cartridges (or mask), this is the last step in the decontamination procedure. Worker's cartridges exchanged, new outer gloves and boot covers donned, and joints taped. Worker returns to duty.
Station 8:	Inner Glove Removal	Remove inner gloves and deposit them in the plastic-lined container.
Station 9:	Field Wash	Wash hands and face with potable water.
Station 10:	Heat stress evaluation/Break Heat stress monitoring will be conducted on an as needed basis.	If heat stress monitoring procedures are engaged, they should be performed at the very beginning of the break periods. Break areas should consist of a shaded area with the ability to provide drinking fluids to personnel, if necessary.

7.3 DECONTAMINATION OF SAMPLING TOOLS

All sampling equipment will be cleaned between sample acquisitions in accordance with the requirements established in the sampling plan. In addition, all sampling equipment that will be leaving the site will require a thorough decontamination, and approval by the FOL or SSO to verify it has been properly decontaminated, prior to leaving the site. This can be accomplished either by steam cleaning or by a detergent wash and potable water rinse until tools are visibly clean.

7.4 CLOSURE OF THE PERSONNEL DECONTAMINATION STATION

Decontamination-generated liquid wastes, all disposable clothing and plastic sheeting used during the operation will be containerized, labeled, and staged on-site to await disposal. The disposal method used will be based upon available information regarding the characteristics of the site, sample analysis, and contaminant levels. Reusable protective equipment will be cleaned, dried, and prepared for future use. (If gross contamination has occurred, the item will be properly disposed of.)

All wash tubs, pail containers, etc., will be thoroughly washed, rinsed, and dried prior to removal from the site. The SSO will be responsible for inspecting and clearing equipment to leave the site.

7.5 EMERGENCY DECONTAMINATION PROCEDURES

In addition to routine decontamination procedures, emergency decontamination procedures will establish the protocol to be followed in the event of a medical emergency. This procedure will be established and conducted based on the severity of the injury including procedures for potential loss of life and injury requiring first-aid. (NOTE: An emergency first aid instruction poster has been attached to this HASP. This shall be posted at the site at a convenient location.)

Potential loss of life:

- Delay decontamination (if necessary), or modify it to perform as much decontamination of the injured person as possible.
- Stabilize victim.
- Wrap the victim in blankets, or plastic sheeting to reduce the potential of contamination to medical personnel.
- All medical support will be informed of the suspected hazards associated with the task. All receiving facilities however must be alerted to the potential hazards. Clearance from the hospital for accepting potentially contaminated personnel will be obtained by the SSO prior to the commencement of on-site activities.

Injury:

In situations where the contamination is extremely toxic or corrosive:

- Implement immediate decontamination procedures.
- Administer First-Aid (if qualified to do so).
- For heat related disorders, remove all protective clothing, wash as appropriate, treat for heat stress. (Note: Extremely toxic or corrosive contamination is not expected to be encountered based upon known site characteristics).

7.6 DECONTAMINATION EVALUATION

The decontamination process effectiveness will be judged in the following manner:

- Visual observation - Discoloration, stains, visible dirt, and alterations of the fabric due to chemical contact will be the primary method used to determine effectiveness.

The following methods may be used if gross contamination is encountered:

- Monitoring Instrumentation - Instruments used to detect site contaminants may be employed to scan garments and equipment for the presence of site contaminants after decontamination procedures have been employed.
- Decontamination Solution Analyses - An analyses of the solution (final rinse) for the presence of contaminants may suggest additional cleaning is required. This information may be useful in the ultimate disposal of the fluids generated.
- Sample Analyses - Sample analyses may indicate the level of contamination and therefore the potential for contamination. Once again this information may be useful in the ultimate disposal.

It is suggested that a combination of methods be used to determine the effectiveness of the decontamination of the process used.

8.0 TRAINING REQUIREMENTS

This section describes the minimum requirements for initial, refresher, and site-specific training.

8.1 INTRODUCTORY AND REFRESHER TRAINING

8.1.1 Requirements for B&R Environmental Personnel

All B&R Environmental personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at IHDIV-NSWC. Additionally, B&R Environmental personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training within the past 12 months before being cleared for site work.

Documentation of B&R Environmental introductory and refresher training will be maintained at the project. Copies of certificates or other official documentation will be used to fulfill this requirement.

8.1.2 Requirements for Subcontractors

All B&R Environmental subcontractor personnel must have completed introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e) and 8 hours of refresher training, as applicable, meeting the requirements of 29 CFR 1910.120(e)(8) prior to performing field work at Indian Head. B&R Environmental subcontractors must certify that each employee has had such training by sending B&R Environmental a letter, on company letterhead, containing the information in the example letter provided as Figure 8-1. Figures 8-1 and 9-2 can be combined into one letter. Copies of the training certificates must be submitted with the letter, and will be maintained on-site.

8.2 SITE-SPECIFIC TRAINING

B&R Environmental will provide site-specific training to all B&R Environmental employees and subcontractor personnel who will perform work at this project. Site-specific training will include:

- Names of personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on-site
- Use of personal protective equipment
- Work practices to minimize risks from hazards
- Safe use of engineering controls and equipment

FIGURE 8-1

OSHA TRAINING CERTIFICATION

The following statements must be typed on company letterhead and signed by an officer of the company:

LOGO
XYZ CORPORATION
555 E. 5th Street
Nowheresville, Kansas 55555

Month, day, year

Mr. George Latulippe, P.E.
Project Manager
Halliburton NUS
661 Andersen Drive
Pittsburgh, Pennsylvania 15220

Subject: Hazardous Waste Site Training - IHDIV-NSWC

Dear Mr. Latulippe:

The employees listed below have had introductory hazardous waste site training or equivalent work experience as required by 29 CFR 1910.120(e). In addition, those employees listed below who have received their introductory training more than 12 months ago have also received 8 hours of refresher training in accordance with 29 CFR 1910.120 (e)(8) within the past 12 months.

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE

Should you have any questions, please contact me at (555) 555-5555.

Sincerely,

(Name of Company Officer)

ENCLOSE TRAINING CERTIFICATES

- Medical surveillance requirements
- Signs and symptoms of overexposure
- The contents of the health and safety plan and addendum
- Emergency response procedures (evacuation and assembly points)
- Review the contents of relevant Material Safety Data Sheets

8.2.1 Site-Specific Training Documentation

B&R Environmental and subcontractor personnel will be required to sign a statement indicating receipt of site-specific training and understanding of site hazards and control measures. Figure 8-2 will be used to document site-specific training.

9.0 MEDICAL SURVEILLANCE

9.1 REQUIREMENTS FOR B&R ENVIRONMENTAL PERSONNEL

All B&R Environmental personnel participating in project field activities will have had a physical examination meeting the requirements of Halliburton NUS' medical surveillance program and will be medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained in the B&R Environmental Pittsburgh office and made available as necessary.

9.2 REQUIREMENTS FOR SUBCONTRACTORS

Subcontractors are required to obtain a certificate of their ability to perform hazardous waste site work and to wear respiratory protection. The "Subcontractor Medical Approval Form" (Figure 9-1) can be used to satisfy this requirement providing it is properly completed and signed by a licensed physician.

Subcontractors who have a company medical surveillance program meeting the requirements of paragraph (f) of OSHA 29 CFR 1910.120 can substitute Figure 9-1 with a letter, on company letterhead, containing all of the information in the example letter presented as Figure 9-2. Figures 8-1 and 9-2 can be combined into one letter.

9.3 REQUIREMENTS FOR ALL FIELD PERSONNEL

Each field team member (including subcontractors) shall be required to complete and submit a copy of Attachment C (Medical Data Sheet). This shall be provided to the SSO prior to participating in site activities.

FIGURE 9-1

SUBCONTRACTOR MEDICAL APPROVAL FORM

For employees of _____
Company Name

Participant Name: _____ Date of Exam: _____

Part A

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f) and found to be medically -

- qualified to perform work at the IHDIV-NSWC work site
- not qualified to perform work at the IHDIV-NSWC work site

and,

2. Undergone a physical examination as per OSHA 29 CFR 1910.134(b)(10) and found to be medically -

- qualified to wear respiratory protection
- not qualified to wear respiratory protection

My evaluation has been based on the following information, as provided to me by the employer:

- A copy of OSHA Standard 29 CFR 1910.120 and appendices.
- A description of the employee's duties as they relate to the employee's exposures.
- A list of known/suspected contaminants and their concentrations (if known).
- A description of any personal protective equipment used or to be used.
- Information from previous medical examinations of the employee which is not readily available to the examining physician.

Part B

I, _____, have examined _____
Physician's Name (print) Participant's Name (print)
and have determined the following information:

**FIGURE 9-1
SUBCONTRACTOR MEDICAL APPROVAL FORM
PAGE TWO**

1. Results of the medical examination and tests (excluding findings or diagnoses unrelated to occupational exposure):

2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

3. Recommended limitations upon the employee's assigned work:

I have informed this participant of the results of this medical examination and any medical conditions which require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the _____ work site, this participant

- may
 may not

perform his/her assigned task.

Physician's Signature _____

Address _____

Phone Number _____

NOTE: Copies of test results are maintained and available at:

Address

FIGURE 9-2

MEDICAL SURVEILLANCE LETTER

The following statements must be typed on company letterhead and signed by an officer of the company:

LOGO
XYZ CORPORATION
555 E. 5th Street
Nowheresville, Kansas 55555

Month, day, year

Mr. George Latulippe, P.E.
Project Manager
Halliburton NUS
661 Andersen Drive
Pittsburgh, Pennsylvania 15220

Subject: Medical Surveillance - IHDIV-NSWC

Dear Mr. Latulippe:

As an officer of XYZ Corporation, I hereby state that the persons listed below participate in a medical surveillance program meeting the requirements contained in paragraph (f) of Title 29 of the Code of Federal Regulations (CFR), Part 1910.120 entitled "Hazardous Waste Operations and Emergency Response: Final Rule". I further state that the persons listed below have had physical examinations under this program within the past 12 months and that they have been cleared, by a licensed physician, to perform hazardous waste site work and to wear positive and negative pressure respiratory protection. I also state that, to my knowledge, no person listed below has any medical restriction that would preclude him/her from working at IHDIV-NSWC.

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE

Should you have any questions, please contact me at (555) 555-5555.

Sincerely,

(Name of Company Officer)

10.0 STANDARD WORK PRACTICES

The following Standard Work Practices are to be applied in addition to the Health and Safety Standard Operating procedures:

- * Eating, drinking, chewing gum or tobacco, taking medication, and smoking are prohibited in the exclusion or decontamination zones, or any location where there is a possibility for contact with site contaminants exists.
- * Upon leaving the exclusion zone, hands and face must be thoroughly washed with soap and potable water. Any protective outer clothing is to be decontaminated and removed as specified in this HASP, and left at a designated area prior to entering the clean area.
- * Contact with potentially-contaminated substances must be avoided. Contact with the ground or with contaminated equipment must also be avoided.
- * No facial hair, which interferes with a satisfactory fit of the mask-to-face seal, is permitted on personnel required to wear respiratory protective equipment.
- * All personnel must satisfy all training requirements (40-hr initial, 8-hr refresher, site-specific training, emergency response training) prior to commencing site activities.
- * All personnel must have a working knowledge of this HASP, including being aware of the action levels for upgrading/downgrading levels of protective equipment, and emergency procedures.
- * All personnel must satisfy medical monitoring procedures.
- * All personnel must complete a medical data sheet, to be maintained on-site (see Attachment C).
- * All personnel working in sight restriction areas of heavy vegetation or where the topography does not permit line of sight contact must utilize the buddy system.
- * When lifting or moving equipment or material, use proper lifting techniques.
- * All work areas must be kept free of ground clutter.

- * No flames or open fires will be permitted on-site.

- * Site personnel must immediately notify B&R Environmental Health Sciences of all incidents for OSHA recordkeeping purposes.

- * If personnel note any warning properties of chemicals (irritation, odors, symptoms, etc.) or even remotely suspect the occurrence of exposure, they must immediately notify the SSO for further direction.

- * Site personnel are not to undertake any activity which would be considered a confined-space entry. Confined-space entry operations cannot be performed without first being trained in the proper procedures, and obtaining a Confined Space/Limited Egress Permit.

- * A full-sized copy of the OSHA poster included as Attachment B of this HASP shall be conspicuously posted on-site.

- * Any new information must be promptly conveyed to the Project HSO and the FOL.

- * All compressed gas cylinders used (empty or full) must be stored, secured, and used properly to protect from damage.

11.0 SPILL CONTROL

11.1 SPILL CONTROL

Bulk quantities of liquids or containers larger than 55-gallons are not anticipated to be handled during this work and major spills of hazardous materials are, therefore, not anticipated. As a result, it has been determined that a spill discharge and control plan is not necessary.

12.0 SITE CONTROL

This section outlines the means by which B&R Environmental will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is anticipated that a three zone approach will be used during work at this site: exclusion zone, contamination reduction zone, and support zone.

12.1 EXCLUSION ZONE

The exclusion zone will be considered those areas of the site of known or suspected contamination. However, significant amounts of surface contamination may not be encountered in the proposed work areas of this site until/unless contaminants are brought to the surface by soil sampling activities. Furthermore, once such activities have been completed and surface contamination has been removed, the potential for exposure is again diminished and the area can then be reclassified as part of the contamination reduction zone. Therefore, the exclusion zones for this project will be limited to those areas of the site where active work is being performed and/or anywhere there is believed to be the potential for inhalation and/or ingestion exposure to site contaminants.

12.2 CONTAMINATION REDUCTION ZONE

The contamination reduction zone (CRZ) will be a buffer area between the exclusion zone and any area of the site where contamination is not suspected. The personnel and equipment decontamination area established for this project will take place in the CRZ. This area will serve as a focal point in supporting exclusion zone activities. In addition, this area will serve as the access and control points to the exclusion zone.

12.3 SUPPORT ZONE

The support zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. In all cases, the support zones will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

12.4 SITE MAP

Once the areas of contamination, access routes, topography, and dispersion routes are determined, a site map will be generated and adjusted as site conditions change. These maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points.

12.5 BUDDY SYSTEM

Personnel engaged in onsite activities will practice the "buddy system" to insure the safety of all personnel involved in this operation.

12.6 MATERIALS SAFETY DATA SHEET (MSDS) REQUIREMENTS

B&R Environmental personnel will provide MSDSs for all chemicals brought on-site. The contents of these documents will be reviewed by the Health and Safety Officer with the user(s) of the chemical substances prior to any actual use or application of the substances on-site. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request. The SSO will create and maintain an inventory of those substances and perform other functions necessary to comply with OSHA 1910.1200 Hazard Communication requirements.

12.7 COMMUNICATION

Proposed site activities will not require site workers to be separated by significant distances. Workers will be in close proximity to one another and communication will be able to be accomplished without the need of two-way radios.

External communication will be done so utilizing the telephones at predetermined and approved locations where work is being conducted. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of site activities, the FOL and Base contact will determine and arrange for telephone communications.

13.0 EMERGENCY RESPONSE PLAN

In the event of any on-site emergencies (i.e., fires, significant spills or releases, etc.), site personnel shall be immediately evacuated to a safe place of refuge and notify appropriate off-site response agencies identified on Figure 13-1. In view of this approach, this section of the Health and Safety Plan is provided to be in compliance with OSHA Standard 29 CFR 1910.38(a) [as permitted by OSHA 29 CFR 1910.120(l)(1)(ii)].

13.1 EMERGENCY ESCAPE

If site evacuation becomes necessary, personnel shall immediately take the most direct route to the main gate where they will await further instruction from the B&R Environmental FOL.

13.2 MAINTENANCE OF CRITICAL OPERATIONS

It is not anticipated that any personnel will need to remain at their worksite to maintain any critical operations. If this condition should change, the site Health and Safety Officer shall identify the personnel and their responsibilities in this regard and amend this Plan accordingly. Any such modifications must be communicated to the Health and Safety Manager for concurrence.

13.3 PERSONNEL ACCOUNTING

In the event of an emergency evacuation, personnel shall immediately report to the designated refuge location and remain there. The SSO, assisted by the FOL, shall conduct a roll call (using the site log book) to account for all personnel to ensure that a total worksite evacuation has taken place. If the roll call identifies that any personnel are not accounted for, this information shall be immediately communicated to the off-site emergency response agency upon their arrival. This information is to be supplemented with any additional information available which could be of assistance in conducting rescue operations (i.e., last known location of the missing personnel, etc.). Site personnel are not authorized to participate in emergency response/rescue operations.

13.4 RESCUE AND MEDICAL DUTIES

Site personnel are not authorized to participate in rescue activities. However, any personnel present who are trained to perform emergency first aid activities may perform these functions, if needed, after rescue or evacuation operations have been completed.

13.5 EMERGENCY REPORTING

Emergency reporting functions shall be the responsibility of the FOL. Figure 13-1 identifies the agencies to be contacted. The FOL will become thoroughly familiar with this Plan prior to the initiation of any site work activities.

In the event that an emergency incident occurs and off-site response assistance is necessary, the FOL shall contact the appropriate agency (or agencies) and communicate the following information:

- Nature of the incident (fire, spill, chemical exposure, physical injury, etc.)
- Number of injuries and type(s) of injury (injuries)
- Possible contaminants which may be encountered in response efforts

13.6 SITE EMERGENCY ALARM SYSTEM

All workers will be in close proximity to each other, therefore, an emergency alarm system is not needed.

FIGURE 13-1

EMERGENCY NOTIFICATION AND DIRECTIONS TO HOSPITAL

EMERGENCY PHONE NUMBERS

FIRE DEPARTMENT (IHDIV-NSWC)	(301) 743-4333
POLICE DEPARTMENT (IHDIV-NSWC)	(301) 743-4381
RESCUE/AMBULANCE (IHDIV-NSWC)	(301) 743-4449
PRIMARY HOSPITAL (Physicians Memorial)	(301) 645-0100
ALTERNATE HOSPITAL (Southern Maryland)	(301) 868-8000
OFF-SITE EMERGENCY SERVICE (Sheriff)	(301) 870-3232
POISON CONTROL CENTER	(800) 962-1253
NATIONAL RESPONSE CENTER	(800) 424-8802
PROJECT MANAGER - (George Latulippe, P.E.)	(412) 921-8684
PROJECT HSO - (Donald J. Westerhoff)	(412) 921-7281
NAVY CLEAN H&S MGR. - (Matthew M. Soltis, CIH, CSP)	(412) 921-8912

DIRECTIONS TO HOSPITAL:

PHYSICIANS MEMORIAL HOSPITAL, LA PLATA, MARYLAND (PRIMARY)

Take Indian Head Highway (MD Route 210) North to MD. Route 225. Turn right on Route 225 and follow until junction with MD. Route 301. Turn right on Route 301. Turn left at first traffic light. The hospital is on the right, about a 1/2 block past the railroad tracks.

SOUTHERN MARYLAND HOSPITAL, CLINTON, MARYLAND (ALTERNATE)

Take Indian Head Highway (MD. Route 210) North to MD. Route 373. Follow until intersection with Branch Ave. (MD. Route 5). Turn left on Branch Ave., right on Surratts Road. The hospital is just past the Colony South Hotel.

14.0 CONFINED SPACE ENTRY PROCEDURES

No confined space activity is planned as part of this proposed field activity, therefore this section will not apply. If any confined space activities are to be performed, the Project HSO must be notified and this HASP shall be modified accordingly.

15.0 MATERIALS AND DOCUMENTS

The B&R Environmental FOL shall ensure the following materials/documents are taken to the project site and utilized as required.

15.1 DOCUMENTATION

- Health and Safety Log Book
- Instrument Log Sheets
- HASP (Signed Copy)
- OSHA Poster 11" x 14"
- MSDSs (if applicable)
- Medical Data Sheets
- Employee Training Certificates
- Medical Surveillance Documentation
- Incident Reports
- Fit Test Records

15.2 HEALTH AND SAFETY EQUIPMENT

- First Aid Kit (Physician's Approved)
- ANSI approved eye wash
- Class ABC fire extinguishers
- Nitrile gloves
- Latex inner gloves
- Tyvek coveralls
- Chemical resistant tyvek
- Barricade tape
- Boot covers
- Duct tape
- Decon kit (Alconox tube, brush, sorbants, step stool)
- Hard hats
- Safety glasses
- Splash shield
- Steel-Toe/Shank Boots

ATTACHMENT A
HEAT/COLD STRESS

HEAT/COLD STRESS

Heat Stress

The HSO shall visually monitor personnel to note for signs of heat stress. Field personnel will also be instructed to observe for symptoms of heat stress and methods on how to control it. One or more of the following control measures can be used to help control heat stress:

- Provide adequate liquids to replace lost body fluids. Personnel must replace water and salt lost from sweating. Personnel must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.
- Replacement fluids can be commercial mixes such as Gatorade®.
- Establish a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts of workers.
- Cooling devices such as vortex tubes or cooling vests can be worn beneath protective garments.
- Breaks are to be taken in a cool rest area (77°F is best).
- Personnel shall remove impermeable protective garments during rest periods.
- Personnel shall not be assigned other tasks during rest periods.
- Personnel shall be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

The heat stress of personnel on-site may be monitored utilizing biological monitoring or the Wet Bulb Globe Temperature Index (WBGT) technique when workers are not wearing protective coveralls (i.e., Tyvek®). This method will require the use of a heat stress monitoring device.

One of the following biological monitoring procedures shall be followed when the workplace temperature is 70°F or above.

- Heart rate (HR) shall be measured by the pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 10 minutes (or 33 percent), while the length of rest period stays the same. If the pulse rate is 100 beats/minute at the beginning of the next rest period, the following work cycle should be shortened by 33 percent. The length of the initial work period will be determined by using the table below.

PERMISSIBLE HEAT EXPOSURE THRESHOLD LIMIT VALUES

Work-Rest Regimen	Work Load		
	Light	Moderate	Heavy
Continuous	80.0°F	80.0°F	77.0°F
75% Work -25% Rest, Each Hour	87.0°F	82.4°F	78.6°F
50% Work - 50% Rest, Each Hour	88.5°F	85.0°F	82.2°F
25% Work 75% Rest, Each Hour	90.0°F	88.0°F	86.0°F

- Body temperature shall be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature (OT) at the beginning of the rest period should not exceed 99°F. If it does, the next work period should be shortened by 10 minutes (or 33 percent), while the length of the rest period stays the same. However, if the OT exceeds 99.7°F at the beginning of the next rest period, the following work cycle shall be further shortened by 33 percent. OT should be measured at the end of the rest period to make sure that it has dropped below 99°F. At no time shall work begin with the oral temperature above 99°F.

NOTE: External temperatures in excess of those stated above shall be regarded as inclement weather. Work continuation, termination, or alteration of the work schedule will be at the discretion of the FOL and on-site health and safety representative. The heat and cold stress related sections of this are applicable to the season when work will be completed.

Cold Stress

The cold stress Threshold Limit Values (TLVs) are intended to protect workers from the severest effects of cold stress (hypothermia) and cold injury and to describe exposures to cold working conditions under which it is believed that nearly all workers can be repeatedly exposed without adverse health effects. The TLV objective is to prevent the deep body temperature from falling below 36°C (96.8°F) and to prevent cold injury to body extremities. (Deep body temperature is the core temperature of the body determined by conventional methods for rectal temperature measurements.) For a single, occasional exposure to a cold environment, a drop in core temperature to no lower than 35°C (95°F) should be permitted. In addition to provisions for total body protection, the TLV objective is to protect all parts of the body with emphasis on hands, feet, and head from cold injury.

Introduction

Fatal exposures to cold among workers have almost always resulted from accidental exposures involving failure to escape from low environmental air temperatures or from immersion in low temperature water. The single most important aspect of life-threatening hypothermia is the fall in the deep core temperature of the body. The clinical presentations of victims of hypothermia are shown in Table 1. Workers should be protected from exposure to cold so that the deep core temperature does not fall below 36°C (96.8°F); lower body temperatures will very likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences.

Pain in the extremities may be the first early warning of danger to cold stress. During exposure to cold, maximum severe shivering depends when the body temperature has fallen to 35°C (95°F). This must be taken as a sign of danger to the workers and exposure to cold should be immediately terminated for any workers when severe shivering becomes evident. Useful physical or mental work is limited when severe shivering occurs.

Since prolonged exposure to cold air, or to immersion in cold water, at temperatures well above freezing can lead to dangerous hypothermia, whole body protection must be provided.

1. Adequate insulating dry clothing to maintain core temperatures above 36°C (96.8°F) must be provided to workers if work is performed in air temperatures below 4°C (40°F). Wind chill cooling rate and the cooling power of air are critical factors. [Wind chill cooling rate is defined as heat loss from a body expressed in watts per meter squared which is a function of the air temperature and wind velocity upon the exposed body.] The higher the wind speed and the lower the temperature in the work area, the greater the insulation value of the protective clothing required. An equivalent chill temperature chart relating the actual dry bulb air temperature and the wind velocity is presented in Table 2. The equivalent chill temperature should be used when estimating the combined cooling effect of wind and low air temperatures on exposed skin or when determining clothing insulation requirements to maintain the deep body core temperature.

**TABLE 1
PROGRESSIVE CLINICAL PRESENTATIONS OF HYPOTHERMIA***

Core Temperature		Clinical Signs
°C	°F	
37.6	99.6	"Normal" rectal temperature
37	98.6	"Normal" oral temperature
36	96.8	Metabolic rate increases in an attempt to compensate for heat loss
35	95.0	Maximum shivering
34	93.2	Victim conscious and responsive, with normal blood pressure
33	91.4	Severe hypothermia below this temperature
32	86.0	Consciousness clouded; blood pressure becomes difficult to obtain; pupils dilated but react to light; shivering ceases
31	87.8	
30	86.0	Progressive loss of consciousness; muscular rigidity increases; pulse and blood pressure difficult to obtain; respiratory rate decreases
29	84.2	
28	82.4	Ventricular fibrillation possible with myocardial irritability
27	80.6	Voluntary motion ceases; pupils nonreactive to light; deep tendon and superficial reflexes absent
26	78.8	Victim seldom conscious
25	77.0	Ventricular fibrillation may occur spontaneously
24	75.2	Pulmonary edema
22	71.6	Maximum risk of ventricular fibrillation
21	69.8	
20	68.0	Cardiac standstill
18	64.4	Lowest accidental hypothermia victim to recover
17	62.6	Isoelectric electroencephalogram
9	48.2	Lowest artificially cooled hypothermia patient to recover

* Presentations approximately related to core temperature. Reprinted from the January 1982 issue of American Family Physician, published by the American Academy of Family Physician.

TABLE 2
COOLING POWER OF WIND ON EXPOSED FLESH EXPRESSED AS EQUIVALENT TEMPERATURE
(under calm conditions)*

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148

(Wind speeds greater than 40 mph have little additional effect)	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security	INCREASING DANGER Danger from freezing of exposed flesh within one minute.	GREAT DANGER Flesh may freeze within 30 seconds.
Trenchfoot and immersion foot may occur at any point on this chart.			

* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

2. Unless there are unusual or extenuating circumstances, cold injury to other than hands, feet, and head is not likely to occur without the development of the initial signs of hypothermia. Older workers or workers with circulatory problems require special precautionary protection against cold injury. The use of extra insulating clothing and/or a reduction in the duration of the exposure period are among the special precautions which should be considered. The precautionary actions to be taken will depend upon the physical condition of the worker and should be determined with the advice of a physician with knowledge of the cold stress factors and the medical condition of the worker.

Evaluation and Control

For exposed skin, continuous exposure should not be permitted when the air speed and temperature results in an equivalent chill temperature of -32°C (-25.6°F). Superficial or deep local tissue freezing will occur only at temperatures below -1°C (30.2°F) regardless of wind speed.

At air temperatures of 2°C (35.6°F) or less, it is imperative that workers who become immersed in water or whose clothing becomes wet be immediately provided a change of clothing and be treated for hypothermia.

TLVs recommended for properly clothed workers for periods of work at temperatures below freezing are shown in Table 3.

Special protection of the hands is required to maintain manual dexterity for the prevention of accidents:

1. If fine work is to be performed with bare hands for more than 10-20 minutes in an environment below 16°C (60.8°F), special provisions should be established for keeping the workers' hands warm. For this purpose, warm air jets, radiant heaters (fuel burner or electric radiator), or contact warm plates may be utilized. Metal handles of tools and control bars should be covered by thermal insulating material at temperatures below -1°C (30.2°F).
2. If the air temperature falls below 16°C (60.8°F) for sedentary, 4°C (39.2°F) for light, -7°C (19.4°F) for moderate work and fine manual dexterity is not required, then gloves should be used by the workers.

To prevent contact frostbite, the workers should wear anti-contact gloves.

1. When cold surfaces below -7°C (19.4°F) are within reach, a warning should be given to each worker by the supervisor to prevent inadvertent contact by bare skin.
2. If the air temperature is -17.5°C (0°F) or less, the hands should be protected by mittens. Machine controls and tools for use in cold conditions should be designed so that they can be handled without removing the mittens.

Provisions for additional total body protection are required if work is performed in an environment at or below 4°C (39.2°F). The workers should wear cold protective clothing appropriate for the level of cold and physical activity:

1. If the air velocity at the job site is increased by wind, draft, or artificial ventilating equipment, the cooling effect of the wind should be reduced by shielding the work area or by wearing an easily removable windbreak garment.

**TABLE 3
THRESHOLD LIMIT VALUES WORK/WARM-UP SCHEDULE FOR FOUR-HOUR SHIFT***

Air Temperature - Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
°C (approx)	°F (approx)	Max. Work Period	No. of Breaks								
-26° to -28°	-15° to -19°	(Norm Breaks) 1		(Norm Breaks) 1		75 min	2	55 min	3	40 min	4
-29° to -31°	-20° to -24°	(Norm Breaks) 1		75 min	2	55 min	3	40 min	4	30 min	5
-32° to -34°	-25° to -29°	75 min	2	55 min	3	40 min	4	30 min	5	Non-emergency work should cease	
-35° to -37°	-30° to -34°	55 min	3	40 min	2	30 min	5	Non-emergency work should cease		Non-emergency work should cease	
-38° to -39°	-35° to -39°	40 min	4	30 min	1	Non-emergency work should cease		Non-emergency work should cease		Non-emergency work should cease	
-40° to -42°	-40° to -44°	30 min	5	Non-emergency work should cease							
-43° & below	-45° & below	Non-emergency work should cease									

NOTES:

- Schedule applies to moderate-to-heavy work activity with warm-up breaks of ten (10) minutes in a warm location. For Light-to-Moderate Work (limited physical movement): apply the schedule one step lower. For example, at -35°C (-30°F) with no noticeable wind (Step 4), a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4-hour period (Step 5).
- The following is suggested as a guide for estimating wind velocity if accurate information is not available: 5 mph: light flag moves; 10 mph: light flag fully extended; 15 mph: raises newspaper sheet; 20 mph: blowing and drifting snow.
- If only the wind chill cooling rate is available, a rough rule of thumb for applying it rather than the temperature and wind velocity factors given above would be: 1) special warm-up breaks should be initiated at a wind chill cooling rate of about 1750 W/M²; 2) all non-emergency work should have ceased at or before a wind chill of 2250 W/m². In general, the warm-up schedule provided above slightly under-compensates for the wind at the warmer temperatures, assuming acclimatization and clothing appropriate for winter work. On the other hand, the chart slightly over-compensates for the actual temperatures in the colder ranges, since windy conditions rarely prevail at extremely low temperatures.
- TLVs apply only for workers in dry clothing.

* Adapted from Occupational Health & Safety Division, Saskatchewan Department of Labor.

2. If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of the clothing in use may be of a type impermeable to water. With more severe work under such conditions, the outer layer should be water repellent, and the outerwear should be changed as it becomes wetted. The outer garments should include provisions for easy ventilation in order to prevent wetting of inner layers of sweat. If work is done at normal temperatures or in a hot environment before entering the cold area, the employee should make sure that clothing is not wet as a consequence of sweating. If clothing is wet, the employee should change into dry clothes before entering the cold area. The workers should change socks and any removable felt insoles at regular daily intervals or use vapor barrier boots. The optimal frequency of change should be determined empirically and will vary individually and according to the type of shoe worn and how much the individual's feet sweat.
3. If exposed areas of the body cannot be protected sufficiently to prevent sensation of excessive cold or frostbite, protective items should be supplied in auxiliary heated versions.
4. If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work should be modified or suspended until adequate clothing is made available or until weather conditions improve.
5. Workers handling evaporative liquid (gasoline, alcohol, or cleaning fluids) at air temperatures below 4°C (39.2°F) should take special precautions to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling. Special note should be taken of the particularly acute effects of splashes of "cryogenic fluids" or those liquids with a boiling point that is just above ambient temperature.

Work - Warming Regimen

If work is performed continuously in the cold at an equivalent chill temperature (ECT) or below -7°C (19.4°F), heated warming shelters (tents, cabins, rest rooms, etc.) should be made available nearby. The workers should be encouraged to use these shelters at regular intervals, the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or euphoria are indications for immediate return to the shelter. When entering the heated shelter, the outer layer of clothing should be removed and the remainder of the clothing loosened to permit sweat evaporation or a change of dry work clothing provided. A change of dry work clothing should be provided as necessary to prevent workers from returning to work with wet clothing. Dehydration, or the loss of body fluids, occurs insidiously in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited because of the diuretic and circulatory effects.

For work practices at or below -12°C (10.4°F) ECT, the following should apply:

1. The worker should be under constant protective observation (buddy system or supervision).
2. The work rate should not be so high as to cause heavy sweating that will result in wet clothing; if heavy work must be done, rest periods should be taken in heated shelters and opportunity for changing into dry clothing should be provided.
3. New employees should not be required to work fulltime in the cold during the first days of employment until they become accustomed to the working conditions and required protective clothing.
4. The weight and bulkiness of clothing should be included in estimating the required work performance and weights to be lifted by the worker.

5. The work should be arranged in such a way that sitting still or standing still for long periods is minimized. Unprotected metal chair seats should not be used. The worker should be protected from drafts to the greatest extent possible.
6. The workers should be instructed in safety and health procedures. The training program should include as a minimum instruction in:
 - a. Proper rewarming procedures and appropriate first aid treatment.
 - b. Proper clothing practices.
 - c. Proper eating and drinking habits.
 - d. Recognition of impending frostbite.
 - e. Recognition of signs and symptoms of impending hypothermia or excessive cooling of the body even when shivering does not occur.
 - f. Safe work practices.

Special Workplace Recommendations

Special design requirements for refrigerator rooms include:

1. In refrigerator rooms, the air velocity should be minimized as much as possible and should not exceed 1 meter/sec (200 fpm) at the job site. This can be achieved by properly designed air distribution systems.
2. Special wind protective clothing should be provided based upon existing air velocities to which workers are exposed.

Special caution should be exercised when working with toxic substances and when workers are exposed to vibration. Cold exposure may require reduced exposure limits.

Eye protection for workers employed out-of-doors in a snow and/or ice-covered terrain should be supplied.

Special safety goggles to protect against ultraviolet light and glare (which can produce temporary conjunctivitis and/or temperature loss of vision) and blowing ice crystals should be required when there is an expanse of snow coverage causing a potential eye exposure hazard.

Workplace monitoring is required as follows:

1. Suitable thermometry should be arranged at any workplace where the environmental temperature is below 16°C (60.8°F) so that overall compliance with the requirements of the TLV can be maintained.
2. Whenever the air temperature at a workplace falls below -1°C (30.2°F), the dry bulb temperature should be measured and recorded at least every 4 hours.
3. In indoor workplaces, the wind speed should also be recorded at least every 4 hours whenever the rate of air movement exceeds 2 meters per second (5 mph).
4. In outdoor work situations, the wind speed should be measured and recorded together with the air temperature whenever the air temperature is below -1°C (30.2°F)
5. The equivalent chill temperature should be obtained from Table 2 in all cases where air movement measurements are required; it should be recorded with the other data whenever the equivalent chill temperature is below -7°C (19.4°F).

Employees should be excluded from work in cold at -1°C (30.2°F) or below if they are suffering from diseases or taking medication which interferes with normal body temperature regulation or reduces tolerance to work in cold environments. Workers who are routinely exposed to temperatures below -24°C

(-11.2°F) with wind speeds less than five miles per hour, or air temperatures below -18°C (0°F) with wind speeds above five miles per hour, should be medically certified as suitable for such exposures.

Trauma sustained in freezing or subzero conditions requires special attention because an injured worker is predisposed to cold injury. Special provisions should be made to prevent hypothermia and freezing of damaged tissues in addition to providing for first aid treatment.

ATTACHMENT B

OSHA POSTER

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Requirements of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA Inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discrimination.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each

citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory penalties against employers of up to \$1,000 for each serious violation and for optional penalties of up to \$1,000 for each nonserious violation. Penalties of up to \$1,000 per day may be proposed for failure to correct violations within the proposed time period. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to \$10,000 for each such violation.

Criminal penalties are also provided for in the Act. Any willful violation resulting in death of an employee, upon conviction, is punishable by a fine of not more than \$10,000, or by imprisonment for not more than six months, or by both. Conviction of an employer after a first conviction doubles these maximum penalties.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

Such voluntary action should initially focus on the identification and elimination of hazards that could cause death, injury, or illness to employees and supervisors. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free consultative assistance, without citation or penalty, is available to employers, on request, through OSHA supported programs in most State departments of labor or health.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, Georgia
Boston, Massachusetts
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Kansas City, Missouri
New York, New York
Philadelphia, Pennsylvania
San Francisco, California
Seattle, Washington

Telephone numbers for these offices, and additional area office locations, are listed in the telephone directory under the United States Department of Labor in the United States Government listing.

Washington, D.C.
1985
OSHA 2203



William E. Brock, Secretary of Labor

U.S. Department of Labor
Occupational Safety and Health Administration



ATTACHMENT C
MEDICAL DATA SHEET

MEDICAL DATA SHEET

This brief Medical Data Sheet will be completed by all onsite personnel and will be kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project _____

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals _____

What medications are you presently using? _____

Do you have any medical restrictions? _____

Name, Address, and Phone Number of personal physician: _____

I am the individual described above. I have read and understand this HASP.

Signature

Date

ATTACHMENT D

Lyme Disease

ATTACHMENT D

Lyme disease - A newly recognized infectious disease characterized by fever, joint pain, and usually a distinctive red annular rash. Transmission of this disease is accomplished via a vector, in this case ticks. Once the infected tick attaches to the host (field personnel) it passes the bacteria (spirochete) via the bloodstream. From introduction of the bacteria to the onset of the signs and symptoms of the disease may vary from individual to individual however generally ranges from 1 to 4 weeks for initial symptoms. Initial treatment would indicate those individuals infected have responded well to treatment with penicillin. In addition to the aforementioned disease, ticks affectively vector many other maladies such as Rocky Mountain Spotted Fever, Tularaemia, and Tick paralysis.

Identification and Control

Several species of hard-backed ticks exist in a variety of climates, however, reward flourish during the early spring and summer. Typically, ticks exist in warm moist climates, heavily vegetative, and attach to their host through contact as the host passes by through grasses and underbrush. Tick identification may be accomplished through their markings and structure. To aid in this identification examples of different types of ticks which may be encountered have been included in Figure 1-D.

Tick Control. Climatic factors are probably the most important in natural control of ticks. As the timing of the field activities is not coordinated with the climatic and natural control of this hazard additional control measures must be implemented.

Control Measures. Every effort should be made to discover the presence of ticks on the body and clothing by careful examination, especially of the head, promptly after exposure to tick infested areas. Tyvek uniforms will be worn for all movement through the brush (potential tick infested areas). These uniforms will be discarded between excursions into the infested areas. These uniforms will be stored away from other garments to avoid potential infestation. Commercially produced repellents have been found to be fairly effective when applied to the outer garments prior to engaging in field activities. For this reason, these compounds will be employed. Additional precautions such as securing outer garments at the pants legs, wrists, and neck to avoid the opportunity of attachment. Field personnel shall assist one another in the detection of ticks and inspection of one another on exposed portions of the body.

Tick Removal. Should ticks successfully attach, removed by grabbing them as close to the skin as possible with a pair of tweezers and slowly pulling them out. This will take approximately 10 minutes. Once removed, a topical medication such as Tincture of iodine should be forced into the hole evacuated by the mouthparts. Care should be taken not to get the blood of crushed ticks into the eyes or into scratches or breaks in the skin. Prompt removal of discovered ticks will reduce the chance of serious consequences.