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ENVIRONMENTAL CHEMICAL
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SITE SAFETY & HEALTH PLAN

**FEDERAL AVIATION ADMINISTRATION
WESTERN-PACIFIC REGION
REMOVAL/REPLACEMENT
AT
SIX GOLDEN GATE SECTOR SITES**

Prepared for

US DOT/RSPA/VOLPE CENTER
ENVIRONMENTAL ENGINEERING DIVISION
55 BROADWAY, KENDALL SQUARE
CAMBRIDGE, MA 02142

Contract No. DTRS 57-96-00034-0001

JUNE 28, 1996

ENVIRONMENTAL CHEMICAL CORPORATION
1240 Bayshore Highway
Burlingame, California 94010
(415) 347-1555

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ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
CIH	Certified Industrial Hygienist
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
COTR	Contracting Officer Technical Representative
EPA	Environmental Protection Agency
IDLH	Immediate Dangerous to Life and Health
IIPP	Illness & Injury Prevention Program
LEL	Lower Explosive Limit
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
PPM	Parts Per Million
SSHO	Site Safety & Health Officer
TLV	Threshold Limit Value
TWA	Time Weighted Average

1.0 SPECIFICATIONS

Project Designation: Six Golden Gate Sector Sites

Contract Number: DTRS 57-96-D-00034-0001

Locations:

1. Moffett Field - Sunnyvale, CA
2. Mill Valley - Mill Valley, CA
3. Paso Robles - Paso Robles, CA
4. Oakland A/P North ATCT - Oakland, CA
5. Oakland A/P - Oakland, CA
6. Ukiah Cow Mountain - Cow Mt. Ranch, Lake County, CA

Contracting Agency: US DOT/RSPA/Volpe Center

Point of Contacts: Mr. Alex Gulyas, FAA ✓
Mr. Glenn Goulet, Volpe Center

Contractor: Environmental Chemical Corp.
1240 Bayshore Highway
Burlingame, CA 94010
(415) 347-1555

Sr. Program Manager: Michael Della-Rocco, ECC

Project Manager: Pete Timmerman, ECC

QC/Safety Officer: Pete Timmerman, ECC

C.I.H. Consultant: Bruce Lazarus, NES

Plan Preparer: Dean K. Osaki, ECC

*SSHP Removal/Replacement
at Six Golden Gate Sector Sites
Contract No. DTRS 57-96-00034-0001
US DOT/RSPA/Volpe Center*

*Environmental Chemical Corporation
1240 Bayshore Highway
Burlingame, CA 94010*

Preparation Date: June 1996

Expiration Date: Upon completion of work.

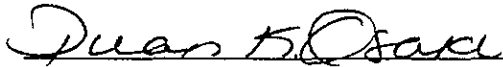
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US DOT/RSPA/Volpe Center*

*Environmental Chemical Corporation
1240 Bayshore Highway
Burlingame, CA 94010*

2.0 APPROVAL

This Site-Specific Safety and Health Plan (SSHP) for the removal/replacement of fuel storage tanks (FSTs) at the six Golden Gate Sector Sites has been reviewed and approved by Mr. Dean Osaki, in accordance with project invitation to bid specifications. This work was performed under contract with Environmental Chemical Corporation, 1240 Bayshore Highway, Burlingame, CA 94010.

This SSHP has been reviewed and approved prior to submittal.




Dean Osaki
Environmental Chemical Corporation
1240 Bayshore Highway
Burlingame, CA 94010

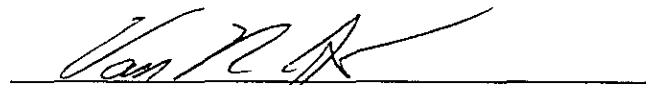
3.0 ADOPTION

This Site-Specific Safety and Health Plan (SSHP) for the removals/replacements at the six Golden Gate Sector Sites has been reviewed, accepted and adopted by Environmental Chemical Corporation. As the primary contractor, Environmental Chemical Corporation agrees to implement this plan, including any and all accepted additions, deletions and revisions, for all phases of field work specified for this project. The requirements of this plan shall apply to all Environmental Chemical Corporation employees, its subcontractors and all other personnel entering and/or performing work in regulated areas as specified by this plan.

This SSHP has been reviewed, approved and adopted by Environmental Chemical Corporation, pending approval by the contracting agency.



Dean Osaki
Corporate Safety & Health Specialist
Environmental Chemical Corporation



Pete Timmerman/Van Jenkins
Project Manager
Environmental Chemical Corporation

4.0 SUMMARY

4.1 Site Locations

The removal and replacement of six fuel storage tanks (FSTs) will be conducted at the following sites:

- | | | |
|------------------|---------------------------|-------------------------|
| 1. Moffett Field | 3. Paso Robles | 5. Oakland A/P |
| 2. Mill Valley | 4. Oakland A/P North ATCT | 6. Ukiah - Cow Mountain |

4.2 Site Conditions

The project involves the removal and replacement of FSTs. The tanks are located at 6 different sites within the Golden Gate Sector and are identified in Appendix A in the Work Plan. A tank removal and replacement schedule is also included in Table 2.1 of the Work Plan. The tank schedule gives the site name, location, site identification number, size of the existing tanks, type of fuel, and size of the new ASTs need to be installed at each site.

The work sites are not hazardous waste sites but will be given special consideration due to the nature of the materials and hazards present until the closure activities are complete. The wastes resulting from tank removal activities shall be properly handled and disposed of in accordance with all federal, state, and local environmental regulations.

4.3 Characterization of Site Contaminant

Chemical contaminant presenting a potential occupational and environmental health hazard during the performance of work include the following: Diesel Fuel.

5.0 GENERAL

5.1 Scope

This Site-Specific Safety and Health Plan (SSHP) has been prepared by Environmental Chemical Corporation in response to the contract number DTRS 57-96-D-00034-0001, US DOT/RSPA/Volpe Center. In addition to all other regulatory requirements, all work shall be performed in compliance with OSHA - Title 29 of the Code of Federal Regulations, Part 1910 and 1926; EPA's Hazardous Waste Requirements (40 CFR 260-270); and California Code of Regulations Title 8 Section 5192.

5.2 Purpose

This SSHP has the following designated purposes:

- To delineate designated personnel roles and responsibilities related to project safety;
- To describe known and anticipated hazards and requisite hazard control measures;
- To establish injury and illness prevention procedures applicable to field operations;
- To establish chemical and medical emergency procedures in anticipation of reasonably foreseeable emergency incidents;
- To understandably communicate all hazard, safety and accident prevention information to assigned and visiting site personnel.

5.3 Application

The requirements established by this SSHP are mandatory, and shall apply to all Environmental Chemical Corporation employees, its subcontractors and any other personnel entering regulated work areas during active field operations. Environmental Chemical Corporation shall be responsible for training all of its employees and subcontractors regarding the information and contents of this SSHP prior to the commencement of work. In addition, Environmental Chemical Corporation shall provide a copy of this plan to any authorized personnel who must enter regulated work areas. Finally, Environmental Chemical Corporation shall maintain a copy of this SSHP, available for inspection, at the work site during each day of field operations.

5.4 Revisions

Changes in the scope of work operations, and/or changing or unanticipated site conditions may require modification and approval of the SSHP in order to maintain field safety in compliance with contract requirements and OSHA regulations. Any and all changes to the SSHP shall be prepared and/or reviewed by ECC's Corporate Health & Safety Specialist and submitted to the Contracting Officer Technical Representative (COTR) for approval. Work operations affected by such revisions shall not proceed unless specifically authorized by ECC's Corporate Health & Safety Specialist, and the COTR. Only the COTR may authorize operations to continue while changes to the SSHP are under review by the contracting agency.

6.0 ORGANIZATION AND RESPONSIBILITIES

6.1 General

Based on the scope of work and the project work plan (see Section 7.0), Environmental Chemical Corporation's field work team shall consist of the Project Manager who will also serve as the QC/Safety Officer, Hazardous Waste Technicians and Equipment Operators. Because of the size of the field work team, a simple organizational structure is applicable. ECC's organizational chart is shown in Figure 2.

6.2 Responsibilities

6.2.1 Project Manager: Pete Timmerman/Van Jenkins

The Project Manager shall represent Environmental Chemical Corporation in all aspects of its work under the project contract and shall be responsible for the following:

- Coordination of all work performed by the contractor and its subcontractors for the project;
- Serving as the liaison with the contracting agency and all other designated federal, state and local agencies;
- Ensuring that the Site-Specific Safety and Health Plan (SSHP) is approved by the contracting agency prior to commencement of operations;
- Ensuring that all employees and subcontractors assigned to the project have been informed of, and trained in the content of the SSHP;
- Ensuring that required personal protective equipment, air monitoring instruments and other safety related items are provided and properly utilized for the project;
- Ensuring that all field personnel, including any subcontractor personnel, assigned to the project have satisfied all requirements for training and medical surveillance as specified by 29 CFR 1910.120, and that records of training and medical approval are available and maintained for each person, Ensuring that all personnel assigned to the project have been instructed on the work plan, operations to be performed, known and potential hazards associated with the work, SSHP requirements, proper use of required personal protective equipment, specified safe work practice, proper action in the event of a medical or

- chemical emergencies, and related site specific safety information;
- Monitoring overall safety performance of field personnel;
 - Correcting any work practices and/or conditions that may result in injury and/or exposure to hazards;
 - Immediately stopping Environmental Chemical Corporation (including subcontractor) operations in the event of an emergency or serious hazard, in order to protect personnel and the environment;
 - Preparing and submitting required work progress/accident history reports and air monitoring reports;
 - Maintaining all required safety and health records (i.e. OSHA 200 Logs, Accident Reports, Records of Training, Safety Inspection Reports, etc.).

6.2.2 *Certified Industrial Hygienist: Mr. Bruce Lazarus, NES*

The Certified Industrial Hygienist shall serve as ECC's occupational health & safety consultant. The C.I.H. shall provide the following support:

- Be responsible for evaluating air monitoring data and recommending changes to engineering controls, work practices, and PPE;
- Provide onsite consultation as needed to ensure the SSHP is fully implemented;
- Coordinate any modifications to the SSHP with the Site Superintendent, the SSHO, and the COTR;
- Provide continued support for upgrading/downgrading of the level of personal protection;

6.2.3 *Site Safety and Health officer: Pete Timmerman/Van Jenkins*

The Site Safety and Health Officer shall implement the SSHP and shall be responsible for the following:

- Oversight and enforcement of the SSHP;
- Assist and represent the C.I.H. in onsite training and the continued on-site implementation and enforcement of the SSHP;
- Be assigned to the site on a full time basis for the entire duration of field activities;

- Ensure site compliance with specified safety and health requirements, Federal and OSHA regulations and all aspects of the SSHP including, but not limited to, activity hazard analysis, air monitoring, use of PPE, decontamination, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log; Serves as a member of the quality control staff on matters relating to safety and health;
- Have the authority to stop work in consultation with COTR if unacceptable safety and health conditions exist and take necessary action to re-establish and maintain safe working conditions;
- Consult with and coordinate any necessary modifications to the SSHP with the C.I.H., Site Superintendent and the COTR.

6.2.4 *Quality Assurance/Quality Control Officer: Pete Timmerman*

The Quality Control Officer shall be responsible for establishing and ensuring compliance with site control procedures. The Quality Control Officer shall be responsible for the following:

- Assure that all personnel on-site are acquainted with the provisions of this plan, particularly the toxicologic properties of present or suspected materials;
- Conduct soil sampling;
- Report to the PM equipment malfunctions and deficiencies;
- Provide quality control reports to the COTR;
- Ensure that the scope of work and specifications is followed and met.

6.2.5 *Field Personnel*

All field personnel assigned to the project, including subcontractor personnel shall follow the requirements of the SSHP, and shall be responsible for the following:

- At all times acting in a responsible and cautious manner in order to prevent accident, injury and/or exposure to themselves and their co-workers;
- Reporting any and all accidents, injuries, exposures and/or near misses to the SSHO and/or

- the Field Supervisor;
- Attending and participating in all Tailgate Safety Meetings conducted during the project.
 - Following the instructions and directions of the SSHO and the Project Manager;
 - Utilizing the personal protective equipment provided and specified for use;
 - Following all field safety procedures for safe work practices, buddy system, communication, site control, decontamination, evacuations and related emergency procedures;
 - Performing only those tasks they have been instructed to perform and that they believe they are trained, qualified and capable at the time of assignment of performing;
 - Reporting to the Project Manager or Site Safety and Health Officer any personal condition that they reasonably believe could affect their safety and/or the safety of co-workers (i.e. fatigue, drowsiness, severe illness, impairment by prescription medications, influence by drugs and alcohol, emotional distress or other condition);
 - Ensuring that no work tasks are performed in deviation from the SSHP and/or the initial instructions of the Field Supervisor or Site Safety and Health Officer without the expressed authorization and additional instruction of the Field Supervisor and/or SSHO.

6.2.6 *Site Visitors*

Authorized Site Visitors, including contract agency and other federal state and/or local agency personnel may visit the site as per the project specification, but shall be responsible for the following:

- Receiving site hazard and safety instructions from the Site Safety and Health Officer;
- Reviewing and complying with the essential elements of the SSHP;
- Using their own, or provided, personal protective equipment to enter regulated work areas when such controls are required for entry as per the SSHP;
- Reporting any observed unsafe act and/or condition at, or affecting, the work site.

In addition, any official visitor who seeks entry into an exclusion zone or contamination reduction zone shall present documentation of health and safety training in compliance with OSHA 29 CFR 1910.120, medical surveillance examination and certification, and respirator fit testing. In addition, a Visitors log (Appendix J) will always be maintained in the job trailer.

7.0 WORK PLAN

7.1 Fuel Storage Tank Removal

The following are the tasks associated with the tank removal operation:

- Task 1: Verification of FSTs and utilities location;
- Task 2: Personnel and equipment mobilization and preparation;
- Task 3: Site preparation and equipment safety inspections;
- Task 4: Remove asphalt concrete or concrete, where applicable;
- Task 5: Excavate to the top of the FSTs;
- Task 6: Transfer fuel to the temporary storage tank and disconnect piping;
- Task 7: Remove residual tank contents from all FSTs;
- Task 8: Vacuum residue from the FSTs and dispose of the liquid at a state permitted disposal/recycling facility;
- Task 9: Excavate the soil to remove FSTs. Inert the tank prior to removal, transport and dispose them of at an approved disposal/recycling facility;
- Task 10: Sampling and Analysis by ETC;
- Task 11: Over-excavate the perimeter of excavation as directed by the Contracting Officer's Technical Representative (COTR) based on the analytical results;
- Task 12: Backfill the excavations with clean excavated spoils and clean imported material. Compact to the level of the adjacent ground. Perform compaction testing;
- Task 13: Final inspection and demobilization.

The above operations will be performed in accordance with American Petroleum Institute (API), American Society for Testing and Materials (ASTM) and National Fire Protection Association (NFPA) standards and in compliance with applicable regulations of 40 CFR and 49 CFR; and other local regulations.

7.2 Installation of Above Ground Storage Tanks (ASTs)

The tasks that comprise a typical AST installation include:

- Task 1: Earthwork for structures;
- Task 2: Installation of concrete slab structures for AST;
- Task 3: Placement of tanks;
- Task 4: Installation of piping;
- Task 5: Installation of Leak detection system;
- Task 6: Painting;
- Task 7: Transfer the fuel from the temporary storage tank to the permanent AST;
- Task 8: Site restoration;
- Task 9: Demobilization.

The above operations will be performed in accordance with American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM), and National Fire Protection Association (NFPA) standards; and other local regulations.

8.0 JOB HAZARD ANALYSIS

8.1 Chemical Hazards

Diesel is the only chemical contaminant presenting a potential occupational and environmental health hazard during the performance of work (excavation, FST removal, stock piling, and soil sampling). Please refer to Table 8.1 for Site Contaminants Exposure Limits and Characteristics. The potential toxic exposure hazard to site personnel of this chemical can be expressed in Threshold Limit Values-Time Weighted Averages (TLV-TWA) as established by the American Conference of Governmental Industrial Hygienists (ACGIH), Permissible Exposure Limits (PEL) as mandated by the Occupational Safety and Health Administration (OSHA), Recommended Exposure Limits (REL) as suggested by the National Institute of Occupational Safety and Health (NIOSH), and by Immediately Dangerous to Life or Health (IDLH) values established by NIOSH and OSHA. These terms are defined as follows:

TLV-TWA - Airborne concentration of a substance to which nearly all workers (8 hours/day, 40 hours/week) may be repeatedly exposed, day after day, without experiencing adverse health effects. For some substances, the overall exposure to substance is intensified by being absorbed by the skin, mucous membranes or eyes, either by airborne, or particularly, by direct contact with the substance. Other substances have a ceiling value, this concentration should not be exceeded during any part of the working day.

PEL - Established by federal or state OSHA. PELs may be expressed as an 8-hour Time Weighted Average (TWA) or as a ceiling limit. Ceiling limits may not be exceeded at any time during a work day. PELs are enforceable by law.

REL - Developed by NIOSH. RELs are published guidelines that recommend employee exposure limits for airborne contaminants. RELs are expressed as a TWA or ceiling limit.

IDLH - Defined as conditions that pose an immediate threat to life or health or conditions that pose an immediate threat or severe exposure to contaminants which are likely to have an adverse cumulative or delayed effect on health. Two factors are considered when establishing IDLH concentrations:

- The worker must be able to escape within 30 minutes without losing his or her life or suffering permanent health damage. Thirty minutes is considered by OSHA as the

- maximum permissible exposure time for escape; and
- The worker must be able to escape without severe eye or respiratory irritation or other reactions that could inhibit escape. If the concentration is above the IDLH levels, only highly reliable breathing apparatus, such as pressure-demand self contained breathing apparatus (SCBA), is allowed. Since IDLH limits are conservative, any approved respirator may be used up to this limit as long as its maximum use concentration, or the limitations on the air-purifying element are not exceeded.

STEL - STEL is defined as the concentration of a substance to which nearly all workers can be exposed to for 15 minutes, four times a day with at least 1 hour between exposure. Note: the overall exposure cannot exceed the TLV-TWA.

PELs may vary in comparison to the TLV-TWA levels (ACGIH) and RELs (NIOSH). In accordance with EM 385-1-1, all site activities shall comply with the exposure standards mandated by OSHA, or the ACGIH-TLV-TWA, whichever is more stringent.

TABLE 8.1 SITE CONTAMINANTS EXPOSURE LIMITS AND CHARACTERISTICS

<u>Chemical</u>	<u>PEL</u>	<u>IDLH</u>	<u>Route of Entry</u>	<u>Symptoms</u>
Diesel Fuel	No OSHA PEL	No OSHA IDLH	Inhalation, Ingestion, Dermal contact	drowsiness, headache throat irritation skin irritation, dermatitis

8.2 Physical Hazards

8.2.1 Cold Stress

Cold injury includes frostbite and hypothermia and can be caused by low temperatures and can be caused by low temperatures and/or low wind chill factors. Warm shelter will be available at all times, warm clothing will be worn and work schedules will reflect the need to rest away from the cold temperatures. Warm drinks (no alcohol) shall also be introduced on site. The "buddy system" shall be implemented at all times while work is being conducted.

8.2.2 Heat Stress

As such, heat stress is anticipated to be one of the most significant physical hazards associated with

the operation. In addition, field personnel are expected to wear personal protective clothing and equipment (i.e. Level C protection) for designated tasks, which will aggravate the heat stress hazard.

The hazards of exposure to hot environments may cause a variety of illnesses including heat rash, muscle cramps, heat exhaustion and heat stroke. Onset of signs and symptoms of exposure can occur rapidly, and may progress to a medical emergency (i.e. heat stroke) without early intervention.

To control exposure to heat stress hazard, monitoring will commence when personnel are required to wear personal protective equipment, including Tyvek-type coveralls, in ambient conditions exceeding 70°F, or when wearing standard work uniforms (Level D) in ambient conditions exceeding 85 °F.

To control the exposure to heat stress during any site activity, the following safety procedures shall be implemented:

- All employees shall be monitored for heat stress;
- Potable drinking water shall be available at all times;
- Frequent rest breaks shall be taken;
- A buddy system shall be utilized,
- Shade (i.e. fixed or portable canopy) shall be provided;
- Employees shall be encouraged to eat a normal diet;
- Employees shall be encouraged to refrain from consuming diuretics, including caffeine from coffee and tea beverages, or any form of alcohol. (Note: Consumption of alcohol is prohibited during work hours).

8.2.3 *Noise*

The potential for noise exposure during field operations is related to individual equipment operations and any adjacent vehicle noise. Noise hazard during excavation and transporting of soil will be prevented by using ear plugs. The variables affecting actual noise exposure include proximity to other operations, operating conditions of equipment in use, proximity of operating equipment to field personnel and duration of equipment usage. Ear plugs will be worn by workers during the entire duration of any field activity.

8.2.4 Safety Hazards - Heavy Equipment Operations

Physical hazards during mobilization and demobilization can arise from activities including off-loading heavy equipment or safety equipment from tractor-trailers and locating equipment to designated areas of use. Hazards will be mitigated by avoiding close proximity to or becoming situated between moving equipment or other immovable objects. Field personnel may be exposed to a variety of other physical injury hazards associated with equipment operations during soil excavation. These hazards include noise (see 8.2.3 above), struck-by injuries, eye hazards, hand and foot injuries and related hazards. ECC shall follow all heavy equipment operations in accordance with 29 CFR 1926. The primary equipment to be operated includes a backhoe, dump truck, and vacuum truck. The following minimum measures shall be implemented for equipment operations to mitigate these hazards:

- The minimum required work uniform for all field personnel (i.e. Level D protection) shall be general work clothes, steel-toed construction boots (ANSI approved), safety goggles or glasses, work gloves, high visibility vests, and a hard hat (ANSI approved);
- Good housekeeping and adequate work space shall be established before operation of any equipment, and shall be maintained throughout the duration of the operation;
- Equipment shall be inspected for condition and operation prior to use. The "Safety Inspection Checklist for Construction Equipment" (see Appendix F) will be implemented;
- Field personnel shall only approach operating equipment from the operators angle of view, and only after making eye contact;
- Only trained and qualified persons shall be assigned to operate individual equipment.

8.2.5 Safety Hazards - Vehicle Traffic

Employees may be exposed to vehicle accident hazards associated with the operation of vehicles during the project. To control these hazards, the following safety requirements will be strictly enforced.

- Seat belts shall be worn ANYTIME a vehicle is in motion, regardless of speed or distance to be traveled. Seat belt requirements also apply to the operation of backhoe and other construction equipment;
- The basic speed law shall be followed at all times. Vehicles shall never be operated at a speed that is not safe for the conditions (i.e. road surface, traffic, visibility, weather, etc.).

8.2.6 Safety Hazards - Open Excavation Hazards

Field personnel may be exposed to several serious hazards associated with excavation activities. All excavation work shall be performed in compliance with 29 CFR 1926.

A primary initial hazard with excavation operations is contact with underground utilities including electrical, gas, water/sewer and chemical pipeline. To mitigate these hazards, the Field Supervisor shall take the following action during excavation operations:

- Verify the exact location of each authorized excavation with the Contracting Officer Technical Representative (COTR) and/or on-site officials prior to breaking ground;
- Make every attempt to determine the presence or absence of any underground utilities in the region by contacting Underground Service Alert, the COTR and/or local utility services;
- Hand dig the first two to three feet of the excavation in areas where contact with utilities is possible or unknown;
- Arrange for the deactivation of utilities whenever possible and appropriate for the circumstances.

An additional primary hazard associated with excavations is exposure to the open, excavated area, resulting in falls and/or collapse. To mitigate this hazard, the following safety actions shall be taken:

- Excavated areas shall be clearly marked and secured with barricades and caution tapes to prevent unauthorized and/or accidental entry into work areas;
- Necessary foot and vehicle traffic shall be directed away from and around excavation work areas, and the routes clearly marked;
- When possible, the sides of excavations shall be sloped or benched at a 45° - 54° angle.

At no time will ECC allow employees or subcontractors in excavations greater than 4 feet in depth without the proper shoring or sloping/benching.

8.2.7 Fuel Storage Tank (FST) Safety Procedures

The accurate location of the FST and underground utilities will substantially reduce subsequent risks. ECC will use local underground service alert to mark underground utilities. In the event that heavy

enforced. Table 4.0 indicates the minimum safe clearance in regards to power line voltage.

TABLE 4.0 Overhead Clearance

POWER LINE VOLTAGE (kV)	MINIMUM SAFE CLEARANCE (feet)
50 or below	10
Above 50 to 200	15
Above 200 to 350	20
Above 350 to 500	25
Above 500 to 750	35
Above 750 to 1000	45

8.2.7.1 Mobilization

All required work zones and necessary equipment will be mobilized on-site. All specified safety and emergency equipment will be staged on site. Sanitary facilities will be provided at each work area, as well as drinking water and a potable water supply for washing hands and face.

8.2.7.2 Removal and Disposal of Tank Contents

Hazards associated with the removal of the tank contents are minimum as removal will be done by pneumatic pump or vacuum truck. The tank and any venting apparatus as well as the vacuum truck will be appropriately grounded per API RP 1604 during content evacuation and inerting of the FST. Possible inhalatory or dermal exposure may occur if spill happens during the hook-up of the hose to the tank or breathing of vapors from the hose or piping during the removal of the tank contents. During sampling of the tank contents, care must be taken for inhalatory and dermal exposures. Respiratory and eye protection will be implemented during these operations. Care will be taken to ensure that a proper connection is obtained before opening the drain valve. Spill control equipment will be readily available.

8.2.7.3 Excavation and Exposure of the FST

The major hazards associated with excavation to expose the FST includes hitting underground utility lines, flying debris during saw-cutting of the concrete or asphalt surface, inhalation of hydrocarbon vapor if the FST is cut or punctured during excavation or from soil contamination, caving of the excavation, and general physical hazards of working with heavy equipment such as backhoes and trucks. FST and underground utilities will be located prior to excavation. Excavations will be sloped to prevent caving. No person shall be allowed to enter any excavation greater than four feet deep without the proper shoring requirements. Hazards associated with operation of heavy equipment will be controlled by the use of trained operators and minimize the personnel and the number of different activities at the site during the operation of the equipment. While excavating the soils around the perimeter of the tanks, precautions will be taken to prevent mixing of contaminated soil with uncontaminated soil.

8.2.7.4 Preparation of Tank for Removal

Before removal of the tank, ECC will demonstrate to the satisfaction of local and federal authorities that the tank has been sufficiently inerted. Under no circumstance will a tank be removed without the prior approval of the fire/health departments. The tank will be excavated approximately 3/4 of tank depth, making checks for contamination periodically. If no contamination is encountered, the soil will be stockpiled a minimum of 2 feet from the edge of the excavation, or at a distance equal to half the depth of the excavation, whichever is greater. If contamination is encountered, it will be segregated and placed on 6 mil polyethylene liner.

The tank will be removed using equipment and methods that will ensure safe removal. Hazards associated with this activity include inhalation of hydrocarbon vapor or contact with organic products during inerting or rinsing of the tank, static charge generation, fire hazards during disconnecting of piping associated with the tank, collapse of the tank, and general physical hazards of falling, tripping, slipping, and working around heavy equipment. The tank will be bonded and grounded before the removal of any flammable liquids in order to eliminate any static charge build-up. A proper grounding rod is three-fourths by ten feet long copper driven into the ground to eight feet. The NEC specifications further add that it may slant up to forty-five degrees or be buried in the trench of specified depth. Bolted connectors can be used conforming to UL 467. Static charge protection serves to inhibit charge generation, inhibit charge storage, minimize ignitable material, inhibit the

serves to inhibit charge generation, inhibit charge storage, minimize ignitable material, inhibit the creation of a spark gap, and inhibit the buildup of sufficient energy to create a spark. Initial and regular air monitoring should be conducted to ensure that proper personnel protective equipment is employed. The atmosphere inside the tank and associated piping, when tested with a combustible gas meter will have a reading less than 10 percent of the lower explosive limit (LEL) during excavation activities. Prior to removing each tank from the excavation and site, the tank will be inerted so that the atmosphere is less 5 percent of the lower explosive limit (LEL) and the oxygen content is less than 8 percent.

Personnel required to work around the tank will not stand on top of the tank or near excavation face that leans against the tank. If work has to be conducted from these locations, a life-line will be provided and a dedicated person will attend the life-line and will be ready to retrieve the person where there is danger. Good housekeeping practice will be stressed in the daily safety meeting.

8.2.7.5 Removal and Disposal of FST and Piping

Hazards associated with this activity include inhalation of hydrocarbon vapors and contact with organic products if the tank is not adequately inerted or there are spills when removing the FST from the excavation. Other hazards include fire hazards of a potentially explosive atmosphere inside the tank, caving-in of the excavation when the tank is removed, and general physical hazards of falling, tripping, and working around heavy equipment. Care will be taken to ensure that the tank is adequately inerted. This can be done by measuring the atmosphere inside the tank immediately before removing the tank. The SSHO will obtain tank removal clearance by the local authorities. The excavation will be enlarged on one side of the tank to allow the tank to roll out from its original position slightly before being lifted to minimize the disturbance to the surrounding soil. Inspection of all chains, slings and hooks will be done prior to tank removal. Any defective chains, slings or hooks will be replaced. The tank will be lifted slowly to prevent rupture of the tank.

Field personnel should maintain as much clearance as possible from air borne loads at all times to avoid being struck by a falling load. The use of a guideline should be used so that employees can maintain a greater distance from the load. All unauthorized personnel shall remain outside the exclusion zone. Hazards associated with operation of heavy equipment will be controlled by the use of trained operators and minimize the personnel and the number of different activities at the site during the operation of the equipment. Good housekeeping practice will be stressed in the daily tailgate safety meeting to minimize the physical hazards.

8.2.8 *Confined Space Entry*

Confined space entry work is not anticipated for this project. In the event an entry is required, the COR will be notified ASAP. Entry into and work in a confined space will not be allowed when oxygen readings are less than 19.5% or greater than 23.5% or if the Lower Explosive Limit (LEL) reading is greater than 10%.

8.3 Activity Hazard Analysis

Please refer to Appendix M for Activity Hazard Analysis.

8.3.1 *Biological Hazards*

Potential biological hazards that may be encountered during operation of the above tasks include, insect bites/ stings. It is important that one fully decontaminates prior to leaving the site. Please refer to section 12.2 for Decontamination Procedures. Apply an insect repellent containing DEET every few hours when in insect-and spider-infested areas. Wash DEET off when you come inside. It is also recommended that one avoid wearing perfumes and colognes during outside activities.

9.0 GENERAL HEALTH AND SAFETY PROGRAM

9.1 Training

All field personnel, including subcontractor personnel, assigned to this project shall have satisfied the training requirements of the contractor's written safety and health training program, 29 CFR 1910.120 (e), 29 CFR 1926.65 and 29 CFR 1926.21, including:

- OSHA 40-Hour Hazardous Waste Operations Training with a minimum of 3 days of supervised hazardous waste work, all personnel;
- OSHA 8-Hour Refresher Training, all personnel who completed OSHA 40-Hour training more than 12 months previously;
- OSHA 8-Hour Supervisor Training, required for the Field Supervisor and any other field personnel assigned supervisory duties during the project.

In addition, the following training requirements shall be satisfied:

- All field personnel assigned to the project shall be informed of, and trained on the content and application of the SSHP. They will receive a copy of the SSHP and sign a Site-Specific Safety and Health Plan Compliance Agreement upon completing of this training (see Appendix B);
- The Site Safety and Health Officer has been trained in the use and maintenance of the air monitoring equipment, interpretation of data required to implement the SSHP, and in-depth coverage of the elements of the SSHP. Should any questions on field monitoring arise during the project, the SSHO will consult with the C.I.H. immediately.
- Decontamination procedures;
- Site control measures;
- Emergency response plan;
- Selection, use, care, and maintenance of PPE;
- Safety, health and other hazards present of the site;
- Medical surveillance requirements;
- Overview of "Safe Work Practices";
- Standard operating safety procedures;
- Names of personnel and alternates responsible for site safety and health and emergency response for hazardous waste operations.

Periodic on-site training shall be provided by the SSHO on a weekly basis when personnel are assigned to work at a site during the following week and prior to each change in operation. All required training shall be documented and Environmental Chemical Corporation shall maintain copies of all training certificates and record of training forms. Copies of training records shall be maintained on-site during the project. ECC training logs shall be completed by the SSHO and submitted to the COTR upon request and at the completion of the work. These logs shall be used to document all on-site training (i.e. Bloodborne Pathogens, PPE, activity hazard analysis and work task, review of safety discrepancies and accidents, and the results of air monitoring data.). The format to be used shall have the following: date, employees in attendance and signatures, visitors in attendance, description of training activity and/or topics covered, equipment utilized, and signature of instructor.

9.2 Medical Surveillance

All ECC employees have received an extensive pre-employment medical screening in accordance with OSHA standards. Personnel also receive periodic and follow-up examinations when appropriate. All medical monitoring information is properly documented and is maintained in each employees' personnel file.

All personnel involved in this project will be provided with medical examinations prior to participation in on-site operations, at the conclusion of this project and/or at 12 month intervals during the progress of the operations, repeated as indicated by substandard performance or evidence of particular stress or chemical exposure that is evidenced by injury or loss time illness on the part of a worker, and if employment is terminated for an individual before completion of the contract.

The medical surveillance program is established to ensure that personnel are capable of performing their assigned activities and the health of employees is not compromised by potential exposure to chemical or physical agents found at work sites. This program is designed to support and monitor the effectiveness of the primary Health and Safety goal of controlling worker exposure to hazardous materials.

This procedure describes the ECC medical surveillance program requirements.

A medical surveillance program is required for employees who are or may be:

- Exposed to substances above permissible levels ;
- Required to wear a respirator; and
- Exposed above permissible levels in accidents or emergency situations;

Employees who have a potential site exposure risk, work with potentially hazardous materials, are required to wear respiratory devices, or are required to be monitored under other regulations (e.g., DOT drivers) will be monitored. All employees who enter the exclusion or contamination reduction zone must participate in the medical surveillance program. Other personnel may be monitored on a case-by-case basis. All employees designated to participate in this program are required to do so as a condition of employment. Employees who do not fall within the above categories will not be included in the program.

The medical surveillance program consists of four parts; a pre-employment medical examination, annual medical examination, project specific monitoring and/or medical examination (periodic), and exit medical examination.

ECC's Corporate Health and Safety Specialist is responsible for providing the physician with the following:

- A copy of the OSHA regulation relating to hazardous waste site workers and its appendices (29 CFR 1910.120);
- Description of employees' duties as they relate to exposures;
- Description of the personal protective equipment to be used;
- Information from previous examinations which may not be readily available to the physician; and
- A copy of the ECC Medical Program.

Documentation of employee participation in the medical surveillance program and physician determination that the employees can wear PPE and respirators, will be attached to the field copy of SSHP.

9.2.1 *Pre-employment Medical Examination*

The purpose of pre-employment examination is three-fold. First, the examination should identify any pre-existing illness or medical problem which will exclude a prospective applicant from

employment. Secondly, the examination should determine if a candidate possesses sufficient physical capabilities to wear respiratory and personal protective equipment, work at heights, work in climatic extremes (heat and cold), and perform strenuous physical labor. Thirdly, the medical information (Physical Exam, Spirometry, EKG, drug screening, chest x-ray, urinalysis, audiogram) will serve as a baseline (pre-exposure) against which the yearly or project specific monitoring can be compared, providing a mechanism for early detection of toxic substance exposure, and determine the employee's general fitness for potential exposure to chemicals and physical agents. Please refer to appendix L for the standard forms filled out by ECC's occupational physician. ECC will fill out the Physical Examination Request Form while sending an employee for medical examination. It describes the nature of the tests to be performed. The Medical Clearance Form and Employee Medical Notification letter will be completed by the occupational physician and sent to ECC after the examination is completed.

During the performance of this pre-employment exam, the employee will prepare a pre-employment medical history. Employees will sign medical records release when required and the employee is aware of and approves of the requesters need.

In the pre-employment examination, the examining physician will determine if the prospective employee is capable of safely performing the job for which he/she is applying. At the conclusion of the pre-employment examination, the examining physician will carefully review the medical history and result of the physical examination along with laboratory reports, and then determine if the prospective employee is physically capable of safely performing the intended tasks.

9.2.2 Annual Medical Examination

The annual examination will include an updated medical history, including any occupational exposure from the previous year, and a detailed physical exam featuring the same components as the pre-employment examination. The physician will pay particular attention when comparing the biochemical parameters to help ensure that symptoms of toxic exposure which may have developed during the past year are recognized. The physician will complete and sign the medical certification/rejection section. A written report of the occupational and medical history, physical exam, and all lab work is required.

9.2.3 *Drivers' Medical Examination*

Personnel who drive trucks for ECC must annually pass a U.S. Department of Transportation physical. The forms for this examination can be obtained from the Health and Safety Department and will be routinely distributed to the division offices. Driver physical will consist of a short history and physical examination.

9.2.4 *Project Specific Monitoring and/or Medical Examination (periodic)*

The company occupational physician will determine the contents of the project medical surveillance program. Any time an actual exposure occurs, the employee may be tested for that material and the advice of the consultant toxicologist sought.

9.2.5 *Exit Medical Examination*

An exit medical examination is required at termination of employment or reassignment to an area where the employee would not be covered. The physician should pay particular attention to the condition of skin and document employee comments as to state of health. A written report of the occupational and medical history, physical exam, and all lab work is required.

9.2.6 *Occupational Health Clinic*

All baseline physicals (pre-employment, annual and exit) are conducted by Readicare Medical Clinic for all ECC California employees. Dr. Jeff Stevenson is the Head Physician at the clinic and has extensive experience in occupational medicine. Dr. Stevenson is licensed with the State of California Physicians.

9.2.7 *Bloodborne Pathogen Program*

At least two persons working on site will be certified in first aid and CPR. The individuals will also be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard 29 CFR 1910.1030. Please refer to Appendix O for ECC's Bloodborne Pathogen Exposure Control Plan.

9.3 Hazard Communication

Environmental Chemical Corporation maintains a Hazard Communication program for its employees (Appendix N) . All field personnel assigned to the project shall have received Hazard Communication training prior to the start of this project (i.e. included in OSHA 40-Hour Hazardous Waste Operations Training). Environmental Chemical Corporation shall provide Material Safety Data Sheets (MSDSs) representing the chemical substances being remediated under the project. If a change in the scope of work requires the use of hazardous materials, Environmental Chemical Corporation shall provide and maintain copies of applicable MSDS's on-site.

9.4 Respiratory Protection Program

Environmental Chemical Corporation maintains a Respiratory Protection Program for its employees. This program includes written procedures, training, medical surveillance, fit testing, maintenance of equipment and other components. All field personnel assigned to this project shall be covered under this program (or an equivalent program for subcontractor personnel). ECC's Respiratory Program is in compliance with 29 CFR 1910.134, ANSI Z88.2-1992, and ANSI Z88.6.

9.4.1 Selection and Use of Respiratory Protective Equipment

There are two general categories of respiratory protective devices; air purifying and supplied-air respirators. Supplied-air respirators will not be required on this project site.

9.4.1.1 Air Purifying Respirators Selection

Respiratory protection (Level C) shall be worn when engineering controls or administrative controls cannot be successfully implemented in order to control a contaminant which has exceeded its 8-Hour Permissible Exposure Limit (PEL) under OSHA guidelines. Respiratory protection shall include the use of NIOSH approved half face air purifying respirators equipped with organic vapor/acid gas cartridges and High Efficiency Particulate Air (HEPA) prefilters.

9.4.1.2 APR Limitations

The following limitations apply to the use of APR:

- The odor threshold must be lower than the contaminants exposure limit (TLV/PEL);
- APRs cannot be worn in oxygen deficient atmospheres (less than 19.5% oxygen);
- APRs cannot be worn in areas where the contaminant has reached IDLH (Immediately Dangerous to Life and Health) conditions.

9.4.2 Protection Factor

APR respirators provide different protection factors as listed below.

<u>APR Respirator Type</u>	<u>Protection Factor</u>
Half-face (dust, gas, or vapor)	10X
Full-Face	50X

Maximum Protection = Protection Factor x TLV/PEL (example: the maximum concentration of ammonia in which a half face respirator could be worn is 250 ppm (PF = 10X x TLV = 25 ppm).

9.4.3 Cartridge Color Codes

Following are the descriptions of cartridge color codes:

<u>Contaminant</u>	<u>Color</u>
Acid gases	White
Organic vapor	Black
Acid gas & organic vapors	Yellow
Radioactive particulates, asbestos, dusts, fumes, mists	Yellow with Purple Stripe
Ammonia Gas	Green
Chlorine Gas	White with Orange Stripe

9.4.4 Donning Procedures

The following are the donning procedures:

1. Make sure you have the following:

- Right type, size and brand of APR;
- Correct cartridge that has not expired;
- APR properly sanitized and stored.

2. Inspect the APR by completing the following:

- Check the cartridge seal;
- Check the straps;
- Check the face piece for cracks and deformity;
- Check the exhalation and inhalation valves.

3. Put on the APR chin first and tighten the straps

4. Fit check the seal by completing the following:

- Positive fit check - Cover exhalation valve and blow out. Mask should inflate on the face without any leaks occurring;
- Negative fit check - Cover the inhalation valves and inhale. Mask should deflate inwards towards the face.

5. Replace cartridge when the following occurs:

- Breathing becomes difficult;
- Chemicals can be smelled or tasted;
- More often (every shift) as recommended.

9.4.5 Sanitation Procedures

ECC will be responsible for maintaining supplies for employee sanitation procedures. Employees will be held responsible for the sanitation of their respirators.

Sanitation procedures to be followed are listed below:

- The employer shall provide means for cleaning all respiratory protective equipment;

- Emergency respiratory protective equipment shall be sanitized after each use;
- Respiratory protective equipment will be freshened up before each use or transfer to others by using a alcohol free wipe pad.

9.4.6 Full Sanitation Procedures

Full sanitation procedures are listed as follows:

- Take the respirator cartridges or hose off;
- Fill container with lukewarm water;
- Add diluted chlorine bleach;
- Wash the respirator in the solution and then soak for 5 minutes;
- Rinse the respirator with cold water;
- Place on a towel and allow to air dry.

If the respirator is used daily, full sanitation is usually done weekly.

If the respirator is used weekly, full sanitation is usually done monthly.

If the respirator is used monthly, full sanitation is done quarterly.

9.4.7 Storage

When not in use, respiratory protective equipment shall be stored in a zip lock bag or carrying cases to protect it against:

- Dust or damaging chemicals;
- Sunlight or extreme temperatures;
- Excessive moisture.

Environmental conditions in the work area shall be monitored on a regular basis to detect:

- Increases in exposure concentrations;
- Introduction of other hazardous substances.

Each respirator shall be individually assigned and not interchanged among employees without first cleaning and disinfecting.

9.4.8 Respirator Fit-testing

Each employee will be either quantitatively or qualitatively fit-tested semi annually as a minimum with the respirator(s) they are issued to ensure proper protection. Fit testing shall be performed using irritant smoke tubes, in accordance with ANSI Z88.2 (1992), 29 CFR 1926.1127 and 29 CFR 1910.134. Isoamyl acetate ampules will not be used, except as a preliminary test prior to testing with irritant smoke tubes. Proof of respirator fit testing and training shall be maintained on-site during all work activities. On-site personnel unable to pass a respirator fit test shall not be permitted to enter or work in the Exclusion Zone or Contaminated Reduction Zone.

10.0 EXPOSURE MONITORING PROGRAM

Based on the chemical and physical hazards anticipated to be encountered during this project, appropriate exposure monitoring will be conducted to identify and evaluate hazards and guide field decisions related to personnel safety and operations. ECC will be responsible for all field monitoring equipment and lab analysis expenses throughout the project.

10.1 Minimum Requirements

Perimeter monitoring for diesel will be performed at all site locations and all zones (Exclusion, Contamination Reduction Zone, and Support). This shall include the following activities: soil excavation and the removal of underground storage tanks. The SSHO shall perform personal air sampling if MicroTIP readings exceed 50 ppm. Personal sampling shall also be required if an employee develops symptoms indicating possible exposure to hazardous substances, if the examining physician determines that more frequent surveillance is necessary, or if increased sampling frequency is required by the C.I.H or in coordination with the SSHO.

If integrated sampling should be performed, individual(s) working in areas that have the greatest potential for exposure will be the ones monitored. An 8-Hour or near full shift will be recommended during sampling activities.

The SSHO shall be trained and qualified to operate all instruments, including inspection, calibration check, warm-up and functions check, sampling procedures, maintenance and storage. Specific instrument training shall be completed and documented prior to the start of the project. Primary monitoring for this project will be for diesel using a MicroTIP. An LEL meter will be introduced during FST removal activities.

Noise protection will be provided by continuous use of ear plugs. The variables affecting actual noise exposure include proximity to other operations, operating conditions of equipment in use, proximity of operating equipment to field personnel and duration of equipment usage. Ear protection should be worn if noise levels prevent conversation in a normal tone of voice at a distance of three feet apart. Adjacent and/ or overhead aircraft operations shall also require the use of hearing protection by field personnel.

Instruments shall be protected from surface contamination during use to allow easy decontamination.

All field portable monitoring instruments shall be calibrated according to the manufacturer's instructions daily and a record of this calibration will be maintained on site by Environmental Chemical Corporation. This instrument calibration shall be performed by the SSHO and documented on a Instrument Calibration Check Log (Appendix C). A calibration/maintenance record will be submitted to the COTR weekly as part of the Weekly Safety Report. Records of all daily calibration checks shall be maintained on-site during the project.

A Sampling Data Log will also be submitted to the COTR on a weekly basis. Please refer to Appendix D (Exposure Monitoring Log). All exposure monitoring results shall be documented on an Exposure Monitoring Log and posted in a conspicuous location for employees viewing. (Appendix D). The SSHO shall initiate a new log for each day of monitoring for each parameter being monitored.

10.2 Monitoring

10.2.1 Particulate Monitoring

Total airborne dust exposure is not likely to exceed 5 mg/m^3 . The use of Level C protection (APR/Organic Vapor/HEPA cartridges) and the implementation of dust control procedures (watering of site) during excavation activities will be implemented.

10.2.2 Heat Stress

Heat stress monitoring shall begin when ambient conditions exceed 85° F when working in Level D and 70° F when working in Level C. For clear weather conditions (i.e. 100 percent sunshine) ambient temperatures shall be decreased by 5° F (i.e. 65° F and 80° F respectively) to determine when to begin monitoring.

Ambient conditions shall be determined by maintaining a properly calibrated outdoor thermometer in the shade at each work location, or by monitoring local weather reports throughout each work shift.

Heat stress exposure shall be evaluated by monitoring heart rate. The radial pulse shall be taken for 30 seconds immediately upon beginning to rest (i.e. at the beginning of a rest break). This rate shall be multiplied by two to determine the heart rate at initial rest. This rate should not exceed 110 beats

per minute (bpm). Following three minutes of rest, the heart rate shall be taken again (same procedure). The difference between the initial and third minute heart rate should be greater than 10 bpm.

If the initial rate exceeds 110 bpm OR the difference between the initial and third minute rate is less than 10 bpm, then the work period shall be shortened by 33 percent and the rest period increased by 33 percent.

10.2.3 Noise

All field personnel shall be required to wear hearing protective devices having a Noise Reduction Rating (NRR) of 28 or greater in all active air operations areas and when using pneumatically driven equipment when sound level reading for an operation exceeds 85 dBA or when directed by the safety officer. As such, noise monitoring will not automatically be required. Ear plugs will be used by workers during all operation hours.

11.0 PERSONAL PROTECTION AND SAFETY

11.1 Safe Work Practices

The following are safe work practices which shall apply to this project:

- Eating, drinking, use of gum or tobacco products or the applying of cosmetics shall only be allowed in designated areas in the Support Zone;
- Smoking and any other sources of ignition shall be prohibited within 50 feet of any work area and sources of flammable/combustible chemicals. "No Smoking" signs will be posted at the entrances to the EZs and CRZs. Areas will be marked where smoking is permitted;
- Personnel shall wash their hands, face and any exposed skin when completing decontamination, before eating, drinking or using tobacco product, and at the end of each shift;
- Personnel shall participate in Tailgate Safety Meetings;
- Personnel shall continually observe their work location and be alert to changes in the environment that may affect safety;
- Personnel shall plan and prioritize their tasks prior to donning protective clothing and entering a designated exclusion zone;
- Personnel shall only enter regulated work areas when instructed by the Field Supervisor, and shall only enter through designated control points;
- Personnel shall exit regulated work areas through the decontamination station, and shall follow the decontamination procedures;
- Personnel shall act to avoid direct contact with contamination by not purposefully walking, touching, or contacting any obviously contaminated surfaces. Instruments and tools shall not be placed directly on the ground;
- Personnel shall report any accident, near miss or unusual situations to the Site Safety and Health Officer and/or Field Supervisor immediately;
- Personnel shall use the personal protective equipment provided and as instructed by the Field Supervisor;
- Personnel shall not wear or carry personal items (i.e. jewelry, watches, gum, tobacco products, etc.) into regulated work areas;
- Personnel shall avoid hand-to-mouth or hand-to-face activities;
- All instruments and safety equipment shall be inspected prior to use;

- All vehicles and construction equipment shall be inspected prior to use;
- The number of personnel in a work area shall be minimized in order to reduce potential exposures;
- The buddy system should be used for all personnel entering an exclusion zone;
- Personnel working together (i.e. buddy system) shall continually be aware of their partner, and shall make integrity checks of their partner;
- Personnel shall work purposefully and as a team;
- Personnel shall work within their own physical and mental limits;
- Personnel shall take adequate rest breaks and replace body fluids (water and electrolytes) continuously;
- Personnel shall at all times follow the instructions of the Field Supervisor;
- Personnel shall not deviate from the SSHP or the instructions of the Field Supervisor;
- Personnel shall avoid rushing and/or taking short cuts;
- All waste generated from decontamination procedures shall be handled and disposed of as per the contract requirements. No waste shall be disposed of without the direction of the Field Supervisor;
- Personnel will do visual checks on machinery and equipment prior to its use.

11.2 Levels of Protection

Personal protective clothing and equipment is on hand for use in an emergency situation. The purpose of personal protective equipment and clothing is to isolate individuals from chemical and physical hazards. ECC shall provide PPE (tyveks, gloves, safety glasses and hard hats) to authorized site visitors who require access to the Exclusion Zone. Level of protection will be selected or deemed necessary by the Project Manager or Site Safety Health Officer. Level of protection at any site will be selected on a site specific/task specific basis; however Level D will be worn as minimum for all site activities. The equipment list given below includes information on all levels of protection.

OSHA Level D: This is primarily a work uniform.

Level D is the basic work uniform that will be used. It provides only minimal protection.

- Hard hat;
- Boots (steel toed);
- General work clothes;

- Safety glasses or safety goggles;
- High visibility vests

OSHA Modified Level D: Same as Level D with an increase protection level for splash hazards. No air purifying respirator. .

- Insulated Coveralls - These coveralls shall be oversized to allow several layers of wool or pile or polypropylene clothing inside. (Optional);
- Disposable Overalls (Tyvek and Saranex);
- Boots -- chemical resistant, steel toe, and shank (ANSI Z41-1983, Safety Toe Footwear, Classification 75). Boots shall be equipped with deep traction sole and be oversized to allow two to three layers of woolen or similar socks inside;
- Gloves - Chemical (PVC, Neoprene, Nitrile) gloves shall be oversized to allow two to three layers of wool or similar gloves inside; Safety glasses or goggles to guard against wind; and Hard hat (ANSI Z89.1-1986, Class A, B, and C). This hard hat shall be supplemented with a hard hat liner.

OSHA Level C:* This is to be selected when the type of airborne substance is known, concentration measured, criteria for using air purifying respiratory met, and skin and eye exposure is unlikely. Please note that all the requirements for hard hat, coveralls, and boots apply here.

- Half-face/Full-face air purifying respirator with organic vapor cartridges: A dual cartridge with organic vapor and HEPA capabilities will be implemented if dust exposure creates a problems to the workers.
- Tyvek/Saranex coveralls - Refer to Modified Level D;
- Neoprene outer gloves - Refer to Modified Level D;
- Cotton inner gloves - Refer to Modified Level D;
- Hard hat with face shield - Refer to Modified Level D;
- Steel toed rubber boots - Refer to Modified Level D;
- Rubber boot covers (where applicable);
- Taped wrist and ankle joints;
- Chemical goggles (where applicable);
- Hearing protection (where applicable); and
- Safety glasses (where applicable).

* Protective clothing material must be compatible with the identified hazardous substances

released. In an unknown situation the material providing the highest overall protection will be utilized.

No individual will enter an area where respiratory protective equipment is required unless the person has been trained in the selection, use, care and limitations of the respirator, and the proper respirator has been selected for the task.

Whenever respirators are required, only equipment approved for that purpose will be used. This equipment must be approved by the National Institute for Occupational Safety and Health (NIOSH). Only parts approved for the specific respirator system are to be used for replacement. Only a person specifically trained should perform work with respirators.

Proper selection of respirators is to be made according to guidance provided by ANSI standard Z88.2 -1980. The correct respirator is to be specified for each job.

11.3 PPE Inspection Program

Regular inspection of PPE, together with respiratory protective equipment shall be performed. ECC's SSHO shall ensure the following during PPE inspection:

- All equipment shall be inspected by the wearer prior to use;
- Respirator cartridges shall be disposed of daily (i.e. not reused);
- Respirator cartridges shall be changed during a work shift if the wearer experiences breakthrough, resistance or uncomfortable warm inhaled air, or if the respirator/cartridges become wet or grossly contaminated;
- Disposable protective items may be reused during a work shift provided they are not damaged or obviously contaminated. Disposable items shall be disposed of daily; and
- Reusable protective items shall be cleaned and inspected daily.

11.4 Care of Equipment

Personal protective equipment offers a high degree of protection, yet the equipment must be maintained and inspected on a regular basis.

Gloves and full body coveralls - Gloves and full body coveralls will be inspected and replaced

promptly if a tear develops.

Respirators - Respirators will be inspected and leak-checked each time they are put on. Respirator cartridges will be replaced daily, or more frequently if excessive resistance or breakthrough develops. All respiratory maintenance will be performed by a trained technician. Respirators will be cleaned daily. Each individual will be assigned exclusive use of a respirator. These respirators will be stored in separate plastic storage boxes with individuals names on them.

11.5 Tasks Covered

The wearing of company-approved hard hats(ANSI Z89.1 approved) on job sites is mandatory for all tasks. Appropriate work clothing (OSHA Level D) will be worn at all times to minimize the hazards from work. The initial minimum protective equipment requirements for each major task and operation are listed below.

<u>Tasks/Operation</u>	<u>Initial Level of Protection</u>
Mobilization	Level D
Removal of Diesel fuel	Modified Level D
Excavation	Level D
UST Removal	Level D
AST Installation	Level D
Backfilling	Level D
Sampling	Level D
Decontamination	Level D
Demobilization	Level D

11.6 Equipment Selection

The SSHO will be in charge of equipment selection and inventory. The level of protection may be upgraded or downgraded by the SSHO as conditions change at the site. Decisions for downgrading PPE requirements shall be approved by the COTR prior to implementation. The COTR should be notified by the SSHO of decisions for upgrading PPE requirements, but COTR approval does not have to be required prior to implementation.

Reasons to upgrade include:

- Change in work task that will increase contact or potential contact with hazardous materials;
- Action level is detected during monitoring; and
- Request of the individual employee.

Reasons to downgrade include:

- New information indicated the situation is less hazardous than originally believed;
- Change in site conditions that decreases the hazards; and
- Monitoring or lab analysis support a decision to downgrade.

EXPOSURE MONITORING ACTION TABLE

READING	LOCATION	ACTION
Hydrocarbons		
>10 ppm	At excavation At boundary of exclusion zone	- Level C Protection - Monitor boundary of exclusion zone. - Temporarily stop operation, ventilate. - If levels persist cover excavation/soils and report to COTR.
> 200 ppm	At excavation	- Stop work, cover excavation/soils, evacuate area, report to COTR.

12.0 STANDARD OPERATING SAFETY PROCEDURES, ENGINEERING CONTROLS, WORK PRACTICES, PROCESS SAFETY MANAGEMENT

The field safety requirements and procedures applicable to this project include site control and decontamination, sanitation, safety meetings, accident reporting and investigations, safety inspections, housekeeping and related items.

12.1 Site Control

Site control procedures for this project shall include the establishment of work zones at each work location, providing site security to warn of unauthorized access and to secure work locations between shifts.

An exclusion zone will be established around the immediate work area, and shall be clearly marked by a combination of traffic cones, barricades and/or high visibility barrier tape. The exclusion zone shall mark the area where direct handling operations are occurring and where field personnel may be exposed to chemical and physical hazards. Entry into the exclusion zone shall be regulated by the SSHO and the Field Supervisor. No person shall enter an exclusion zone if they are not wearing the required protective clothing and equipment. All personnel exiting an exclusion zone must pass through the decontamination zone, following the required decontamination procedure.

At the commencement of operations and periodically through the day, the boundary between the exclusion zone and the support zone shall be monitored using a MicroTIP. The support zone shall be positioned upwind and up gradient from the work area.

The size and shape of the exclusion zone shall be based on known and anticipated hazards, type of operation being performed, physical and topographical features, potential for site emergencies affecting surrounding areas, etc. Prior to the beginning of each days' operations, the SSHO shall observe site conditions and determine the location and boundaries of the exclusion zone. This work zone shall be reasonably large enough to accommodate equipment operations (i.e. 25 to 50 feet in all directions, etc.). The SSHO shall re-evaluate the location and boundaries of the exclusion zone as frequently as necessary, each day, in order to ensure that the exclusion zone incorporates all areas as described immediately above.

All work zones shall be established daily before beginning operations. Site control requirements

shall be reviewed during daily Tailgate Safety Meetings. A copy of the site map showing any adjustments to the work zone boundary shall be attached to the daily Tailgate Safety Meeting form whenever work zones are adjusted based on site conditions.

Site security shall be established by clearly marking all work zones at all possible locations of entry by unauthorized personnel in order to minimize and prevent public exposure to hazards created by site activities. In addition, the SSHO as well as ECC employees shall observe for pedestrian and vehicle traffic that may unknowingly enter designated work areas, and take action to stop their unauthorized entry. When necessary, field personnel may be assigned as security in order to warn persons or vehicles of the adjacent operation.

At the end of each work period, any open excavations shall be barricaded in ALL directions with lighted barricades, and all barricades connected by a double run of barrier tape. A similar procedure shall apply to any stockpiled soils.

12.2 Decontamination

12.2.1 Temporary Exit

The following decontamination procedures will occur when the employee departs EZ for breaks, lunches, end of shift or if protective clothing has been damaged or torn.

- ECC shall provide a change room for changing into and out of protective clothing. A container will be made available for contaminated clothing;
- Remove PPE prior to entering support zone;
- Rinse gloves with soap and water to remove excess contamination;
- Gloves, protective suits, and booties will be removed;
- Thorough washing of the entire body is required as soon as possible after doffing of protective outer garments;
- In no case will contaminated clothing be worn out of the EZ or the CRZ;
- Protective clothing will be stored in a manner to avoid potential contamination of inner surfaces.

Employees leaving the exclusion zone to pick up or drop off tools or instruments and immediately returning will not require decontamination but will not be permitted past the first station.

12.2.2 *Exit from Site*

Exit from the site requires procedures as described below:

- Remove PPE before entering support zone;
- All suits, gloves, booties used during the day must be removed at the end of the day's work or prior to leaving the site;
- Protective clothing will be stored in a manner to avoid potential contamination of inner surfaces;
- Thorough washing of the entire body is required as soon as possible after doffing of protective outer garments.

12.2.3 *Means of Decontamination*

All personnel, clothing and equipment leaving the contaminated area of the site will be decontaminated to remove any harmful chemicals. The decontamination facilities will be located in the contamination reduction zone. The decontamination procedures will be an organized process, with a series of stations to provide the maximum level of decontamination. The decontamination area will be clearly defined and equipped with all necessary equipment. All equipment/solutions used for decontamination will also be decontaminated and/or disposed of properly.

The procedure will vary from site to site but will always include the following steps:

- Equipment drop;
- Outer boots and gloves wash/rinse (step off);
- Outer boots and gloves removal;
- Suit wash/rinse/removal;
- Inner glove wash/rinse;
- Face piece removal, wash/rinse;

- Inner glove removal; and
- Field wash (face, hands).

Personnel assigned to the decontamination process will assist workers and decontaminate equipment and reusable protective gear. All field equipment such as probes, tools, etc., will be decontaminated with a solution ofalconox and water and rinsed with water before the equipment is stored for future use. Rinsate will be placed in 55 gallon drums.

For the decontamination of heavy equipment a bermed decontamination stage will be set up with a double layer of visqueen. The equipment will be brought to this area and washed with water andalconox. The decontamination fluids/wastes will be solidified using floor-dry and placed in 55 gallon drums.

In an emergency situation, in which personnel may need to be transported off-site for medical attention, the employee will be decontaminated before leaving the site. If lifesaving care must be given immediately, decontamination will not be considered.

12.2.4 Disposal of Decontamination Materials

Materials such as liquids, rinsate, sludge, and personal protective gear resulting from decontamination activities, will be placed in 55-gallon drums and disposed of at an appropriate disposal facility, with the other contaminated waste materials. In the event of any accident during this process, emergency decontamination procedures shall be performed. Please refer to section 13.7 for emergency decontamination procedures.

12.2.5 Decontamination Station Set-Up

A decontamination station and appropriate decontamination procedures shall be established by the SSHO prior to the beginning of operations each day. The decontamination station shall be situated up-wind and up-gradient from the exclusion zone, be clearly marked, and provide a controlled access point for movement between the exclusion zone and support zone. Decontamination requirements shall be reviewed with field personnel during daily Tailgate Safety Meetings. The following decontamination procedures shall be implemented:

Level D:

- Move to the designated Decontamination area;
- Clean work boots of any accumulation of soil or mud;
- Remove leather work gloves;
- Wash hands and face.

Level C:

- Move to the designated Decontamination area;
- Wash gloves, boots and any taped areas;
- Remove tape;
- Remove outer gloves;
- Remove suit from the inside out;
- Remove respirator face piece;
- Remove inner gloves;
- Wash hands, face and any exposed skin.

Decontamination supplies to be provided daily at the work site by Environmental Chemical Corporation include visqueen plastic, duct tape, traffic cones, barrier tape, a wading pool or large plastic wash tube (large enough to stand in with both feet), bucket, long handled scrub brush, waste collection containers (open-top 55 gallon drum with drum liner, or several lawn size garbage bags and Tri Sodium Phosphate (TSP) or equivalent soap/decontamination solution.

The decontamination solution shall be made by mixing approximately 1/8 cup of TSP with one to two gallons of water (in a bucket), and shall be made daily for use. The SSHO shall ensure that the Decontamination station is set up completely prior to beginning work each day. All field personnel exiting an exclusion zone must pass through the decontamination station and complete the required decontamination procedure before entering the support zone. All waste generated from decontamination shall be properly packaged and managed as a regulated hazardous waste.

12.2.6 Equipment Decontamination

In addition to personnel, all equipment and hand tools used in the exclusion zone shall be decontaminated in the CRZ prior to entering the support zone. Equipment decontamination will consist of the following: wiping down with lint free rags moistened with decontamination solution prior to entering the support zone; tires and bucket/blade shall be cleaned with a wire brush and all soils collected and placed with excavated spoils. ECC's SSHO shall be responsible for monitoring

all vehicle decontamination prior to exiting the site. Personnel engaged in vehicle decontamination shall wear protective equipment including disposable clothing and respiratory protection consistent with the requirements of this specification and the SSHP.

A clean area shall be established by ECC for performing equipment maintenance. This area shall be used when personnel are required by normal practices to expose themselves to contact with ground soil and crawling under a vehicle to change engine oil. All equipment shall be decontaminated by wash down in the CRZ prior to maintenance work.

Maintenance work such as greasing heavy equipment will not require decontamination unless the job requires body contact with the ground soil within the EZ or CRZ. Seats of equipment and vehicles used in the EZ will not be cloth covered. They will be free from cracks or holes that would allow dust to enter seat padding or shall be covered with a temporary sheet vinyl covering.

12.3 Tail Gate Safety Meetings

The SSHO shall conduct a Tailgate Safety Meeting with all field personnel, including subcontractor personnel, at the beginning of every shift. A copy of each days Tailgate Safety Meeting form (Appendix E) shall be maintained at the immediate work site and shall be available for field personnel and site visitor review. All site visitor are to be briefed on the operations and daily Tailgate Safety Meeting information prior to entering a designated exclusion zone. Copies of all Tailgate Safety Meetings shall be maintained on-site during the project, and shall be provided to the COTR upon request.

12.4 Safety Inspections

The SSHO shall perform a daily safety inspection of the work site. The daily safety inspections shall be documented using the Safety Inspection form. The SSHO shall ensure that all immediate hazards are corrected before work proceeds and that all other hazards and potential safety situations are corrected in a timely manner in relation to this project (i.e. one to three days).

In addition, the SSHO shall perform a specific safety inspection of each piece of equipment to be used that day (i.e. backhoe, loader, etc.). The equipment inspection shall be documented using a Safety Inspection Check List For Construction Equipment (Appendix F). Any defective items or conditions shall be corrected by the Project Manager before the commencement of work.

Copies of all safety inspections (i.e. work site and construction equipment) shall be available for field personnel review, shall be maintained on-site during the project, and shall be provided to the COTR upon request. Please refer to Appendix G for a copy of the Safety Inspection Report.

12.5 Accident Investigations

In the event of an injury, illness or near miss, the incident shall be immediately reported to the Field Supervisor or SSHO. If required, emergency medical care or first aid shall be rendered. The Field Supervisor shall then initiate a Supervisor's Report of Injury, and all other documents required for injury/illness reporting and worker's compensation claims.

As soon as possible after the occurrence of an occupational accident, the SSHO shall initiate an Accident Investigation. The accident investigation shall be documented on an Accident Investigation form (Appendix H). The purpose of the accident investigation is to identify the causes of the incident in order to take corrective action to prevent future occurrences.

In addition, the SSHO shall immediately notify the COTR of the reported injury, illness or near miss. Finally, the SSHO shall maintain a project log of all recordable injuries and illnesses.

12.6 Personal Hygiene

ECC management shall ensure that adequate drinking water, toilet facilities and hand washing facilities are available daily to all field personnel. For drinking water, at least one gallon per person shall be provided daily. Potable water shall be supplied from a pressurized source (i.e. tap water) or commercially available bottled water. Disposable drinking cup shall be provided at each work location, and shall be stored and made available in a sanitary manner. Any non-potable sources of water shall be clearly marked. A break/lunch area will be established on-site in the Support Zone.

Toilet facilities shall be immediately available at all times to field personnel (i.e. on-site or immediately adjacent rest room facilities or on-site portable chemical toilets). Toilet facilities shall be within immediate access for field personnel (i.e. within five minutes).

Hand washing facilities shall be adjacent to the decontamination station at each work location (support zone). Hand washing facilities shall consist of soap, clean water, wash basins and single-use towels. Any waste water collected shall be disposed of properly.

12.7 Housekeeping

A strict housekeeping program shall be implemented daily at each work location. The purpose of the housekeeping program is to reduce or prevent accidents and prevent to unwanted spread of contamination, debris or other material to any areas. Of special concern is the release of dirt and other debris in active air operations areas which may interfere with or damage aircraft. The SSHO and Field Supervisor shall both be responsible for ensuring that good housekeeping is maintained at all times during the project.

The following housekeeping procedures apply to this project:

- Only in use equipment and tools shall be off-loaded from vehicles;
- Work areas shall be continuously "policed" by field personnel and the Field Supervisor for cleanliness and orderliness;
- All spills shall be immediately cleaned up;
- Any loose dirt and debris that is not part of a designated spoils pile (from excavations) shall be immediately cleaned up;
- No dirt or loose debris shall be left in any work area, or allowed to leave any work area either by vehicle, foot or wind movement;
- Spoils pile shall be kept covered with visqueen plastic and/or tarps. Covers shall be weighted down with sand bags (or equivalent) to keep in place;
- In wind conditions, excavated soils may be lightly wetted with a water fog to reduce airborne dust. No water run-off shall be generated or allowed.

All field personnel shall be instructed on the basic emergency actions to take in the event of a medical or chemical emergency. This instruction shall include actions to take to preserve personal safety, how to make emergency notifications, basic first aid/assistance procedures, staging and use of emergency equipments and evacuation procedures, and shall be reviewed during each Tailgate Safety Meeting.

12.8 Fall Protection

Employees shall be protected by standard guardrail, catch platforms, temporary floors, safety nets, personal fall protection devices in the following situations: 1) on access ways (excluding ladders)

or work platforms from which they may fall 6 feet or more, 2) on access ways or work platforms over water, machinery, or dangerous operations, 3) on runways from which they may fall 4 feet or more.

All employees will be trained by the SSHO and/or ECC's Corporate Health and Safety Specialist in the safe use of access ways and fall protection systems and the recognition of hazards related to their use, including: 1) the nature of access and fall hazards in the work area, 2) the correct procedures for constructing, erecting, maintaining, using, and dismantling access ways and fall protection systems, 3) the maximum intended load-carrying capacities of access ways and fall protection systems, and 4) all applicable requirements from this section.

12.9 Electrical Safety Procedures

Always call an electrician in case of need of electrical work except for changing 110 volt A.C. light bulbs, resetting breakers or working on automotive type circuits.

All electrical wiring of equipment must be considered "live" and dangerous. A shock from 110 volts can be fatal.

All permanent electrical wires must be hung on insulators, messengers, in conduit or trays. All temporary electrical wires must be hung so they are not in mud or water. GFCI's will be used on all electrical wiring.

Never handle electrical wires that are "hot" while standing or sitting in a wet place without taking extra precautions to obtain insulation from the ground. Be sure conditions are safe before starting work.

Do not place electric bulbs where drops of water can hit them. Do not spray down electrical equipment.

Electricians shall not touch, install, or attempt to repair any electrical equipment unless they are fully familiar with it; until it is locked and tagged out; and until they are positive it is safe. Never take your first chance with electricity.

Always do your work so that you do not become a conductive path.

Do not open a manual switch to disconnect power from a running motor except in cases of extreme emergency where the regular starter is not functioning.

Cultivate the habit of turning your face away when opening or closing switched on circuit breakers or when doing anything that could cause an arc or flash. Never turn your face and then grope for a switch handle.

- Never close an electrical switch slowly or hesitatingly. Close it quickly and positively;
- Remember that arc burns may be severe;
- Do not remove a fuse from any circuit until the switch has first been opened.

In case of a blown fuse or tripped circuit breakers, do not restore power until a thorough check has been made of the equipment to prevent closing into a fault.

All electrical equipment shall be installed in such a manner so as to be readily and safely accessible to authorized employees to maintain and repair. Such equipment shall be guarded by rails, wooden platforms, insulating mats or electrically non-conductive material wherever necessary.

All repairs or adjustments on other work on any type of electrical equipment shall be performed only by qualified electricians.

Electrical equipment and wiring shall be inspected systematically and documented at regular intervals to ensure a safe operating condition. Defective equipment shall be repaired or replaced at once.

Fuses or equivalent protective devices of the correct type and capacity shall be installed on all electrical equipment to protect against excessive overloads or other failures.

Switches and circuit breakers shall be installed so that they are readily accessible and can be operated without danger of contact with moving or "live" parts.

Switch board shall be well lighted for personnel operating in front of board and for maintenance and repair. The rear of the switch boards shall be so guarded as to prevent anyone getting near them and, if possible, shall be enclosed.

All rooms or building which contain switch boards or control equipment shall be kept free of debris and refuse at all times.

All junctions on switch boxes must have covers in place before starting operation.

When repairs are finished or before an employee closes the switch, he shall make certain that the closing will not start a fire or endanger a fellow employee.

Wire, pieces of wire, or other conducting materials shall not be used as a substitute for properly designed fuses. Where circuit breakers are used, they shall be maintained in proper operating condition and be properly adjusted.

No employee working in an elevated position on electrical equipment shall do so without using an approved safety belt and life line, unless there are proper guard rails around such elevated positions.

Hand held electric tools shall not be operated at high potential voltages.

All electrical installations, temporary or permanent, shall comply with the applicable provisions of the national electrical safety code.

Electrical wire, conduit, apparatus, components of equipment shall be approved or listed by the Underwriters Laboratories, Inc., or factory mutual laboratories, for the specific application. Extension cords shall be 3-wire grounded type listed by the Underwriters Labs, Inc. The rated load shall not be exceeded.

All 115-, 120-, and 220-volt, single-phase receptacle outlets used for construction operations shall be protected by a ground-fault (GFI) interrupter program. This requirement includes receptacles on stationary and portable systems.

Always use a fiberglass or non-conductive ladder when doing electrical work.

Grounding

- "Grounding" means making an intentional permanent connection to the general mass of earth in such a manner as will insure at all times the immediate discharge of electric energy

to the earth without danger;

- All equipment that may become accidentally charged with electric current shall be effectively grounded;
- Ground wire connections to the apparatus shall be made by means of an approved clamp or terminal soldered or welded to the ground wire and securely bolted to the apparatus, where removal will be unnecessary for inspection or repairs;
- Wherever possible, ground wires shall be installed in such a manner that they may be inspected for continuity and be protected from mechanical injury;
- All fence enclosures surrounding switch gear, transformers, etc. shall be effectively grounded. Three feet clearance shall be provided between transformer and fence.

Installation of electrical equipment is not to be considered complete until it has been properly and effectively grounded.

Electrical Lockout Procedures

- All electrical equipment must be locked out according to the following procedure prior to maintenance activities;
- Inform operator and/or foreman of intent to shutdown equipment;
- Turn off equipment;
- Lockout equipment with lock, lock-out hasp, and tag. Sign and date tag. Keep key;
- Attempt to start Equipment; if equipment remains energized, report to foreman or electrician and do not proceed with maintenance activity. If equipment is de-energized, proceed with maintenance as planned;
- When maintenance is finished, clear area of tools and debris;
- Inform operator and/or foreman of intent to start equipment;
- Make sure men are clear of equipment;
- Test run;
- Replace tag and lockout on lockout board.

12.10 Site Security

Before field operations begin, warning flags or signs which read "Hazardous Area - Keep Out - Caution Authorized Personnel Only" will be posted at all excavation sites.

12.11 Drum Handling Procedures

No containers will be handled unless necessary to complete the task. Containers will be positioned with drum handling equipment such as drum dollies or fork lifts. The scope of work for this project does not involve any drum handling/removal operations.

13.0 EMERGENCY RESPONSE AND CONTINGENCY

Emergency conditions that may be anticipated during work activities include:

- Fire involving combustible materials;
- Medical emergency due to heat stress, physical accident or exposure to toxic materials;
- Release of hazardous materials.

In the event of a release of hazardous materials or fire during transferring/repacking procedures, ECC's project manager will be the response manager and will determine the appropriate level of response.

13.1 Emergency Supplies

At a minimum, the following supplies must be immediately available for on-site use:

- First aid equipment and supplies;
- Emergency eyewash station and shower as per ANSI Z-358.1;
- Emergency use respiratory equipment (SCBAs);
- Spill Control material and equipment;
- Type ABC fire extinguisher, 10 lb. capacity, minimum of two; and
- An emergency vehicle parked at exit from the cleared area.

13.2 Contingency Plan Execution

In the event an emergency situation should arise while performing site activities, employees shall follow the following ECC procedures:

- Your name;
- Description of the emergency;
- Exact location of the emergency; and
- Any other pertinent information;

Upon discovering an emergency the following series of events will occur:

- Notification of personnel;
- Stop work activities if necessary;
- Lower background noises; and
- Begin emergency procedures (not in order, depending on the situation):
- Survey casualties;
- Assess existing and potential hazards to site personnel and off-site populations;
- Request aid if necessary;
- Allocate resources;
- Extricate and stabilize victims;
- Bring the hazardous substance under control; and
- Evacuate if necessary.

13.3 Emergency Numbers

The following table (13.1) list emergency telephone numbers for this project. Emergency telephone numbers will be posted in the ECC project trailer.

Table 13.1 Emergency Numbers

ORGANIZATION	TELEPHONE NUMBER
Police	911 emergencies
Fire/Ambulance	911 emergencies
Hospitals: For non emergencies	
Readicare (Santa Clara) - Moffett Field	(408) 727-1900
Readicare (Oakland) - Oakland A/P North	(510) 638 0701
Readicare (Oakland) - Oakand A/P	(510) 638-0701
First Med Marin - Mill Valley	(415) 258-9500
Industrial Medical Center of San Luis	
Obispo County - Paso Robles	(805) 542-0769
Mendocino Health Group - Ukiah - Cow Mt.	(707) 463-2855
Chemtrec	1-800-424-9300
ECC Sr. Program Manager Michael Della-Rocco	(415) 347-1555 ext. 350 pager: 800-810-6563

ECC Project Manager Pete Timmerman/Van Jenkins	on site telephone no. TBA pager: 800-796-0177
FAA Environmental Manager Mr. Alex Gulyas	(510) 786-5110
Volpe Center/COTR Mr Glenn Goulet	(617) 494-2002
C.I.H. Bruce Lazarus (NES)	(916) 853-9400

13.4 Communications

Two sets of communication systems will be established; internal communication among personnel on-site, and external communication among on-site and off-site personnel. Internal communication will be used to:

- Alert team members to emergencies;
- Maintain site control;
- Communicate changes in work to be accomplished to an emergency situation; and
- Pass along safety information, such as air change, amount of air time left before break, etc.

Visual signals will be used for communication during operations.

13.5 Emergency Recognition and Prevention

Emergency recognition and prevention training will be included in the daily tailgate safety meetings. By discussing the tasks to be performed, time constraints, emergency procedures, and hazards that may be encountered, personnel should be alert to the dangers and potential emergencies.

13.6 Site Evacuations/Refugees

Safe distances will be determined at the time of the emergency. The following factors which influence safe distances will be taken into consideration:

- Toxicological properties of the substance;

- Physical state of the substance;
- Quantity released;
- Rate of release;
- Method of release;
- Vapor density relative to air;
- Wind and speed direction; and
- Local topography.

On-site safety stations will be located in the Support Zone. The safety station will include first aid equipment, fire extinguisher, hand tools, extra monitoring devices, oxygen, and communication system.

13.7 Decontamination and Medical Treatment

Whether or not to decontaminate the victim will be based on the type and severity of the illness or injury and the nature of the contaminant. If decontamination cannot be done the victim will be wrapped in blankets, plastic, or rubber to reduce the possibility of contamination to other personnel. The medical facility will be informed of the potential contamination and a site representative will accompany the victim.

A route map to the nearest hospital is included in figure 3.

13.8 Documentation and Review

After the response ECC will prepare an Emergency Response Report. It will include such things as a chronological history of the emergency, facts, actions, personnel present, sample results (if taken), summary of injuries, and possible exposures. This Report will be given to the COTR within 2 days of the incident and immediate verbal notification.

14.0 SPILL AND DISCHARGE CONTROL

ECC will provide contingency measures for potential spills and discharge from trucks handling off-site transportation and any other potentially hazardous materials on-site. ECC will:

- Provide methods, means, and facilities to prevent contamination of soil, water, air,

- structures, equipment, or material from a release due to ECC's operations;
- Provide equipment and personnel to perform emergency measures to mitigate spills and control their spreading;
- Dispose of contaminated materials; and
- Provide a decontamination program to clean previously uncontaminated areas.

14.1 Equipment Required

ECC will have the following equipment on-site at all times in order to handle hazardous material releases:

- Noncombustible absorbent;
- 55 gallon drums; and
- Shovels and other hand tools.

14.2 Contingency Plan

The following requirements will be met during a spill response action:

- Notify the COTR immediately;
- Take immediate measures to control and contain the spill;
- Isolate and contain hazardous spill areas;
- Deny entry to unauthorized personnel;
- Do not allow anyone to touch spilled material;
- Stay upwind; keep out of low areas;
- Keep combustibles away from the spilled material;
- Use water spray to reduce vapors and dust, as needed;
- Take samples for analysis to determine that cleanup is adequate;
- If released from tanks, prevent discharge beyond site boundaries;
- Caution should be given (opening, sampling, and over packing) when handling drums and containers.

14.3 Notification of Spills and Discharges

ECC will present a report no later than two days after a release to include the following items:

- Description of material spilled, including identity, quantity, and a copy of the waste disposal manifest;
- Exact time and location of the spill, and the description of the area involved;
- Containment procedures utilized;
- Description of the cleanup procedures employed at the site, including disposal of spill residue;
- Summary of the communications ECC has with other agencies; and
- Determination if the spill is reported to the EPA and/or reportable, and the date upon which the report to the appropriate agency was made, as well as the name of the agency representative who accepted the report.

15.0 LOGS, REPORTS, AND RECORD KEEPING

15.1 Exposure of Personnel

All injuries and accidents will be reported promptly to the SSHO. Reportable incidents include, but are not limited to:

- Injuries to personnel resulting in lost time;
- Tool or equipment failure which results or could result in serious injury;
- Fire or explosion of any magnitude;
- Exposure of unprotected personnel to toxic agents;
- Vehicle accidents; and
- Any damage to client or private property.

All injuries/illnesses, no matter how minor they appear, are to be reported to the PM / SSHO. They should then ensure that the incident is logged and properly reported.

Under no circumstances should an injured employee drive himself/herself to the hospital, clinic, etc. An employee with minor injury may be transported by car after first aid treatment is given. The employee who transports the injured person should be trained in first aid and CPR whenever possible. In the event the injury is severe, or when in doubt of severity of injury, employee should be transported by ambulance.

Injured employees that require medical treatment or have been taken to a doctor, hospital, clinic, etc., should not be allowed to resume work without a written return to work or any work statement from the treating physician. This statement should give diagnosis, date of return to work and work limitations. Should a statement such as "light duty" be given, call the treating physician to determine the exact restriction that is needed. Be sure the treating physician understands the type of work the employee normally performs and that alternate work is available to meet work restrictions.

15.2 OSHA Recording Procedures

All injuries, no matter how minor they appear, are to be logged as required by OSHA. This provides a record per exposure limits and audits safety. Minor injuries such as small cuts, scrapes, small first degree burns, and splinters that require first aid treatment, are entered on this log only. Any incident

that requires the completion of the Incident Investigation Report as described below must also be logged. Maintaining this log will help in meeting OSHA record keeping requirements and in responding to minor incidents before they become major. The original log should be retained in site records.

15.3 OSHA Records

The following records will be archived in ECC's permanent project files:

- Occupational Injuries and Illnesses - 5 years;
- Training (Hazardous Waste and Operations) - Current;
- Exposure Measurements (Hazardous Waste and Operations) - 30 years; and
- Medical Surveillance (Hazardous Waste) - 30 years.

15.4 Daily Log and Inspection Report

The following information will be included in the Daily Logs and Inspection Reports:

- Specific Zone;
- Number of employees in each area;
- Equipment being used in each area;
- First aid treatments;
- Special health and safety issues notes;
- Daily tailgate safety meeting forms; and
- SSHO signature and date.

15.5 Weekly Report

The Weekly Report will contain the following items:

- Summary sheet covering range of work accomplished during the week;
- Daily health and safety inspection report copies;
- Instances of job-related injuries and illnesses;
- Copies of correspondence;
- Results of personal/air monitoring and screening performed; and

- SSHO signature and date.

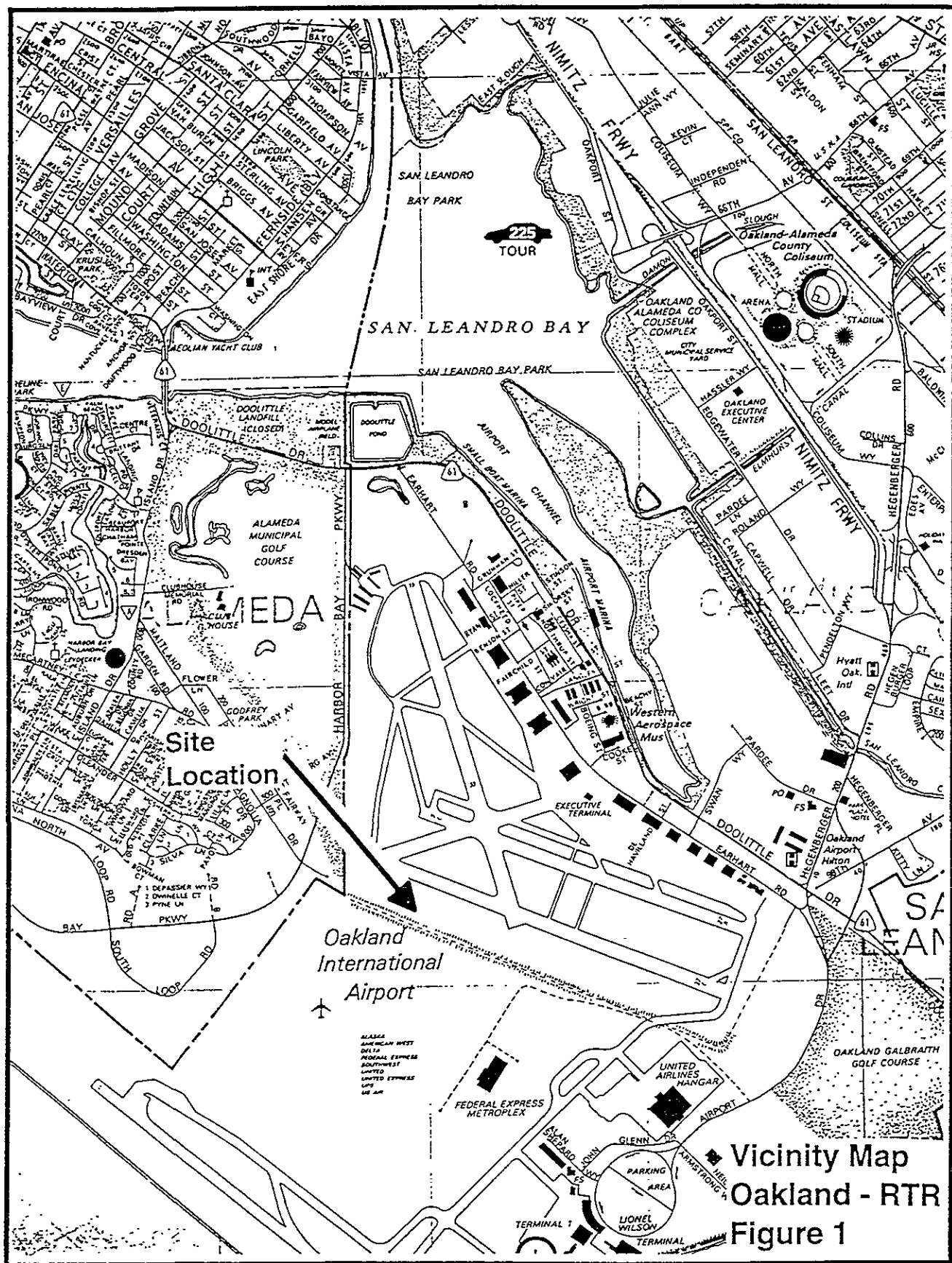
15.6 Close Out Report

The Close Out Report will include:

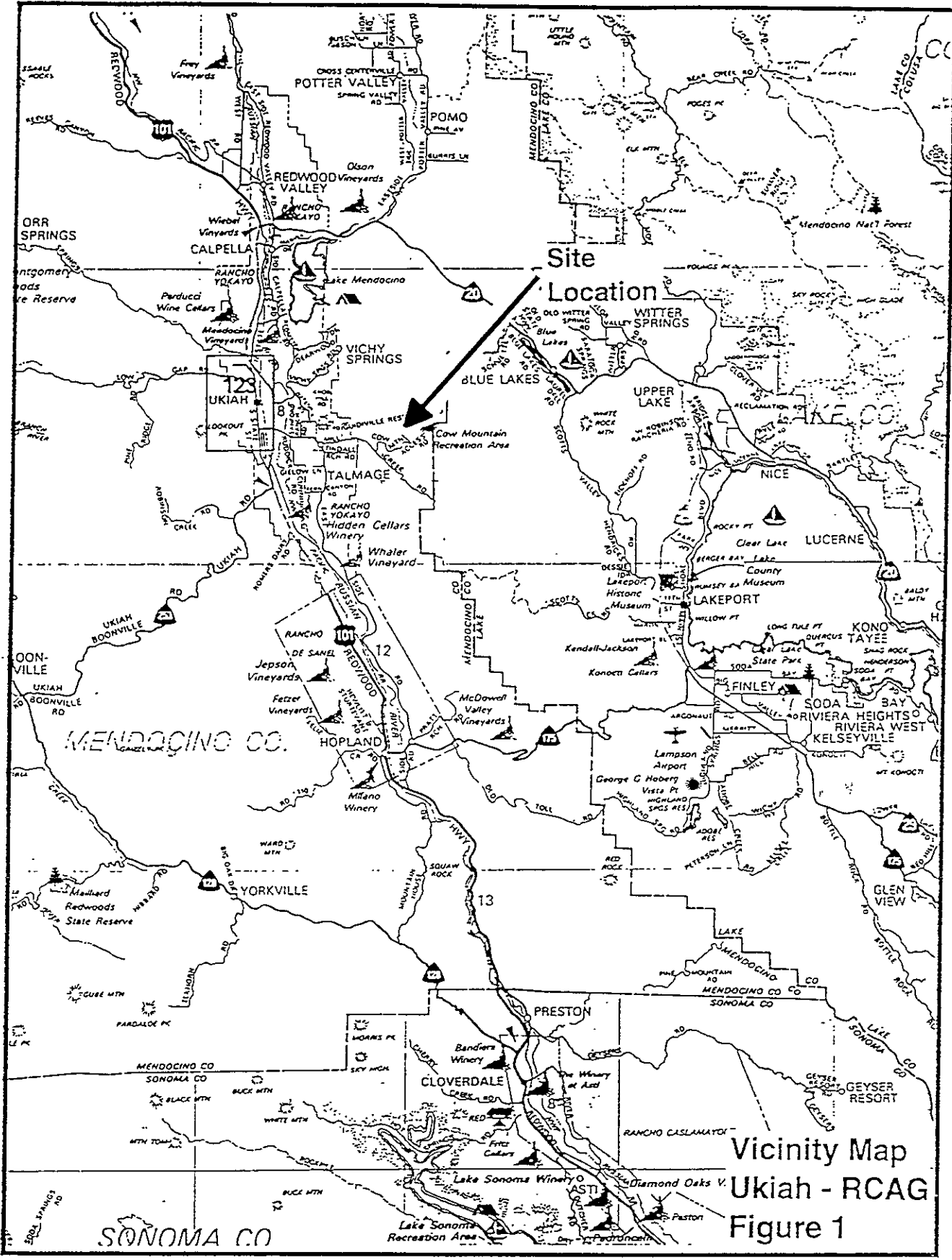
- A summary of the project;
- Summary of health and safety activities reported throughout the duration of the project;
- Records of all occupational illnesses and injuries associated with the project;
- Copies of the final physical and medical records and the physician's final written opinion;
- Copies of the air monitoring field log;
- Copies of all chain-of-custody records maintained for air samples;
- Copies of all air monitoring calibration records;
- Date and place; and
- Copies of all raw data collection sheets used during air monitoring activities.

FIGURE 1

SITE VICINITY MAPS



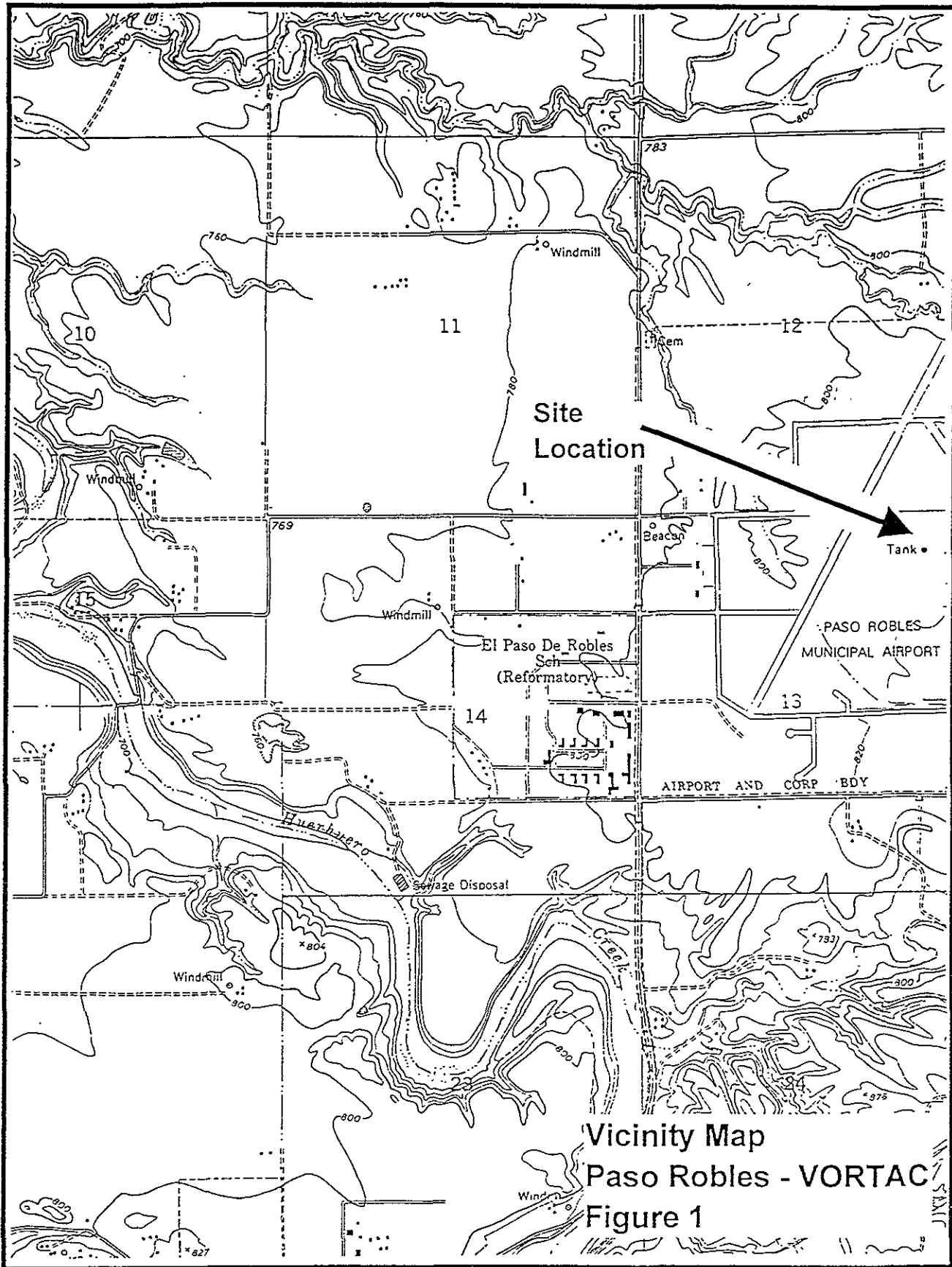
Vicinity Map
Oakland - RTR
Figure 1



Site
Location

Vicinity Map
Ukiah - RCAG
Figure 1

SONOMA CO



Vicinity Map
 Paso Robles - VORTAC
 Figure 1

FIGURE 2
ORGANIZATION CHART

ORGANIZATION CHART

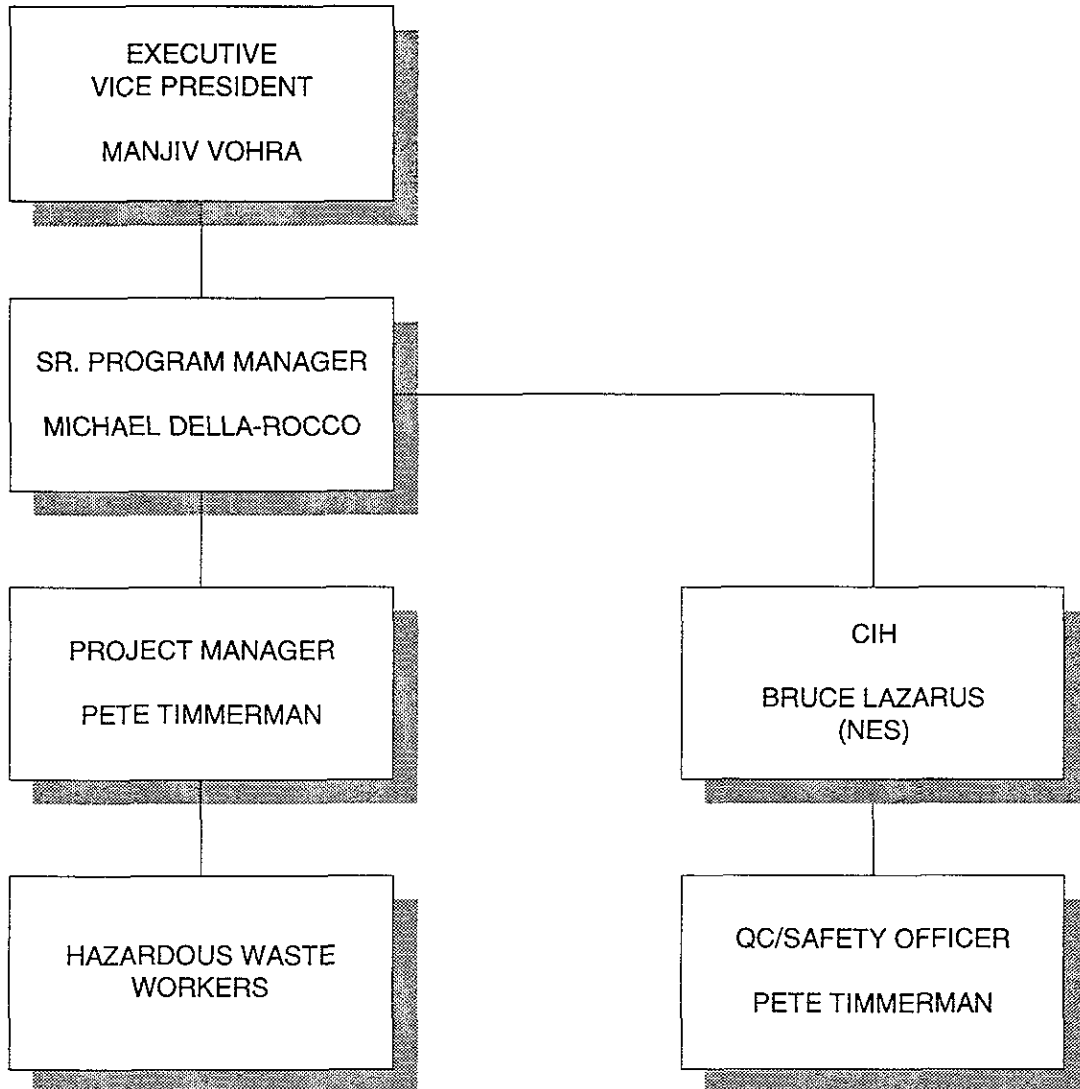


FIGURE 3

HOSPITAL ROUTE MAPS

Hospital route maps will be available at the beginning of the project .

**APPENDIX A
QUALIFICATIONS:
PROJECT MANAGER/QC/SITE SAFETY OFFICER**

NAME: **Peter D. Timmerman**

PROPOSED JOB TITLE: Project Manager/
QC/Safety Officer

EDUCATION/DATES

B.S., Fermentation Science, University of California, Davis, CA, 1986

CPR certified, 1995

8 hour HAZWOPER refresher, 1995

8 hour HAZWOPER supervisor, 1994

Qualified respirator use, 1994

Hazardous Substances Removal and Remedial Actions Certification, State of California, 1992

8 hour UST Installation Course, University of California Extension, 1990

UST Licensed Precision Tester, State of California, Water Resources Board, 1990

40 hour HAZWOPER Certified (29 CFR 1910.120), 1990

8 hour UST Removal Course, University of California Extension, 1989

General Engineering Contractor, State of California, Dept. of Consumer Affairs, 1989

SPECIAL QUALIFICATIONS

- Environmental remediation and construction site management
- Demolition operations
- Heavy equipment operations
- All aspects of underground and aboveground fuel storage systems including installation, removal, transportation and disposal of wastes

COMPLETE EXPERIENCE RECORD

1995 to Present, Program Manager, Environmental Chemical Corporation, Burlingame, CA

- Establish and maintain relations with customers
- Develop new business
- Recruit, hire, and manage staff
- Prepare cost proposals for contracts and delivery orders
- Establish strategies for maximum benefit from the projects
- Review submittals
- Prepare technical plans
- Track costs and schedules
- Develop new procedures
- Resolve problems
- Evaluate solicitations
- Negotiate delivery orders

1994-1995, Project Manager, Environmental Chemical Corporation, Burlingame, CA

- Directed and reviewed the results of site assessments
- Planned and directed operations
- Mobilized necessary personnel and equipment
- Monitored personnel safety
- Supervised on-site activities for remediation of hazardous waste sites
- Managed on-site construction operations such as heavy equipment usage, excavations, extractions, demolitions, tank shearing and cutting, installation of both underground and aboveground fuel storage systems, establishing drum staging and inventories, stockpile maintenance, and backfilling/site restoration and erosion control

1994-1995, Project Manager, NAVFAC-Westdiv, Travis AFB, CA

- Multi-million dollar contract required, at eleven sites, the removal of twenty existing USTs ranging in size from 2,000 gallons to 25,000 gallons, installation of six ASTs and 8 USTs and the subsequent removal of over 6,000 tons of petroleum contaminated soil.

Project Management Responsibilities included:

- Scheduling and planning
- Daily reporting
- Enforcement of health and safety procedures
- Project oversight of ECC's own crews as well as subcontractors
- Coordination of off-site transportation and deliveries of new materials
- Interaction with local regulators
- Materials purchasing
- Preparation of change orders and subcontracts
- Budget tracking

1989-1994, Owner, Timmerman Engineering Construction, Concord, CA

- Developed a successful environmental construction company
- Identified the initial target market and established a business base generating over \$1.2 million in sale
- Duties encompassed the hiring, training and supervision of employees in all aspects of UST site activities
- Performed all activities related to removal and replacement of UST and AST sites including business development, bid preparation, contract administration, securing permits, interfacing with regulators, demolition, remediation, restoration and installation of fueling systems
- Customers included Social Security Administration, Department of Energy, US Army Corp of Engineers, US Navy, US Air Force, State of California, Numerous City and County Governments, Local utilities and commercial and residential sites.

APPENDIX B
COMPLIANCE AGREEMENT

**ENVIRONMENTAL CHEMICAL CORPORATION
SITE-SPECIFIC SAFETY AND HEALTH PLAN
COMPLIANCE AGREEMENT**

I, _____ have received a copy of the Site Specific Safety and Health Plan (SSHP) for the _____ **Project**. I have received information and training on the contents of the plan including operations to be performed, site hazards, safety requirements, use of personal protective clothing and equipment, monitoring requirements, site control and decontamination procedures and actions to take in the event of a site emergency.

I have reviewed the plan, understand its requirements, and agree to comply with all of its provisions. I understand that failure to comply with these requirements could result in disciplinary action.

Employee Signature

Date

Environmental Chemical Corp.

Date

APPENDIX C

INSTRUMENT CALIBRATION CHECK LOG

APPENDIX D

EXPOSURE MONITORING LOG

APPENDIX E

TAILGATE SAFETY MEETING FORM

APPENDIX F

**SAFETY INSPECTION CHECKLIST
FOR CONSTRUCTION EQUIPMENT**

SAFETY CHECKLIST FOR MOBILE CONSTRUCTION EQUIPMENT

* GENERAL REQUIREMENTS *

Contract # and title:	
equipment name & number: owned/rented/leased?	
contractor: _____	subcontractor:
contract inspector:	date inspected:
gov't QA representative:	date reviewed:
notes:	

In accordance with SAD Regulation 385-1-1 and appropriate district safety regulations, this checklist shall be completed for all cranes, shovels, derricks, draglines, cranes equipped with pile drivers, pile drivers, pavers, scrapers, graders, pans, loaders, dump trucks, and similar heavy equipment. The appropriate supplemental checklists, identified below, must also be completed:

- 1666a-R: Cranes, Derricks & Material Hoists
- 1666b-R: Rigging
- 1666c-R: Earth Drilling Equipment
- 1666d-R: Conveyors
- 1666e-R: Motor Vehicles and Aircraft

NOTE: Any machinery or mechanized equipment found by the contractor or the designated authority to be unsafe shall be deadlined and its use prohibited until all unsafe conditions have been corrected (16.A.03).

Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, Oct 92, references are in parentheses - consult them for more specific guidance.

NOTE: The expected answer to all questions is yes or n/a. You must explain all 'no' answers

	yes	no	n/a
1. Are there records documenting the inspection and testing of all machinery/equipment on site? (16.A.01)			
2. Is the slow moving emblem used on all vehicles which by design move at 25 MPH or less on public roads? (08.A.04)			

SAFETY CHECKLIST: GENERAL REQUIREMENTS

	yes	no	n/a
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3. Are all vehicles which will be parked or moving slower than normal traffic on haul roads equipped with a yellow flashing light or flashers visible from all directions? (16.A.12)			
4. Are vehicles and equipment operating in aircraft movement areas identified by a flag on a staff attached to and flying above the vehicle? (32.A.10)			
5. Are all tanks, containers, and pumping equipment, portable or stationary, used for flammable or combustible liquids, tested by a recognized authority? (09.B.10)			
6. Do all vehicles used to transport or dispense flammable or combustible liquids carry a fire extinguisher of not less than 20 B-C units? (09.B.03)			
7. Are all non-current carrying metallic parts of electrical equipment or equipment enclosures provided with a ground? (11.C.01)			
8. Are electrical cables in good condition? (11.A.03)			
9. Is all equipment to be operated on public roads provided with: (16.A.07) a. headlights? b. brake lights? c. taillights? d. back-up lights? e. front and rear turn signals?			
10. Are seats and seat belts provided for the operator and each rider on equipment? (16.A.07 and 16.B.08)			
11. Is all equipment with windshields equipped with powered wipers and defogging or defrosting devices? (16.A.07)			
12. Is all mobile equipment equipped with adequate service brake systems and emergency brake systems? (16.A.07)			
13. Is there a record of manufacturer's approval of any modification of equipment which affects its capacity or safe operation? (16.A.18)			
14. If present, are steering or spinner knobs properly installed? (16.A.19)			
15. Are the following adequately guarded: (16.B.03) a. belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, and other reciprocating, rotating or moving parts? b. uninsulated hot surfaces, including exhaust pipes? c. accessible charging skips?			
16. Are areas on equipment where employees walk or climb equipped with platforms, footwalks, steps, handholds, guardrails, toeboards and non-slip surfaces? (16.B.03)			
17. Are fuel tanks located to prevent fuel spills onto the engine, exhaust, or electrical equipment? (16.B.04)			
18. Is all self propelled equipment equipped with automatic, audible, reverse signal alarms? (16.B.01)			
19. Are exhaust and discharges located so as not to obstruct the operator's view? (16.B.05)			

SAFETY CHECKLIST: GENERAL REQUIREMENTS

	yes	no	n/a
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20. Do all high rider industrial trucks have overhead guards which meet ANS/ASME B56.1? (16.B.09)			
21. Do all long-bed end dump trailers used in off-road hauling have roll over warning devices? (16.B.15)			
22. Are falling object protective structures installed on all bulldozers, tractors, or similar equipment used in clearing or like operations? (16.B.11)			
23. Is rollover protection provided for: (16.B.12) a. crawler and rubber-tire tractors? b. off-the-road self-propelled pneumatic-tire earth movers? c. motor graders? d. water tank trucks having tank heights less than the cab? e. other self-propelled construction equipment such as front-end loaders, backhoes, rollers, and compactors?			
24. Do all points requiring lubrication during operation have fittings that are guarded or located away from hazards? (16.B.13)			
25. Remarks (enter action taken)			
contractor inspector (signature):			
contractor QC/safety officer/project manager (signature):			

SAFETY CHECKLIST FOR CRANES, DERRICKS, & MATERIAL HOISTS

Contract # and title:	
equipment name & number: owned/rented/leased?	
contractor:	subcontractor:
contract inspector:	date inspected:
gov't QA representative:	date reviewed:
notes:	

PART 1 - GENERAL - CRANES

	yes	no	n/a
1. Does the equipment meet the general requirements checklist for mobile construction equipment?			
2. Are the following with the crane at all times: (16.C.01) a. the manufacturer's operating manual? b. the load rating chart? c. the crane's log book documenting use, maintenance, inspections and tests? d. pre-operational checklist used for inspection? (16.C.11) e. written reports of the rated load test? (16.C.12)			
3. Is the crane inspected, tested and maintained IAW the manufacturer's operation manual? (16.C.06)			
4. Is a hazard analysis for set-up and set-down available? (16.C.07)			
5. Are accessible areas within the swing radius of the rear of the crane barricaded? (16.C.08)			
6. Are hoisting ropes installed IAW the manufacturer's recommendations? (16.C.09)			
7. Are there at least 3 full wraps of cable on the drum at all times? (16.C.09)			
8. Is the drum end of the rope anchored to the drum IAW the manufacturer's recommendation? (16.C.09)			
9. Are critical lift plans available? (16.C.17)			
10. Are minimum clearance distances for high voltage lines posted at the operator's position? (11.E.04)			

SAFETY CHECKLIST - CRANES

	yes	no	n/a
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PART 2 - CRAWLER-, TRUCK-, AND WHEEL-MOUNTED CRANES

	yes	no	n/a
1. Is there a stable foundation for the crane? (16.D.03)			
2. If required, are outriggers available? (16.D.05)			
3. Are all lattice boom and hydraulic mobile cranes equipped with: (16.D.01) a. a boom angle indicator? b. a rated capacity indicator? c. a means for the operator to visually determine levelness? d. drum rotation indicators? e. a boom angle indicator? f. an anti-two block (upper limit) device?			
4. Are all mobile cranes with cable-supported booms equipped with: (16.D.02) a. boom stops? b. positive stops on all jibs? c. an automatic boom hoist disengaging device?			

PART 3 - PORTAL, TOWER, AND PILLAR CRANES

	yes	no	n/a
1. Are the following available: (16.E.02) a. written erection instructions? b. listing of the weight of each component? c. an activity hazard analysis for the erection?			
2. Is there a boom angle indicator within the operator's view? (16.E.04)			
3. Are luffing jib cranes equipped with: (16.E.05) a. shock absorbing jib stops? b. jib hoist limit switch? c. jib angle indicator visible to the operator?			
4. If used, do rail clamps have slack between the point of attachment to the rail and the end fastened to the crane? (16.E.06)			

PART 4 - FLOATING CRANES & DERRICKS

	yes	no	n/a
1. Are truck and crawler cranes attached to the barge or pontoon by a slack tie-down system? (16.F.06)			

SAFETY CHECKLIST - CRANES

	yes	no	n/a
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2. Have the following conditions been met for land cranes mounted on barges or pontoons: (16.F.04) <ul style="list-style-type: none"> a. Have load ratings been modified to reflect the increased loading from list, trim, wave, and wind action? b. Are all deck surfaces above the water? c. Is the entire bottom area of the barge or pontoon submerged? d. Are tie downs available? e. Are cranes blocked and secured? 			

PART 5 - OVERHEAD, GANTRY, MONORAIL, & UNDERHUNG CRANES

	yes	no	n/a
1. Is the rated load plainly marked on each side of the crane? (16.G.02 and 16.H.02)			

PART 6 - DERRICKS

	yes	no	n/a
1. Are load anchoring data available for each permanent fixed derrick? (16.I.01)			
2. Are booms, load hoists, and swinger mechanisms suitable for the work intended? (16.I.02)			

PART 7 - MATERIAL HOISTS

	yes	no	n/a
1. Are all hoist towers, masts, guys or braces, counterweights, drive machinery supports, sheave supports, platforms, supporting structures, and accessories designed by a licensed engineer? (16.K.02)			
2. Is a copy of the hoist operating manual available? (16.K.04)			
3. Do all floors and platforms have slip-resistant surfaces? (16.K.08)			
4. Are landings and runways adequately barricaded and is overhead protection provided where needed? (16.K.08)			
5. Are hoisting ropes installed IAW manufacturer's instructions? (16.K.10)			
6. Are operating rules posted at the hoist operator's station? (16.K.14)			
7. Are air powered hoists connected to an air supply of sufficient capacity and pressure to safely operate the hoist? (16.K.15)			
8. Are pneumatic hoses secured by some positive means to prevent accidental disconnection? (16.K.15)			

SAFETY CHECKLIST - CRANES

	yes	no	n/a
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9. Remarks (enter action taken)			
contractor inspector (signature)			
contractor QC/safety officer/project manager (signature)			

SAFETY CHECKLIST FOR RIGGING

Contract # and title:	
equipment name & number: owned/rented/leased?	
contractor:	subcontractor:
contract inspector:	date inspected:
gov't QA representative:	date reviewed:
notes:	

	yes	no	n/a
1. Has all defective rigging been removed? (15.A.01)			
2. Is rigging stored properly? (15.A.01)			
3. Are running lines within 6.5' of the ground or working level guarded? (15.A.03)			
4. Are all eye splices made in an approved manner with rope thimbles? (slings-eyes excepted) (15.A.04)			
5. Are positive latching devices used to secure loads? (15.A.05)			
6. Are all custom designed lifting accessories marked to indicate their safe working loads? (15.A.07)			
7. Are all custom designed lifting accessories proof-tested to 125% of their rated load? (15.A.07)			
8. Are the following conditions met for wire rope: (15.B.01 - 09) a. Are they free of rust or broken wires? b. Are defective ropes cut up or marked as unusable? c. Do rope clips attached with U-bolts have the U-bolts on the dead or short end of the rope? d. Are protruding ends of strands in splices on slings and bridles covered or blunted? e. Except for eye splices in the end of wires and for all endless wire rope slings, are all wire ropes used in hoisting, lowering, or pulling loads one continuous piece, free of knots or splices? f. Do all eye splices have at least 5 full tucks? g. If used, are wedge socket fastenings attached <u>without</u> attaching the dead end of the wire rope to the live rope? h. Are they free of eyes or splices formed by wire rope clips or knots?			
9. Are the following conditions met for chains? (15.C.01 - 04) a. Are all chains alloyed? b. Do all coupling links or other attachments have rated capacities at least equal to that of the chain? c. Are makeshift fasteners restricted from use?			

SAFETY CHECKLIST - RIGGING

	yes	no	n/a
<p>10. Are the following conditions met for fiber rope: (15.D.01 - 07)</p> <p>a. Are all ropes protected from freezing, excessive heat or corrosive materials?</p> <p>b. Are ropes protected from abrasion?</p> <p>c. Are splices made IAW manufacturer's recommendations?</p> <p>d. Do all eye splices in manila rope contain at least 3 full tucks and do all short splices contain at least 6 full tucks (3 on each side of the centerline of the splice)?</p> <p>e. Do all eye-splices in layed synthetic fiber rope contain at least 4 full tucks and do all short splices contain at least 8 full tucks (4 on each side of the centerline of the splice)?</p> <p>f. Do the tails of fiber rope splices extend at least 6 rope diameters (for rope under 1" diameter) or 6" (for ropes 1" diameter or greater) past the last full tuck?</p> <p>g. Are all eye splices large enough to provide an included angle of not greater than 60° at the splice when the eye is placed over the load or support?</p>			
<p>11. Are the following conditions met for all slings: (15.E.01 - 06)</p> <p>a. Is protection provided between the sling and sharp surfaces?</p> <p>b. Do all rope slings have a minimum length of 10 rope diameters between each end fitting or eye splice?</p> <p>c. Do all braided slings have a minimum clear length of 40 times the diameter of component ropes between each end fitting or eye splice?</p> <p>d. Do all welded alloy steel chain slings have affixed permanent identification stating size, grade, rated capacity and manufacturer?</p> <p>e. Is each synthetic web sling marked or coded to identify its manufacturer, rated capacities for each type hitch and the type material?</p>			
12. Are drums, sheaves, and pulleys smooth and free of surface defects? (15.F.01)			
13. Is the ratio of the diameter of the rigging and the drum, block sheave or pulley thread diameter such that the rigging will adjust without excessive wear, deformation, or damage? (15.F.02)			
14. Have all damaged drums, sheaves and pulleys been removed from service? (15.F.04)			
15. Are all connections, fittings, fastenings, and attachments of good quality, proper size and strength, and installed IAW manufacturer's recommendations? (15.F.05)			
16. Are all shackles and hooks sized properly? (15.F.06 & .07)			
17. Are hoisting hooks rated at 10 tons or greater provided with safe handling means? (15.F.07)			
18. Do all drums have sufficient rope capacity? (15.F.08)			
19. Do at least 3 full wraps of rope remain on the drum at all times? (15.F.08)			
20. Is the drum end of the rope anchored by a clamp securely attached to the drum in a manner approved by the manufacturer? (15.F.08)			
21. Do grooved drums have the correct groove pitch for the diameter of the rope and is the groove depth correct? (15.F.08)			
22. Do the flanges on grooved drums project beyond the last layer of rope at a distance of either 2" or twice the diameter of the rope, whichever is greater? (15.F.08)			
23. Do the flanges on ungrooved drums project beyond the last layer of rope a distance of either 2.5" or twice the diameter of the rope, whichever is greater? (15.F.08)			
24. Does the fleet angle lie between 1/4° and 1 1/4° for grooved drums and between 1° and 2° for smooth drums? (15.F.08)			

SAFETY CHECKLIST - RIGGING

	yes	no	n/a
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25. Are sheaves compatible with the size of rope used and as specified by the manufacturer? (15.F.09)			
26. Are sheaves properly aligned, lubricated, and in good condition (15.F.09)			
27. When rope is subject to riding or jumping off a sheave, are sheaves equipped with cable-keepers? (15.F.09)			
28. Are eye bolts loaded in the plane of the eye and at angles less than 45° to the horizontal? (15.F.10)			
29. Remarks (enter action taken)			
contractor inspector (signature):			
contractor QC/safety officer/project manager (signature):			

SAFETY CHECKLIST FOR EARTH DRILLING EQUIPMENT

Contract # and title	
equipment name & number: owned/rented/leased?	
contractor:	subcontractor:
contract inspector:	date inspected:
gov't QA representative:	date reviewed:
notes:	

	yes	no	n/a
1. Does the equipment meet the general requirements section of this checklist?			
2. Is a copy of the manual for all drilling equipment available? (16.M.01)			
3. Have all overhead electrical hazards and potential ground hazards been identified in a site layout plan and addressed in an activity hazard analysis? (16.M.02)			
4. Are MSDS for all drilling fluids available? (16.M.03)			
5. Does the drilling equipment have 2 easily accessible emergency shut down devices (one for the operator and one for the helper)? (16.M.05)			
6. Is the equipment posted with a warning of electrical hazards? (16.M.06)			
7. Is there a spotter or an electrical proximity warning device available to ensure safe distances from power lines are maintained? (16.M.06)			
8. Remarks (enter action taken)			
contractor inspector (signature)			
contractor QC/safety officer/project manager (signature)			

SAFETY CHECKLIST FOR CONVEYORS

Contract # and title:	
equipment name & number: owned/rented/leased?	
contractor:	subcontractor:
contract inspector:	date inspected:
gov't QA representative:	date reviewed:
notes:	

	yes	no	n/a
1. Does the equipment meet the general requirements section of this checklist?			
2. Is the conveyor system constructed and installed IAW manufacturer's recommendations? (17.A.01)			
3. Is the conveyor equipped with anti-runaway devices, brakes, backstops, or other safeguards? (17.A.03 & .14)			
4. Is the conveyor equipped with an audible warning signal to be sounded when starting the conveyor? (17.A.03)			
5. Is the conveyor equipped with emergency stopping devices along its full length? (17.A.03 & 06)			
6. Is there a device to prevent unsafe conditions in the event of a power failure? (17.A.03)			
7. Is the conveyor properly guarded? (17.A.04)			
8. Are crossovers or underpasses with safeguards provided wherever access is required? (17.A.05)			
9. Are gates and switches designed not to release materials in the event of a power failure? (17.A.07)			
10. Are counterweights securely fastened and provided with a means to restrain the falling weight in case of failure of the normal counterweight support? (17.A.08)			
11. Is manual reset or restart required at the location of an emergency stop? (17.A.10)			
12. Is the operation visible from control stations? (17.A.11)			
13. Are hoppers and chutes guarded or posted? (17.A.13)			
14. Is a platform or cab provided for operators on mobile conveyors? (17.A.14)			
15. Are controls clearly marked? (17.A.12)			
16. Is the raising and lowering mechanism for the boom of any portable conveyor provided with a safety device to hold it at any rated angle of inclination? (17.A.15)			

SAFETY CHECKLIST - CONVEYORS

	yes	no	n/a
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17. Are all screw conveyors completely enclosed? (17.A.16)			
18. Are the feed openings of all screw conveyors covered by grating or guarded by a railing and posted? (17.A.16)			
19. Remarks (enter action taken)			
contractor inspector (signature):			
contractor QC/safety officer/project manager (signature):			

SAFETY CHECKLIST FOR MOTOR VEHICLES AND AIRCRAFT

Contract # and title:	
equipment name & number: owned/rented/leased?	
contractor:	subcontractor:
contract inspector:	date inspected:
gov't QA representative:	date reviewed:
notes:	

	yes	no	n/a
1. Does the equipment meet the general requirements section of this checklist			
2. Are records of safety inspections of all vehicles available? (18.A.02)			
3. Are all vehicles to be operated between sunset and sunrise equipped with : (18.A.04) a. 2 headlights? b. taillights and brake lights? c. front and back turn signals? d. 3 emergency flares, reflective markers, or equivalent portable warning devices?			
4. Are vehicles equipped with service brakes and manually operated parking brakes? (18.A.05)			
5. Are service brakes on trailers and semitrailers controlled from the driver's seat of the prime mover? (18.A.05)			
6. Does the vehicle have: (18.A.06) a. a speedometer? b. a fuel gage? c. an audible warning device (horn)? d. a windshield & adequate windshield wiper? e. an operable defrosting and defogging device? f. an adequate rear view mirror? g. a cab, cab shield, and other protection to protect the driver from the elements and falling or shifting materials? h. non-slip surfaces on steps? i. a power-operated starting device?			
7. Is all glass safety glass and is all broken or cracked glass replaced? (18.A.07)			

SAFETY CHECKLIST - MOTOR VEHICLES AND AIRCRAFT

	yes	no	n/a
<p>8. Do trailers meet the following: (18.A.08)</p> <p>a. Are all towing devices adequate for the weight drawn?</p> <p>b. Are all towing devices properly mounted?</p> <p>c. Are locking devices or a double safety system provided on every 5th wheel mechanism and tow bar arrangement to prevent accidental separation?</p> <p>d. Are trailers coupled with safety chains or cables to the towing vehicle?</p> <p>e. Are trailers equipped with power brakes equipped with a break-away device which will lock-up the brakes in the event the trailer separates from the towing vehicle?</p>			
<p>9. Are all dump trucks: (18.A.10)</p> <p>a. equipped with a holding device to prevent accidental lowering of the body?</p> <p>b. equipped with a hoist lever secured to prevent accidental starting or tripping?</p> <p>c. equipped with means to determine (from the operator's position) if the dump box is lowered?</p> <p>d. equipped with trip handles for tailgates that allow the operator to be clear?</p>			
<p>10. Are all buses, trucks and combinations of vehicles with a carrying capacity of 1.5 tons or more, to be operated on public roads equipped with: (18.A.11)</p> <p>a. one red flag (at least 12" square)?</p> <p>b. 3 reflective markers?</p> <p>c. 2 wheel chocks for each vehicle?</p> <p>d. at least one 1A:10B:C fire extinguisher?</p> <p>e. at least 2 properly rated fire extinguishers (for vehicles carrying flammable cargo)?</p>			
<p>11. Is vehicle exhaust controlled so as not to present a hazard to personnel? (18.A.12)</p>			
<p>12. If needed are safety tire racks, cages or equivalent protection available for split rims or rims equipped with locking rings or similar devices? (18.A.13)</p>			
<p>13. Are all rubber tired motor vehicles equipped with fenders or with mud flaps if the vehicle is not designed for fenders? (18.A.14)</p>			
<p>14. Are the following conditions met for all 'All Terrain Vehicles' (ATVs):</p> <p>a. Are gloves and approved motorcycle helmets with full face shield available?</p> <p>b. Do all ATVs have a minimum of 4 wheels?</p> <p>c. Are all ATVs equipped with a warning signal device (horn)?</p>			
<p>15. Are the following conditions met for all aircraft: (18.E)</p> <p>a. Are all non-military aircraft registered, certified in the appropriate category, and maintained IAW the air-worthiness standard of the Federal Aviation Administration?</p> <p>b. Are all non-military aircraft equipped with a two-way radio?</p>			

SAFETY CHECKLIST - MOTOR VEHICLES AND AIRCRAFT

	yes	no	n/a
--	-----	----	-----

16. Remarks (enter actions taken)

contractor inspector (signature):

contractor QC/safety officer/project manager (signature)

APPENDIX G

SAFETY INSPECTION REPORT

SAFETY INSPECTION REPORT

Project No: _____ Date: _____ Time: _____

Job Location: _____

Work Objective: _____

Personnel On-Site: _____

Subcontractors: _____

Safety Checklist	Yes	No
------------------	-----	----

1. Is the SSP on-site and being followed? If not, explain: _____	___	___
---	-----	-----

2. Has a tailgate safety meeting been conducted? If not, explain: _____	___	___
--	-----	-----

3. Are workers aware of site hazards? If not, explain: _____	___	___
---	-----	-----

4. Is PPE being worn at all times? If not, explain: _____	___	___
--	-----	-----

5. Is ambient air monitoring being conducted? If not, explain: _____	___	___
---	-----	-----

6. Are work zones established? (exclusion, crz, support) If not, explain: _____	___	___
--	-----	-----

7. Is a first aid kit and fire extinguisher available and functional? If not, explain: _____	___	___
---	-----	-----

8. Are workers on-site properly trained? If not, explain: _____	___	___
--	-----	-----

9. Is PPE inventory fully stocked. If not, explain: _____	___	___
--	-----	-----

10. Are decontamination procedures being followed? _____
If not, explain: _____

11. Is an eye wash station available/operating _____
On site? If not, explain: _____

Comments _____

APPENDIX H

ACCIDENT INVESTIGATION FORM

ACCIDENT INVESTIGATION REPORT

Employee's Name: _____ Job No.: _____

Date of Accident: _____ Office: _____

Accident description (what happened): _____

Cause of accident (e.g. poor visibility, backing without a guide, etc.): _____

Corrective action taken or required to be taken: _____

Completed by: Health and Safety Officer: _____ Date: _____

Signature: _____

Reviewed by: Program Manager: _____ Date: _____

Signature: _____

Corporate H & S Officer: _____ Date: _____

Signature: _____

APPENDIX I

RESPIRATOR FIT TEST RECORD

ENVIRONMENTAL CHEMICAL CORPORATION
RESPIRATOR FIT TEST AND TRAINING ACKNOWLEDGMENT

EMPLOYEE _____ DATE _____

EMPLOYER _____

ADDRESS _____

RESPIRATOR(S) TESTED

MAKE & MODEL _____ SIZE _____

MAKE & MODEL _____ SIZE _____

TYPE OF TEST

QUANTITATIVE _____ QUALITATIVE _____

- _____ Isoamyl Acetate
- _____ Irritant Smoke
- _____ Saccharin Mist

TEST EXERCISE

- _____ Positive/Negative Pressure Test
- _____ Normal Breathing
- _____ Deep Breathing
- _____ Turn head side to side
- _____ Nod head up and down
- _____ Reading (Rainbow Passage)
- _____ Grimace
- _____ Bend over and touch toes
- _____ Jogging in place

THIS CERTIFIES THAT THE ABOVE NAME TEST SUBJECT HAS BEEN INFORMED OF THE HAZARD INVOLVED IN WORKING AT A HAZARDOUS WASTE SITE, AND HAS BEEN GIVEN INSTRUCTIONS IN THE USE AND CARE OF THE RESPIRATOR SELECTED.

INSTRUCTOR SIGNATURE _____ DATE _____

I certify that I understand the exercises which have been shown to me today are for properly fitting my respirator. I have been instructed about how to properly clean and maintain the respirator, and how to field test and inspect the respirator.

EMPLOYEE SIGNATURE _____ DATE _____

APPENDIX J

VISITORS LOG

ENVIRONMENTAL CHEMICAL CORPORATION VISITOR INFORMATION FORM

You are entering a hazardous waste site. Overexposure to the toxic substances here can cause damage to internal organs and, in cases of extreme exposure, death. Heavy equipment operation and other inherently dangerous work is underway. You will remain with your designated escort at all times and follow his instructions for your safety and the safety of others. You must also wear all protective clothing and equipment issued. Minimum protective equipment will be a hard hat. Clothing and equipment issued must be returned prior to leaving the site.

VISITOR'S CERTIFICATION

I acknowledge that I have been advised of the dangers present at the hazardous waste site facility. I agree to immediately follow all direction given by my escort on site. I also certify that I do relieve ECC, the U.S. Government, the state of California, and their officers, employees, and agents of all liability of all

APPENDIX K

MSDS



Date Issued: 05-12-94
Supersedes: 07-15-93

TEXACO
MATERIAL SAFETY DATA SHEET

NOTE: Read and understand Material Safety Data Sheet before handling or disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

Product Code and Name:

00558 LOW SULFUR CABE DIESEL 2

Chemical Name and/or Family or Description:
Diesel Fuel

Manufacturer's Name and Address:

TEXACO REFINING AND MARKETING, INC
P.O. Box 7812
Universal City, CA 91608

Telephone Numbers:

Transportation Emergency-Company : (914) 631-3400
CHEMTREC : (800) 424-9300
Health Emergency -Company : (914) 831-3400
General MSDS Assistance : (914) 838-7204
Technical Information -Fuels : (914) 838-7336
-Chemical : (512) 459-6543
-Lubricant/ : (800) 782-7852
Antifreezes
-Additives : (713) 235-6278
-Solvents : (800) 876-3738

2. COMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA	IARC	NTP	OTHER	NONE
-	-	-	X	-

Composition: (Sequence Number and Chemical Name)

Seq. Chemical Name	CAS Number	Range in %
01 * A complex mixture of hydrocarbons produced by crude oil distillation. Consists predominantly of hydrocarbons ranging from C-9 to C-20, and boiling in the range of 325-675F. The hydro-treated or hydrosulfurized product also contains some hydrocarbons produced by the distillation of the catalytic cracking. The latter materials contain bicyclic and tricyclic aromatic hydrocarbons.		100.00

PRODUCT IS HAZARDOUS ACCORDING TO OSHA (1910.1200).
* COMPONENT IS HAZARDOUS ACCORDING TO OSHA.

Exposure Limits referenced by Sequence Number in the Composition Section

Seq. Limit
None

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance:

Bright and clear liquid

Odor:

Petroleum odor

PAGE: 1

N.D. - NOT DETERMINED
< - LESS THAN

N.A. - NOT APPLICABLE
> - GREATER THAN

N.T. - NOT TESTED



PRODUCT CODE: 00559
NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-94
Supersedes: 07-15-93

3. HAZARD IDENTIFICATION (CONT)

CAUTION 1

WARNING STATEMENT

MAY CAUSE DIZZINESS AND DROWSINESS
MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT
ASPIRATION HAZARD IF SWALLOWED -
CAN ENTER LUNGS AND CAUSE DAMAGE
COMBUSTIBLE LIQUID AND VAPOR
USE ONLY AS A FUEL
CONTAINS MIDDLE DISTILLATES WHICH MAY CAUSE CANCER BASED ON
ANIMAL DATA

ATTENTION 1

Health: 2		Reactivity: 0		Health: 2		NFPA	
Flammability: 2		Special: -		Flammability: 2		Reactivity: 0	
						Special: -	

POTENTIAL HEALTH EFFECTS

Primary Route of Exposure: EYE SKIN INHALATION INGESTION

X X X -

EFFECTS OF OVEREXPOSURE

Acute:

Eyes:

May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.

Skin:

Brief contact may cause slight irritation. Prolonged contact, as with clothing wetted with material, may cause more severe irritation and discomfort, seen as local redness and swelling.

Other than the potential skin irritation effects noted above, acute (short term) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.

Prolonged, widespread, or repeated skin contact may result in the absorption of potentially harmful amounts of material.

Inhalation:

Vapors or mist may cause irritation of the nose and throat.

Inhalation may cause dizziness, drowsiness, euphoria, loss of coordination, disorientation, headache, nausea, and vomiting. In poorly ventilated areas or confined spaces, unconsciousness and asphyxiation may result. Prolonged or repeated overexposure may result in the absorption of potentially harmful amounts of material.

Ingestion:

If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur. Aspiration may occur during swallowing or vomiting resulting in lung damage.

Sensitization Properties:

Unknown.

Chronic:

NIOSH has recommended that whole diesel exhaust be regarded as a potential occupational carcinogen, based on findings of carcinogenic responses in laboratory animals exposed to whole diesel exhaust. The excess cancer risk for workers exposed to diesel exhaust has not been calculated; the probability of developing cancer should be decreased by minimizing exposure to the lowest feasible limits.

Repeated skin contact may cause a persistent irritation or dermatitis.

Medical Conditions Aggravated by Exposure:

Skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:

None



PRODUCT CODE: 00559
NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-84
Supersedes: 07-15-83

4. FIRST AID MEASURES

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get medical attention.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If person is conscious and can swallow, give two glasses of water (16 oz.) but do not induce vomiting. If vomiting occurs, give fluids again. Have medical personnel determine if evacuation of stomach or induction of vomiting is necessary. Do not give anything by mouth to an unconscious or convulsing person.

Inhalation:

If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Other Instructions:

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

Aspiration of this product during induced emesis may result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Center for additional treatment information.

5. FIRE-FIGHTING MEASURES

Ignition Temperature (degrees F):
500

Flash Point (degrees F):
125 (CC)

Flammable Limits (%):
Lower: .5
Upper: 4.1

Recommended Fire Extinguishing Agents And Special Procedures:
Use water spray, dry chemical, foam or carbon dioxide to extinguish flames.
Use water spray to cool fire-exposed containers.

Unusual or Explosive Hazards:
None

Special Protective Equipment for Firefighters:
Wear full protective clothing and positive pressure breathing apparatus. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:
Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

If more than 99,970 pounds of product is spilled, then report spill according to SARA 304 and CERCLA 102(A) requirements.

PRODUCT CODE: 00559
 NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-84
 Supersedes: 07-15-83

7. HANDLING AND STORAGE

Precautions to be Taken in Handling:

Eye wash and safety shower should be available nearby when this product is handled or used.

Storage:

Store away from heat and open flame. A placard is required only when material is contained in packaging or container that exceeds 110 gallons, or in tank car or tank truck. Transport, handle, and store in accordance with OSHA Regulation 1910.106 and applicable DOT Regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Local exhaust ventilation recommended if generating vapor, dust, or mist. If exhaust ventilation is not available or inadequate, use MSHA or NIOSH approved respirator as appropriate.

Exposure Limit for Total Product:

None established for product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Bright and clear liquid

Odor:

Petroleum odor

Boiling Point (degrees F):

650

Melting/Freezing point (degrees F):

Not applicable.

Specific Gravity (water=1):

.8521

pH of undiluted product:

Not applicable.

Vapor Pressure:

< 10 mmHg at 68.0

Viscosity:

3 cSt at 37.7 C

VOC Content:

Not determined.

Vapor Density (air=1):

Not determined.

Solubility in Water (%):

< .1

PAGE: 4

N.D. - NOT DETERMINED
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PRODUCT CODE: 00558
 NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-94
 Supersedes: 07-15-93

9. PHYSICAL AND CHEMICAL PROPERTIES (CONT)

Other: None

10. STABILITY AND REACTIVITY

This Material Reacts Violently With:
 (If Others is checked below, see comments for details)

Air	Water	Heat	Strong Oxidizers	Others	None of These
			X		

Comments: - - -
 None

Products Evolved When Subjected to Heat or Combustion:
 Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.

Hazardous Polymerizations: DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION (ANIMAL TOXICITY DATA)

Median Lethal Dose

Oral:

LD50 Similar product 9.00 ml/kg (rat) practically non-toxic

Inhalation:

Not determined.

Dermal:

LD50 Similar product > 5.00 ml/kg (rabbit) practically non-toxic

Irritation Index, Estimation of Irritation (Species)

Skin:

(Draize) Similar product 6.80 / 8.0 (rabbit) extremely irritating

Eyes:

(Draize) Believed to be > 15.00 - 25.00 / 110 (rabbit) slightly irritating

Sensitization:

Not determined.

Other:

Middle distillates have caused skin irritation and skin cancer in laboratory animals when repeatedly applied and left in place between applications. Studies to further evaluate the carcinogenic potential of middle distillates are currently underway. Kidney damage has also been observed in laboratory animals exposed to middle distillates.

12. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This product (as presently constituted) has the RCRA classification of benzene toxicity and ignitability. If discarded in its present form, it would have the hazardous waste numbers D018 and D001 respectively. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may change the classification to non-hazardous, or hazardous for reasons other than, or in addition to benzene toxicity and ignitability.

Remarks

None

13. TRANSPORT INFORMATION

Transportation

DOT:

Proper Shipping Name:

Fuel Oil

Hazard Class:

Combustible liquid (LAND TRANSPORT ONLY-49CFR 173.120(b)(2))

Identification Number: NA 1993

Packing Group: III

Label Required:

None

PAGE: 5

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PRODUCT CODE: 00559
 NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-94
 Supersedes: 07-15-93

13. TRANSPORT INFORMATION (CONT)

Marine pollutant:
 Not applicable

This product contains a DOT Hazardous Substance or substances, listed in Section 14 of the MSDS. DOT information must be accompanied with RQ notation, or, an otherwise 'Not Regulated' product will be classified as Environmentally Hazardous (solid/liquid) N.O.S., Class 9, IF the product's shipping container holds at least (lbs) 99,970.

IMDG:
 Proper Shipping Name:
 Not evaluated

ICAO:
 Proper Shipping Name:
 Not evaluated

TDG:
 Proper Shipping Name:
 Not evaluated

14. REGULATORY INFORMATION

Federal Regulations:

SARA Title III:

Section 302/304 Extremely Hazardous Substances

Seq. Chemical Name	CAS Number	Range in %
None		

Section 302/304 Extremely Hazardous Substances (CONT)

Seq. TPO	RQ
None	

Section 311 Hazardous Categorization:

Acute	Chronic	Fire	Pressure	Reactive	N/A
X	X	X	-	-	-

Section 313 Toxic Chemical

Chemical Name	CAS Number	Concentration
None		

CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance)

Seq. Chemical Name	CAS Number	Range in %
01+ Benzene, (1-methylethyl) -		
02+ Benzene	98-82-8	0.01-0.09
	71-43-2	0.01-0.09

CERCLA/DOT Hazardous Substances (Sequence Numbers and RQ's):

Seq. RQ	
01+	5000
02+	10

TSCA Inventory Status:

This product is listed on the Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

Other:
 None.

State Regulations:

California Proposition 65:

The following detectable components of this product are substances, or belong to classes of substances, known to the State of California to cause cancer and/or reproductive toxicity.

Chemical Name	CAS Number
Benzene	71-43-2

States Right-to-know Regulations:

Chemical Name	State Right-to-know
Benzene, (1-methylethyl) -	CT, FL, IL, LA, MA, NJ, PA, RI, MI
Benzene	CT, FL, IL, LA, MA, NJ, PA, RI, MI
1,2,4-trimethylbenzene	NJ, PA



PRODUCT CODE: 00559
NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-94
Supersedes: 07-15-93

14. REGULATORY INFORMATION (CONT)

State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan)
LA (Louisiana), MA (Massachusetts), NJ (New Jersey),
PA (Pennsylvania), RI (Rhode Island),

International Regulations:

Export Notification (TSCA-12b):
This product may be subject to export notification under TSCA
section 12(b)1 contains:

- Benzene, (1-methylethyl) -
- 1,2,4-trimethylbenzene
- 2-Ethyl, 1-hexanol

WHMIS Classification:

Not determined

Canada Inventory Status:

N.D.

EINECS Inventory Status:

N.D.

Australia Inventory Status:

N.D.

Japan Inventory Status:

N.D.

15. ENVIRONMENTAL INFORMATION

Aquatic Toxicity:

Not determined.

Mobility:

Not determined.

Persistence and Biodegradability:

Not determined.

Potential to Bioaccumulate:

Not evaluated.

Remarks:

Not evaluated.

16. OTHER INFORMATION

THIS PRODUCT IS INTENDED FOR USE AS A MOTOR FUEL ONLY.

This product is not intended for use in space heaters. Do not use in agricultural sprays.

Texaco recommends that all exposures to this product be minimized by strictly adhering to recommended occupational controls procedures to avoid any potential adverse health effects.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

N.D. - NOT DETERMINED
< - LESS THAN

N.A. - NOT APPLICABLE
> - GREATER THAN

N.T. - NOT TESTED

PRODUCT CODE: 00559
NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-84
Supersedes: 07-15-93



1B. OTHER INFORMATION (CONT)

Date: 05-12-94 New Revised, Supersedes: 07-15-93
Date printed: 05-28-94

Inquiries regarding MSDS should be directed to:
Texaco Inc.
Manager, Product Safety
P.O. Box 509
Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

PRODUCT CODE: 00559
 NAME: LOW SULFUR CARB DIESEL 2

Date Issued: 05-12-94
 Supersedes: 07-15-93



17. PRODUCT LABEL

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

00559 LOW SULFUR CARB DIESEL 2

WARNING STATEMENT

CAUTION ! MAY CAUSE DIZZINESS AND DROWSINESS
 MAY CAUSE IRRITATION TO EYES AND RESPIRATORY TRACT
 ASPIRATION HAZARD IF SWALLOWED -
 CAN ENTER LUNGS AND CAUSE DAMAGE
 COMBUSTIBLE LIQUID AND VAPOR
 USE ONLY AS A FUEL

ATTENTION ! CONTAINS MIDDLE DISTILLATES WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA

PRECAUTIONARY MEASURES

-Use only with adequate ventilation.
 -Keep away from heat and flame.
 -Avoid breathing vapor, mist, or gas.
 -Avoid contact with eyes, skin, and clothing.
 -Keep container closed.
 -Never siphon by mouth.
 -Wash thoroughly after handling.

FIRST AID

Eye Contact:
 Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get medical attention.

Skin Contact:
 Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:
 If person is conscious and can swallow, give two glasses of water (16 oz.) but do not induce vomiting. If vomiting occurs, give fluids again. Have medical personnel determine if evacuation of stomach or induction of vomiting is necessary. Do not give anything by mouth to an unconscious or convulsing person.

Inhalation:
 If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Note to Physician:
 Aspiration of this product during induced emesis may result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Center for additional treatment information.

FIRE

In case of fire, use water spray, dry chemical, foam or carbon dioxide. Water may cause frothing. Use water spray to cool fire-exposed containers.

If more than 99,970 pounds of product is spilled, then report spill according to SARA 304 and CERCLA 102(A) requirements.

Chemical Name	CAS Number	Range in %
* A complex mixture of hydrocarbons produced by crude oil distillation. Consists predominantly of hydrocarbons ranging from C-9 to C-20, and boiling in the range of 325-675F. The hydrotreated or hydrosulfurized product also contains some hydrocarbons produced by the distillation of the catalytic cracking. The latter materials contain bicyclic and tricyclic aromatic hydrocarbons.		100.00

PRODUCT IS HAZARDOUS ACCORDING TO OSHA (1910.1200).
 * COMPONENT IS HAZARDOUS ACCORDING TO OSHA.

PAGE: 9

N.D. - NOT DETERMINED	N.A. - NOT APPLICABLE	N.T. - NOT TESTED
< - LESS THAN	> - GREATER THAN	

APPENDIX L

MEDICAL SURVEILLANCE FORMS

MEDICAL CLEARANCE FORM

Employee Name: _____ Date of Exam: _____

I have reviewed the results of the medical history, physical exam, and lab tests prescribed by ECC.

Type of Exam: ___ Initial ___ Annual ___ Exit

Protocol: ___ Hazardous Worker ___ Administrator

and certify that: ___ The record is complete ___ The following were not performed

Based upon my examination as per the OSHA Respirator Standard (29 CFR 1910.134), I certify that this employee:

___ Has no medical contraindications to the use of supplied air or self contained breathing apparatus (SCBA) and air-purifying respirators.

___ Has a medical restriction in the use of respiratory equipment (described below).

As per OSHA Hazardous Waste Operations and Emergency Response Standard (29CFR 1910.120), I have examined the individual above for medical conditions that would place him/her at an increased risk of material impairment of health from work involving hazardous waste operations or emergency response. Based on my examination, I certify that this individual:

___ Has no medical contraindications to full participation in hazardous waste site work; when conducted under the conditions of adequate training and a health and safety plan.

___ Has medical limitations that restrict full participation in hazardous waste site work. (Describe work function limitations, i.e., lifting, temporary limitation, pending medical follow-up work, etc.).

___ Is medically restricted from any direct work with hazardous waste or hazardous waste sites. (Describe work limitations).

Hearing Classifications: ___ Hearing loss ___ Standard Threshold Shift - 10dB or more loss at 2000, 3000 and 4000Hz in either ear.

I have reviewed the examination results to the employees and have also informed the employee about medical conditions discovered during my examination that require further examination or treatment.

Signature of Physician: _____

APPENDIX M
HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

ACTIVITY: MOBILIZATION (Page 1 of 1)

ANALYZED BY/DATE

APPROVED BY/DATE

ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Mobilization of equipment/supplies	Heavy lifting	<ul style="list-style-type: none"> •Use proper lifting techniques, size up the load, use teamwork, never twist or turn when lifting. •Wear appropriate personal protective equipment. •Objects greater than 60 lbs require assistance or use of a mechanical lifting device.
	Slip, trip, fall	<ul style="list-style-type: none"> •Hazards will be identified and remedied by implementation of engineering controls. •Good housekeeping procedures. •Continual inspection of work areas.
	Faulty/damaged equipment	<ul style="list-style-type: none"> •Equipment will be inspected upon arrival and at the beginning of each shift. •Equipment to be inspected by competent mechanic and certified to be in safe operating condition.

ACTIVITY HAZARD ANALYSIS

ACTIVITY: REMEDIAL INVESTIGATION (Page 1 of 5)

ANALYZED BY/DATE

REVIEWED BY/DATE

ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Staging equipment	Slip, trip, and fall hazards	<ul style="list-style-type: none"> •Determine best access route before transporting equipment. •Good housekeeping, keep work area picked up and clean as feasible. •Continually inspect the work area for slip, trip, and fall hazards. •Look before you step, ensure safe and secure footing.
	Heavy lifting	<ul style="list-style-type: none"> •Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment.
	Falling objects	<ul style="list-style-type: none"> •Stay alert and clear of materials suspended overhead, wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> •Wear safety glasses/goggles, ensure that eye wash is in proper working condition.
	Pinch points	<ul style="list-style-type: none"> •Keep hands, fingers, and feet clear of moving/suspended materials and equipment. •Beware of contact points. •Stay alert at all times!
	Bees, spiders, and snakes	<ul style="list-style-type: none"> •Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Fire	<ul style="list-style-type: none"> •Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> •Work area will be barricaded/demarcated. •Equipment will be laid out in an area free of traffic flow.
	Hazard communication	<ul style="list-style-type: none"> •Label all containers as to contents and dispose of properly.
	Noise	<ul style="list-style-type: none"> •Sound levels above 85 dBA mandates hearing protection.

ACTIVITY HAZARD ANALYSIS

ACTIVITY: SITE PREPARATION (Page 1 of 1)

ANALYZED BY/DATE
REVIEWED BY/DATE

ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
<p>Set up trailers and hook up utilities</p> <ul style="list-style-type: none"> • Install utility poles • Move trailers onto site • Secure and tie down trailers • Place aggregate in support zone • Place frac tanks and fuel tanks 	<ul style="list-style-type: none"> • Safety hazards from use of heavy equipment • Electrical hazards during hook-up of wiring • Pouring aggregate in support zone • Contact to contaminated media while on site • Handling of heavy materials • Fire, explosion, or spills from fuel tanks 	<ul style="list-style-type: none"> • Ensure that all workers are clear of area when moving trailers. • Use only trained, qualified electrician to install wiring. • Keep non-essential personnel out of area while pouring and spreading rock. • Survey site for hazardous materials prior to work in this area. • Inspect tanks for spills, have fire extinguishers on site, train personnel in use and recognition of problems with fuel storage and transfer.
<p>Clearing and grubbing</p> <ul style="list-style-type: none"> • Driving heavy equipment onto site • Scraping and piling vegetation and debris 	<ul style="list-style-type: none"> • Driving over workers • Injury to workers while loading or moving materials • Exposure to contaminated soils • Creation and inhalation of dust • Discovery of UXO 	<ul style="list-style-type: none"> • Train all site workers to avoid moving equipment. • Load materials with equipment and not by hand. • Survey area prior to work on site. • Monitor the air during this operation for discovery of contaminated soils. • Use dust suppression techniques specified in DCP. • If UXO are discovered, immediately cease operations, evacuate site, and SSHO shall contact FPPB.
<p>Install fencing around work zones</p> <ul style="list-style-type: none"> • Drive equipment around perimeter of site • Drive fence posts into ground • Hang fabric onto posts and secure 	<ul style="list-style-type: none"> • tripping on materials on the site • Safety hazards from use of post driving equipment • Injury from handling of heavy fencing materials • Exposure to contaminated media on the site 	<ul style="list-style-type: none"> • Clear site of tripping and slipping hazards. • Use caution while operating post driving equipment. • Use equipment to haul heavy materials. • Be alert for the presence of contaminated areas. • Wear PPE specified in Section • Brief all workers on the hazards to be anticipated.

ACTIVITY HAZARD ANALYSIS

ACTIVITY: SITE WALK-THROUGH, SITE SURVEYS, AND SAMPLING GRID LAYOUT

(Page 1 of 1)

ANALYZED BY/DATE

REVIEWED BY/DATE

ACTIVITY	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Site walk-through, surveys, and sampling grid layout	Exposure to irritant and toxic plants	<ul style="list-style-type: none"> •Wear long sleeved clothing and slacks to minimize contact. •Appropriate first aid for personnels' known allergic reactions.
	Slip, trip, and fall	<ul style="list-style-type: none"> •Be alert at all times. •Wear steel toed boots. •Good housekeeping.
	Sprains and strains	<ul style="list-style-type: none"> •Safe lifting techniques.
	Wildlife	<ul style="list-style-type: none"> •Avoid wildlife when possible. In case of an animal bite, perform first aid. Perform a tick check after leaving a wooded or vegetated area.
	Terrain	<ul style="list-style-type: none"> •Inspection or determination of road conditions and structures shall be made in advance to assure that clearances and load of any machinery or equipment is safe.
	Equipment	<ul style="list-style-type: none"> •Ensure all maintenance is performed on vehicles before going to the field.
	Fallen power lines	<ul style="list-style-type: none"> •Ensure fallen power lines are not energized.
	Structures	<ul style="list-style-type: none"> •Avoid buildings which are not structurally sound.
	Heat stress	<ul style="list-style-type: none"> •Shift work hours. •Sufficient fluid intake. •Monitor employees.
	Cold stress	<ul style="list-style-type: none"> •Wear layered insulated clothing. •Remove wet clothing as soon as possible. •Take breaks in warm area.

HAZARD ANALYSIS

Activity: FST Removal/Excavation Procedure	Analyzed By: Dean Osaki Date: 6/07/96	Analyzed By: Dean Osaki Date: 6/07/96
PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Initial Excavation Work	Damaging Lines	<ul style="list-style-type: none"> - Prior to any excavating work, underground installations (e.g. gas, water, electric, telephone, and sewer lines) shall be located and protected from damage
Excavation Work-Shoring Safety	Flammable Environment	<ul style="list-style-type: none"> - No gasoline powered equipment will be allowed in the excavation zone
	Earth Disturbance	<ul style="list-style-type: none"> - When work is being conducted, inspections shall be done on a daily basis and after every rainstorm or earth disturbance - No personnel or equipment shall enter an excavation greater than 4.5 feet in depth without first ensuring a minimum slopeback of 1.5:1 on the sidewalls of the excavation
	High Chemical Concentration in the Soil	<ul style="list-style-type: none"> - Periodic monitoring at excavation site will be conducted with a LEL/O₂ meter - Upgrading level of protection, if necessary
Site Security	General Public	<ul style="list-style-type: none"> - Appropriate fencing/warning signs will be implemented on site
Inerting Tanks	Flammable vapors	<ul style="list-style-type: none"> - Tanks shall be inerted with either CO₂ or N₂ to remove flammable vapors - If compressed gas (CO₂ or N₂) is introduced into the tank, the following procedures shall be observed to prevent the buildup of static electricity: <ol style="list-style-type: none"> 1) UST and compressed gas supply shall be bonded together and grounded 2) Compressed gas shall be supplied only at low flows 3) Liquid or gas shall be released at the tank bottom so that static electricity is not generated by liquid falling to the bottom of the tank
Rigging of FST	Breaking or slipping of chain or sling	<ul style="list-style-type: none"> - All chains and/or nylon slings will be inspected prior to use - All damaged hooks and frayed slings shall be retired - Back up chains and slings will be required
Hoisting of FST	Breaking or slipping of chain or sling	<ul style="list-style-type: none"> - No employee will be permitted near the tank during lifting activities - Guidelines shall be used at all times - Hoisted tanks will be lowered and chocked during an emergency
Cleaning of FST (exterior)	Explosiveness	<ul style="list-style-type: none"> - All excess soil and material will be removed from the exterior walls of the tank - Only nonsparking tools will be allowed - Exclusion zone will be monitored
Sampling	Inhalation or dermal contact while sampling the material	<ul style="list-style-type: none"> - Wearing of appropriate PPE (ie., Level C, splash-resistant tyvek, chemical-resistant gloves and boots) - Wearing of appropriate respiratory protection (ie., Air Purifying Respirator (APR) with acid gas/HEPA combination filter)
Backfill	Heavy Equipment Operations	<ul style="list-style-type: none"> - Use spotters, hand signals/ Inspect Equipment
Field Compaction Testing	Proximity to Air Traffic	<ul style="list-style-type: none"> - Exclusion zone will be monitored during this period

EQUIPMENT TO BE USED	INSPECTION REQ'TS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> • LEL/O₂ meter • Nylon slings • Chains • Guideline • First aid kit • Fire extinguisher • Eyewash station • Compactor • Backhoe 	<p>Inspect excavation area and protective system (shoring) on a daily basis when work is being conducted and after every rainstorm or earth disturbance</p>	<ul style="list-style-type: none"> • 40 hr. HAZWOPER Training • Knowledge in excavation safety • OSHA Supervisory Training for project coordinator and Health and Safety officer

HAZARD ANALYSIS

Activity: Aboveground Storage Tank (AST) Installation	Analyzed By: Dean Osaki 6/07/96	Reviewed By: Dean Osaki 6/07/96
PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
Preparation of Subgrade/Earthwork for Structures and utilities.	Earth Disturbance	Shoring if applicable. All earthwork activities will be in accordance with OSHA - 29 CFR 1926.
Electrical Installation of Conduits and wiring.	Live wires	All electrical wiring of equipment must be considered live and dangerous. Electrical installations, temporary or permanent, shall be approved or listed by the Underwriters Laboratories, Inc.
Mechanical Installation: - Piping Installation - Placement of AST on Foundation	Scrapes, strains and cuts Rigging and hoisting of AST	Implementation of correct tools and equipment when conducting installation activities. All chains/slings will be inspected prior to use. Any damaged equipment will be retired. Guidelines shall be used at all times. No employee will be permitted near the tank during lifting procedures.
- Testing of System (purging lines)	Leaks - high pressure	Shut off system immediately. Spill Response kit will be available for emergency purposes (if applicable).
Backfill	Heavy Equipment Operations	Use Spotters, hand signals and inspect equipment on a regular basis.
EQUIPMENT TO BE USED	INSPECTION REQ'TS	TRAINING REQUIREMENTS
Slings/chains, guideline, first aid kit, eyewash station, fire extinguisher, heavy equipment, PPE	Inspection of all work will be conducted during AST activities.	OSHA Supervisory Training - For Project Management personnel.

APPENDIX N

HAZARD COMMUNICATION PROGRAM

INTRODUCTION

The purpose of the hazard communication program is to inform and train Environmental Chemical Corporation (ECC) employees about the potential hazards of the materials that they may be exposed to while performing their duties. As a company we intend to provide information about chemical hazards and their control through labeling, chemical inventory, Material Safety Data Sheets (MSDS), and training programs as detailed in this written hazard communication program. This program applies to all known hazardous substances in the workplace that employees may be exposed to under normal conditions of use or in a foreseeable emergency resulting from workplace operations. Emergencies include equipment failure, rupture of containers.

This program does not apply to:

1. Hazardous Waste (as defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976).
2. Tobacco and tobacco products.
3. Wood and wood products.
4. Foods, drugs, or cosmetics intended for personal consumption by employees while in the work place.
5. Consumer products packaged for distribution to and use by, the general public, provided that employee exposure to the product is not significantly greater than the consumer exposure occurring during the principle consumer use of the product.

This program is in compliance with Title 8 of the California Code of regulations, General Industry Safety Orders (GISO), Section 5194 titled Hazard Communication. This written program will be readily available at All ECC offices and project sites.

HAZARD DETERMINATION

Manufacturers, distributors and importers of chemicals are required to assess the physical and health hazards associated with each chemical they manufacture or import. This information must be conveyed to the employer by means of Material Safety Data Sheets (MSDS) and container labels. Hazardous substances are any material listed in any one or more of the following lists:

1. The Director's List of Hazardous Substances (section 339 of CCR Title 8)
2. 29 CFR Part 1910, Subpart Z, Toxic & Hazardous Substances (OSHA)
3. Threshold Limit Values (American Conference of Gov. Industrial Hygienists)
4. National Toxicology Program (NTP)
5. International Agency for research on Cancer (IARC)
6. Any scientific study providing evidence that a material has physical or health hazards.
7. Mixture containing 1% or more of a hazardous substance or
8. Mixtures containing 0.1% or more of a carcinogen.

Consumer products used under normal conditions are exempt from this regulation.

MATERIAL SAFETY DATA SHEETS (MSDS)

Manufacturers and importers of chemicals are required to develop an MSDS for each chemical based upon the information they obtained during the hazard determination process. A copy of the MSDS supplied by the manufacturer or distributor of the chemical, shall be kept at each ECC project site and offices. The Corporate Health & Safety Specialist, Chemical Hygiene Officer (Cincinnati Lab) or Project Safety Officers are responsible for obtaining an MSDS for all chemicals present at each site

or office. These individuals shall review incoming MSDS for new and important health and safety information. All supervisors and employees will be informed of the new MSDS within 30 days of the Health & Safety Officer receiving the new MSDS from the manufacturer.

All MSDS will be reviewed for completeness by the ECC Safety Officer. If an MSDS is missing, a new MSDS shall be requested in writing from the manufacturer within 7 days. In the state of California, Cal-OSHA will be notified in writing, if a complete MSDS has not been received from the manufacturer within 25 working days or requesting a copy of the MSDS.

The MSDS must contain the following information: chemical identity; chemical ingredients; physical and chemical characteristics; fire and explosion hazard data; reactivity hazard data; health hazard data; control and protective measures; precautions for safe handling and special hazards.

Upon receiving the MSDS from the first shipment of a chemical send the original to the Health & Safety Officer. The MSDS will be reviewed by the Health & Safety Officer and will be placed in the MSDS binder. ECC will not accept chemicals from the manufacturer or distributor unless a copy of the MSDS has already been obtained from a previous shipment or the shipment is accompanied by an MSDS. MSDS are available to all employees and contractors in the work area for review during each work shift.

LABELING

ECC will not accept or release hazardous chemicals for use unless the original container is clearly labeled with at least the following information: identity of the hazardous chemical(s); appropriate hazard warning statement; and name and address of the manufacturer. If the hazardous substance is transferred to a secondary container that container must be clearly labeled with at least the following information: identity of the hazardous chemical and the appropriate hazard warning statement.

All labels must be legible in English and prominently displayed on the container. Labels shall not be defaced or removed unless the container is immediately marked

with the required information. Unlabeled chemical containers should be immediately reported to the area supervisor or the Health and Safety Officer. The name of the material that appears on the manufacturer's label shall be the same as the name that appears in the area chemical inventory as well as the MSDS. The regulation does not require labeling of the following substances: pesticides; distilled spirits (beverage alcohols) for non-industrial use; and any consumer product.

EMPLOYEE TRAINING

Employees shall be trained on the hazardous substances in their work area: at the time of their initial assignment; whenever a new hazard is introduced into their area; and within 30 days of the employer receiving an updated MSDS containing new information indicating significant increased risk or changes in the use of personal protective equipment.

ECC employees will be trained in the following:

1. Overview of the Hazard Communication regulation including their rights.
2. Operations involving hazardous chemicals in their work area.
3. Location and availability of the MSDS and written hazard communication program.
4. How to read an MSDS and container labels.
5. Physical and health effects of hazardous chemicals and measures to be taken by the employee to protect themselves.
6. Emergency and first aid procedures to follow in case of exposure to hazardous chemicals.
7. Use of engineering controls, personal protective equipment and work practices to prevent or lessen exposure to hazardous chemicals.

The employees shall be informed of their rights as follows:

1. That they personally receive information on the hazardous substances which they may be exposed to.
2. That their physician shall receive information regarding hazardous substances that they may be exposed to.
3. That no disciplinary action including discharge or discrimination will be taken against the employee due to the employee's exercise of the rights given to them under this regulation and written program.

CHEMICAL INVENTORY

Each ECC office and project site containing hazardous chemicals must have a Chemical Inventory list. The inventory shall be placed with the MSDS binder in a conspicuous location. An MSDS shall be available for each chemical listed in the inventory. The Health & Safety Officer is responsible for updating the chemical inventory list whenever a new chemical is introduced into the area or a chemical is deleted from the area. Whenever a chemical is deleted from the area the MSDS will be placed in the archive for the area and retained for 30 years in compliance with Cal-OSHA GISO 3204.

APPENDIX O

BLOODBORNE PATHOGEN PROGRAM

ENVIRONMENTAL CHEMICAL
C O R P O R A T I O N

**BLOODBORNE PATHOGEN
EXPOSURE CONTROL PLAN**

To Meet The Requirements of:
California Code of Regulations Title 8: Section 5193
and Code of Federal Regulations
Title 29: Section 1910.1030

Updated: May 1995

ENVIRONMENTAL CHEMICAL CORPORATION
1240 Bayshore Highway
Burlingame, CA 94010
(415) 347-1555

ENVIRONMENTAL CHEMICAL CORPORATION
Bloodborne Pathogens Exposure Control Plan
February 1994

The purpose of this bloodborne Pathogens Exposure Control Plan is to bring Environmental Chemical Corporation (ECC) into compliance with federal and California regulations (29 CFR, 1910.1030 and 8 CCR, 5193 respectively) regarding bloodborne pathogens. Bloodborne pathogens include the hepatitis B virus and the HIV virus believed to cause Acquired Immune Deficiency Syndrome (AIDS).

Exposure Determination

ECC provides provides cardiopulmonary resuscitation (CPR) and first aid training to employees of the field operations and professional services department. Such training is provided in the expectation that ECC employees will render first aid care to fellow employees who are injured on the job. As a result, there is some risk of on the job exposure to bloodborne pathogens.

Employees in the following job classifications may have occupational exposure to bloodborne pathogens as a result of performing CPR/first aid services for fellow employees:

- * Hazardous Waste Technicians
- * Program Manager
- * Corporate Health and Safety Officer
- * Field Chemist
- * Project Managers
- * Quality Control Officer
- * Environmental Engineer
- * Chemical Engineer
- * Lab Manager
- * Chemical Hygiene Officer
- * Lab Technicians

Work Practices to Minimize Exposure

Performing CPR/First Aid

The skin is a natural protective shield against virus, bacteria, and other germs, including bloodborne pathogens, but if the skin is broken by a small cut or sore germs can enter the body.

When performing CPR, the following personal protective equipment shall be used to protect the rescuer from exposure:

- * A pair of latex or rubber gloves
- * A CPR mouth shield

When performing first aid where there is potential for contact with blood products, the following personal protective equipment shall be worn:

- * A pair of latex or rubber gloves
- * A tyvek suit if there is a splash or spatter hazard or possibility of blood coming into contact with clothing.

Immediately after performing CPR/first aid, wash all exposed skin surfaces with soap and water. Flush mucous membranes with water if any such areas have been exposed.

Cleaning Spills of Blood

When blood is spilled on surfaces, assume that it is infected. When differentiation between body fluid types is difficult, all body fluids shall be considered potentially infectious. If it is not possible to clean the blood immediately, block off the area and warn others not to touch it. Blood spills shall be cleaned as soon as feasible.

When cleaning blood, wear rubber gloves and use a disinfectant solution. If it is anticipated that clothing and shoes may come into contact with the blood, wear a tyvek suit and booties. Make the disinfecting solution by mixing one cup of liquid household chlorine bleach in nine cups of water. (Important! This solution must be made fresh just prior to its use and discarded each day.) Perform work in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of liquid. Employees shall wash their hands and arms with soap and water after removing gloves.

Disposal of Waste

Disposable non-sharp products contaminated with blood shall be double-bagged in plastic bags and labeled. The label shall include the date and time of the incident, a description of the bags contents, and the word "Biohazard" in bold print. As soon as feasible, these materials shall be placed in red biosafety bags and relabeled. Contact the Corporate Health and Safety Officer to determine current disposal requirements. Non-disposable products shall be disinfected.

Sharp materials shall be placed in puncture-resistant containers and labeled as described above. As soon as feasible, these materials shall be placed in red-orange biosafety sharp containers and relabeled.

Availability of Personal Protective Equipment

Kits containing CPR mouth shields, latex gloves, and an antimicrobial hand wipe are placed near or in all ECC office first-aid kits. CPR kits are also placed in each ECC vehicles and job trailers. Instructions for use of the CPR mouth shields are provided in the kits and are discussed during employee bloodborne pathogens training.

Incident Reporting

First aid incidents involving the presence of blood or other potentially infectious material shall be reported to the Corporate Health and Safety Officer before the end of the work shift during which the first aid incident occurred. The report must include the following information:

- * Names of all first aid providers who rendered assistance, regardless of whether personal protective equipment was used and must describe the first aid incident, including time and date.
- * The description must include a determination of whether or not, in addition to the presence blood or other potentially infectious material, an exposure incident, as defined below, occurred.

The Corporate Health and Safety Officer or Project Safety Officer shall prepare an accident report which includes the above information.

Hepatitis B Series Vaccination

If an employee renders assistance in any situation involving the presence of blood or other potentially infectious materials, regardless of whether or not a specific exposure incident occurs, the hepatitis B vaccination will be made available to the employee as soon as possible but in no event later than 24 hours after the incident. The vaccination is made available at no charge and is given at three intervals. The vaccination shall take place at a company approved clinic. Employees who decline the vaccination must sign the attached declination form.

Post-Exposure Evaluation and Follow-up

An exposure incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parental contact with blood or other potentially infectious materials that result from the performance of an employee's duties.

Following a report of an exposure incident, ECC shall make immediately available to the exposed employee a confidential medical evaluation and follow-up which includes the following elements:

- * Documentation of the route of exposure and the circumstances under which the exposure incident occurred.
- * Identification and documentation of the source individual, unless ECC can establish that identification is infeasible or prohibited by state or local law. The source individual's blood shall be tested as soon as feasible and after consent is obtained in order to determine hepatitis B virus (HBV) and HIV infectivity. If consent is not obtained, ECC shall establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, shall be tested and the results documented. Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
- * Collections and testing of blood for HBV and HIV status. The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained. If the employee consents to baseline blood collection, but does not give consent at the time for HIV serologic testing, the sample shall be preserved for at least 90 days. If, within 90 days of the exposure incident, the employee elects to have the baseline sample tested such testing shall be done as soon as feasible.
- * Post-exposure prophylaxis, when medically indicated, as recommended by the U.S. Public Health Service.
- * Counseling
- * Evaluation of reported illnesses
- * A copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.

Information and Testing

Bloodborne pathogens training shall be provided as part of new employees orientation training and on an annual basis. Training is provided at no cost to employees and during working hours. The information included in the training is in compliance with state of California and federal regulations (8 CCR, 5193 and 29 CFR, 1910.1030 respectively).

Recordkeeping

Medical Records

Corporate Health and Safety Officer shall establish and maintain an accurate record for each employee with occupational exposure. The record shall include:

- * The employee's name
- * Dates of any hepatitis B vaccinations administered and any medical records relative to the employee's ability to receive vaccination.
- * A copy of all results of examinations, medical testing and follow-up procedures.
- * A copy of the healthcare professional's written opinion as described above.
- * A copy of the information provided to the healthcare professional in the event that an employee has been involved in an exposure incident: (1) a copy of the Bloodborne Pathogens standards; (2) a description of the exposed employee's duties as they relate to the exposure incident; (3) documentation of the route(s) of exposure and circumstances under which exposure occurred; (4) Results of the source individual's blood testing, if available; and (5) medical records relevant to the appropriate treatment of the employee including vaccination status.

Training Records

The Corporate Health and Safety Officer shall maintain the following training records:

- * The dates of the training sessions
- * The contents or a summary of the training session
- * The names and qualifications of persons conducting the training
- * The names and job titles of all persons attending the training sessions.

Environmental Chemical Corporation
Hepatitis B Vaccine Declination

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease.

Name: _____

Signature: _____

Date: _____