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APPENDIX I
RESPIRATORY PROTECTION PROGRAM

APPENDIX I
RESPIRATORY PROTECTION PROGRAM

REQUIREMENTS, ORGANIZATIONAL RESPONSIBILITIES AND EVALUATION

The Occupational Safety and Health Administration (OSHA) has established safe exposure levels for various airborne contaminants that may be encountered at sites during field operations. If worker exposure to these substances exceeds the OSHA permissible exposure limits (PELs), OSHA requires that feasible engineering controls and administrative measures be instituted to reduce worker exposure to within acceptable levels. If other controls are not feasible, employers are required to provide the appropriate, approved respirators for employee protection. Because of the nature of hazardous waste site work in general, traditional engineering controls are not always feasible. Hence, respirators must be relied upon as a means for protecting workers at hazardous waste sites and CWM sites such as those at the Fort McClellan.

No workers will be permitted to wear a respirator without clearance from a physician to do so. This clearance is normally obtained from the examining physician at the time of the worker's normal and periodic physical examinations. The Parsons ES medical examination program is described in Appendix O. The diagnostic protocol for a fit-to-work classification for workers covered by HAZWOPER (OSHA in 29 CFR 1910.120) includes an assessment of the worker's ability to use air purifying respirators and self-contained breathing apparatus (SCBAs). The examining physician obtains clinical data, including spirometry, X-ray, and cardiac-function data as well as physical observations on which to base a conclusion. A specific conclusion addressing this requirement must accompany the worker's fit-to-work statement from the examining physician. Some individuals, especially those with marginal respiratory and cardiac functions, may experience a sense of choking (angina) when using respirators. If this is distinct and persistent, the worker should not be allowed to wear respiratory protective equipment until re-evaluated by a physician.

Objective of the Respiratory Protection Program

The objective of the Respiratory Protection Program is to provide workers with sufficient information and guidance to adequately protect themselves from potential inhalation hazards during hazardous waste operations. The use of respirators to protect personnel from inhalation hazards is permitted by OSHA in 29 Code of Federal Regulations (CFR) Part 1910.134 when other methods of protection (e.g., engineering controls or changes in work practices) are not feasible.

Minimum Requirements of an Acceptable Respirator Program

The Occupational Safety and Health Administration has established the requirements for a minimally acceptable program under 29 CFR Part 1910.134. Elements in an OSHA-acceptable program must include the following:

- use of approved respiratory devices;
- selection of respirators based on the hazards present;
- an employee training program in which the employee becomes familiar with the respiratory protective devices and is trained in the proper selection and use of respirators and their limitations;
- provisions for the proper cleaning, disinfection, maintenance, storage, inspection and repair of respirators;
- testing for the proper fit of the respiratory protective equipment;
- medical screening of employees to determine if they are physically able to perform their assigned work including the use of respiratory protective equipment;
- written standard operating procedures for the selection and use of respiratory protective equipment; and
- regular inspection and evaluation for the respiratory protection program to determine its effectiveness.

Positions and Personnel Responsible for the Program

Personnel with specific responsibilities for the implementation of the program are described in the following:

Safety and Health Representative. The Parsons ES Office or Subcontractor's Safety and Health (S&H) Representative is responsible for the following:

- administering the respiratory protection program;
- establishing the training program;
- selecting and working with a medical contractor;
- ensuring the office has the necessary respiratory protection equipment;
- scheduling fit testing;
- developing written standard operating procedures for the selection of respiratory protection equipment;
- maintaining fit test and medical records; and
- scheduling audits of and evaluating the respiratory protection program.

Project Safety and Health Officer. The Project Safety and Health Officer is responsible for the following:

- verifying that team members conducting the field investigation have received training in the selection and use of respirators and have the equipment necessary to conduct the investigation safely;

- determining the degree of respiratory protection required for each field task or operation;
- ensuring site-specific training is performed prior to on-site activities; and
- ensuring records of respirator use are maintained.

The Fort McClellan Site Safety and Health Officer (SSHO). The SSHO is responsible for ensuring the following:

- maintenance of records of respirator use;
- inspection, maintenance and cleaning of respirators;
- proper storage of respirators;
- maintenance of repair records for the respirators;
- ensuring that Grade D or better breathing air is provided for atmosphere-supplying respirators; and
- distribution of respirators to field team member.

Project Staff. All project team members are responsible for the following:

- reading and conforming to the SSHP;
- presenting a copy of their fit test results to the SSHO prior to receipt of a respirator;
- inspecting and cleaning of their assigned respirator before and after each use;
- storing respirators in a convenient, clean and sanitary location when not in use;
- reporting any perceived problems or difficulties with respiratory equipment to the S&H officer; and
- while using a respirator, workers shall be aware of any perception of odor, resistance in breathing, and/or fatigue and report their existence to the SSHO immediately.

Evaluation of the Respiratory Protection Program. Auditing of respiratory protection program practices will determine whether the appropriate respirators are being selected and worn properly. Examination of respirators in use and in storage will indicate how well the equipment is being maintained. The results of periodic audits of respirator storage and use consultations with wearers, measurements of hazard levels in work areas, and medical surveillance of wearers will be reviewed and analyzed to determine the effectiveness of the respiratory protection program. Evidence of excessive exposure to an hazard will be evaluated to determine why inadequate protection was provided, and action will be taken to prevent a repeat of the problem.

The respiratory program for Fort McClellan will be periodically evaluated by the PSHO and/or Corporate Health and Safety Manager (Mr. Ed Grunwald) and modified as appropriate.

CRITERIA USED TO SELECT RESPIRATORY EQUIPMENT

The investigation of hazardous waste sites presents workers with a number of environmental conditions some of which are better defined than others. Each environmental situation is unique and the selection of the appropriate respiratory protection device may involve many steps. The PSHO chooses the respiratory equipment to be used based on considerations which include the following.

- Consideration of all available information pertaining to the hazard including: past activities, suspected materials, historical information, land use, analytical data and nature of current activities.
- Evaluation of the relevancy and timeliness of the data to determine the appropriate protective level needed for the task.
- Identification of substances present in the work area.
- Evaluation of any known or suspected chemicals on site, using the following characteristics:
  - ◊ permissible exposure limits (PEL) and threshold limit values (TLV);
  - ◊ eye irritation potential for substance;
  - ◊ warning properties of substance;
  - ◊ immediately dangerous to life and health (IDLH) concentration;
  - ◊ possibility of poor sorbent efficiency at and below IDLH concentrations;
  - ◊ the possibility of severe skin irritation resulting from skin contact;
  - ◊ the vapor pressure of the substance;
  - ◊ the possibility of high heat of reaction with sorbent material in the cartridge or canister; and
  - ◊ the possibility of shock sensitivity of the chemical being sorbed onto the cartridge or canister.
- Determination of the physical state of the substance as it is likely to be encountered at the hazardous waste site. It will be either a gas or vapor, a particulate (dust, fume, or mist), or a combination of both.
- Identification of oxygen-deficient atmospheres (ANSI Z88.2-1980). Air-purifying respirators shall not be worn in environments deficient in oxygen (less than 19.5 percent by volume or partial pressure less than 100mm of mercury).

Skin Absorption and Irritation. A supplied air suit (e.g., Level A) provides skin protection from extremely toxic substances which may be absorbed through the skin or cause severe skin irritation. Most information concerning skin irritation is not quantitative but rather is presented in commonly used descriptive terms, such as “a strong skin irritant, highly irritating to the skin” and “corrosive to the skin.” Decisions made

concerning skin irritation are judgmental and are often based on this non-quantitative information

As a guideline for the use of the supplied-air suit for substances that are sorbed through the skin, a single skin penetration LD_{50} of 2 g/kg for any animal species is used. ***For work at the Fort McClellan, Level A protection will be worn if mustard and/or lewisite have been detected and skin exposures of workers are possible.***

Poor Warning Properties

Air-purifying devices cannot be used to protect against organic vapors with poor warning properties. Warning properties include odor, eye irritation, taste imparting characteristics, and respiratory irritation. Warning properties provide an indication to the wearer of possible cartridge exhaustion or of poor facepiece fit. Adequate warning properties can be assumed when the substance's odor, taste, or irritation effects are detectable and persistent at concentrations at or below the PEL.

If the odor or irritation threshold of a substance is more than two times greater than the PEL, this substance should be considered to have poor warning properties. Some substances have extremely low thresholds of odor and irritation in relation to the PEL. These substances can be detected by a worker within the facepiece of the respirator even when the respirator is functioning properly. These substances are considered to have poor warning properties.

The primary technical criteria for what constitutes a permissible respirator is determined by the technical requirements of 30 Code of Federal Regulations (CFR) Part 11. Although 30 CFR Part 11 does not specifically eliminate the use of air-purifying respirators for substances with poor warning properties, prudent practices dictate that a respirator should not be used to protect against any substances with poor warning properties.

Sorbents

There are certain limitations to the use of sorbent cartridge or canister respirators. A sorbent cartridge is not recommended when:

- evidence exists of immediate (less than 3 minutes) breakthrough time at or below the IDLH concentrations;
- there is reason to suspect that the sorbent does not provide adequate efficiency against the removal of a specific contaminant that may be encountered at the site;
- there is reason to suspect that a sorbent has a high heat of reaction with a substance;
- there is reason to suspect that a substance sorbed onto the surface of a cartridge or canister is shock sensitive; and

- concentrations of organic vapors exceed 1,000 ppm (10 times the PEL for quarter masks or 50 times the PEL for full facepiece masks).

A sorbent, full-facepiece respirator will not be selected if the contaminant or its concentration are unknown.

Eye Irritation

The decision of whether to use a full-facepiece respirator or a half- or quarter-facepiece respirator is often made by considering the chemical's potential for producing eye irritation or damage. The following guidelines deal with eye protection.

- For routine work activities, any eye irritation is considered unacceptable. Therefore, only full-facepiece respirators are permissible in contaminant concentrations that produce eye irritation.
- For escape, some eye irritation is permissible if it is determined that such irritation would not inhibit escape and such irritation is reversible.
- In instances for which quantitative eye irritation data cannot be found in literature references, and theoretical considerations indicate that the substance should not be an eye irritant, half-facepiece respirators are allowed.
- In cases where a review of the literature indicates a substance causes eye irritation but no eye irritation threshold is specified, the full-facepiece respirators are to be used.

  NOTE: Both mustard gas and lewisite are extreme eye irritants and a few minutes of exposure to high concentrations can cause permanent blindness.

Immediately Dangerous to Life or Health (IDLH)

The definition of IDLH provided in 30 CFR 11.3(t) is as follows:

> Immediately dangerous to life or health means conditions that pose an immediate threat to life or health or conditions that pose an immediate threat of severe exposure to contaminants, such as radioactive materials, which are likely to have adverse cumulative or delayed effects on health.

The purpose of establishing an IDLH exposure concentration is to insure that the worker can escape without injury or irreversible health effects in the event of failure of the respiratory protective equipment. The IDLH is considered the maximum concentration above which only a highly reliable positive-pressure, atmosphere-supplying respirator is permitted. Since IDLH values are conservatively set, any approved respirator may be used up to its maximum-use concentration below the IDLH.

In establishing the IDLH concentration the following factors are considered.

- Escape without loss of life or irreversible health effects. Thirty minutes is considered the maximum permissible exposure time for escape.

- Severe eye or respiratory irritation or other reactions which would prevent escape without injury.

The IDLH will be determined from the following sources:

- specific IDLH concentrations provided in the literature (such as the American Industrial Hygienists Association Hygienic Guides and the National Institute of Occupational Safety and Health Pocket Guide to Chemical Hazards);
- human exposure data;
- acute animal exposure data; and
- acute toxicological data from analogous substances.

The following guidelines will be used to interpret toxicological data reported in the literature for animal species.

- Where acute inhalation exposure data (30 minutes to 4 hours) are available for various animal species, the lowest exposure concentration causing death or irreversible health effects in any species is determined to be the IDLH concentration.
- Chronic exposure data may have little relevance to the acute effects and will not be used in determining the IDLH.

  NOTE: Both mustard gas and lewisite have low IDLH concentrations.

Respirator Protection Factors

The protection factors of respiratory protection devices are a useful numerical tool to aid in the selection of appropriate respiratory protection. Protection factors measure the overall effectiveness of a respirator.

The protection factor of a given respirator for a specific user multiplied by the PEL for a given substance is the maximum allowable concentration of that substance for which the respirator may be used. For example, if the protection factor (PF) for a full-facepiece respirator is 50 and a particular substance has a PEL (or TLV) of 10 ppm, the full-facepiece respirator will provide protection up to 500 ppm (see Table I.1).

Types of Respirators

There are two main types of respirators, air-purifying and atmosphere-supplying.

Air-Purifying Respirators. An air-purifying respirator can be used only if the atmosphere contains greater than 19.5 percent oxygen and the contaminant is present at a concentration below the IDLH level. The contaminant must have properties which will alert the user that the filter or sorbent is about to be exhausted. Two types of air-purifying respirators are described below.

Table I.1
Respirator Protection Factors

Type of Respirator	Protective Factor (Qualitative Test)
Air-purifying, half-facepiece	10
Air-line, half-facepiece	10
SCBA, demand, half-facepiece	10
Hose mask, full-facepiece	10
Air-purifying, full-facepiece	10
Air-line, demand, full-facepiece	50
SCBA, demand, full-facepiece	50
Air-line, pressure-demand, with escape provision, full-facepiece (no test required)	10,000+
SCBA, pressure-demand or positive pressure, full-facepiece (no test required)	10,000+

Source: ANSI 288.2, 1980
Acronym: SCBA, self-contained breathing apparatus.

- **Half-Facepiece Respirators**. A half-facepiece respirator fits from under the chin to above the nose. One or two cartridges are used to filter the air and are discarded once the use limits are reached. The half-facepiece has approved cartridges for pesticides, organic vapors, dusts, mists, fumes, acid gases, ammonia, and several combinations of contaminants.
- **Full-Facepiece Respirators**. The whole face, including the eyes, is protected by the full-facepiece respirator. It gives 5 times the protection of a half-facepiece (full-facepiece PF - 50, half-facepiece PF - 10).

Atmosphere-Supplying Respirators. Atmosphere-supplying respirators provide from 5 minutes to several hours of breathing air. The amount of protection provided is based upon the type of facepiece and its mode of operation, continuous, demand, and pressure-demand, the pressure-demand mode provides the best protection.

Two types of atmosphere-supplying respirators may be used. These are an airline respirator and a self-contained breathing apparatus (SCBA). A description of each is presented below.

- **Airline Respirator**. This respirator uses an airline to transport clean compressed air to the wearer. The mode of operation may be either continuous, demand, or pressure-demand. This respirator may be worn in an IDLH environment if it is pressure-demand type, and incorporates an escape SCBA into the system. However, no more than 300 feet of airline can be used.

- **Self-Contained Breathing Apparatus**. The wearer of an SCBA carries a cylinder of compressed air and is not restricted by an airline. These devices are open-circuit and are approved for either demand or pressure-demand operation. Greater protection is afforded, however, when these devices are operated in the pressure-demand mode and these devices are used in this mode when worn in IDLH or potentially IDLH conditions.

Use of Air Monitoring Measurements

The protection level will be modified as necessary based on real-time measurements, supplemented with background information and professional judgment. Modification of the levels or respiratory protection will be made based on the following guidelines.

Level B to Level D

Guideline 1: this modification may be made in the sustained absence of volatiles or particulates as measured on real-time equipment and at the direction of the Project H&S Officer.

Level C to Level D

Guideline 1: same as Level B to Level D

Level B to Level C

Guideline 2: may be made at the direction of the Project H&S Officer only when the contaminants and their concentrations are known. This modification should not be used without substantial knowledge of all the chemicals involved and their expected behavior in relation to change in concentration and effect on absorbent cartridges.

Level D to Level C

Guideline 3: permissible at the direction of the Project H&S Officer when total volatiles or particulates exceed the preset action level based on characterization of the expected contaminants and when PEL-TWA measurements are being taken concurrently.

Level C to Level B

Guideline 4: permissible at the direction of the Project H&S Officer in cases where total volatiles or particulate measurements exceed the preset action level based on characterization of the expected contaminants.

Level D to Level B

Guideline 5: may be made at the direction of the Project H&S Officer based on the magnitude of the measurements and on professional judgment.

NOTE: Where data indicates civilian personnel may be exposed to mustard in excess of 0.003mg/m³ only pressure-demand, supplied air respiratory protection will be used.

TRAINING AND FITTING

Selecting the respirator appropriate for a given hazard is important, but equally important is using the selected device properly. Proper use can be ensured by careful training of users and by maintenance of respiratory protective devices.

Training

Respirator training is required as part of the initial training course conducted for workers who are to perform hazardous waste or industrial field operations and is also required in the annual refresher training provided to workers performing hazardous waste activities. Both types of training will address the subjects in Table I.2.

Project-specific respirator training will be offered by the PHSO as part of the on-site training.

Respirator Fit Testing

The proper fitting of respiratory protective devices requires the use of a fit test The fit test is needed to determine a proper match between the facepiece of the respirator and the face of the user.

Initial Testing. The worker shall be given the opportunity to choose the most comfortable respirator from various sizes and manufacturers. The worker shall hold each facepiece up to their face and eliminate those which do not provide a comfortable fit. The most comfortable mask will then be donned and worn for at least five minutes to assess comfort. The worker will evaluate the following points:

- ⇒ the position of the mask on the nose;
- ⇒ the room available for eye protection or prescription inserts;
- ⇒ the room available to talk; and
- ⇒ the position of the mask on the face and cheeks.

After the worker has determined the respirator of greatest comfort, that worker shall conduct a negative and positive-pressure fit check. If the negative-and positive-fit checks are unsuccessful, another respirator facepiece shall be selected and the fit re-tested. After the successful completion of negative- and positive-fit checks, the respirator fit shall be evaluated using a test atmosphere.

Testing Using Test Atmospheres. The users of respirators are required to test the facepiece-to-face seal of the respirator and to wear the respirator in a test atmosphere. The test atmosphere is simulated in an enclosure that permits the user to enter with the equipment on while an atmosphere containing a low-toxicity compound is generated. The isoamyl acetate or irritant smoke tests described in the text that follows will be performed every six months for personnel engaged in hazardous waste and industrial field operations.

Table I.2
Respirator Training Outline

Lecture and Discussion	
	Discussion of classification of respirators.
	Discussion of respirator capabilities and limitations.
	Instruction on setting "action levels."
	Instruction on OSHA Standard for respiratory protection
	Proper fitting.
	Classroom and field training in recognizing and dealing with emergencies
Workshop and Field Exercise	
	Field exercise in Levels A, B, and C protective ensembles.
	Disassembly and reassembly of respirators emphasizing components, their function, and their relation to the overall function of the respirator.
	Inspection of respirators.
	Proper donning and field fit testing.
	Fit testing with a test atmosphere.
	Cleaning, maintenance and storage.

Occupational Safety and Health protocols for fit testing will be followed (29 CFR Part 1910.1028). A summary of this protocol is presented below. After the fit test has been successfully completed, a fit test log will be issued to the test subject (Form I.1).

- **Isoamyl Acetate Test**. Isoamyl acetate, a low-toxicity substance with a banana-like odor, will likely be used in testing the facepiece fit of organic vapor cartridge or canister respirators. This test substance will be applied to a cotton wad inside the test enclosure. The user will put on the respiratory protective device in an area away from the test enclosure so that there is no prior contamination of the cartridge or ""pre-exposure" to the isoamyl acetate and will perform the following inside the enclosure:
  - ◊ normal breathing;
  - ◊ deep breathing, as during heavy exertion;
  - ◊ side-to-side and up and-down head movements similar to those that take place on the job;

FORM I.1 RESPIRATOR FIT TEST LOG

Personnel:

Employee: _____

Fit test adminstrator: _____

Respirator:

Manufacturer: _____

Model: _____

Size: _____

ID Number: _____

Dates:

_____
(date of test)

_____
(date of last physical

_____
(date of next scheduled fit test)

Comfort:

Very comfortable: _____

Comfortable: _____

Intolerable: _____

Needs prescription inserts: _____
(yes/no)

_____ fit _____ no fit

Test Protocol

Pressure fit check:

_____ positive

_____ negative

Test atmosphere:

_____ isoamyl acetate

_____ stannic oxychloride

_____ other (specify)

Remarks: _____

_____

_____

_____

◊ talking by reading a prepared text loudly enough to be understood by someone standing nearby; and

◊ other exercises that may be added depending upon need.

The major drawbacks of the isoamyl acetate test are that odor thresholds vary widely among individuals and that isoamyl acetate smells pleasant, even in high concentrations. Therefore, unless the worker is highly motivated to select a respirator that fits properly, the results of this test may be suspect.

- **Irritant Smoke Test.** The irritant smoke test, similar to the isoamyl acetate test, may be used to test the facepiece fit of particulate and particulate/organic vapor filter respirators. The irritant, stannic oxychloride, is available commercially in sealed glass tubes and can be used for testing. Then the tube ends are broken and air passed through them, a dense, irritating smoke is emitted. In this test, the user steps into the test enclosure and the irritant smoke is sprayed into the enclosure. If the user detects any of the irritant smoke, a defective fit is indicated and adjustment or replacement of the respirator is required. The irritant smoke test must be performed with caution because the aerosol is highly irritating to the eyes, skin, and mucous membranes. As a qualitative means of determining respirator fit, this test has a distinct advantage in that the wearer usually reacts involuntarily to leakage by coughing or sneezing and the likelihood of giving a false indication of proper fit is greatly reduced.

Daily Qualitative Fit Check at the Site. Each employee is responsible for performing daily qualitative fit checks of their assigned respirator prior to entry into any potentially hazardous atmosphere. The daily determination of fit will consist of a negative- and positive-pressure fit check as described below.

- **The Negative-Pressure Test**. In this test, the user closes off the inlet of the canister, cartridges, or filters by covering it with the palm of their hand; inhales gently so that the facepiece collapses slightly; and holds their breath for about 10 seconds. If the facepiece remains slightly collapsed and no inward leakage is detected, the respirator is probably properly fitted and functioning correctly.
- **The Positive-Pressure Test**. This test is conducted by closing off the exhalation valve and exhaling gently into the facepiece. The fit is considered satisfactory if slight positive pressure can be built up inside the facepiece without any evidence of outward leakage.

RESPIRATOR INSPECTION, CLEANING MAINTENANCE AND STORAGE

Respirator inspection, cleaning and maintenance is made an integral part of the overall respirator program. Wearing a dirty, poorly maintained or malfunctioning respirator is, in one sense, more dangerous than not wearing a respirator at all. The

employee wearing a defective device thinks they are protected when, in reality, they are not.

Inspection

It is imperative that periodic inspections of respirators be done. Inspections for three types of respirators are described in detail below.

Air-Purifying Respirators. Each individual must inspect their air-purifying respirator. The respirator custodian is responsible for inspecting and cleaning respirators prior to assignment to and upon receipt from an employee. Form I.2 lists the items to be checked during the daily inspection of an air-purifying respirator.

Self-Contained Breathing Apparatus. Self-contained breathing apparatuses (SCBA) will be inspected by the respirator custodian or SSHO on a monthly basis and by the PHSO prior to beginning work. Prior to use, workers must inspect their individual facepiece assembly as listed on the daily inspection checklist (Form I.3). The monthly inspection checklist for SCBA is given on Form I.4.

Airline Respirator. The airline respirators with escape SCBA will be inspected by the respirator custodian or SSHO on a monthly basis. Prior to and following each use, this airline system will be inspected. Form I.5 contains a list of inspection items.

Cleaning and Storage

Users of respiratory protection at Fort McClellan are responsible for inspecting and cleaning all respirators following each use. Cleaning is done using a commercial cleaner-sanitizer followed by a thorough rinse and air drying. After cleaning, sanitizing and inspecting the respirator. the user will repackage and store the respirator in an area protected against dust, sunlight, heat, extreme cold, excessive moisture and damaging chemicals. Each respirator facepiece usually comes in a plastic bag supplied by the manufacturer. This bag will be retained and used for respirator storage. The respirators must be packed and stored so the exhalation valve rests in a normal position.

Maintenance. Continued usage of respirators will require periodic repair or replacement of component parts of the equipment. Replacement of parts and repair of air-purifying respirators, in most cases, presents few problems. The manufacturer will provide replacement parts. Replacement parts for respiratory protective devices must be those of the manufacturer of the equipment. Substitution of parts from a different brand or type of respirator will invalidate the approval of the respirator. Maintenance of SCBA equipment is more difficult, primarily because of the valve and regulator assembly. Because of this, regulations require that SCBA equipment be returned to the manufacturer for adjustment or repair. Users shall not perform any maintenance on the regulators or valves or SCBA or airline respirators. The SSHO will be notified of needed maintenance/repair and he will ensure required maintenance/repair is performed by manufacturer certified personnel/firms.

FORM I.2 AIR-PURIFYING RESPIRATOR DAILY INSPECTION CHECKLIST

Rubber face piece - check for:

_____ excessive dirt (clean all dirt from face piece);

_____ cracks, tears, or holes (obtain new face piece);

_____ distortion (allow face piece to "sit" free from any constraints and see if distortion disappears; if not, obtain new face piece); and

_____ cracked, scratched, or loose-fitting lenses.

Head harness - check for:

_____ breaks or tears (replace head straps);

_____ loss of elasticity (replace head straps); and

_____ broken or malfunctioning buckles or retaining clips (obtain new buckles).

Inhalation valve, exhalation valve - check for:

_____ detergent residue, dust particles, or dirt on valve or valve seat (clean residue with soap and water);

_____ cracks, tears, or distortion in the valve material or valve seat (clean residue with soap and water); and

_____ missing or defective valve cover (obtain valve cover from program supervisor).

Cartridges and canisters - check for:

_____ proper filter for the hazard (verify with Project Health and Safety Officer);

_____ missing or worn gaskets (contact warehouse manager for replacement);

_____ worn filter and facepiece threads (replace filter or face piece); and

_____ cracks or dents in filter housing (replace filter).

FORM I.3 SELF-CONTAINED BREATHING APPARATUS DAILY INSPECTION CHECKLIST

Rubber face piece - check for:

_____ excessive dirt (clean all dirt from face piece);

_____ cracks, tears, or holed (obtain new face piece);

_____ distortion (allow face piece to "sit" free from any constraints and see if distortion disappears; if not, obtain new face piece); and

_____ cracked, scratched, or loose-fitting lenses.

Head harness - check for:

_____ breaks or tears (replace head straps);

_____ loss of elasticity (replace head straps); and

_____ broken or malfunctioning buckles or retaining clips (obtain new buckles).

FORM I.4 SELF-CONTAINED BREATHING APPARATUS MONTHLY INSPECTION CHECKLIST

Device: _____ Serial #: _____

Date inspected: _____ Inspected by: _____

Rubber face piece: _____ Antifogging Agent Application on lenses: _____

Exhalaration valve

Rubber head harness: _____ Air Cylinder Pressure: _____

Rubber hose: _____ Bypass Valve: _____

O-rings: _____ Mainline Valve: _____

Facepiece Lens: _____ Alarm: _____

Harness: _____ Regulator Diaphragm: _____

Backpack: _____ Regulator Function: _____

Washing/Sanitizing: _____ Demand Valve: _____

Operating Instructions: _____ Pressure Demand: _____

Hydrostatic test date: _____ Storage Box: _____

No visible damage: _____

Remarks: _____

_____

_____

_____

FORM I.5 AIRLINE RESPIRATOR WITH EMERGENCY EGRESS SCBA INSPECTION CHECKLIST

Serial #: _____

Date inspected: _____

Inspected by: _____

Rubber face piece torn or ripped:	YES	NO
Head harness - torn or ripped:	YES	NO
Is SCBA cylinder fully pressurized:	YES	NO
Are airlines clean and serviceable:	YES	NO
Rotate bypass valve hand wheel while airline is hooked to air source) does bypass function?	YES	NO
Check SCBA cylinder for deep scratches or gouges.	YES	NO
Does carrying pouch or harness have signs of excessive wear or damage?	YES	NO
Is face piece lens cracked or scratched?	YES	NO
Has the face piece been washed/sanitized since it was last worn?	YES	NO
Has antifogging solution been applied on lens?	YES	NO
Stow the airlines and face masks.	YES	NO

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APPENDIX J
HAZARD COMMUNICATION PROGRAM

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INTRODUCTION

The OSHA Hazard Communications Standard (29 CFR 1910.1200) was promulgated to ensure that all chemicals would be evaluated and information regarding the associated chemical hazards would be communicated to employers and employees. The goal of the standard is to reduce the number of chemically related occupational illnesses and injuries.

In order to comply with the OSHA Hazard Communication Standard, this written program has been established by Parsons ES for work at Fort McClellan, AL. All Parsons ES and subcontractor personnel working at Fort McClellan are included in this program. Copies of this written program will be available for review by any employee at the onsite office trailer for Fort McClellan – by contacting the SSHO or from the PHSO:

Ed Grunwld, CIH
Parsons Engineering Science, Inc.
5390 Triangle Parkway
Norcross, GA 30092
678/969-2394

HAZARDOUS CHEMICAL INVENTORY LIST

Hazardous chemicals used at Fort McClellan include industrial chemicals such as chlorinated solvents and the much more persistent Chemical Warfare Agents – mustard, Lewisite, nerve agents GB and VX, and choking and blood agents. The SSHO will maintain an inventory of hazardous chemicals brought onto Fort McClellan.

HAZARD DETERMINATION

The most hazardous chemicals potentially present at Fort McClellan sites are Chemical Warfare Agents (CWA), e.g., mustard, Lewisite, and nerve agents either in containers or as filler in chemical munitions. These chemicals are “military unique” and are no longer produced in the U.S. Parsons ES will therefore rely upon the hazard information contained in the MSDSs prepared for these materials by the U.S. Army. Copies of these MSDSs are included in Appendix D of this SSHP.

MATERIAL SAFETY DATA SHEETS (MSDS)

MSDSs are prepared by manufacturers or producers to provide specific information on the safety precautions and health effects of a particular chemical or mixture. The MSDS contains at a minimum the following information:

- Chemical and common names
- Physical and chemical characteristics
- Physical hazards
- Health hazards
- Primary routes of entry
- Exposure limits
- Carcinogenic potential
- Handling and protective precautions
- Control measures
- Emergency and first aid procedures
- Date of MSDS preparation
- Name and address of manufacturer

When chemicals are ordered, the Site Manager or his designee will specify on the purchase order that chemicals are not to be shipped without corresponding MSDSs. When chemicals and MSDSs arrive, they will be reviewed for completeness by the SSHO or his designee. Should any MSDS be incomplete, a letter or FAX will be sent immediately to the manufacturer requesting the additional information, Parsons ES or its subcontractors will not accept (at Fort McClellan sites) any shipped chemical materials without an MSDS.

A complete file of MSDSs for all hazardous chemicals to which an employee of Parsons ES may be exposed will be kept in labeled files on-site. MSDSs for CWM suspected at some Fort McClellan sites are provided in Appendix D of this Safety and Health Plan. In the event that an MSDS is missing the employee should immediately contact the SSHO or PHSO.

MSDSs at this site will be reviewed during periodic audits by the Corporate Health and Safety Officer or PHSO. Should there be any MSDS that has not been updated within the past year, a new MSDS will be requested.

LABELS AND OTHER FORMS OF WARNING

The Hazard Communication Standard requires that hazardous chemicals be labeled by manufacturers. The label must contain the following:

- Chemical identity
- Appropriate warnings
- Name and address of manufacturer, importer, or other responsible party.

If the labels are incomplete or missing, Parsons ES personnel will refuse the shipment.

When chemicals are transferred from the manufacturer's container's to secondary containers, the Site Manager or SSHO will ensure that the containers are labeled with the identity of the chemicals and appropriate hazard warnings. Labels for secondary containers can be obtained from the SSHO.

The entire labeling procedure will be reviewed at least annually and changed as necessary.

EMPLOYEE INFORMATION AND TRAINING

Prior to starting work Parsons ES and its subcontractors' employees will attend a site specific safety and health training course. This course will include Hazard Communication Training to review the contents of this program and learn the hazards associated with each listed hazardous chemical. The training will be performed by the PHSO and SSHO. The format will be classroom training.

6.1. Training Topics

The site training or HAZCOM will include:

- An overview of the requirements of the Hazard Communication Standard;
- The labeling system and how to use it;
- How to review MSDS and where they are kept;
- Chemicals present in work operations;
- Physical and health effects of hazardous chemicals;
- Methods and observation techniques used to determine the presence or release of hazardous chemicals in the area;
- Personal protective equipment and work practices to reduce or prevent exposure to chemicals;
- Steps to be taken to prevent or reduce exposure to chemicals;
- Safety-emergency procedures to follow if exposure occurs; and
- Location and availability of written program/MSDSs.

Following the training session(s), each employee will sign and date the training record. Additional training may be provided by the PHSO or SSHO, with the

introduction of each new hazardous chemical. Records of additional training will be maintained.

ON-SITE CONTRACTORS AND VISITORS

Parsons ES understands that at times other persons may be on the work site. New contractors, subcontractors and visitors will be required to attend site health and safety training to familiarize them with the contents of this document and the specific hazards associated with Fort McClellan. New contractors, subcontractors and visitors will be provided with the following information:

- Hazardous chemicals to which the contractor's employees or visitors may be exposed;
- Precautions necessary to protect employees during normal operating conditions and foreseeable emergencies; and
- Labeling system used in the work place.

It is the responsibility of the Site Manager and/or SSHO to ensure that all MSDSs of chemicals to which the contractor's employees or visitors may be exposed are made available at a central location in the work place along with an example of the labeling system in use. Visitors and subcontractors will be informed of the availability of this information and its location.

PROGRAM REVIEW

This written hazard communications program for Parsons ES will be reviewed by the PHSO or Corporate Health and Safety Manger at least annually and updated as necessary.

Reviewed and Approved:

Project Safety and Officer Health: _____

Site Manager: _____

FINAL

APPENDIX K
LOCKOUT/TAGOUT PROGRAM

APPENDIX K
LOCKOUT/TAGOUT PROGRAM

INTRODUCTION

Objective

This procedure shall be used by Parsons ES and subcontractor personnel to ensure that the machine or equipment being worked on is isolated from all potential hazardous energy sources, and locked out or tagged out before an employee performs any servicing or maintenance activity in which unexpected energization, start-up or release of energy could cause an injury. Energy sources can be electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Purpose

This procedure establishes the minimum safety requirements to ensure the proper deactivation of movable, electrically energized, pressurized equipment and systems, and systems containing hazardous materials prior to repairing, cleaning, oiling, adjusting, or similar work. This procedure complies with the requirements in 29 CFR 1910.147.

Requirements

This procedures applies to all equipment that receives energy from electrical power, hydraulic fluid under pressure, compressed air, steam, energy stored in springs, potential energy from suspended parts, or any other source that may cause unexpected movement when it is necessary to perform work on that system. It also applies to similar functions performed on systems containing hazardous materials.

Definitions

Lockout - The placement of a lockout device on an energy isolating device, in accordance with this procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed. The lockout device is removed. The lockout device can be key operated or a combination device.

Tagout - The placement of a tagout device on an energy isolating device, in accordance with this procedures, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed by the authorized person who originally placed the tagout device in position.

Authorized employee. A person who locks or implements a tagout system procedure on machines or equipment to perform the servicing or maintenance on that machine or equipment.

LOCKOUT/TAGOUT STEPS

Prior to initiating any repairs, modifications and/or adjustments to operating equipment, these steps will be followed.

1. The immediate supervisor with jurisdiction over the equipment and all affected employees will be notified that the energy sources are to be deactivated.
2. All sources of power that must be locked out, blocked or released will be identified by the immediate Supervisor and the employee who will work on the equipment.
3. In order to ensure that the equipment cannot be re-energized while maintenance activities are performed, the employee will lockout/blank out all potential energy sources. (The employees will be assigned padlocks with their names or identification numbers affixed to the locks. The locks will be individually keyed to prevent another employee from removing the lock inadvertently.) If more than one employee is assigned to work on the equipment, a multi-lockout hasp will be used so that all employees working on the equipment can apply their locks and ensure their safety.
4. A tagout device will be affixed to all components or systems de-energized to indicate that lockout has been performed.
5. After the servicing and/or maintenance is complete and the equipment is ready for normal operations, check the area around the machine or equipment. After all tools have been removed from the machine or equipment, guards have been reinstalled, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

SPECIAL CONDITIONS

During certain operations it may be necessary to energize the equipment for a short period of time. Employees in the immediate area will be notified and directed to stay clear of the equipment. If the equipment is to be deactivated again, the employee should repeat steps 3 to 6 of this procedure before work resumes.

If the work is completed and a lock remains on the equipment, it shall not be removed until the employee responsible for the lock is found or the supervisor of the employee investigates and ascertains that the equipment is safe to operate. Unauthorized removal of a lock will subject the violator to disciplinary action.

TRAINING

Initial and annual training will be given to all employees to ensure that the purpose and function of this energy and control program are understood.

PERIODIC INSPECTION

The PHSO will conduct an annual audit of the energy control program to ensure that the requirements of these procedures are being followed for the Fort McClellan project. A record of annual audits will be kept to comply with the requirement for periodic inspections.

APPENDIX L
PERSONNEL AND EQUIPMENT DECONTAMINATION STATION SOPS

APPENDIX L
PERSONNEL AND EQUIPMENT DECONTAMINATION STATION SOPS

INTRODUCTION

Personnel, clothing, equipment and sample containers from the exclusion zone (EZ) at Fort McClellan sites must be decontaminated to remove any harmful chemical that may have adhered to them. A combination of physical and chemical decontamination procedures will be used to remove these contaminants.

PERSONNEL DECONTAMINATION

Personnel working at Modifile Level D, or Levels C, B or A will undergo decontamination prior to departing the contamination reduction zone. The level and procedures for decontamination vary depending on the level of protection being worn. The SSHO and PHSO may agree that the number of stations described below (for maximum decon) may be reduced – based on actual site hazards encountered.

Modified Level D and Level C Decontamination Procedures

Table L.1 contains the standard operating procedures that will be followed during decontamination of personnel wearing Modified Level D and Level C protection.

Level B Decontamination Procedures

Personnel working in Level B protective clothing will undergo decontamination as indicated in Table L.2.

Level A Decontamination Procedures

Personnel working in Level A protective clothing will undergo the decontamination as outlined in the SOP provided in Table L.3.

Materials for Decontamination

The decontamination of personnel and PPE will require a number of materials. The materials which may be needed for personnel/PPE decon are listed (i.e., for each station) in Table L.4.

Table L.1. SOP for Modified Level D** and Level C Decontamination at Fort McClellan Sites

Station		Tasks
Station 1:	Segregated Equipment Drop	1. Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2:	Boot Cover and Glove Wash	2. Scrub outer boot covers and gloves with detergent and decon solution.
Station 3:	Boot cover and Glove Rinse	3. Rinse off detergent and decon solution * from station 2 using copious amounts of water.
Station 4:	Tape Removal	4. Remove tape around boots and gloves and deposit in container with plastic liner.
Station 5:	Boot Cover Removal	5. Remove boot covers and deposit in containers with plastic liner.
Station 6:	Outer Glove Removal	6. Remove outer gloves and deposit in container with plastic liner.
Station 7:	Suit and boot Wash	7. Wash splash suit, gloves, and safety boots. Scrub with long-handle scrub brush and detergent. Rinse with decon solution.
Station 8:	Suit and Boot, and glove Rinse	8. Rinse off detergent and decon solution using water. Repeat as many times as necessary.
Station 9:	Canister or Mask Change	9. If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, and joints taped worker returns to duty.
Station 10:	Safety Boot Removal	10. Remove safety boots and deposit in container with plastic liner.
Station 11:	Splash Suit Removal	11. With assistance of helper, remove splash suit. Deposit in container with plastic liner.
Station 12:	Inner Glove Wash	12. Wash inner gloves with decon solution.
Station 13:	Inner Glove Rinse	13. Rinse inner gloves with water.
Station 14:	Face Piece Removal	14. Remove face piece. Deposit in container with plastic liner. Avoid touching face with fingers.
Station 15:	Inner Glove Removal	15. Remove inner gloves and deposit in lined container.

* Decon solution for work at suspected CWM sites will include a 5.25% sodium or calcium hypochlorite solution.

** Modified Level D may only require the use of rubber gloves and boots without a suit. This decon SOP/procedure will be applied to only those Modified Level D items.

Table L.2. SOP for Level B Decontamination
at Fort McClellan Sites

	Station	Tasks
Station 1:	Segregated Equipment Drop	1. Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. During hot weather operations, cool-down stations will be set up within this area.
Station 2:	Boot Cover and Glove Wash	2. Scrub outer boots and gloves with detergent and decon* solution.
Station 3:	Boot cover and Glove Rinse	3. Rinse off detergent and decon solution * from station 2 using copious amounts of water.
Station 4:	Tape Removal	4. Remove tape around boots and gloves and deposit in container with plastic liner.
Station 5:	Boot Cover Removal	5. Remove boot covers and deposit in containers with plastic liner.
Station 6:	Outer Glove Removal	6. Remove outer gloves and deposit in container with plastic liner.
Station 7:	Suit and Safety Boot Wash	7. Wash chemical-resistant splash suit, SCBA, gloves and safety boots. Scrub with long handle scrub brush and detergent. Rinse with decon solution. Wrap SCBA regulator (if belt mounted type) with plastic to keep out water. Wash airline/harness sponges or cloths.
Station 8:	Suit, SCBA Boot, and Glove Rinse	8. Rinse off detergent and decon solution using copious amounts of water.
Station 9:	Safety Boot Removal	9. Remove safety boots and deposit in container with plastic liner.
Station 10:	SCBA Removal	10. While still wearing facepiece remove emergency SCBA and airline harness and place on table. Disconnect hose from regulator valve.
Station 11:	Splash Suit Removal	11. With assistance of helper, remove splash suit. Deposit in container with plastic liner.
Station 12:	Inner Glove Wash	12. Wash inner gloves with decon solution.
Station 13:	Inner Glove Rinse	13. Rinse inner gloves with water.
Station 14:	Face Piece Removal	14. Remove face piece. Deposit in container with plastic liner. Avoid touching face with fingers.
Station 15:	Inner Glove Removal	15. Remove inner gloves and deposit in lined container.

* Decon solution for work at suspected CWM sites will include a 5.25% sodium or calcium hypochlorite solution.

Table L.3. SOP for Level A Decontamination
at Fort McClellan Sites

Station		Tasks
Station 1:	Segregated Equipment Drop	1. Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station will be set up within this area.
Station 2:	Boot Cover and Glove Wash	2. Scrub outer boot covers and gloves with detergent and decon solution.
Station 3:	Boot cover and Glove Rinse	3. Rinse off detergent and decon solution * from station 2 using copious amounts of water.
Station 4:	Tape Removal	4. Remove tape around boots and gloves and deposit in container with plastic liner.
Station 5:	Boot Cover Removal	5. Remove boot covers and deposit in containers with plastic liner.
Station 6:	Outer Glove Removal	6. Remove outer gloves and deposit in container with plastic liner.
Station 7:	Suit and boot Wash	7. Wash encapsulating suit and boots using scrub brush and detergent/water and rinse with decon solution. Repeat as many times as necessary.
Station 8:	Suit and Boot, and glove Rinse	8. Rinse off detergent and decon solution using water. Repeat as many times as necessary.
Station 9:	Safety Boot Removal	9. Remove safety boots and deposit in container with plastic liner.
Station 10:	Fully Encapsulating Suit and Hard Hat Removal	10. Fully encapsulated suit is removed with assistance of a helper and laid out on a drop cloth or hung up. Hard hat is removed. Hot weather rest station may be set up within this area for personnel returning to site.
Station 11:	SCBA Removal	11. While still wearing facepiece, remove emergency SCBA and airline harness and lay on table. Disconnect hose from regulator valve and proceed to next station.
Station 12:	Inner Glove Wash	12. Wash with decon solution that will not harm the skin. Repeat as often as necessary.
Station 13:	Inner Glove Rinse	13. Rinse with water. Repeat as many times as necessary.
Station 14:	Face Piece Removal	14. Remove face piece. Deposit in container with plastic liner. Avoid touching face with fingers.
Station 15:	Inner Glove Removal	15. Remove inner gloves and deposit in container with liner.

*Decon solutions for work on suspected CWM sites will include a 5.25% sodium or calcium hypochlorite solution.

Table L.4. Materials for Decontamination Measures for Levels A, B, C, and Modified Level D at Fort McClellan Sites

Station 1:	Various Size Containers Plastic Liners Plastic Drop Cloths	*Station 10:	Containers (20-30 Gallons) Plastic Liners Bench or Stools Boot Jack
Station 2:	Containers (20-30 Gallons) Decon Solution and Detergent Water 2-3 Long-Handled, Soft-Bristled Scrub Brushes	*Station 11:	Rack Drop Cloths Bench or Stools
Station 3:	Containers (20-30 Gallons) OR High-Pressure Spray Unit Water 2-3 Long-Handled, Soft-Bristled Scrub Brushes	*Station 12:	Table
Station 4:	Containers (20-30 Gallons) or High-Pressure Spray Unit Water 2-3 Long-Handled, Soft-Bristled Scrub Brushes	*Station 13:	Basin or Bucket Decon Solution Small Table
Station 5:	Containers (20-30 Gallons) Plastic Liners	*Station 14:	Water Basin or Bucket Small Table
Station 6:	Containers (20-30 Gallons) Plastic Liners	*Station 15:	Containers (20-30 Gallons) Plastic Liners
Station 7:	Containers (20-30 Gallons) Decon Solution and Detergent Water 2-3 Long-Handled, Soft-Bristled Scrub Brushes	*Station 16:	Containers (20-30 Gallons) Plastic Liners
Station 8:	Containers (20-30 Gallons) OR High-Pressure Spray Unit Water 2-3 Long-Handled, Soft-Bristled Scrub Brushes	*Station 17:	Containers (20-30 Gallons) Plastic Liners
Station 9: (Level C Only)	Face Mask and Cartridge Tape Boot Covers Gloves	*Station 18:	Water Soap Small Table Basin Or Bucket Field Showers Towels
		*Station 19:	Dressing Trailer is Needed in Inclement Weather Tables Chairs Lockers Cloths

* Station Nos. 10 thru 19 are applicable to Level C while these 11 stations become Station Nos. 9 thru 18 for Levels A and B.

Changing and Showering

It will be the requirement for work on the Fort McClellan sites that everyone working in Levels A, B or C will change each morning into appropriate clothing for site work. Personnel working in these levels will change again (into their personal clothes) at the end of the workday, prior to leaving the site. All personnel working in Levels A, B or C will also shower prior to leaving the site. A laundry service will be used for all garments worn under the Level A, B or C PPE. Showering and changing will occur in the centrally located Decontamination Trailer that will be used for this project. Lockers will be assigned in the Decon Trailer to personnel wearing PPE.

Personal Protection of Personnel Conducting Decontamination Procedures

Decontamination personnel ,for Levels A and B, are required to wear the following protective ensemble:

- Tyvek® F coveralls with hood;
- Interspiro supplied air /SCBA;
- Butyl rubber apron;
- Butyl rubber outer gloves
- Surgical inner gloves;
- Butyl rubber safety boots; and
- Rubber boot covers.

Decontamination personnel for Level C operations will wear the protective ensemble listed above without the Interspiro supplied air /SCBA.

EQUIPMENT DECONTAMINATION

Excavation equipment will be steam-cleaned and decontaminated prior to moving to a new site. Equipment will be decontaminated in the following manner:

- Decontamination personnel will don appropriate PPE to include: Saranex® coveralls, butyl apron and gloves, chemical resistant boots, inner PVC or Silver Shield® gloves, and respiratory protection (if chemical agents were was detected at the site).
- Steam-clean excavation equipment using a high-pressure steam sprayer and potable water;
- Clean with tap water and laboratory detergent using a brush, if necessary, to remove particulate matter and surface films; and
- Rinse thoroughly with potable water.

NOTE: If chemical agents are detected at a site, equipment will be decontaminated using household bleach (5.25% sodium or calcium hypochlorite), rinsed, and decontaminated with a 10% sodium hydroxide solution.

Equipment Decontamination Areas

Steam-cleaning and washing of heavy equipment (e.g., backhoe) will result in the generation of waste decon fluids. It is necessary to contain, collect, store and test these spent fluids prior to disposal. A temporary decon area will be constructed at sites where heavy excavation equipment is used. These temporary areas will be constructed as follows:

- Sand bags are filled and stacked around a flat area or depression -- large enough for the piece of heavy equipment.
- An impermeable membrane (e.g., geosynthetic liner like those used in landfills) is spread over the depression created by the stacked sandbags.
- Heavy excavation equipment is driven into the lined depression created by the sandbags and membrane. Sandbags are used to repair any breaches in the depression sidewalls.
- Pumps are used to move collected water from the decontamination area to storage tank for storage, testing and ultimately disposal.

Air Monitoring Equipment and Other Sensitive Equipment

Some equipment (e.g., radios and air monitoring equipment) which may be needed within the exclusion zone will be too sensitive for extensive decontamination. For equipment of this type, it is very important to AVOID contamination. Avoiding contamination of this type of equipment will be achieved by “bagging” it in single or double plastic/clear bags. Care should be taken not to block needed openings (e.g., sampling ports) or controls. Should decontamination be needed after the bags have been removed from the equipment (i.e., after decon of outer bags in CRZ). Paper towels wet in 5.25% sodium or calcium hypochlorite can be used to carefully wipe equipment surfaces.

Decontamination Procedures During Medical Emergencies

During medical emergencies, decontamination procedures should be completed prior to transport of injured personnel for off-site treatment.

Physical Injury

- Physical injuries can range from a sprained ankle to a compound fracture, from a minor cut to massive bleeding. Depending on the seriousness of the injury, treatment may be given at the site by trained personnel. For minor medical problems or injuries, the normal decontamination procedure should be followed.
- For more serious injuries, additional assistance may be required at the site or the victim may have to be transported to a medical facility. Life-saving care should be started immediately. Respirators and backpack assemblies must always be

removed. Contaminated garments must be removed, the individual should be decontaminated and wrapped in plastic, rubber, or blankets to further reduce the potential for contaminating medical personnel and the inside of ambulances. No attempt should be made to wash or rinse the victim at the site (prior to transport) unless it is known that the individual has been contaminated with an extremely toxic or corrosive material that could also cause severe injury or loss of life.

Heat Stress

- Heat-related illnesses range from mild heat fatigue to life-threatening heat stroke. Heat stroke requires prompt treatment to prevent irreversible damage or death. Less serious stages of heat stress also require prompt attention because they can progress to heat stroke. Unless the victim is obviously contaminated, decontamination should be omitted or minimized and treatment begun immediately. Protective clothing should be cut off to begin the first aid for this illness.

Hypothermia, Frostbite

- Cold-related illnesses range from mild to severe forms of hypothermia and frostbite. Both illnesses should be easily detected at mild stages of development. Decontamination procedures should be conducted as normal. However, staff should work as quickly as possible in order to begin proper treatment.

Chemical Exposure

- Exposure to chemicals can be divided into two categories:
  1. Injuries from direct contact, such as acid burns or inhalation of toxic chemicals.
  2. Potential injury caused by gross contamination of clothing or equipment.
- For inhaled contaminants, treatment can only be performed by qualified physicians. If the contaminant is on the skin or in the eyes, first aid treatment generally includes flooding the affected area with water.
- When protective clothing is grossly contaminated, contaminants may be transferred from the wearer to treatment personnel and cause injuries. The protective clothing should be washed off as rapidly as possible and then carefully removed prior to transport.

FINAL

APPENDIX M
ELECTRICAL SAFETY

APPENDIX M
ELECTRICAL SAFETY

INTRODUCTION

Objective

Parsons ES or Subcontractor personnel working on electrical systems and equipment at the former Fort McClellan (e.g., during the setup/establishment of temporary support areas) will follow standards set by the National Electrical Code (NEC) and OSHA in selection of materials and methods of installation and maintenance. Only qualified personnel will work on electrical systems and equipment.

Purpose

This procedure specifies the requirements for electrical equipment and methods and is an overview of the requirements of 29 CFR 1910, Subpart S-Electrical. If work is to be performed on any electrical circuit, lockout/tagout may be required. Refer to the Lockout/Tagout procedure (Appendix K). Fieldwork at Fort McClellan, AL will involve work at temporary facilities and will use temporary electrical systems. To minimize/prevent electrical shocks/accidents electrical safety must be emphasized.

GENERAL REQUIREMENTS

- No electrical work is done on an energized circuit.
- Only approved, qualified electricians are permitted to work on electrical equipment or electrical wiring.
- Use proper clearance and grounding procedures. All electrical circuits and equipment is de-energized and lockout/tagout accomplished before maintenance or repair work is started.
- Single-phase electric hand tools and other single-phase portable electrical equipment must be approved by a recognized testing agency, and all exposed non-current-carrying metal parts must be grounded, or double insulated.
- Before each use, portable electrical appliances are to be examined for obvious defects in the appliance, cord, and plug. If any deficiency is noted, the appliance is not to be used.
- Extension cords are to be kept clean, dry, free of kinks, and protected from oil, hot or sharp surfaces, and chemicals. Extension cords used outdoors shall be equipped with Ground Fault Circuit Interrupters (GFCI).

PORTABLE ELECTRICAL EQUIPMENT

- Portable electrical tools not provided with special insulating or grounding protection are not to be used at Fort McClellan sites.
- Portable electrical appliances and equipment with non-current carrying metal parts exposed to contact by personnel shall be grounded by a continuous conductor from the device to a grounded receptacle. The Site Safety and Health Officer (SSHO) shall resolve any question which arises as to whether or not a particular appliance is or should be grounded.
- Grounding of receptacles shall be accomplished in one of two ways:
  - A built-in ground wire of green color may be attached to the ground pole of the receptacle.
  - The conduit system, if installed in an approved manner, may be relied upon for grounding of a receptacle serving single phase appliances with ratings up to 230 volts.
- At outside locations all single-phase 15 and 20 ampere receptacle outlets (operating at 230 volts or less) which are not a part of the permanent wiring of the building or structure must have GFCI for personnel protection. The GFCI should be located at the power source so that all extension cords and tools are protected by the GFCI.
- The outlet box for portable extension cords for outdoor use shall be of weather proof type and maintained in good condition.

  NOTE: Due to the temporary/transient nature of the fieldwork at the former Fort McClellan, portable electrical equipment will be used. Therefore, particular attention MUST be paid to the requirements of this section.

ELECTRICAL GUARDING

- Suitable access and working space shall be provided and maintained about all electric equipment to permit safe operation and maintenance.
- The dimensions of the access and working space around energized parts in switchboards, control panels, fused switches, circuit breakers, panel boards, motor controllers, and similar equipment (which require examination, adjustment, servicing, or maintenance while energized), shall not be less than 36” in depth (30” for installations built prior to 1981) and 30” wide or the width of the equipment, whichever is greater.
- The access and working space shall not be used for storage purposes. The “keep clear” area may be identified with suitable markings and/or posting of signs or decals on the equipment.
- Energized parts of electrical equipment operating at 50 volts or more shall be guarded against accidental contact by the use of approved cabinets or enclosures.

- Entrance to rooms and other guarded locations containing exposed energized parts shall be marked with a conspicuous warning sign forbidding entry by unqualified persons.
- Temporary covers, warning signs, and/or barricades are to be used when it is necessary to remove covers of electrical panels during construction, major refurbishment, or for the purpose of providing temporary power to an area.
- All openings in boxes, enclosures, or fittings shall be effectively guarded or closed to afford protection substantially equivalent to that of the wall of the box, enclosure, or fitting.
- All electrical components over 230 volts shall have signs stating “High Voltage”.

EXTENSION CORD REQUIREMENTS

- Extension cords are designed for and will be used for TEMPORARY USE ONLY! All other electrical connections will be made permanent by proper construction methods.
- Use of indoor extension cords greater than 50 feet in length is to be discouraged. All extension cords shall include a grounding conductor within the cable jacket and shall be equipped at each end with either explosion-proof or non-explosion-proof three-wire, grounded receptacles and plugs (but not with one of each), depending on the location and intended use. (No “hybrid”, ungrounded or external ground wire extension cords are allowed.)
- If a cord is damaged, it shall be shortened or replaced by an electrician - never patched with electrical tape.
- Cords shall be protected against contact with oil, hot surfaces and chemicals.
- Cords must not be hung over nails or other sharp edges or places where vehicles may run over them.

ELECTRICAL FUSE REQUIREMENTS

- Circuits must be de-energized by lockout and tagout procedures before attempting to replace fuses.
- Bridging of fuses or circumventing the normal operation of circuit breakers is prohibited.
- Blown fuses shall not be replaced with fuses having a higher amperage or voltage rating. Fuses should be replaced in kind to maintain proper circuit protection.
- Use a fuse puller to remove fuses.

ASSURED ELECTRICAL GROUNDING REQUIREMENTS

- This program provides the minimum requirements for an assured equipment grounding conductor program and reflects the requirements of 29 CFR

1910.304. It also applies to circuits and equipment not attached to a permanent building or structure.

- Parsons ES and its Subcontractors will use GFCI's when using temporary wiring (cords and plugs) in field work using any temporary electrical power source.
- Cords and equipment will be inspected prior to each use for damage or missing parts. Equipment which is found to be defective will be taken out of service and repaired.
- The Assured Equipment Grounding Conductor Program will include the following:
  - This written program.
  - Designation of a competent persons(s) – SSHO – to implement the program.
  - Visual inspection of cords on a daily basis for deformed and missing pins, insulation damage, and indications of possible internal damage. Equipment found damaged or defective will be removed from service and repaired or expended.
  - Cords and electrical circuits will be tested for the following:
    - ◊ Electrical grounding continuity, and
    - ◊ Correct attachment of grounding conductor.
  - Tests outlined above shall be performed before the first use, before being returned to use after repair, after possible damage (such as being run over by a vehicle), and at least every three months.
  - The tests outlined above must be recorded and cords which have been tested identified.

FINAL

APPENDIX N
CONFINED SPACE ENTRY PROGRAM

APPENDIX N
CONFINED SPACE ENTRY PROGRAM

INTRODUCTION

Background

Hundreds of fatal accidents occur each year in "confined spaces." The causes of these fatalities include lack of knowledge, improper procedures, and inappropriate equipment for entry and work in confined spaces. The greatest dangers posed by confined spaces are atmospheric hazards and the leading cause of confined space fatalities is asphyxiation.

Definition of a Confined Space

A "confined space" is any enclosed or semi enclosed space that has limited openings for entry and exit, that is not intended for continuous employee occupancy, and that does not have sufficient natural or mechanical ventilation to prevent build-up of a hazardous atmosphere. Typical confined spaces include manholes, sewers, metering stations, valve or siphon chambers, pump stations, digestors, silos and empty tanks, trenches or pits.

Potential Hazards of Confined Spaces

There are many hazards that may be associated with confined spaces. These include:

- oxygen deficiency (asphyxiation);
- explosive and toxic gases;
- noise;
- falling objects/crushing;
- engulfment (the surrounding and capture of a person by a liquid or finely divided solid substance);
- temperature extremes; and
- electrical shock.

The prevention of confined space accidents requires employee hazard awareness and adherence to safety rules and procedures designed for confined space entry and work.

Hazardous Atmospheres

There are three types of atmospheres that require special attention and monitoring.

Oxygen-Deficient Atmospheres: An oxygen-deficient atmosphere has less than 19.5 percent available oxygen (O_2). This percentage will be considered the minimum level for safe entry into a confined space without a breathing apparatus. The oxygen level in a confined space can decrease because of the work being done, e.g. welding, cutting, brazing, stirring-up sludge. The oxygen level also can be decreased if displaced by a gas or vapor, such as carbon dioxide or methane. Oxygen deficient atmospheres can cause unconsciousness and death due to asphyxiation.

Flammable and Explosive Atmospheres: For a confined space to have an explosive or flammable atmosphere, three components are necessary: oxygen; a flammable or explosive gas, vapor or dust in the proper mixture; and a source of ignition (fire, hot work).

Work in a confined space will be prohibited (except work using intrinsically safe equipment and tools) when air monitoring indicates the presence of flammable vapors greater than 10 percent of the lower explosive limit.

An oxygen-enriched atmosphere is an environment with available oxygen above 22 percent. This type of atmosphere will cause flammable materials, such as clothing and hair, to burn violently when ignited. Oxygen will not be used to ventilate a confined space since this will produce an oxygen-enriched atmosphere.

Toxic Atmospheres: All substances (liquids, vapors, solid materials, and dusts) should be considered hazardous in a confined space. Toxic substances can come from the following:

- ***The product stored or conveyed in a space:*** Toxic substances can be absorbed into walls and can give off toxic gas when cleanup or removal activities are performed. This is especially true, for example, in storage tanks due to the possible presence of sludges and decomposing material. Toxic gases that may be encountered in this type of confined space include ammonia, carbon monoxide, and hydrogen sulfide. Knowing the material(s) stored in a confined space is therefore crucial when selecting protective measures and air monitoring equipment.
- ***The work being performed in the space:*** Examples of work that can cause the creation of toxic substances are welding, cutting, brazing, cleaning, painting, scraping and sanding. Monitor around the operation continuously.
- ***The process material in a confined space:*** Toxic atmospheres can be generated in various processes. For example, cleaning solvents are used in many industries. The vapors from these solvents are very toxic in a confined space.

EQUIPMENT AND PROCEDURES FOR CONFINED SPACES

It is anticipated that the confined spaces at the Fort McClellan sites will include the trenches excavated into suspected CWM burial areas. It is not anticipated that personnel

will be required to enter this trench unless a buried chemical munition is uncovered. However, to ensure the protection of Parsons ES employees and Subcontractors during this project, should entry into a confined space become necessary, certain items of equipment and safety procedures will be used. The equipment and safety procedures are described in detail below.

Equipment

The following is a list of equipment that will probably be required for entry and work in these burial area trenches or other confined spaces at Fort McClellan:

- atmosphere-testing equipment to measure oxygen deficiency, combustible gas, and vapor;
- a positive pressure, self-contained breathing apparatus or a positive pressure airline respirator with an escape tank;
- protective clothing, including rubber boots, gloves, and hard hats or Level A suit if mustard/lewisite contamination is potentially present;
- explosion-proof lights;
- communications equipment; and
- Life-line and harness for each employee entering the confined space.

Additional equipment or procedures used for confined space entry at Fort McClellan will be determined by the PHSO (in consultation with the SSHO and/or the UXO Safety Officer). For example, a "trenching box" or appropriate sidewall sloping with approval by a competent person will be required prior to any personnel entering trenches dug into burial areas.

ATMOSPHERIC TESTING OF CONFINED SPACES

As has been stated previously, the greatest danger of working in a confined space is a hazardous atmosphere. Atmospheric testing shall be performed before any Parsons ES employee or subcontractor enters any confined space. If possible, initial atmospheric testing of a confined space should be performed before any ventilation of the space. This type of initial testing will afford the best opportunity to assess "worst case" conditions and/or identify toxic contaminants which may be present in low concentrations.

The principal atmospheric testing anticipated for confined spaces at Fort McClellan are tests for oxygen content, flammable or explosive atmospheres and perhaps specific toxic contaminants (e.g., mustard and lewisite). Combination meters will be used to test atmospheres in confined spaces for percentage of oxygen and the percentage of the lower explosive limit. A photoionization detector or OVA® will be used to monitor for toxic industrial chemical contaminants (e.g., chlorinated solvents). The PHSO has sole responsibility for deciding on additional tests for toxic contaminants. During any atmospheric testing all areas of the confined space will be tested.

Personnel working in confined space will be provided with continuous atmospheric monitoring device(s). Monitoring of the atmosphere shall be done according to the Confined Space Permit. Equipment use to monitor the atmosphere shall be explosion-proof.

Maintenance and calibration records for the air monitoring equipment used at Fort McClellan are maintained by the SSHO (for industrial chemicals), and ECBC personnel (for chemical agents and their breakdown products).

MEDICAL, FIRST AID AND RESCUE PROVISIONS

The list of hospitals, police, fire, and ambulance services, including phone numbers and directions to medical facilities included in this plan shall be maintained, with a first aid kit, at each confined space entry (See Section 14 and Appendix B of the SSHP). First aid kits shall be checked on a scheduled basis and before any work for which they may be needed. For entry there must always be someone readily available in the area of the confined space with current training in cardio-pulmonary resuscitation (CPR) and standard first-aid procedures.

Standby rescue personnel shall be trained, fully-equipped and ready to effect immediate rescue. The procedure for rescue includes:

- First, call for help either by radio or phone, if necessary;
- Next, put on respiratory protection and other necessary equipment before entering the confined space;
- After reaching the victim, assess the injury and the nature of the accident for the correct removal procedure; and
- Administer first aid or breathable air to keep the victim alive until further medical assistance arrives.

Directions to medical facilities, and medical and other emergency phone numbers are provided in Section 14 of this SSHP. A map, directions and emergency telephone numbers will be available in the standby area for the confined space entry.

Employee Information

Entrances to any confined space will be posted. Signs shall include, but are not limited to the following information:

DANGER

CONFINED SPACE

ENTRY BY PERMIT ONLY

Specific Work Requirements

When a specific work practice is performed or specific safety equipment is needed, the following statement shall be added, in large letters, to the warning sign:

RESPIRATOR REQUIRED FOR ENTRY

GENERAL WORK PRACTICES

The following general work practices will be followed during confined space work at Fort McClellan:

- When work is being done in a confined space, stand-by personnel, (the number of standby personnel to be specified on the permit described later) must be present in case of an emergency. Each stand-by person will be assigned an appropriate positive-pressure, atmosphere supplying device.
- Personnel who are in the confined space will be provided with atmospheric monitoring device(s).
- If a worker begins to feel dizzy or light-headed he must leave the confined space immediately. High temperatures and humidity can lead to heat stress or breathing difficulties.
- Hard hats must always be worn in confined spaces. Slick and wet surfaces will probably be encountered in the confined space. Slips and falls can cause injury. Falling objects are also a hazard.
- Hearing protection may be needed. Noise within a confined space will be amplified because of the acoustic properties of the space, and excessive noise can damage hearing as well as affect communication.
- Explosion-proof lights and intrinsically safe equipment will be used in confined spaces.
- Electrical tools used must be equipped with ground fault interrupters and workers should be warned that wet surfaces increase the potential for, and effect of, electrical shock.

CONFINED SPACE TRAINING

Personnel are made aware of the hazards and procedures associated with confined space entry during the initial site health and safety training. Personnel who have been assigned to work in a confined space, or in support of those working in a confined space, will receive the following additional training before confined space entry:

- emergency entry and exit procedures;
- use of applicable respirators;
- safety equipment including rescue equipment used;

- fire protection;
- traffic control procedures;
- permit requirements;
- work practices; and
- communications.

Confined space/rescue and training drills will be conducted before personnel enter a confined space.

CONFINED SPACE PERMITS

Entry into an area that can be defined as a "CONFINED SPACE" will be by permit only.

A permit is a written authorization and approval that specifies the location and type of work to be done. It certifies that all existing hazards have been evaluated by a qualified person and necessary protective measures have been taken to insure the safety of each employee. For work at Fort McClellan, the SSHO or other project personnel are responsible for identifying confined spaces, and the SSHO is responsible (in consultation with the PHSO) for evaluating each identified confined space, completing the permit, and signing the permit before any confined space entry.

A completed confined space permit will include the following:

- Hazards that may be encountered;
- Complete isolation checklist, including blanking or disconnecting; electrical lockout; and mechanical lockout;
- Special clothing and equipment, including personal protective equipment and clothing; safety harness or lines; and approved tools and electrical equipment;
- Atmospheric testing readings, including oxygen level, flammability or explosive levels, and toxic substance levels;
- Atmospheric monitoring while work is being performed;
- Personnel training;
- Standby persons(s) as named on the permit; and
- Emergency procedures.

The safety work permit/confined space entry permit for Fort McClellan activities is shown in Figure N.1.

FIGURE N.1
CONFINED SPACE ENTRY PERMIT

Location of work: _____
Description of Work: _____
Employees Assigned: _____
Entry Date/Time: _____
Outside Contractors: _____

Circle Applicable Items

Isolation Checklist:
- Blanking and/or Disconnecting
- Electrical
- Mechanical
- Other

Hazardous Work:
- Burning
- Welding
- Brazing
- Open Flame
- Other

Hazards Expected:
- Corrosive Materials
- Hot Equipment
- Flammable Materials
- Toxic Materials
- Drains Open
- Cleaning (i.e., chemical or water lance)
- Spark-producing Operations
- Spilled Liquids
- Pressure Systems
- Other

Fire Safety Precautions: _____
_____

Personal Safety: Circle Applicable Items and State Specifics
- Ventilation Requirements _____
- Respirators _____
- Clothing _____
- Heat, Hand, and Foot Protection _____
- Shields _____
- Retrieval Lines and Harness _____
- Lighting _____
- Communications _____
- Employee Qualified _____
- Buddy System _____
- Standby Person _____
- Emergency Egress Procedures _____
- Training Sign Off _____
- (Supervisor and Qualified Person) _____
- Remarks: _____

FIGURE N.1 (CONTINUED)
CONFINED SPACE ENTRY PERMIT

Atmospheric Gas Tests

	Tests Performed	Location	Reading
Example:	(oxygen)		(19.5%)
	(flammability)		(Less than 10% LEL)
	_____	_____	_____
	_____	_____	_____

Remarks: _____

Calibration performed by:_____
(signature)

Test performed by: _____
(signature)

Time: _____

Authorizations:
Site Health and Safety Officer: _____
Project Health and Safety Officer: _____

Entry and Emergency Procedures Understood:
Standby Person: _____
Rescue: _____
Telephone: _____

Permit Expires: _____

COMMENTS:

_____

_____

_____

_____

_____

_____

_____

_____

FINAL

APPENDIX O
MEDICAL SURVEILLANCE, CONTROL/ACCESS TO EMPLOYEE MEDICAL RECORDS, AND EMERGENCY CARE

APPENDIX O
MEDICAL SURVEILLANCE, CONTROL/ACCESS TO EMPLOYEE MEDICAL RECORDS, AND EMERGENCY CARE

INTRODUCTION

The medical surveillance program is a major element in the Parsons ES Safety and Health Program. The three major components of the medical surveillance program are: (1) routine medical monitoring of the health of Parsons ES personnel whose work may expose them to health hazards, (2) arrangements for emergency medical care in the event of a work-related injury, and (3) maintenance of employee medical records.

MEDICAL SURVEILLANCE

Enrollment Criteria

A medical examination is essential to assess and monitor a worker's health and fitness both before placement and during the course of work. The criteria for medical surveillance enrollment is dependent upon the employee's exposure potential. An employee whose work involves the regular, potential exposure to toxic substances or physical agents above established OSHA permissible exposure limits (PELs), OSHA action levels, or American Conference of Governmental Industrial Hygienist (ACGIH) threshold limit values (TLV) shall be enrolled in the medical surveillance program. Examples of operations where employee enrollment would be necessary include.

- field investigations or remedial operations at gasoline stations or bulk storage terminals;
- field investigations in a designated exclusion zone;
- work requiring respirator usage;
- laboratory use of hazardous substances;
- asbestos or lead sampling or abatement;
- stack sampling and source evaluation operations; and
- industrial wastewater and process water characterization surveys.

An employee assigned to a task where there is no reason to believe there is a potential for exposure above OSHA PELs, OSHA action levels, or ACGIH TLVs would be exempt from the medical surveillance program. Examples of exempted operations would include the following:

- project management oversight from support zone;
- site visits/walk overs without ground disturbance;
- geotechnical and land surveys without ground disturbance;
- property transfer audits where there is no environmental sampling;
- laboratory operations confined to dip and read tests; and
- ecological surveys.

Medical Oversight Contractor

Parsons ES has hired a medial oversight contractor (MOC) to manage its medical surveillance program. The MOC is Medical Services Network (MSN), 2625 Cumberland Parkway, Suite 320, Atlanta, Georgia 30339, phone: 800-874-4676. The responsibilities of the MOC are:

- develop medical examination protocols specific to Parsons ES operations;
- contract local clinics;
- issue employee medical reports to the Facility Safety and Health Representative;
- track personnel enrolled in medical monitoring program; and
- archive employee medical and exposure records.

The MOC provides Parsons ES with consistency in examination content and quality.

Clinic Selection

The Parsons ES MOC or the Facility Safety and Health Representative perform initial clinic selection. Only after MOC approval may the clinic be used by Parsons ES. The Corporate Safety and Health Manager, Mr. Edward Grunwald is co-located in the Atlanta office and can be contacted with questions concerning medical monitoring - 678-969-2394. The clinic used for medical monitoring and records maintenance for the Parsons ES Atlanta office is located in Atlanta, Georgia and operated by MSN – 404-333-1090.

Pre-Placement Screening

All employees who will be involved in the medical surveillance program have an initial physical examination before assignment to work requiring regular health monitoring. The pre-placement screening has two major functions: (1) to determine the employee's fitness for duty, including the ability to work while wearing protective equipment and (2) to establish a baseline physiological profile for comparison with future medical data. The physical examination will be given by an approved clinic and will follow the examination protocol established by the MOC. For those Parsons ES employees working on the project at Fort McClellan, the MOC has been asked to review Department of Army Pamphlet 40-173, Occupational Guidelines for the Evaluation and

Control of Occupational Exposure to Mustard Agents H, HD, and HT. The MOC will add additional medical tests or exams as appropriate.

Periodic Examinations

Physical examinations are repeated annually for personnel involved in HAZWOPER projects such as those at Fort McClellan. Records of project personnel working at Fort McClellan will be checked to ensure that periodic examination has occurred within the last year.

Termination Examination

A physical examination shall be performed as a part of the checkout procedure for terminating employees. The content of this examination shall comply with the protocol established by the MOC. For the Fort McClellan project, each Parsons ES employee who works on-site will also receive a project termination physical as directed by the MOC – in accordance with DA Pamphlet 40-173.

Special Examination

Special medical examinations and counseling will be provided in cases of known or suspected exposure to a toxic substance above its occupational exposure limit. Special testing must be approved by the PHSO and Corporate S&H Manager after consulting the MOC physician.

Information Provided to the Examining Physician

Each employee participating in the medical surveillance program will present to the examining physician a completed History and Physical Form at the time of the examination. The History and Physical Form is designed to gather information needed by for the physician to understand the employee's past and current health status. Additionally, the form provides an opportunity for the employee to express possible concerns about his or her occupational environment.

Medical Examination Reports

Data obtained during the examination is sent to the MOC physician for analysis. After reviewing the data, the MOC physician submits a report to the Parsons ES Atlanta office Safety and Health Representative. This report contains the following information:

- physician's opinion of the employee's fitness to perform their assigned duties;
- any recommended limitations upon the employee's assigned duties; and
- statement that the employee has been informed of the physician's findings and of any medical conditions that require further examination or treatment.

Additionally, the employee receives a report from the MOC physician that discusses all aspects and findings of the medical examination.

Disposition of Medical Records of Terminated Employees

When an employee is terminated from Parsons ES, the MOC shall seal the employee's medical file for archiving. The medical file will be maintained in the custody of the MOC for 30 years after the employee's termination date.

Confidentiality of Reports

The medical report that is submitted to the Office Safety and Health Representative or Corporate Safety and Health Manager shall not reveal any specific findings or diagnoses unrelated to occupational exposures, illnesses, or accidents. The physician's report shall be kept in the custody of the Office Safety and Health Representative in a locked file separate from the employee's personnel records. Access to the physician's report shall be limited to the Corporate Safety and Health Manager and the Office Safety and Health Representative unless authorized in writing by the employee or except where the opinions are required for settlement of workers' compensation claims.

Subcontractor's Medical Certification

Subcontractors assigned to work at the Fort McClellan sites are required to furnish the Project Manager or PHSO a doctor's certification of each assigned employee's ability to wear personal protective equipment. The certification should be dated not more than 1 year before the employee begins on-site work.

EXPOSURE MONITORING

A fundamental approach to evaluating and controlling potential workplace hazards is the use of air sampling. The Fort McClellan project potentially involves airborne exposures to chemical agents (i.e., mustard, Lewisite, GB, VX, CG, CK, and their breakdown products) and industrial chemicals (e.g., chlorinated solvents).

Airborne monitoring at the Fort McClellan sites will be conducted by both Parsons ES and ECBC. Parsons ES is responsible for perimeter/work area monitoring of volatile organic compounds and airborne dusts, and ECBC personnel will use an on-site laboratory to analyze various media for the presence of chemical agents. The SSHO will ensure that all sampling results that may be used to characterize potential worker exposures are recorded and transferred confidentially to the appropriate Parsons ES or subcontractor Safety and Health representative.

Exposure records (to include non-detections) will be prepared by SSHO. Records will include workers name, social security number - if available, and monitoring results (with description of source/equipment used to generate results; time/date; duration of sampling time; type of sample-personal, area or breathing zone; and concentration). Records will be prepared for all measurements that can be used to characterize exposures to site workers.

Exposure sampling results that indicate an over exposure (e.g., above OSHA PEL or above 0.003 mg/m^3 for mustard) will immediately be brought to the attention of the following:

1. Project Health and Safety Officer - Ed Grunwald, CIH – 678-969-2394; or Corporate Safety and Health Officer - Ed Grunwald, CIH – 678-969-2394.
2. For Parsons ES personnel, overexposures will be also brought to the immediate attention of Dr. Harvey Merlin, MSN - Medical Director at 404-333-1090 ext. 111 or 800-874-4676, ext. 111.
3. For subcontractor employees with reported overexposures, the Safety and Health Representative or supervisor of the employee must be notified immediately.

For Parsons ES employees, exposure records are forwarded to MSN representatives for inclusion in employee medical records. MSN representatives authorized to receipt exposure records are Ms. Virginia Maddox (404-333-1090, ext. 133) or Ms. Natalie Snyder (404-333-1090, ext. 129). Forwarding the exposure results to MSN serves two functions: (1) it provides MSN occupational physicians with accurate employee exposure information; and (2) it provides Parsons ES with a central location for the storage of both employee occupational medical records and employee exposure results.

EMERGENCY MEDICAL CARE

Emergency treatment is integrated into the Emergency Response and Fire Prevention Plan (Appendix B to this SSHP). This plan requires posting of the name, a map showing its location, phone number, and address of the nearest emergency care center. In addition, phone numbers and procedures for contacting fire, police and ambulance services are included in the emergency response portions of this plan. The Emergency Response and Fire Prevention Plan designates roles and responsibilities to be assumed by personnel in an emergency. At least two members of the field team will be currently certified in cardiopulmonary resuscitation (CPR) and first aid.

A map with directions to the nearest medical facility will be posted at the worksite. All personnel working at the site should know the location of the nearest medical facility. The SSHO will report all incidents requiring emergency medical attention to the PHSO or Corporate Safety and Health Manager.

PROGRAM RESPONSIBILITY

The Corporate Safety and Health Manager is responsible for assuring compliance with the medical surveillance program. The Office Safety and Health Representative is responsible for the scheduling of personnel examinations and for the maintenance of data and reports.

PROGRAM COSTS

Routine medical monitoring is the responsibility of Parsons ES, and the company will bear the entire cost of the program. Special, project-specific, medical examinations will be included in the project budget.

FINAL

APPENDIX P
SAFE PROCEDURES FOR HANDLING, STORAGE AND USE OF PRESSURIZED CYLINDERS

APPENDIX P
SAFE PROCEDURES FOR HANDLING, STORAGE AND USE OF PRESSURIZED CYLINDERS

PURPOSE

The purpose of this procedure is to outline the minimum requirements for safe handling and use of compressed gas and gas cylinders by Parsons ES employees. It is anticipated that pressurized cylinders will be used to store and supply Grade A breathing air for Level A and B activities performed at the Fort McCellan sites. This procedure is intended to provide procedures for safely handling these cylinders and any other pressurized gases used on the Fort McCellan sites. This procedure complies with the requirements of 29 CFR 1910.101, .169, and .253.

USE OF COMPRESSED AIR OR GASES

- Compressed air or other compressed gases are not to be used to blow dirt, chips, or dust from clothing.
- The use of compressed air is to be controlled, and proper personal protective equipment or safeguards utilized, as to protect against the possibility of eye injury to the operator or other persons.
- Compressed gases are not to be used to elevate or otherwise transfer any hazardous substance from one container to another unless the containers are designed to withstand the pressure with a safety factor of at least four.

COMPRESSED GASES (CYLINDERS)

- Cylinders must never be dropped, struck, or permitted to strike each other violently. Use carts or racks to move compressed gas cylinders; correct material handling techniques must be exercised when moving cylinders.
- Valve protection caps must always be kept on cylinders when they are being moved, stored, or until ready for use.
- Cylinder valves are to be kept closed except when gas is being used or when connected to a permanent manifold. Valves of empty cylinders must be closed.
- Cylinders must never be used as rollers or supports, or for any purpose other than carrying gas.

- Cylinders of compressed gas shall be stored in areas where they are protected from external heat sources such as flame impingement, intense radiant heat, electric arc, or high temperature steam lines.
- Cylinders are to be stored in an assigned area with full and empty cylinders separated. Stored fuel gases and oxygen cylinders are to be separated by 20 feet, or by a fire wall at least five (5) feet high having a fire-resistance rating of at least one-half (1/2) hour.
- Oxygen, nitrogen, helium, or freon cylinders may be stored or transported either in an upright or horizontal position. Acetylene cylinders must always be kept in an upright position. All horizontally placed cylinders are to be secured by chocks or ties to prevent rolling.
- Cylinders are to be secured to a fixed object by chain or equivalent fastening device whenever they are placed in an upright position. The protective cap is not to be removed or the cylinder valve opened until the cylinder is secured.
- The repair of leaks must never be attempted on a pressurized system. If leaks develop, system pressure should be reduced to atmospheric pressure as rapidly as possible, and the supervisor notified immediately.
- Compressed gas (in cylinders) must never be used to clean clothing or work surfaces.
- Identification of the gas to be used must always be assured before connecting cylinders for use. All cylinders are to be labeled as to contents in addition to proper color coding. Color coding of cylinders should be posted.
- Compressed gas cylinders in portable service are to be conveyed by suitable trucks to which they are securely fastened. All gas cylinders in service must be securely held in racks or secured to other rigid structures so that they will not fall or be knocked over.
- Gas cylinders moved by hoist must be handled in suitable cradles or boxes.
- Cylinders must not be placed where they might form part of an electrical circuit.
- Transfer of acetylene from one cylinder to another is prohibited.
- Oxygen cylinders are never to be stored near:
  - Highly combustible materials, especially oil and grease;
  - Reserve stocks of acetylene or other fuel gas cylinders; or
  - Any other substance likely to cause or accelerate fire.
- Cylinders are not to be used unless they bear DOT markings showing that they have been tested as required by DOT regulations.

- All cylinders used and stored at the Fort McCellan site must have a current hydrostatic test date stamped on the cylinder. Any cylinder not having a current hydrostatic test will be rejected.
- Compressed gas cylinders must be legibly marked for the purpose of identifying the gas content with either the chemical or the trade name of the gas. Such marking is to be by means of stenciling, stamping or labeling, and must not be readily removable. Whenever practical, the marking is to be located on the shoulder of the cylinder.
- Compressed air and oxygen are not interchangeable as gases. Oxygen should never be used for the following:
  - As breathing air;
  - To purge pipelines, tanks, or any confined area;
  - To supply a head-pressure tank;
  - To power pneumatic tools;
  - In oil preheating burners;
  - To start internal combustion engines;
  - Ventilation;
  - Cleaning clothing; or
  - In any other way as a substitute for compressed air.
- Use of a cylinder's contents for purposes other than those intended by the supplier is prohibited.

FINAL

APPENDIX Q
EQUIPMENT AND VEHICLE SAFETY

APPENDIX Q
EQUIPMENT AND VEHICLE SAFETY

OBJECTIVE

Motor vehicle usage presents the most significant work risk to employees. United States Department of Labor statistics indicates that motor vehicle deaths and injuries continue to be the number one cause of work-related death and serious injury. Accordingly, it is essential that an effective vehicle safety program be instituted for the Fort McCellan sites.

PURPOSE

This section establishes requirements for safe operation of vehicles and equipment. This procedure is an overview of the guidelines in the proposed OSHA Motor Vehicle Safety Standard 29 CFR 1910.140.

RESPONSIBILITIES

Driver/Operator: The driver of Parsons ES or subcontractor owned, rented or leased vehicle is responsible for:

- Operating the vehicle in a safe and legal manner;
- The safety of passengers; and
- Reporting immediately any motor vehicle that is found to be defective or not operating properly.

Site Safety and Health Officer: The Fort McCellan SSHO is responsible for the following:

- Ensuring that all vehicle accident reports are processed and the required number of copies submitted to local, state, and federal agencies, to the resource manager and to the insurance carrier.
- Assuring that appropriate individuals, beginning with the PHSO, and the Corporate Safety and Health Manager are notified by telephone of accidents that involve fatalities or multiple serious injuries.
- Assuring that all accidents are documented and investigated. The investigation should be of sufficient depth to determine the cause and action required to prevent recurrence. Copies of all motor vehicle investigations

shall be forwarded to the PHSO and the Corporate Safety and Health Manager.

- Ensuring that during the selection process for leased or purchased vehicles, consideration is given to obtaining vehicles with essential safety devices. Such devices include anti-locking brakes, air bags, both front and rear seat shoulder harnesses, and all season traction tires. Each motor vehicle must be equipped with safety kits. Shoulder safety belts must not be attached to doors.

SEAT BELTS

OSHA has determined that the use of seat belts in motor vehicles can significantly reduce the number and seriousness of occupational motor vehicle accidents, including crashes, by requiring employers to ensure that each employee uses occupant safety belts. Accordingly, all Parsons ES and subcontractor employees driving motor vehicles for the Fort McCellan project (including rental cars, pick-up trucks, personal vehicles which are used for company compensated business travel, etc.) shall ensure that all occupants use seat belts, both shoulder and lap belts.

STATE AND LOCAL LAWS

- All drivers shall drive Parsons ES and subcontractor vehicles in accordance with the law.
- Drivers shall not operate Parsons ES and subcontractor vehicles which are known to be defective or not in compliance with the law.
- Drivers of Parsons ES and subcontractor vehicles are personally liable and responsible for the consequences of state and community violations.
- The use of devices designed to identify active police speed detection systems (i.e., radar detectors) is prohibited in all Parsons ES and subcontractor owned, leased and rented vehicles and in personal vehicles used for company compensated business travel.

SAFE DRIVING PRACTICES

- Personnel shall operate vehicles in a defensive manner, i.e., being always on the alert and trying to anticipate what might occur under the existing conditions and driving in such a manner as to avoid hazards.
- Personnel operating vehicles shall be considerate of, and courteous to, the traveling public and/or pedestrians and should yield the right-of-way to avoid accidents.
- Personnel shall drive at speeds consistent with posted speed limits and prevailing conditions, such as weather, traffic and road conditions.

- Personnel shall drive at all times with sufficient space around the vehicle to provide time to see conflicts arising, to react quickly, and to stop. The five keys to defensive driving will help accomplish a good space cushion.
  - Aim high in steering.
  - Get the big picture.
  - Keep your eyes moving.
  - Leave yourself an out.
  - Make sure they see you.

GENERAL SAFETY RULES

- **Blind Curves** - Slow down and sound horn when approaching a blind curve.
- **Driver's License** - Operation of a vehicle without a valid operator's license is prohibited. Personnel operating vehicles regulated by the United States Department of Transportation (DOT) shall have a current commercial drivers license (CDL).
- **School Buses** - Obey school bus laws. Slow down and prepare to stop when approaching school buses, children on foot or on bicycles.
- **Emergency Vehicles** - Give ambulances, fire fighting equipment and other vehicles the right-of-way during emergencies and lend assistance if required.
- **Gasoline** - Gasoline and other flammable/combustible liquids shall not be carried in or on vehicles other than in permanent gas tanks or in approved safety cans. Approved safety containers must be properly secured when being carried in the back of pick-up trucks.
- **Laws and Regulations** - Learn and obey all local, state, and federal laws.
- **Parking** - Equipment and vehicles shall be parked off roads and highways whenever possible. When it is not possible, the vehicle shall be marked by red lights or flares at night and red flags during the day. Wheels should be blocked or chocked.
- **Passing** - Do not pass when visibility is restricted for any reason.
- **Pedestrians** - Be constantly alert for pedestrians. Remember they have the right-of-way.
- **Slow Down** - Slow down and use caution at blind intersections and crossings when visibility is limited or when passing work crews.
- **Speeding** - Speeding is strictly prohibited.
- **Thumbs Up** - Keep thumbs up when driving. Do not grasp the steering wheel with thumbs inside the spokes.

- **Visibility** - Make sure all windshields, side and rear windows, mirrors and lights are clean before moving vehicles.
- **Warning Signs and Traffic Signals** - Be alert and strictly obey all directional and warning signs and signals.
- **Seat Belts** - If unit is equipped with seat belts, operator and passengers must keep seat belts fastened at all times during operations.

DOT REGULATED VEHICLES/EQUIPMENT

- **Commercial Driving License.** All Parsons ES and subcontractor personnel operating a DOT regulated vehicle must hold a valid Commercial Driving License from their state of residence.
- **Air Hose and Couplings** - Periodically check air hoses and couplings and compressor hoses for warn or damaged parts. Do not crimp air hose to disconnect couplings; shut off air at the valve.
- **Backing Up** - Never start or back up equipment or vehicles until you are sure the way is clear. If necessary, have another person guide you safely. Back up alarms, when required, must be working and audible over the surrounding noise.
- **Ear Protection** - Ear plugs or other approved ear protection shall be worn when necessary. Use of ear plugs in cars or trucks on public highways may be against local laws.
- **Fueling and Repair** - No fueling or repair shall be made to equipment while it is in operation. The motor shall be turned off and the bucket, blade, gate or boom shall be lowered to the ground or blocks.
- **Housekeeping** - Operators should keep deckplates, steps, rung and hand rails on equipment free of grease, oil, ice, and mud. The inside of the cabs shall also be kept clean and free of flammable items.
- **Inspections**- Equipment and vehicles shall not be used until known defects or discrepancies are corrected. Inspections shall be made at the start of each shift and defects or discrepancies shall be reported to the supervisor immediately.
- **Jumping** - Jumping on or off equipment is prohibited. When climbing on or off equipment or vehicles, face the unit and use secure hand and foot holds to prevent slips and falls. Always look where you are stepping.
- **Know Your Equipment or Vehicle** - It is your responsibility to be thoroughly familiar with all features and manuals and if you are in doubt as to correct operating techniques or safety features, ask your supervisor at once.

- **Overloading** - Avoid overloading vehicle beds and equipment buckets and beds. Excessive material can damage the unit and falling material can cause serious injury.
- **Power Lines** - When operating trucks, cranes, shovels or other units, always use caution around power lines and maintain a minimum safe clearance of 10 feet or more depending upon the voltage.
- **Riders** - Only authorized persons will be permitted to ride in equipment or vehicles.
- **Securing Loads** - The operator of the vehicle is responsible for ensuring that their load is secure and will not shift during transport.
- **Long Hauls** - On long hauls, binders should be checked periodically (at least during each rest or service stop) to make sure they are still secure and tight.
- **Overhanging and Oversize Loads** - When it is necessary to transport overhanging or oversize loads, the appropriate signs and red flags and red lights will be used. When necessary, use flag cars.
- **Safety Chains** - Safety chains of sufficient size and strength shall be installed on all trailers being towed.
- **Safety Hooks** - Use safety hooks with latches on all winch truck cables.
- **Side Roads and Railroad Tracks** - Stop and look both ways before crossing railroad tracks or before driving onto a highway from a side road.
- **Stopping** - Do not stop vehicles in the middle of the road to talk to occupants in another vehicle. Always pull to the side or off the road to maintain a clear, safe road.
- **Turn Signals** - Always use turn signals, emergency and other signals as appropriate when turning, stopping, passing, or performing other vehicle operations.
- **Vehicle Maintenance** - It is the driver's responsibility to see that his vehicle is in good mechanical condition before and during operation. Special emphasis should be placed on ensuring the brakes, lights, horn, windshield wiper, tires and steering assembly are in good order. Defects must be reported and corrected immediately.

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29 CFR - Part 1910.120, OSHA, "Hazardous Waste Site Operations and Emergency Response."

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