

**INTRUSIVE ACTIVITY PROTOCOL**  
**FOR THE**  
**CUMBERLAND VALLEY BUSINESS PARK**



**Prepared for the**  
**Letterkenny Industrial Development Authority**  
**By**  
***EPSYS Corporation***

## **Summary of Intrusive Activity Protocol Cumberland Valley Business Park**

The Letterkenny Industrial Development Authority (LIDA) has developed the following intrusive activity protocol plan for use by landowners and LIDA property lease tenants within the Cumberland Valley Business Park. It has been approved by the Army for use during intrusive activities such as construction excavation, demolition, or drilling which involves penetrating the ground surface of the property. Because all property within the park is considered to be within the National Priority Listing (Superfund) due to groundwater contamination, these precautions are to be followed to avoid exposure of any unknown contaminant sources or hazards to employees or contractors conducting their work.

### **Volume I - Sampling and Waste handling Plan for Intrusive Activity - October 1998**

The sampling requirements address the needs during *maintenance activities*, small jobs of short duration or emergency excavating, as well as *construction activities* with large volumes of soil disturbance. In general, prior to any excavation, notification of your intent to excavate must be given, a review of available environmental and utility background information should be completed, and a soil vapor survey by OVM or PID to discern any organic vapors which may exist. The number of tests and locations will vary with the size of the excavation. Soil sampling and analytical testing may be required based upon findings of the soil vapor investigation.

The characterization of the soil to be excavated will determine how it must be handled during excavation. Water which is encountered must also be analyzed to determine its handling and disposal.

### **Volume II - Health and Safety Plan for Intrusive Activity - October 1998**

The Health and Safety Plan (HASP) has been created by LIDA to provide a *unified systematic approach to personnel protection during construction within the proximity of any hazards* which may be encountered. The designation of a Health and Safety Officer (HSO) will be required for the proper management and compliance of each project. All notification, reporting, employee training, medical surveillance and compliance of personnel to use personal protective equipment will be the responsibility of each HSO.

The establishment of an "exclusion zone" is required in the presence of hazardous soil gases or contaminated groundwater. The level of protection required will be determined by the level of contamination encountered or expected from sampling. Precautions for confined space work, decontamination and emergency planning are also included in the HASP.

**Volume II**

**Health & Safety Plan for Intrusive Activity**

**Cumberland Valley Business Park**

**Prepared for**

**The Letterkenny Industrial Development Authority**

**by**

**EPSYS Corporation  
5801 Grayson Road  
Harrisburg PA 17111**

**October 1998**

## TABLE OF CONTENTS

	<u>PAGE</u>
	<u>NO.</u>
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 Site Description/Background .....	1
<b>2.0 CONTROL PLAN .....</b>	<b>2</b>
2.1 Work Zones .....	2
<b>3.0 HAZARD ASSESSMENT .....</b>	<b>3</b>
<b>4.0 PERSONNEL RESPONSIBILITY .....</b>	<b>3</b>
4.1 HSO .....	4
<b>5.0 GENERAL GUIDELINES AND PROCEDURES .....</b>	<b>6</b>
5.1 Medical Surveillance .....	6
5.2 Documentation .....	7
5.3 Safety Training .....	8
<b>6.0 PERSONNEL PROTECTION .....</b>	<b>8</b>
6.1 Determination of Level of Protection Requirements .....	9
6.1.1 Dermal Protection .....	11
6.1.2 Eye Protection .....	11
6.2 Air Monitoring .....	12
6.2.1 Equipment Calibration .....	12
6.2.2 Air Monitoring Location and Frequency .....	12
<b>7.0 TASK-SPECIFIC PERSONNEL PROTECTION GUIDELINES .....</b>	<b>13</b>
7.1 Excavating and Soil Sampling .....	13
7.2 Preparation for Entry into Confined Space .....	14
7.2.1 Removal of Contents .....	14
7.2.2 Isolation .....	14
7.2.3 Electrical Lockout .....	14
7.2.4 Securing Covers .....	15

7.2.5	Testing Atmosphere .....	15
7.2.6	Continuous Monitoring .....	15
7.2.7	Ventilation .....	15
7.2.8	Buddy System .....	15
7.2.9	Debris, Materials, Tools .....	16
7.3	Equipment for Confined Spaces .....	16
7.3.1	Means of Entry and Exit .....	16
7.3.2	Portable Light .....	16
7.3.3	High Volume Air Pump .....	16
7.3.4	Safety Equipment and Devices .....	16
7.4	Contractor Safety Equipment, Test Devices, and Training .....	18
<b>8.0</b>	<b>DECONTAMINATION PROCEDURES .....</b>	<b>18</b>
8.1	Personnel Decontamination Procedures .....	19
8.2	Equipment Decontamination .....	20
<b>9.0</b>	<b>CONTINGENCY PLANNING .....</b>	<b>21</b>
9.1	Emergency Procedures .....	21
9.2	Emergency Telephone Numbers and Routes .....	22
9.3	Evacuation Plan .....	24
<b>10.0</b>	<b>INCIDENT REPORTING .....</b>	<b>24</b>
<b>11.0</b>	<b>GENERAL WORK RULES .....</b>	<b>24</b>
<b>12.0</b>	<b>AFFIDAVIT OF COMPLIANCE .....</b>	<b>27</b>

## FIGURES

<b>FIGURE</b>		<b>FOLLOWS</b>
<u>NO.</u>		<u>PAGE</u>
1	Site Location Map .....	1
2	Hospital Route from LEAD .....	22

## TABLES

<b>TABLE</b>		
<u>NO.</u>		
1	Emergency Telephone Numbers .....	23

## APPENDICES

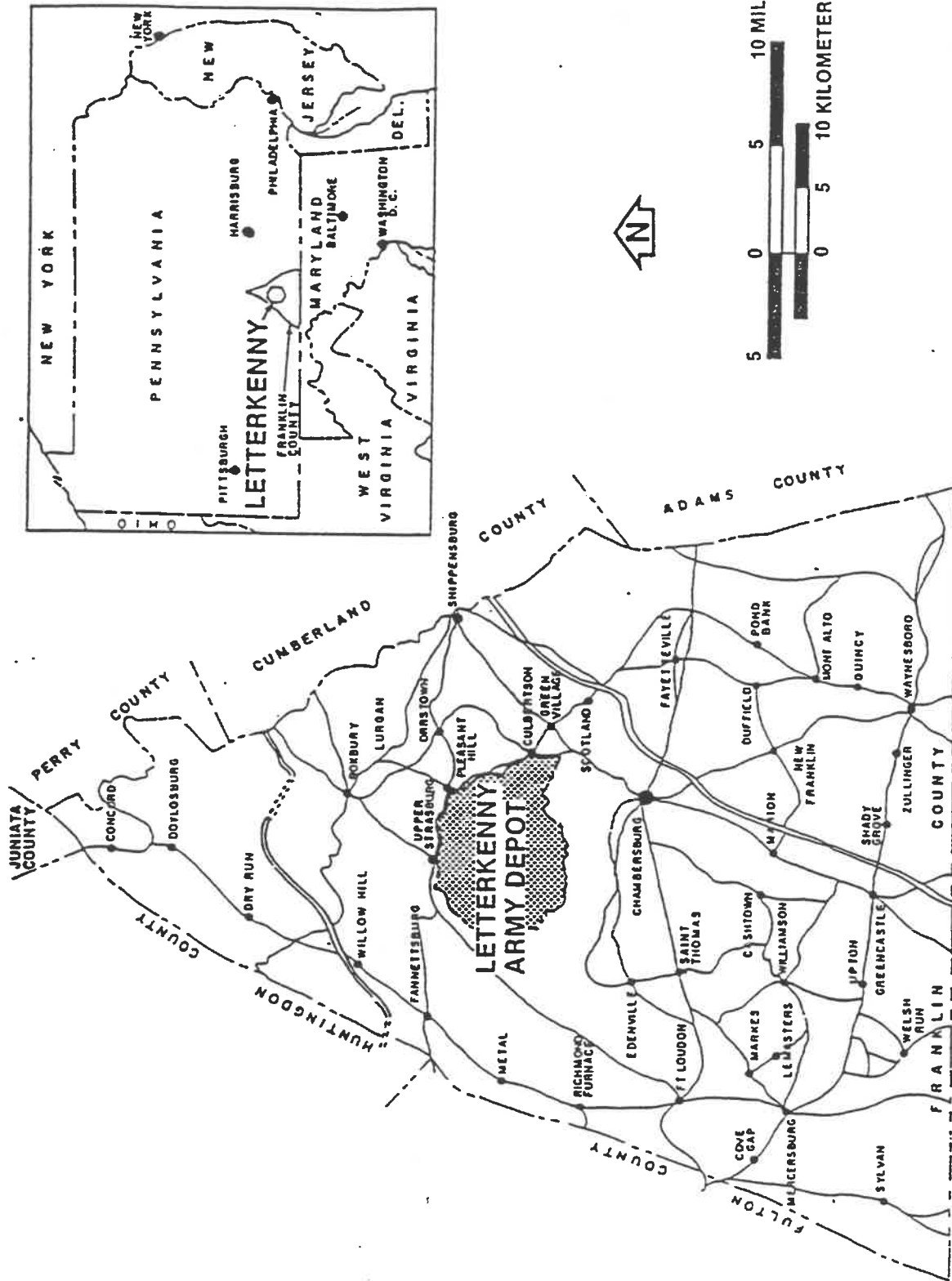
<b>APPENDIX A</b>	Chemical Hazard Information
<b>APPENDIX B</b>	Incident Reporting Forms

## **1.0 INTRODUCTION**

This Health and Safety Plan for Intrusive Activity (HASP) has been prepared to meet the U.S. Army's (Army) requirement in lease and transfer documents to the Letterkenny Industrial Development Authority (LIDA) that intrusive work be conducted using health and safety precautions under the assumption that soils and groundwater may be contaminated at Letterkenny Army Depot (LEAD). This HASP has been prepared in accordance with the Occupational Safety and Health Administration (OSHA) requirements for hazardous waste operations and emergency response (29 CFR 1910.120). It addresses precautions that should be taken by LIDA employees, property owners or leasees, and their contractors when performing certain types of work which may lead to encounters with hazardous substances at property being transferred or leased by the Army to LIDA. This HASP does not in any way relieve the site personnel, contractors, or subcontractors from responsibility for the health and safety of their personnel.

### **1.1 SITE DESCRIPTION/BACKGROUND**

LEAD is a U.S. Army- owned and -operated installation in the central portion of Franklin County, Pennsylvania, 5 miles north of the City of Chambersburg (see Figure 1). The facility stores and maintains ammunition, vehicles, missile systems, and repair parts, and destroys surplus ammunition. In 1995 the Base Realignment and Closure (BRAC) Committee recommended that approximately 1500 acres of LEAD be realigned. The U.S. Army will be conveying this land to the Letterkenny Industrial Development Authority and all of the property being transferred is part of two United States National Priority List Sites. The Army has completed numerous environmental investigations and remedial actions at LEAD. In order to determine the environmental condition of the lands to be transferred, the Army had Phase I Environmental Baseline Surveys (EBS) conducted that included a review of previous environmental investigations, site inspections of the property and buildings, review of historical information and aerial photographs, and interviews with workers. While most of the soils in the lands being transferred were found not to be contaminated (i.e., fell in categories 1, 3 or 4 on Attachment 7 of the Environmental Baseline Study), chlorinated solvents are present in groundwater underlying much or all of this land.



SHIPLEY BATTLE, 1983a

## SITE LOCATION MAP

**EPSYS** Corporation  
 ENVIRONMENTAL PROTECTION SYSTEMS  
 A SUBSIDIARY OF DEMATT ASSOCIATES  
 HARRISBURG, Pa. 17111

CUMBERLAND VALLEY BUSINESS PARK  
 FOR  
 LETTERKENNY INDUSTRIAL DEVELOPMENT AUTHORITY  
 PROJECT NO. : 97364H  
 FIGURE 1



This HASP will be implemented whenever intrusive activities such as excavation, demolition, drilling or other activities which are conducted which may expose workers to potentially contaminated soils, soil vapors or groundwater are conducted due to maintenance activities, emergency excavation, and/or preconstruction or predevelopment. A soil gas survey will be conducted prior to maintenance or preconstruction activities in accordance with the "Sampling Plan for Intrusive Activities," and in some cases soil samples will be collected and analyzed. If the soil gas survey results are less than 10 parts per million above background in all locations and no soil samples exceed PADEP direct contact standards for industrial sites (0 - 2'), the subsequent intrusive activity will not have to follow this Health and Safety Plan.

## **2.0 CONTROL PLAN**

The primary purpose for this HASP is to reduce the number of persons exposed to hazardous contaminants. This can be achieved by:

- Identifying known and suspected areas of contamination.
- Preventing personnel from inadvertent exposure by restricting access to work areas.
- Containing wastes to prevent contaminant transfer away from work areas.

## **2.1 WORK ZONES**

Analytical results of groundwater and soil samples obtained by the Army indicate the widespread presence of groundwater contamination. Thus, any intrusive work area on the entire site is potentially an "exclusion zone," where only authorized personnel should be permitted to enter. In practice, the decision to establish an exclusion zone in certain work areas and the size or dimensions of the exclusion zone will be made by the Health and Safety Officer (HSO) or his designee. The HSO job description and qualifications for the HSO are described in Section 4.0.

Each work area designated as an exclusion zone will have an entry and exit point to regulate personnel entrance to the exclusion zone unless subsequent testing demonstrates that personal protective equipment (PPE) and health and safety precautions listed herein are not necessary (refer to the Sampling Plan for Intrusive Activity). All personnel entering this exclusion zone must wear the PPE. At the entry and exit point, a "contamination reduction corridor" will be established to

regulate entry and implement decontamination procedures for personnel and equipment. A support zone will be established outside the physical barriers. Decontaminated equipment and supplies are stored in the support zone.

### **3.0 HAZARD ASSESSMENT**

Groundwater is contaminated over much of the Letterkenny Army Depot with chlorinated solvents. Seasonally high groundwater depths have been mapped between 5 and 15 feet or more over the majority of the lands being transferred; therefore, groundwater is not expected to be encountered during most intrusive maintenance and preconstruction activities. However, groundwater may be present at relatively shallow depths seasonally (e.g., following spring thaw) or excavations for foundations, sewer pumping lifts, or gravity sewer lines may be sufficiently deep to be in the zone where the potential to encounter groundwater exists. It is recommended that construction designs and schedules be developed to avoid encountering groundwater.

Previous soil and groundwater investigations at the facility have indicated the presence of the following chemicals:

- Chlorinated Solvents: tetrachloroethene (PCE), trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-trichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE), and 1,1-dichloroethane (1,1-DCA); and degradation products such as vinyl chloride.
- Non-halogenated solvents: benzene, toluene, ethylbenzene, xylene, petroleum distillates. To date, these compounds have only been found on the BRAC parcels in the immediate vicinity of the oil burn pit, which is undergoing remediation.

Appendix A contains the hazardous property information and Chemical Hazard Data Sheets each contaminant of concern.

### **4.0 PERSONNEL RESPONSIBILITY**

Compliance with this HASP is required of all personnel who enter an established exclusion zone. To preclude unnecessary exposure to contaminants, each task will be conducted with only the

required number of personnel needed at a given time to complete the assigned duties in a satisfactory manner. To achieve the highest level of worker safety maintenance and preconstruction activities will be assessed by the HSO. The HSO will then evaluate whether to be present during work activity.

#### 4.1 HSO

The site HSO and designated alternates, if necessary, will be appointed by LIDA or LIDA's contractor. In addition to determining the levels of personnel protection necessary for each activity performed on-site, the HSO will have the responsibility of executing the HASP.

The HSO will have the following qualifications:

- Training and experience in the use, capabilities, and limitations of dermal and respiratory protective equipment required for Level C and Level B operations described in Chapter 6.0.
- A knowledge of the site hazards including acute and long-term toxicology of the contaminants known or suspected to be on-site.
- Familiarity with the contents and objectives of this HASP including action levels and emergency procedures.
- A working knowledge of the use, capabilities, and limitations of air monitoring equipment, and decision log for selecting respiratory equipment.
- A familiarity with methods used in performance of each work activity at the site and support areas.
- Forty-hour training required by 29 CFR 1910.120.
- Training in first aid and CPR.

- Annual medical monitoring.

Specific responsibilities of the HSO follows:

- Review site-specific HASPs.
- To establish levels of personnel protection required for each work activity, in fulfillment of the requirements of this HASP. Levels of protection will be established on the basis of air monitoring results in accordance with the specific provisions of this plan. In the case of conflicting data, the highest indicated safety factor will be implemented as a health precaution.
- Document field activities and record field data.
- To assure that established safety guidelines are implemented before, during, and after all field activities.
- To assure that air monitoring and safety equipment is calibrated and in proper working order.
- To assure that personnel are properly trained in safety equipment use and limitations, are medically monitored, 40-hour trained and fit tested prior to making site entries.
- To assure that decontamination procedures are carried out effectively.
- To conduct debriefings of personnel and address deficiencies or problems that are identified.

It will be within the authority of the HSO to refuse access of unauthorized personnel to the work area, eject personnel from the work area, or cease operations due to noncompliance with the

objectives and guidelines established herein, or because of contamination levels being measured that are beyond the scope of personnel preparedness.

## **5.0 GENERAL GUIDELINES AND PROCEDURES**

### **5.1 Medical Surveillance**

Whenever Level C or greater safety precautions are required, a site-specific HASP may be required which establishes a medical surveillance program. All personnel working within the site exclusion zones will adhere to the following medical surveillance program which satisfies OSHA regulations (29 CFR 1910.134 and 1910.1017). Its purpose is to accomplish the following:

- Establish a baseline for pre-site health status for all personnel who will be on-site.
- Report any abnormalities which might seriously interfere with job performance.
- Determine the capacity of each individual to perform work while using PPE.

Each individual working within the site exclusion zones will undergo the following medical tests prior to mobilization to the site:

- A medical history screening, to determine past work exposure to hazardous chemicals or any other history of blood, nerve, or inherited medical problems. This will include a history of renal or liver disfunction, drugs routinely taken, alcohol intake, and systemic infections. Exposure to materials such as cleaning agents, insecticides, and other toxins outside of the current work situation will be documented.
- Laboratory tests including the following:
  - A complete blood count (SMK-23) with red cell count, white cell count, differential platelet count, hematocrit, hemoglobin, red cell indices (MCV,

MCH, MCHC, serum bilirubin, and reticulocyte count), and additional tests when in the opinion of the physician, abnormalities in the components in the blood are detected.

- Urinalysis.
- Chest x-ray (frequency at the discretion of the physician).
- Electrocardiogram.
- Pulmonary function tests, including tests of lung ventilation to measure forced expiratory volume in one second and forced vital capacity, and other factors such as FEF, MMEFR, MMV, FRC, RV, and TLC may be included.

A physical examination may be required during the course of the investigation in situations of possible exposure on the site due to spill, sudden release of chemicals, or failure of PPE; complaints from the individuals which indicate a potential problem; or as part of a routine medical surveillance program as required under 29 CFR 1910.134 and 1910.1017. In every case, the examining physician shall certify in writing the worker's fitness for work on the site both with and without respirators.

## **5.2 Documentation**

Records shall be maintained of all factors affecting worker safety and health. This will include analytical data, weather, conditions, protective equipment in use, and any unusual event that may occur on-site. In addition, employee training, health monitoring data, health and safety planning documentation, and contingency plan communication and contacts will be filed with LIDA until completion of work.

Each employee's supervisor will be responsible for maintaining up-to-date files of medical and safety related items. The employer and consulting physician will retain the medical records of on-site workers with the employer receiving only these findings and information which directly affect job performance. These records will be maintained in a confidential manner such that only

authorized persons (such as corporate officers of the employer, medical staff of the employer, or contracted medical personnel, the individual, the individual's personal physician, or the individual's representative) may have access to the reports. Upon request, the individual may obtain a copy of the medical file from the employer or physician. Medical records will be retained by the employer or contracting physician for the duration of employment plus 30 years.

### **5.3 Safety Training**

All workers on-site involved with hazardous materials must meet OSHA 1910 safety training requirements. This program will be administered by the HSO, and will consist of the following components:

- Respiratory protection consisting of a pre-work briefing in respiratory protection, prior self-contained breathing apparatus (SCBA) training, and respiratory testing employing irritant smoke.
- Physical, chemical, and toxic properties of hazardous materials on-site.
- Site operating procedures in levels of personal protection, work zones, perimeter control, decontamination, evacuation and self-rescue, and emergency procedures and signals.

Specific instruction will be provided by the HSO or other qualified personnel. All individuals working in the exclusion zone will be required to read this HASP and complete the necessary compliance affidavit contained in Section 12.0.

### **6.0 PERSONNEL PROTECTION**

Personnel health and safety protection shall follow the guidelines provided by this HASP. Modifications to the HASP may be made with the approval of the HSO on a day-to-day basis as conditions change, based on ongoing monitoring. These revisions will be fully documented to include the specifics and rationalizations for the change.

Personnel protective equipment associated with designated levels of protection (Levels A, B, C, and D) as established by the EPA are shown on Table 2. In areas designated by the HSO, equipment required for these levels will be issued to all personnel unless other specific equipment is provided for a certain activity by this plan.

#### **6.1 Determination of Level of Protection Requirements**

A Sampling Plan for Intrusive Activity has been developed for LIDA at the Letterkenny Army Depot. Pre-excavation sampling may be required prior to all intrusive activities. A site-specific HASP or addendum to this HASP may be required before any excavating can begin. If a HASP is provided, Army approval must be obtained prior to field work.

Known hazardous materials at the site are volatile organics in ground and surface water, soil and sediments. Invasive activities such as excavating or sampling of soils could liberate these materials into the atmosphere. Volatile organic compounds (VOCs) and their permissible exposure limits (PELs) are shown on the table in Appendix A.

Certain substances such as metals and polychlorinated biphenyls present a hazard due to airborne particulates. While these substances are not expected to be encountered on the transferred parcels in elevated levels, Appendix A contains PELs for these substances to aid in determining when respiratory protection is needed in the event they are encountered. There are no breakthrough times for mechanical filter cartridges. Mechanical filters become clogged with particulates as they are used. When a mechanical filter becomes difficult to breathe through, it should be replaced.

In order to protect personnel from many of the hazards stated above, full-face air purifying respiratory protection will be required when necessary. Combination organic vapor, acid gas, and high-efficiency dust filters are required to be fitted to the respirators under these conditions.

Under most circumstances, levels of personnel protection will be established on the basis of ambient air monitoring responses. This criterion will be applicable to all activities except excavation in known hot spots. Hot spots are areas where waste material or high levels of soil contamination are encountered. Levels of personnel protection will be established as follows:



- Level D - Total organic vapor concentrations at background to five parts per million (ppm) above background. Regular worker uniform includes coveralls, steel-toed safety shoes and hard hat (if task requires). If workers are performing a task which constitutes a skin contact hazard, workers shall wear chemical-resistant gloves and clothing ("*Modified level D*"). Level D will be considered the minimum protection level for work conducted within the exclusion zone.
- Level C - Total organic vapor concentrations, from 5 ppm to greater than 100 ppm above background (excluding vinyl chloride) requires a full-face air purifying cartridge respirator equipped with the MSA GMC-H type filter cartridges or equivalent. These cartridges are approved by the National Institute of Occupational Safety and Health (NIOSH) for organic vapors, acid gases, and dust. The remainder of the workers uniform should be as described under Level D.
- Level B - Total organic vapor concentrations of greater than 100 ppm above background or oxygen concentration less than 19.5 percent requires positive pressure-demand supplied-air breathing apparatus. All Level B operations will require an additional person on standby to observe each worker in the work zone. That person will be outfitted with a SCBA at Level B, and will provide for a possible rescue contingency. All work will be performed within sight of this rescue person. Chemical-resistant clothing, as described under Level C operations, will be required for Level B operations.
- Level A - This level is not expected at the site. Level A conditions are warranted when additional splash or corrosion protection are needed. This is achieved with the addition of a chemically protective fully encapsulating suit.

Vinyl chloride is not sufficiently filtered with air-purifying cartridges; therefore, persistent total organic vapor concentrations of exceeding 5 ppm above ambient levels in the breathing zone will necessitate cessation work and the collection of a vinyl chloride gas detector tube sample. All personnel will remain clear of the area while the HSO obtains the sample. The HSO will wear Level

C protective equipment to minimize his exposure while the sample is drawn. If the tube indicates concentrations of vinyl chloride exceeding 2 ppm, an upgrade to Level B respiratory protection will be enforced. In addition to respiratory protection, inner and outer chemical-resistant gloves will be worn. Disposable tyvek coveralls and chemical-resistant boots will also be employed for body protection. Gloves and boots will be taped to coveralls to preclude gaseous vapor entry. If the activity involves the potential for splash of contaminants, body protection will be upgraded to Saranex-coated tyvek with hood.

#### **6.1.1 Dermal Protection**

In general, dermal protection levels will correspond with the respiratory protection level in use during an activity. For most non-invasive activities on the site, cotton coveralls or disposable tyvek coveralls will provide protection against nuisance dust. When invasive activities are performed, disposable tyvek coveralls will provide protection against dust. If work tasks are such that splash of contaminated water is possible or imminent, dermal protection will be immediately upgraded to coated tyvek (Saranex). This determination will be made by the HSO, as required. Concurrence with DEP will be necessary to reduce personnel protection levels during a project.

Site activities in contaminated areas requires possible handling of contaminated equipment or soil. Chemical-resistant gloves will be required for all on-site work with contaminated soil and water. Outer nitrile and inner latex or thin nitrile gloves will be required in the exclusion zone and contamination reduction corridor. Nitrile gloves will provide adequate chemical and abrasion resistance for the protection of hands and inner latex gloves will assist in preventing transfer of contaminants.

#### **6.1.2 Eye Protection**

Since some of the materials found on-site are capable of penetrating skin tissues, the eyes provide a potential easy route of entry into the body. Typically, these materials are VOC's, which will be detected in the air monitoring program. However, dust and airborne particulates are also of concern. Eye protection requirements will

correspond to respiratory protection levels, and full-face respirators will be required in all work areas designated as Level C or higher. Other tasks which do not represent respiratory hazards, but do represent hazards due to airborne debris or liquid splash will necessitate safety glasses, or goggles, and face shields.

## **6.2 Air Monitoring**

Contaminant concentrations in soils do not necessarily reflect the concentrations of vapors or particulates released during excavation, though they do serve as a guide. Variables such as wind velocity and direction, atmospheric pressure, precipitation, and type of invasive activity make it necessary to continuously assess conditions in the working environment to provide adequate levels of personnel protection. The use of selected air monitoring equipment throughout the operation will provide information to reestablish required levels of protection.

Safety-related assessment of VOC's will be determined in the field using a photoionization detector (PID) organic vapor detector and compound-specific detector tubes. The PID is quantitative instrument and cannot be used to determine the exact species of organic vapors. Compound-specific detector tubes will be used for vinyl chloride, which is not sufficiently removed by air purifying respirators. Detector tubes indicate vapor concentration by the length of a color change resulting from the reaction with the chemical in the tube.

### **6.2.1 Equipment Calibration**

The PID shall be calibrated at the start of each workday prior to the beginning of work and entry on the site and after lunch or after six hours of use. Calibration shall be documented in a Project Field Book or form. Calibration shall employ a gas standard of known concentration supplied by the instrument manufacturer, to be injected through the instrument. At the end of each day of use, the equipment will be cleaned and charged for the following day.

### **6.2.2 Air Monitoring Location and Frequency**

It is the responsibility of the HSO to assure that monitoring provisions are carried out to establish safety guidelines and personnel protection requirements. Air monitoring

shall take place as follows:

- Prior to beginning work each day, the command post area, contamination reduction corridor, and the perimeter of the work zone (in a downwind and upwind direction) will be monitored using the PID to determine and document background levels.
- Prior to entering any work area within the exclusion zone, appropriate air monitoring utilizing the PID will be performed to assess the degree of contamination in ambient conditions. The periodic readings in the breathing zone will be used to establish levels of personnel protection for individuals working in that area. Monitoring frequency will vary from minutes to hours at the judgement of the HSO. If breathing zone VOC levels exceed 5 ppm above background concentrations, a vinyl chloride detector tube shall be immediately used to determine if the levels exceed the PEL of 1 ppm.
- Monitoring at ground level may also be necessary when encountering high concentrations of flammable VOC's. VOC's are often heavier than air and may travel a considerable distance to an ignition source.
- The HSO will supervise the fitting of protective gear and shall determine the option to proceed.

## **7.0 TASK-SPECIFIC PERSONNEL PROTECTION GUIDELINES**

Specific air monitoring will be performed, and the results will be used by the HSO to establish levels of personnel protection for all site activities. The following sections provide pre-established protection requirements for some task-specific items.

### **7.1 Excavating and Soil Sampling**

All excavating on the site in known hot spots can be initiated under Level D respiratory and dermal protection. The HSO will be responsible to conduct sufficient air monitoring to determine whether worker exposure approaches the PELs. Engineering controls shall be used to abate dust such as working upwind, wetting, or wind barriers.

## **7.2 Preparation for Entry into a Confined Space**

Confined spaces at LEAD/Letterkenny Opportunity Center can include underground and aboveground storage tanks, and some buildings. Respiratory hazards can also occur in open well-ventilated areas such as low areas, ditches, gullies, or excavations.

### **7.2.1 Removal of Contents**

Confined space should be clean, free of hazardous materials/chemicals, and where necessary, purged by water or other equivalent means.

### **7.2.2 Isolation**

Where possible, all input lines which discharge into the confined space shall be disconnected and capped or isolated. If this is not possible, all input points must be controlled. The use of a single in-line valve shut off as the sole means of isolating the confined space from any input line is prohibited. However, the use of a double in-line valving arrangement with a vent between the two valves is acceptable provided that dangerous air contaminants are not included by such venting.

### **7.2.3 Electrical Lockout**

When electrical devices located within the confined space (motors, switches, etc.) are to be repaired or worked on, the line disconnect switches supplying the power must be tagged and locked in the "off" position. The lock key is to be kept by the person performing the job, and only this person is authorized to unlock the switch and remove the tag upon completion of the job. Where more than one person is working on the line, each must place a lock on the switch and retain their own key.

Line disconnect switches supplying power to any mechanical apparatus in the confined space must also be locked off for any entry, even though work will not be performed on the apparatus itself.

#### **7.2.4 Securing of Covers**

All manhole and clean-out covers shall be removed and the openings maintained clear of any obstructions. When hinged doors or lids are provided, they shall be secured so that they cannot be closed while occupied. In pedestrian /vehicle trafficked areas, signs/warnings shall be provided.

#### **7.2.5 Testing Atmosphere**

A trained person, as determined by the HSO, shall make appropriate tests of the atmosphere in the confined space to assure that 10 percent of the lower explosive limit is not exceeded, the Threshold Limit Values (TLV) of toxic chemicals are not exceeded, the oxygen content is not lower than 19.5 percent, *and these values are stable.*

#### **7.2.6 Continuous Monitoring**

If the nature of the work to be performed introduces or has the potential to introduce harmful air contaminants, continuous monitoring of the atmosphere is required. If tests indicate evidence of dangerous air contaminants exceeding the TLV's (OSHA 1910.100), concentration greater than 10 percent of the lower explosive limit and/or the oxygen content drops below 20 percent, all personnel shall evacuate the confined space immediately.

#### **7.2.7 Ventilation**

All confined spaces must be ventilated by the use of a positive mechanical exhaust system. Evacuate a minimum of two air volumes before entry.

#### **7.2.8 Buddy System**

At least one standby employee shall be stationed just outside the access opening of any confined space while such space is occupied. This person shall:

- Maintain continuous awareness of the activities and well-being of the occupant of the confined space.

- Be able to maintain verbal communication at all times.
- Be alert and fully capable of quickly summoning help.
- Be physically able and equipped to assist in the rescue of an occupant from a confined space under emergency conditions.

### **7.2.9 Debris, Materials, Tools**

Debris, material, or tools, etc., should be kept away from the opening of confined space where danger of it falling into the confined space exists

## **7.3 Equipment for Confined Spaces**

### **7.3.1 Means of Entry and Exit**

A built-in or portable ladder (OSHA approved) shall be used for a safe means of entering and exiting. Such means must not obstruct the access opening.

### **7.3.2 Portable Light**

May be battery or transformer operated at 24 volts or less, or must be protected by a ground fault circuit interrupter. In all cases, it must be explosion proof if used in a flammable vapor area.

### **7.3.3 High Volume Air Pump**

Air pump must be capable of supplying air one volume of air for the volume of confined space being entered. The air intake line must be a minimum of 15 feet *from the discharge point* to avoid recirculating contaminated air.

### **7.3.4 Safety Equipment and Devices**

Any person entering a confined space shall use the following safety equipment:

- Wrist straps and noose-type devices: Where the location of and/or the dimension of the opening of a confined space is such that a person can only be removed by the lifting of his/her body by the wrists or ankles with a life line, wrist straps or other noose-type devices shall be provided and attached to the life line.
- Life line: Approved life line (breaking strength not less than 4,000 pounds) shall be attached to such life belt, approved safety harness, approved wrist straps or approved noose-type wristlets, with the other end securely anchored outside the confined space.
- Non-sparking tools: Non-sparking tools and equipment are required when the confined space may contain explosive or flammable air contaminant and the operations involve striking, chipping, hammering, or cutting.
- Self-Contained Breathing Apparatus:
  - A SCBA shall be available and located within 15 feet of the opening for use by the standby personnel.
  - When persons are entering an atmosphere which is being purged with an inert gas or if the confined space may still contain hazardous atmosphere, then a SCBA or a hose mask is required.
  - Skin protection: If a contaminant in the confined space can cause dermatitis or can be absorbed through the skin, those entering the confined space must wear protective clothing.
  - Other personal protective equipment: Safety equipment such as safety glasses or goggles, rubber-gloves, safety sleeves, hard hat, hearing protection, or impervious clothing shall be worn when specified by the HSO.



#### **7.4 Contractor Safety Equipment, Test Devices, and Training**

- Test devices, safety equipment, and materials required to assure a safe entry shall be provided by the party performing the entry.
- It is the responsibility of the party performing the entry to assure that tests are made by qualified personnel, that proper safety equipment is provided and that all requirements for a safe confined space entry are met.
- The contractor/subcontractor ensures that its employees are fully informed of the hazardous conditions they might encounter in the confined space, and shall review the safety guidelines for entering a confined space (Table 4) with employees prior to entering any confined space.

#### **8.0 DECONTAMINATION PROCEDURES**

All decontamination operations will be performed inside the contamination reduction corridor and supervised by the HSO. The contamination reduction corridor will be equipped with sprayers, brushes, basins, plastic bags, and drum storage. Water used in decontamination, disposable outer wear, and contaminated disposable equipment will be drummed or characterized and disposed of properly.

The HSO will inspect personnel protection equipment and clothing to determine if decontamination procedures were sufficient to allow passage into the supported area. Any equipment which cannot be adequately cleaned will be double-bagged and marked as such until more thorough decontamination can be performed.

Proper on-site decontamination procedures and the use of disposable outer clothing, supplemented by showering as soon as possible after leaving the site, will effectively minimize the opportunity for skin contact with contaminants.

## **9.0 CONTINGENCY PLANNING**

### **9.1 Emergency Procedures**

In the event of a medical emergency, the HSO should be immediately notified. Typical first aid procedures for contact with hazardous materials are described below:

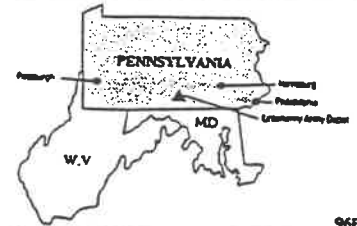
- Skin contact: In the event of personnel exposure to potentially toxic or hazardous contaminants by skin contact, the following procedures will be employed:
  - Wash skin and rinse with copious amounts of soap and water for at least 15 minutes.
  - Decontaminate if the situation allows.
  - If necessary, transport affected individual to the nearest hospital or poison control center.
- Inhalation: In the case of inadvertent inhalation of potentially toxic contaminants, the following procedures will be employed:
  - Victim should be moved to fresh air.
  - Decontaminate if the situation allows.
  - Transport immediately to a medical facility.
- Ingestion: If ingestion of a potentially toxic, hazardous, or unidentified substance has occurred, the victim will be decontaminated if the situation allows and transported to the nearest poison control center or emergency medical facility.
- Injury: In the event of a personnel injury, emergency first aid will be applied on-site as deemed necessary. The victim should be decontaminated if the situation allows and transported to the nearest medical facility, if needed.

U.S. Army Environmental Center  
Letterkenny Army Depot  
Chambersburg, Pennsylvania - June 1996

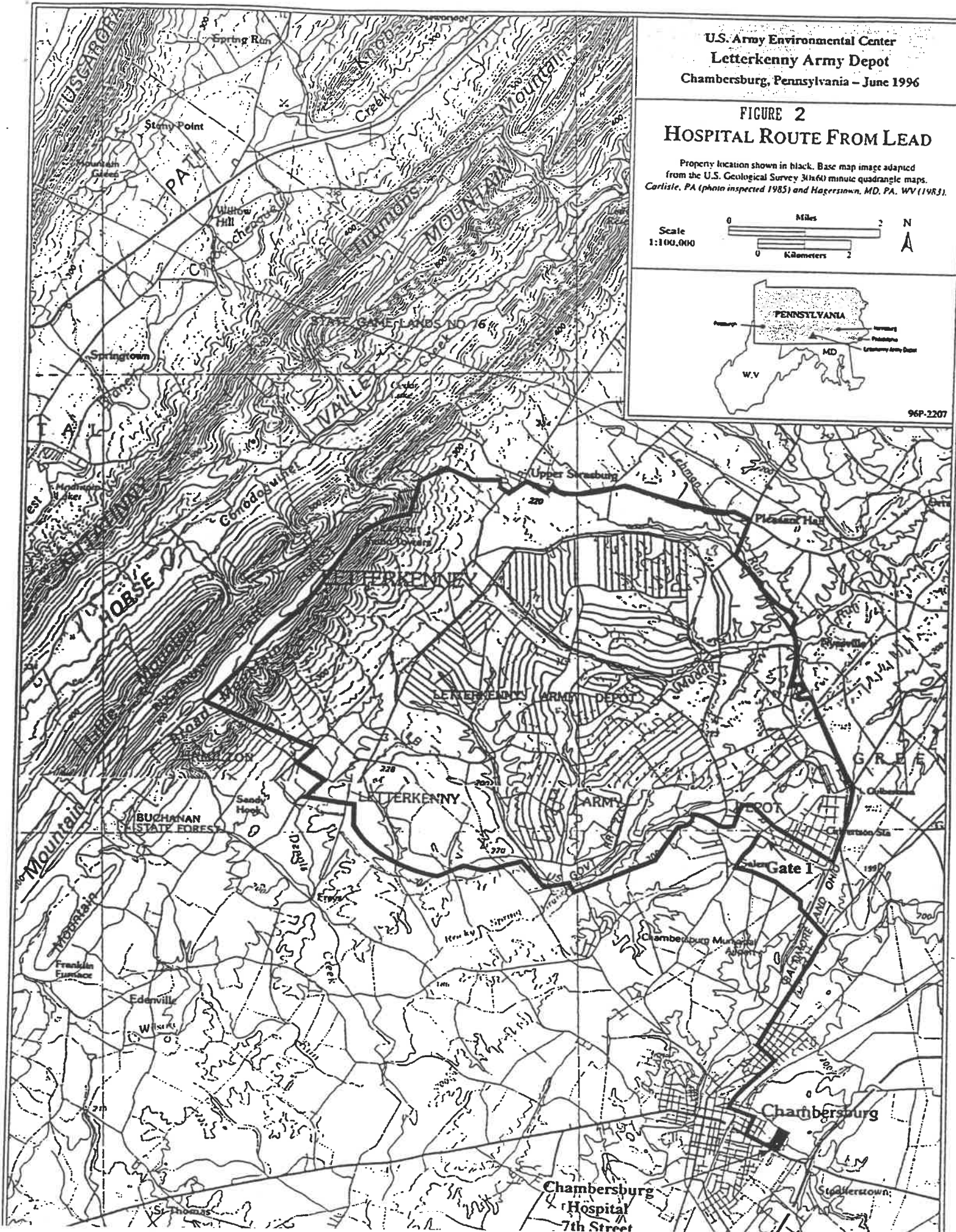
FIGURE 2  
HOSPITAL ROUTE FROM LEAD

Property location shown in black. Base map image adapted from the U.S. Geological Survey 30x60 minute quadrangle maps. Carlisle, PA (photo inspected 1985) and Hagerstown, MD. PA. WV (1983).

Scale  
1:100,000



96P-2207



- Environmental incident: In the event of an environmental incident caused by a spill or other spread of contamination outside the exclusion zone, personnel will attempt to secure the spread of contamination if possible, and the state police will be notified. The HSO will be in charge of contacting the emergency response groups, directing first aid procedures, and securing the site. The HSO will also be responsible for completing an Incident Report Form (see Appendix B).

## **9.2 Emergency Telephone Numbers and Routes**

Table 9-1 lists important emergency telephone numbers. These numbers shall be posted near telephones close to the site or in the vehicles with telephones.

Injured personnel shall be taken to Chambersburg Hospital located at 7th and King Street, Chambersburg, Pennsylvania. The hospital is approximately 5.5 miles away with a travel time of 8 to 10 minutes. Figure 2 depicts the Route to the hospital. Directions to the hospital are as follows:

- Exit from South Gate (Gate 1) onto Letterkenny Road
- Turn left on Salem Road.
- Turn right on Philadelphia Avenue (Route 11 South).
- Turn left on Norland Avenue.
- Turn right on 5th Avenue.
- Turn left on Montgomery Street.
- Turn right on 7th Street.
- Hospital is located on the corner of 7th Street and King Street.

From Gate 6:

- Exit from Gate 6.
- Turn right on Route 433.
- Turn right on Philadelphia Avenue (Route 11 South).
- Turn left on Norland Avenue.
- Turn right on 5th Avenue.
- Turn left on Montgomery Street.
- Turn right on 7th Street.
- Hospital is located on the corner of 7th Street and King Street.

**Table 9-1  
Emergency Telephone Numbers**

Incident	Contact	Telephone Number
Fire/Explosion	LEAD Fire Department	911 Emergency; 267-9101
Personal Injury	LEAD Emergency Operations Center (ambulance)	911
	LEAD Safety Office	(717)267-5253
	Chambersburg Hospital	(717)267-7146
USAC Safety Officer	William Houser	(410)612-6869
Spill/Accidental Release*	Installation On-Scene Coordinator: Randy Quinn	(717)267-9690 or 267-8483
<b>Additional</b>	<b>Telephone Numbers</b>	
LIDA	John Van Horn	(717)267-9532
USAEC Project Manager	Paul R. Stone III	Mobile Phone:(717)261-6863 Office: (410)[671-1517] (410)962-4906 Home: (410)671-9871
Lead Environmental Coord.	Bryan Hoke	(717) 267-9836
EPSYS	Dave Mooney	Mobile Phone:(717)979-7539 Office:(717)558-9822 Ext.16
Site Health and Safety Officer (SHSO)		
EPA - Project Manager	Stacie Driscoll	(215)566-3368
PADEP- Project Manager	Noreen Wagner	(717)657-4592
Police	LEAD Police Dept.	267-8800 (Emergency 911)
	Pennsylvania State Police	(717)264-5161
Poison Control Center		(717)264-5171
National Response Center*		(800)424-8802

\*Only Army representatives are to report releases to spill center.

### **9.3 Evacuation Plan**

In the event of an emergency situation such as fire, explosion, release of toxic gases, dust, etc., a pre-determined audible signal (e.g., a vehicle horn) will be sounded for approximately 30 seconds indicating the initiation of evacuation procedures. All personnel in both exclusion zone and support zone will evacuate the area and assemble upwind in another safe area, as identified by the HSO on-site. This location will be determined on a daily basis depending on the direction of the wind, and will be efficient and safe site evacuation and assessment of emergency situations and for assuring that the authorities are notified for possible evacuation of the surrounding residences. Section 9.2 contains names, telephone numbers, and the appropriate order of notification in the event of an emergency.

Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The HSO must see that access for emergency equipment is provided and that all equipment has been shutdown and evacuated once the alarm has been sounded.

### **10.0 INCIDENT REPORTING**

At the conclusion of any environmental incident, a report must be prepared by the HSO. The report should contain a general description of how the incident occurred, hazard abatement, and injuries or affected personnel. Appendix B contains an example Incident Report form.

### **11.0 GENERAL WORK RULES**

- Eating, drinking, chewing gum or tobacco, smoking, or any other practice that increases the probability of hand-to-mouth transfer and ingestion of hazardous materials is prohibited in an established exclusion zone and contamination reduction zone.
- Hands and face shall be thoroughly washed upon leaving the exclusion zone and before eating, drinking, or any other similar activity.
- Whenever Level C or above decontamination procedures for outer garments

are in effect, the entire body shall be thoroughly washed as soon as possible after the protective garment is removed.

- Facial hair which interferes with satisfactory adjustment and fit of the respirator is defined as a safety hazard and will not be allowed on personnel required to wear such protective equipment.
- Contact with contaminated or suspected contaminated surfaces shall be avoided. Whenever possible, avoid personal and equipment contact with puddles, mud, and other discolored surfaces. Do not place equipment or sit on a known or suspected contaminated surface.
- Work upwind of contaminated media. Minimize cross contamination by storing equipment and supplies in an upwind direction.
- Medicines and alcohol can exaggerate the effects of exposure to toxic chemicals. Prescribed drugs shall not be taken by personnel on-site where the potential for absorption, inhalation, or ingestion of toxic substances exists, unless specifically approved by a qualified physician.
- Eye glasses are not compatible for use with full-face respiratory equipment, and contact lenses have the tendency to trap vapors between the eye and the lens, allowing vapor absorption to the body via eye tissue. In addition, dislodged contacts can be a problem when on-site. Therefore, use of these devices shall be prohibited. Prescription lens inserts are available for most full-face respirators and shall be used if vision correction is necessary.
- The buddy system will be maintained in all operations within the exclusion zone. Personnel shall maintain communications with their assigned partner and watch for signs of fatigue, exposure, etc.

- No work will be conducted in the exclusion zone without appropriate supervision and air quality monitoring.
- All personnel working on-site are required to read and comply with this HASP.
- The personnel health and safety compliance affidavit (Appendix A) must be signed and dated by each person directed to work on the site.
- Any persons entering the exclusion zone shall maintain communications via a radio or cell phone.



## 12.0 AFFIDAVIT OF COMPLIANCE

Since all personnel working on-site are required to read and comply with this HASP, the following safety compliance affidavit shall be signed and dated by each person directed to work on the site on a full-time basis.

I, \_\_\_\_\_, of \_\_\_\_\_  
(Name) (Company Name)

have read the HASP for LIDA. I agree to conduct all on-site work in conformity with the requirements of the HASP, and I acknowledge that failure to comply with the designated procedures in the HASP may lead to my removal from the site.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

APPENDIX A

**CHEMICAL HAZARD INFORMATION**

## HAZARDOUS PROPERTY INFORMATION

Material	Water Solubility*	Specific Gravity	Vapor Density	Flash Point °F	Vapor Pressure*	LEL UEL	LD <sub>50</sub> mg/kg	TLV-TWA's	IDLH Level	Odor Threshold or Warning Concentration
VOLATILE ORGANIC COMPOUNDS										
Acrolein	22%	0.8410	1.9	-15	214 mm	2.0% 31%	46	0.1 ppm	5 ppm	0.1-16.8 (0.21-0.5)
Acrylonitrile	7.1%	0.0060	1.0	30	63 mm	3% 17%	82	2 ppm	4,000 ppm	19-100
Benzene	820 ppm	0.8765	2.0	12	75 mm	0.330% 7/1%	3000	11 ppm	2,000 ppm	4.60
Bromomethane	0.1 g	1.732	3.3	none	1.88 atm	13.5% 14.5%		5 ppmh	2,000 ppm	no odor
Bromodichloromethane	Insoluble	1.000	..	none	n/a	non flam	010	none established	none specific	
Bromoform	0.01g	2.887	..	none	5 mm	non flam	1147	0.5 ppm	n/a	530
Carbon Tetrachloride	0.00%	1.5067	5.3	none	91 mm	non flam	2800	5 ppmh	300 ppm	21.4-200
Chlorobenzene	0.01 g	1.1050	3.9	04	0.0 mm	1.3% 0.6%	2910	75 ppm	2,400 ppm	0.21-60
Chloroethane	0.6 g	0.8970	2.2	-50	1.30 atm	3.0% 15.4%		1000 ppm	20,000 ppm	
2-Chloroethylvinyl Ether	Insoluble	1.0475	3.7	00	30 mm	..	250	none established	none specific	
Chloroform	0.11 g	1.4832	4.12	none	100 mm	non flam	800	10 ppmh	1,000 ppm	50-307 fatigue (>4096)
Chloromethane	0.74%	0.9150	1.0	32	50 atm	7.0% 10%		50 ppmh	10,000 ppm	10-100 no odor (500-1000)
Dibromodichloromethane	Insoluble	2.451	..	..	..	..	040	none established	none specific	
1,1-Dichloroethane (DCA)	0.1 g	1.1757	0.4	22	102 mm	0% 16%	725	100 ppm	4,000 ppm	5 ppm

## HAZARDOUS PROPERTY INFORMATION

Material	Water Solubility*	Specific Gravity	Vapor Density	Flash Point °F	Vapor Pressure*	LEL UEL	LD <sub>50</sub> mg/kg	TLV-TWA*	IDLN Level	Odor Threshold or Warning Concentration
Toluene	0.05 g	0.868	3.2	40	22 mm	1.3% 7.1%	5000	100 ppm	2,000 ppm	0.17-40 fatigue (300-400)
Vinyl Chloride	negligible	0.9100	2.24	-108	3.31 atm	3.6% 33%	500	1 ppm	none specified	260
<b>METALS</b>										
Arsenic	b	5.727	n/a	none	n/a	f		10 g/m <sup>3</sup>	none specified	
Beryllium	b	1.85	n/a	none	n/a	f		2 g/m <sup>3</sup>	none specified	
Cadmium	b	8.642	n/a	none	n/a	f	225	0.5 mg/m <sup>3</sup>	40/mg <sup>3</sup>	
Chromium	b	7.20	n/a	none	n/a	f		0.5 mg/m <sup>3</sup> h	500/mg <sup>3</sup>	
Copper	b	8.02	n/a	none	n/a	f		0.1 mg/m <sup>3</sup>	none specified	
Lead	b	11.3437	n/a	none	n/a	f		50 g/m <sup>3</sup>	none specified	
Mercury	b	13.5930	7.0	none	0.0012 mm	f		50 g/m <sup>3</sup> h	20 mg/m <sup>3</sup>	
Nickel	b	8.9	n/a	none	n/a	f		1 mg/m <sup>3</sup>	none specified	
Silver	b	10.5	n/a	none	n/a	f		0.01 mg/m <sup>3</sup>	none specified	
Thallium	b	11.85	n/a	none	n/a	f		0.01 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	
Zinc	b	7.14	n/a	none	n/a	f		none established	none specified	

## HAZARDOUS PROPERTY INFORMATION

Material	Water Solubility <sup>a</sup>	Specific Gravity <sup>a</sup>	Vapor Density	Flash Point °F	Vapor Pressure <sup>a</sup>	LEL UEL <sup>a</sup>	LD <sub>50</sub> mg/kg	TLV-TWA <sup>a</sup>	IDLN Level	Odor Threshold or Warning Concentration
<b>MISCELLANEOUS</b>										
Asbestos	Insoluble	2.5	n/a	none	n/a	non flam		0.2-2 fibers/cc	none specified	
Cyanides	58-72%		n/a	none	n/a	non flam		5 mg/m <sup>3</sup>		
PCB (generic)	slightly	..	n/a	none	n/a	non flam		1.0 g/m <sup>3</sup>	none specified	
Phenol	0.4%	1.0576	3.2	175	0.36 mm	1.0% 0.0%	414	5 ppm	100 ppm	0.47-5 (40)
Xylene	0.00003%	0.8642	3.7	84	9 mm	1.1% 7%	5000..	100 ppm	10,000 ppm	0.5-200 (200)
Acetone	soluble	0.8	2.0	-4	400 mm	2.0% 12.0%	8700	750 ppm	10,000 ppm	100
Chromic Acid	soluble	1.67-2.02	n/a	none	n/a	non	flam	none	none established	specified
Diesel Fuel	insoluble	0.81-0.90	..	130	..	0.8-1.3	8-7.5	none	none established	0.08 specified
Gasoline	insoluble	0.72-0.76	3.4	-45	variable	1.4% 7.0%		300 ppm	none specified	0.005-10 x 0.25
Kerosene	Insoluble	0.83-1.0	..	100-185	5	0.7% 5.0%		none established	none specified	1.0

**APPENDIX B**

**INCIDENT REPORTING FORMS**

ATTACHMENT A-1  
SITE SAFETY FOLLOW-UP REPORT

This section must be filled out by the Project Coordinator and returned to the Manager of Health, Safety and Training after each site activity or task.

Today's Date: \_\_\_\_\_

Job Name and Number: \_\_\_\_\_

Date(s) work was performed: \_\_\_\_\_

Were any safety problems encountered while on site? Yes\_\_\_\_, No\_\_\_\_  
If yes, complete page two of the attachments.

Personnel on Site

Task(s) Performed


MONITORING EQUIPMENT UTILIZED

List type(s) and model(s) of instrumentation used on site:


Describe any high or unusual instrument readings encountered:


Describe any instrument malfunction or abnormality: If problems with equipment occurred, notify Project Manager of problem.


Attach summary sheets or site logs of calibration data and actual readings encountered on site.

**ATTACHMENT A-2**  
**INCIDENT REPORT**

Site: \_\_\_\_\_  
Location: \_\_\_\_\_  
Project Number: \_\_\_\_\_  
Date of Report: \_\_\_\_\_  
Preparer's Name: \_\_\_\_\_  
Name of Injured: \_\_\_\_\_  
Address of Injured: \_\_\_\_\_  
Social Security Number: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_  
Years of Services: \_\_\_\_\_ Time at Present Job: \_\_\_\_\_  
Title: \_\_\_\_\_

Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_

Incident Category:  
Motor Vehicle \_\_\_\_\_ Property Damage \_\_\_\_\_  
Fire \_\_\_\_\_ Chemical Exposure \_\_\_\_\_ Other \_\_\_\_\_

Severity of Illness or Injury:  
Non-disabling \_\_\_\_\_ Disabling \_\_\_\_\_  
Medical Treatment \_\_\_\_\_ Fatality \_\_\_\_\_

Estimated Number of Days Away From Job: \_\_\_\_\_

**ACCIDENT INFORMATION**

Did any member on site report any of the following:

- Chemical exposure; Yes \_\_\_\_\_ No \_\_\_\_\_
- Illness, Discomfort unusual symptoms; Yes \_\_\_\_\_ No \_\_\_\_\_
- Physical hazards (heat, cold, injury, etc.); Yes \_\_\_\_\_ No \_\_\_\_\_

If yes to any of the above, explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PERSONAL PROTECTIVE EQUIPMENT**

Task Performed	Protective Clothing Used	Respiratory
_____	_____	_____
_____	_____	_____
_____	_____	_____