

ENVIRONMENTAL
PROTECTION

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**Health and Safety Plan
for Site Investigation Activities at
The Sherwin-Williams Facility
1450 Sherwin Avenue
Emeryville, California**

**October 27, 1997
6215.00-001**

Prepared for
The Sherwin-Williams Facility
1450 Sherwin Avenue
Emeryville, California 94608

 **Levine-Fricke-Recon**
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

April 6, 1998

6215.00-012

Mr. Mark Johnson
Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612

Subject: Health and Safety Plan for Site Investigation Activities at The Sherwin-Williams Facility, 1450 Sherwin Avenue, Emeryville, California

Dear Mark:

As required by the Site Cleanup Requirements (SCR) Order No. 98-009, Task 1, enclosed is the Health and Safety Plan for the Sherwin-Williams site investigation activities. The Health and Safety Plan presents the health and safety requirements for establishing and maintaining a safe work environment based on the activities described in Levine·Fricke·Recon Inc.'s (LFR's) "Work Plan for Site Investigation, The Sherwin-Williams Facility, 1450 Sherwin Avenue, Emeryville, California," dated June 2, 1997 ("the work plan.")

All activities conducted at the Site will be performed in accordance with applicable Occupational Safety and Health Administration (OSHA) regulations, particularly those in Title 8 California Code of Regulations (CCR) 5192, 5214, and 5216, and other applicable federal, state, and local laws, regulations, and statutes.

The enclosed Health and Safety Plan, dated October 27, 1997, has been in place during several work activities that were conducted at the site beginning October 1997. The work activities previously conducted were proposed in the work plan and included piezometer installation and sampling at The Sherwin-Williams Facility, and monitoring well installation and sampling on Horton Street.

As the site investigation proceeds, additional work activities that are a modification to the work plan are expected to be conducted to further characterize the site. In addition, Interim Remedial Measures (IRMs) are anticipated to be proposed based on data and information received from the site investigations. If any additional work activities are conducted which are significantly different from those activities in the work plan, then an addendum to the enclosed Health and Safety Plan will be prepared that addresses necessary health and safety issues for the proposed scope of work.

If you have any questions or comments, please call Mike Marsden at (510) 652-4500, or Larry Mencin of Sherwin-Williams at (216) 566-1768.

Sincerely,



Mark D. Knox, P.E.
Principal Engineer

Enclosure

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1.0 GENERAL

This Health and Safety Plan (HSP) has been developed for use during the site investigation activities to be conducted in the vicinity of The Sherwin-Williams Company's ("Sherwin-Williams") facility in Emeryville, California ("the Site"). All activities conducted at the Site shall be in compliance with applicable Occupational Safety and Health Administration (OSHA) regulations, particularly those in Title 8 California Code of Regulations (CCR) 5192, 5214, and 5216, and other applicable federal, state, and local laws, regulations, and statutes.

This HSP addresses the potential hazards associated with planned field activities at the Site. It presents the minimum health and safety requirements for establishing and maintaining a safe working environment during the course of work described in Levine·Fricke·Recon Inc.'s (LFR's) "Work Plan for Site Investigation, The Sherwin-Williams Facility, 1450 Sherwin Avenue, Emeryville, California," dated June 2, 1997 ("the Work Plan"). In the event of conflicting requirements, the procedures or practices that provide the highest degree of personnel protection shall be implemented. If work plan specifications change or site conditions encountered during the course of the work are found to differ substantially from those anticipated, the Director of Health and Safety shall be informed immediately, and appropriate changes shall be made to this HSP.

It is the Project Manager's responsibility to ensure that health and safety procedures are enforced at the Site. All project personnel, including subcontractors, must receive a copy of this HSP and sign the form indicating acceptance before on-site project activities begin.

2.0 SITE DESCRIPTION AND BACKGROUND

The Sherwin-Williams Company owns and operates a coatings manufacturing plant located at the corner of Horton Street and Sherwin Avenue (1450 Sherwin Avenue) in Emeryville, California. The plant has been in operation since the early 1900s, manufacturing various types of coating products. It also produced lead-arsenate pesticides from the 1920s until the 1940s. In 1987, Sherwin-Williams changed its manufacturing at the Site from oil-based products to water-based products. The change in manufacturing operations included the closure and dismantling of an oil tank storage facility, solvent tanks storage facilities, alkyd resin manufacturing facility, lacquer manufacturing facility, and the pesticide manufacturing area.

The Work Plan has divided the Site into the following areas of concern to be evaluated:

- Horton Street
- Rifkin Property
- Southern

- Northwestern
- Inside Slurry Wall

A more detailed description of the Site is summarized in Section 2.0 of the Work Plan. For the purpose of this HSP, the general health and safety procedures required for scheduled work activities will be consistent throughout the Site.

3.0 PLANNED SITE ACTIVITIES

Scheduled work will consist of the following activities:

- identifying subsurface conduits by conducting a geophysical investigation
- drilling boreholes using hollow-stem auger techniques
- collecting soil samples
- developing groundwater monitoring wells
- collecting groundwater samples
- collecting samples via Geoprobe/Hydropunch
- collecting sediment samples from Temescal Creek
- collecting surface water samples

A detailed scope of work is presented in the Work Plan.

4.0 KEY LFR PERSONNEL AND RESPONSIBILITIES

Project Manager
Site Safety Officer
Director of Health and Safety

Mark Knox, P.E.
Kenton Gee
James Bucha, CIH

The responsibilities of LFR project personnel are outlined below.

4.1 Project Manager

The Project Manager is responsible for the health and safety of LFR personnel at the Site. The Project Manager is responsible for the following:

- ensuring that all project personnel have received a copy of, and have read and understand, this HSP
- keeping the Director of Health and Safety informed of project developments

- keeping on-site personnel, including subcontractors, informed of the expected hazards and appropriate protective measures at the Site
- ensuring that resources are available to provide a safe and healthy work environment for LFR personnel

4.2 Director of Health and Safety

The Director of Health and Safety is responsible for the review, interpretation, and modification of this HSP. Modifications to this HSP that may result in less-stringent precautions cannot be undertaken by the Project Manager or Site Safety Officer (SSO) without the approval of the Director of Health and Safety. In addition, he has the following responsibilities:

- advising the Project Manager and SSO on matters relating to health and safety on this project
- recommending appropriate safeguards and procedures
- modifying this HSP, when necessary
- approving changes in health and safety procedures employed at the Site

4.3 Site Safety Officer

The SSO is responsible for enforcing the requirements of this HSP once site work begins. The SSO has the authority to immediately correct all situations where noncompliance with this HSP is noted and to immediately stop work in cases where an immediate danger to site workers or the environment is perceived. Responsibilities of the SSO also include:

- obtaining and distributing personal protective equipment (PPE) and air monitoring equipment necessary for this project
- limiting access at the Site to authorized personnel
- communicating any unusual or unforeseen conditions at the Site to the Project Manager
- supervising and monitoring the safety performance of all site personnel to ensure that required health and safety procedures are followed, and correcting any deficiencies
- conducting daily tailgate safety meetings before each day's activities begin

5.0 HAZARDS OF KNOWN OR EXPECTED CHEMICALS OF CONCERN

Previous investigations have detected volatile organic compounds (VOCs) and metals (primarily lead and arsenic) in soils and groundwater at the Site. The highest concentrations of lead and arsenic were detected in the immediate area surrounding the source area (near the shop inside the slurry wall area) and the highest concentrations of VOCs were detected in the area that previously contained aboveground storage tanks. Soil or groundwater data are not currently available for the southern area. Known results of previous investigations for the remaining areas are summarized in the following table.

Known Compounds	Source (soil/water/drum, etc.)	Known Concentration Range (ppm, mg/kg)	
		Lowest	Highest
Arsenic	Soil	Non Detect	110,000
Lead	Soil	Non Detect	49,000
Toluene	Soil	Non Detect	3,600
Ethylbenzene	Soil	Non Detect	730
Xylene	Soil	Non Detect	3,000
TCE	Soil	Non Detect	0.4
PCE	Soil	Non Detect	19
Arsenic	Groundwater	Non Detect	200
Lead	Groundwater	Non Detect	0.004
Toluene	Groundwater	Non Detect	310
Ethylbenzene	Groundwater	Non Detect	10
Xylene	Groundwater	Non Detect	210
TCE	Groundwater	Non Detect	0.004
PCE	Groundwater	Non Detect	0.005
Benzene	Groundwater	Non Detect	0.05
Acetone	Groundwater	Non Detect	280

TCE = trichloroethene
PCE = tetrachloroethene

mg/kg = milligrams per kilogram
ppm = parts per million

Exposure pathways of concern for chemical compounds that may be present at the Site include inhalation of airborne contaminants and direct skin contact with contaminated materials. Dermal contact can be minimized by wearing protective equipment and following decontamination procedures listed in Section 9. Attention to personal hygiene is imperative whenever working with or near arsenic or lead. Workers will be instructed to decontaminate thoroughly on site and shower as soon as practical upon leaving the Site. Eating, drinking, smoking, chewing gum or tobacco products, or applying cosmetics is prohibited at the Site.

On-site worker exposure to airborne contaminants will be monitored during all intrusive site activities. A calibrated photoionization detector (PID) or flame ionization detector (FID) will be used to monitor any changes in exposure to VOCs. A miniature real-time aerosol monitor (mini-RAM) will be used to monitor exposure to total dusts. The SSO, or designated personnel, will perform routine monitoring during site operations to evaluate concentrations of VOCs and/or total dusts in employee breathing zones. If VOCs and/or total dusts are detected above predetermined action levels specified in Section 10, the procedures found in Section 7 of this HSP will be followed.

To minimize inhalation hazards, dust control measures will be implemented, especially in the inside slurry wall and southern areas, and action levels will be observed during intrusive site activities. Site-specific action levels by chemical type and work area are presented in Section 10. Chemical descriptions of chemicals of concern, including health effects and exposure limits, are presented in Appendix A.

Biological monitoring of LFR employees will be conducted before beginning field work and after field work is completed, to evaluate potential worker exposure to arsenic and lead during the project.

In accordance with the Hazard Communication standard, material safety data sheets (MSDSs) will be maintained on site for chemical products used by LFR personnel at the Site. In addition, all containers will be clearly labeled in English to indicate their contents and appropriate hazard warnings.

6.0 PHYSICAL HAZARDS

The following potential health and safety hazards may be encountered during scheduled activities at the Site:

- slips, trips, and falls
- heavy equipment
- heat stress
- noise
- electrical sources

- underground and overhead utilities
- container handling

6.1 General Safe Work Practices

All personnel, including subcontractor personnel, shall bring to the attention of the SSO any unsafe condition or practice associated with site activities.

- Workers shall thoroughly clean their hands, faces, and all other potentially contaminated areas before smoking, eating, or leaving the Site.
- Respiratory devices may not be worn with beards or long sideburns, or under other conditions that prevent a proper seal.
- All accidents and/or injuries shall be immediately reported to the SSO. If necessary, a first report will be initiated by the SSO.
- Periodic safety briefings will be held to discuss current site conditions, field tasks being performed, planned modifications, and work concerns.
- Site conditions may include uneven, unstable, or slippery work surfaces. Substantial care and personal observation are required on the part of each employee to prevent injuries from slips, trips, and falls.
- Workers shall maintain good housekeeping practices during field activities to maintain a safe working environment. The work site shall be kept free of debris, waste, and trash at all times.
- The "buddy system" shall be used whenever appropriate.

6.2 Heavy Equipment

Any equipment, including earth-moving equipment, drill rigs, or other heavy machinery, will be operated in strict compliance with the manufacturer's instructions, specifications, and limitations, as well as any applicable regulations. The operator is responsible for inspecting the equipment daily to ensure that it is functioning properly and safely.

Operation of heavy equipment at the Site for the activities outlined in Section 3 poses potential physical hazards. The following precautions should be observed whenever heavy equipment is in use:

- PPE, including steel-toed boots, safety glasses, and hard hats, must be worn.
- Personnel must be aware at all times of the location and operation of heavy equipment and take precautions to avoid getting in the way of its operation. Workers must never assume that the equipment operator sees them; eye contact and hand signals should be used to inform the operator of intent.

- Traffic safety vests are required for personnel working near mobile heavy equipment or near high traffic areas.
- Personnel should never walk directly in back of, or to the side of, heavy equipment without the operator's knowledge.
- Nonessential personnel shall be kept out of the work area.

6.3 Heat Stress

Adverse climate conditions, primarily heat, are important considerations in planning and conducting site operations. Heat-related illnesses range from heat fatigue to heat stroke, with heat stroke being the most serious condition. The effects of ambient temperature can cause physical discomfort, loss of efficiency, and personal injury, and can increase the probability of accidents. In particular, protective clothing that decreases the body's ventilation can be an important factor leading to heat-related illnesses. To reduce the possibility of heat-related illness, workers should drink plenty of fluids and establish a work schedule that will provide sufficient rest periods for cooling down. Workers should be aware of signs and symptoms of heat-related illnesses, as well as first aid for these conditions. These are summarized in the table below.

Condition	Signs	Symptoms	Response
Heat Rash or Prickly Heat	Red rash on skin.	Intense itching and inflammation.	Increase fluid intake and observe affected worker.
Heat Cramps	Heavy sweating, lack of muscle coordination.	Muscle spasms, and pain in hands, feet, or abdomen.	Increase fluid uptake and rest periods. Closely observe affected worker for more serious symptoms.
Heat Exhaustion	Heavy sweating; pale, cool, moist skin; lack of coordination; fainting.	Weakness, headache, dizziness, nausea.	Remove worker to a cool, shady area. Administer fluids and allow worker to rest until fully recovered. Increase rest periods and closely observe worker for additional signs of heat exhaustion. If symptoms of heat exhaustion recur, treat as above and release worker from the day's activities after he/she has fully recovered.
Heat Stroke	Red, hot, dry skin; disorientation; unconsciousness.	Lack of or reduced perspiration; nausea; dizziness and confusion; strong,	Immediately contact emergency medical services by dialing 911. Remove the victim to a cool, shady

Condition	Signs	Symptoms	Response
		rapid pulse.	location and observe for signs of shock. Attempt to comfort and cool the victim by administering small amounts of cool water (if conscious), loosening clothing, and placing cool compresses at locations where major arteries occur close to the body's surface (neck, underarms, and groin areas). Carefully follow instructions given by emergency medical services until help arrives.

6.4 Noise

Noise may result primarily from the operation of drill rigs and mechanical equipment. The use of heavy equipment may generate noise above the Cal/OSHA permissible exposure limit for noise of 90 dBA for an 8-hour time-weighted average. Workers shall wear appropriate hearing protection when operating or working near heavy equipment. If loud noise is present or normal conversation becomes difficult, hearing protection in the form of ear plugs, or equivalent, will be required.

6.5 Electric Shock

All electrical equipment to be used during field activities will be suitably grounded and insulated. Ground fault circuit interrupters (GFCI) will be used with all heavy electrical equipment to reduce the potential for electrical shock.

Lockout/Tagout procedures in accordance with 8 CCR 3314 will be conducted before activities begin on or near energized or mechanical equipment. Workers conducting the operation will positively isolate the piece of equipment, lock/tag the energy source, and verify effectiveness of the isolation. Only employees who perform the lockout/tagout procedure may remove their own tags/locks. Employees will be thoroughly trained before initiating this procedure.

6.6 Underground and Overhead Utilities

The locations of all underground pipes, electrical conductors, fuel lines, and water and sewer lines must be determined before soil intrusive work is performed. All lines must be de-energized, blocked out, or blinded where feasible. Equipment with articulated

upright booms or masts shall not be permitted to pass within 20 feet of an overhead utility line while the boom is in the upright position.

6.7 Container Handling and Moving Procedures

The movement and handling of containers and materials on the Site pose a risk to workers in the form of muscle strains and minor injuries. These injuries can be avoided by using safe handling practices, proper lifting techniques, and proper personal safety equipment such as steel-toed boots and sturdy work gloves. Where practical, mechanical devices will be used for the movement of containers and materials.

7.0 PERSONAL PROTECTIVE EQUIPMENT

All LFR personnel will be provided with appropriate personal safety equipment and protective clothing. The SSO is to inform each worker about necessary protection and must provide proper training in the use of the safety equipment. The required PPE to be worn is described below.

7.1 Conditions Requiring Level D Protection

Work activities will commence in Level D PPE. During work activities, sustained PID/FID and/or mini-RAM readings (continuous over a 5-minute duration) within action levels specified in Section 10 will require level D protection. Level D protection is described as follows:

- work shirt and long pants
- steel-toed boots or safety shoes
- safety glasses
- hard hat

Other personal protection readily available for use, if necessary, includes the following:

- outer nitrile gloves at a minimum for all material handling. Inner nitrile surgical gloves are recommended where practical.
- chemical-resistant clothing (e.g., Tyvek or polycoated Tyvek coveralls) when contact with chemically affected soils or groundwater is anticipated
- hearing protection

7.2 Conditions Requiring Level C Protection

During work activities, sustained PID/FID and/or mini-RAM readings above action levels specified in Section 10 will require level C protection. Level C protection requires the following in addition to level D protection:

- half-face air-purifying respirator (APR) equipped with combination organic vapor/high-efficiency particulate air (HEPA) filter cartridges
- chemical-resistant clothing (e.g., Tyvek, polycoated Tyvek, or Saranex coveralls) when contact with chemically affected soils or groundwater is anticipated
- outer nitrile gloves and inner nitrile surgical gloves
- safety shoes/boots with protective overboots or knee-high polyvinyl chloride (PVC) polyblend boots when direct contact with chemically affected soils is anticipated

During work activities, sustained PID/FID and/or mini-RAM readings above action levels specified in Section 10 will require level C protection with the addition of a full-face APR equipped with organic vapor/HEPA filter cartridges in lieu of half-face APR and safety glasses.

If sustained PID/FID and/or mini-RAM readings are above the action levels specified in Section 10, activities must cease, and personnel must evacuate the Exclusion Zone (see Section 9). If questions arise, they should be addressed to the SSO. The Project Manager and Director of Health and Safety will be contacted immediately.

8.0 SAFETY PROCEDURES

Procedures must be followed to ensure site control so that persons who may be unaware of site conditions are not exposed to hazards. The work area will be barricaded by tape, warning signs, or other appropriate means. Any equipment or machinery will be secured and stored safely.

Access inside the specified work area will be limited to authorized personnel. Only LFR employees and designated LFR subcontracted personnel, as well as designated employees of the client, will be admitted to the work site. Only those workers possessing evidence of the required current 40-hour OSHA health and safety training (or current 8-hour refresher) and physician's authorization to conduct hazardous waste activities will be permitted in the designated Exclusion Zone. The SSO will be responsible for ensuring that workers wear proper personal protective clothing. All personnel entering the Site will sign the signature page in this HSP, indicating they have read and accepted the health and safety practices outlined in this plan.

Real-time air monitoring devices will be used to analyze for airborne contaminant concentrations every 30 minutes in the workers' breathing zones while workers are in the Exclusion Zone. The equipment will be calibrated daily, and the results will be

recorded on LFR's Air Monitoring form or project log book. The results of air monitoring will be recorded on a LFR Air Monitoring Form or project log book and will be retained in the project files following completion of field activities. A copy of the Air Monitoring Form is located in Appendix B.

A daily morning briefing to cover safety procedures and contingency plans in the event of an emergency is to be included with a discussion of the day's activities. These daily meetings will be recorded on LFR Daily Tailgate Safety Meeting Forms. A debriefing to cover the activities is to be held upon completion of the work. A copy of the Daily Tailgate Safety Meeting Form is located in Appendix B.

Minimum emergency equipment maintained on site shall include a fully charged 20-pound ABC dry chemical fire extinguisher, an adequately stocked first aid kit, and an emergency eyewash station.

All personnel entering the Site will exit at the same location. There must be an alternate exit established for emergency situations. In all instances, worker safety will take precedence over decontamination procedures. If decontamination of personnel is necessary, exiting the Site will include the decontamination procedures described below.

9.0 WORK ZONES AND DECONTAMINATION PROCEDURES

In some instances it may be necessary to define three established work zones: an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. Work zones may be established based on anticipated contamination and projected work activities. The physical dimensions and applicability of work zones will be determined for each area based on the nature of job activity and hazards present. Within these zones, prescribed operations will occur using appropriate PPE. Movement between zones will be controlled at checkpoints.

Considerable judgment is needed to ensure a safe working area for each zone, balanced against practical work considerations. Physical and topographical barriers may constrain ideal locations. Field measurements combined with climatic conditions may, in part, determine the control zone distances. Even when work is performed in an area that does not require the use of chemical-resistant clothing, work zone procedures may still be necessary to limit the movement of personnel and retain adequate site control.

Despite protective procedures, personnel may come in contact with potentially hazardous compounds while performing work tasks. If so, decontamination needs to take place using an Alconox or TSP wash, followed by a rinse with deionized water. Standard decontamination procedures for levels C and D are as follows:

- equipment drop
- boot cover and glove wash and rinse

- boot cover and outer glove removal
- suit wash and rinse
- safety boot and suit removal
- inner glove wash and rinse
- respirator removal
- inner glove removal
- field wash of hands and face

Workers should employ only applicable steps in accordance with level of PPE worn and extent of contamination present. All disposable items will be disposed of in a dry container. Wash and rinse water generated from decontamination activities will be drummed and sampled to determine proper disposal procedures. Nondisposable items will be sanitized before reuse. The SSO is responsible for the maintenance, decontamination, and sanitizing of the PPE.

Used equipment will be decontaminated as follows:

- An Alconox or TSP and water solution will be used to wash the equipment.
- The equipment will be rinsed, first with tap water, then with deionized water.

Each person must follow these procedures to ensure that potential contamination is not transferred off site.

10.0 ACTION LEVELS

See Section 7 of this HSP for minimum required health and safety procedures. The following action levels have been established for Site investigation activities scheduled for the Site. Action levels may be adjusted by the Director of Health and Safety if laboratory analysis of samples collected warrant.

10.1 VOC Action Levels - Site Wide

Activity	Action Level	Level of Respiratory Protection
Intrusive site activities, all areas	0 to 15 ppm above background	Level D: No respiratory protection required.
	16 to 150 ppm	Level C: Half-face air-purifying respirator fitted with organic vapor/HEPA filter cartridges.
	151 to 250 ppm	Level C: Full-face air-purifying respirator fitted with organic vapor/HEPA filter cartridges.
	> 250 ppm	Cease operations and evacuate work area. Contact Director of Health and Safety and Project Manager immediately.

10.2 Dust Action Levels - Inside Slurry Wall and Southern Area

Activity	Action Level	Level of Respiratory Protection
Intrusive site activities, inside slurry wall and southern area	0 to 0.5 mg/m ³ above background	Level D: No respiratory protection required.
	0.6 to 5.0 mg/m ³	Level C: Half-face air-purifying respirator fitted with organic vapor/HEPA filter cartridges.
	5.1 to 10 mg/m ³	Level C: Full-face air-purifying respirator fitted with organic vapor/HEPA filter cartridges.
	> 10 mg/m ³	Cease operations and evacuate work area. Contact Director of Health and Safety and Project Manager immediately.

10.3 Dust Action Levels - Horton Street, Rifkin Property, and Northwestern Areas

Activity	Action Level	Level of Respiratory Protection
Intrusive site activities, Horton Street, Rifkin Property, and Northwestern areas	0 to 2.5 mg/m ³ above background	Level D: No respiratory protection required.
	2.6 to 10 mg/m ³	Level C: Half-face air-purifying respirator fitted with organic vapor/HEPA filter cartridges.
	> 10 mg/m ³	Cease operations and evacuate work area. Contact Director of Health and Safety and Project Manager immediately.

11.0 CONTINGENCY PROCEDURES

In the event of an emergency, site personnel will signal distress with three blasts of a horn (a vehicle horn will be sufficient). Communication signals, such as hand signals, must be established where communication equipment is not feasible or in areas of loud noise.

It is the SSO's duty to evaluate the seriousness of the situation and to notify appropriate authorities. Section 12 of this plan contains emergency telephone numbers as well as directions to the hospital. Nearby telephone access must be identified and available to communicate with local authorities. If a nearby telephone is not available, a cellular telephone will be maintained on site during work activities. Personnel should dial 911 in the event of an emergency.

11.1 Injury/Illness

If an exposure or injury occurs, work shall be temporarily halted until an assessment can be made of whether it is safe to continue work. The SSO, in consultation with the Director of Health and Safety, shall make the decision regarding the safety of continuing work. The SSO will conduct an investigation to determine the cause of the incident and steps to be taken to prevent recurrence.

In the event of an injury, the extent and nature of the victim's injuries will be assessed and first aid will be rendered as appropriate. If necessary, the individual may be transported to the nearby medical center. The mode of transportation and the eventual destination will be based on the nature and extent of the injury. A hospital route map is presented in Appendix C. In the event of a life-threatening emergency, the injured person shall be given immediate first aid and emergency medical services will be

contacted by dialing 911. The individual rendering first aid shall follow directions given by emergency medical personnel via telephone. A person certified in first aid/CPR techniques will be present on site at all times during field activities.

11.2 Fire

In the event of fire, personnel should contact the local fire department immediately by dialing 911. When representatives of the fire department arrive, the SSO, or designated representative, shall advise the commanding officer of the location, nature, and identification of hazardous materials on site. Only trained, experienced fire fighters should attempt to extinguish substantial fires at the Site. Site personnel should not attempt to fight fires, unless properly trained and equipped to do so.

11.3 Underground Utilities

In the event that an underground conduit is damaged during excavation or drilling, all mechanized equipment will immediately be shut off until the nature of the piping can be determined. Depending on the nature of the broken conduit (e.g., natural gas, water, or electricity), the appropriate local utility will be contacted.

11.4 Evacuation

The SSO shall designate evacuation routes and refuge areas to be used in the event of an emergency. Site personnel shall stay upwind from vapors or smoke and upgradient from spills. If workers are in an Exclusion or Contamination Reduction Zone at the start of an emergency, they should exit through the established decontamination areas whenever possible. If evacuation cannot be done through an established decontamination area, site personnel shall go to the nearest safe location and remove contaminated clothing there or, if possible, leave it near the Exclusion Zone. All personnel shall assemble at the predetermined refuge following evacuation and decontamination. The SSO, or designated representative, shall count and identify personnel to ensure that all have been evacuated safely.

11.5 Hazardous Material Spill

If a hazardous material spill occurs, site personnel should locate the source of the spill and determine the hazard to the health and safety of site workers and the public. Attempt to stop or reduce the flow if it can be done without risk to personnel. Isolate the spill area and do not allow entry by unauthorized personnel. De-energize all sources of ignition within 100 feet of the spill, including vehicle engines. Should any spill be of the nature or extent that it cannot be safely contained, or poses an imminent threat to human health or the environment, an emergency cleanup contractor will be called out as soon as possible. Spill containment measures listed below are examples of responses to spills.

- Upright or rotate containers to stop the flow of liquids. This step may be accomplished as soon as the spill or leak occurs, providing it is safe to do so.
- Sorbent pads, booms, or adjacent soil may be used to dike or berm materials, subject to flow, and to solidify liquids.

12.0 EMERGENCY CONTACTS

Ambulance:	911
Police:	911
Fire Department:	911
Hospital:	911
National Response Center:	(800) 424-8802
Poison Control Center:	(800) 682-9211
TOXLINE:	(301) 496-1131
CHEMTREC:	(800) 424-9300
LFR Director of Health and Safety (Roseville, California):	(916) 786-0320
LFR (Emeryville, California)	(510) 652-4500
Alta Bates Hospital: 2450 Ashby Avenue Berkeley, California	(510) 655-4000

A hospital route map is presented in Appendix C.

13.0 LFR APPROVALS

This Health and Safety Plan has been prepared for the following project:

The Sherwin-Williams Facility
1450 Sherwin Avenue
Emeryville, California 94608

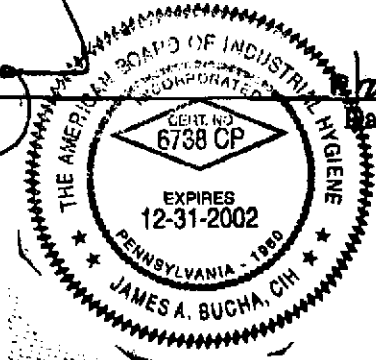
LFR Project No. 6215.00-001

This Health and Safety Plan has been approved by the following LFR personnel:

Kenton Gee 10/30/97
Kenton Gee Date
Site Safety Officer

Mark D. Knox 10/30/97
Mark Knox, P.E. Date
Project Manager

James Bucha, CIH 10/27/97
James Bucha, CIH Date
Director of Health and Safety



APPENDIX A

CHEMICAL DESCRIPTIONS

CHEMICAL DESCRIPTIONS

The following chemical descriptions are presented for chemicals that may be present at the Site. Each chemical description includes physical and odor recognition characteristics, health effects associated with exposure, and exposure limits expressed as an 8-hour time weighted average (TWA). Provided are federal OSHA ("OSHA") permissible exposure limits (PELs; located in 29 CFR 1910.1000); California OSHA ("Cal/OSHA") PELs (located in 8 CCR 5155); and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs).

ACETONE

Acetone is a colorless liquid with a fragrant, mint-like odor. Short-term exposure to acetone can cause eye irritation, dryness of the mouth and throat, nausea, vomiting, headaches, drowsiness, dizziness, light-headedness, muscle weakness, lack of coordination, loss of energy, fainting, and unconsciousness.

- The OSHA PEL is listed as 1,000 parts per million (ppm).
- The Cal/OSHA PEL is listed as 750 ppm.
- The TLV is listed as 750 ppm.

ARSENIC

Metallic arsenic is most commonly a gray, brittle, crystalline solid. It can also be in a black or yellow amorphous form. Arsenic is also commonly found in its volatile white trioxide form. Arsenic is used in several insecticides, herbicides, defoliants, desiccants, and rodenticides and appears in a variety of forms. It is also used in tanning, pigment production, glass manufacturing, wood preservation, and anti-fouling coatings. Arsenic is classified as a known carcinogen.

Short-term exposure to arsenic can cause marked irritation of the stomach and intestines with nausea, vomiting, and diarrhea. In severe cases the vomiting and stools are bloody and the exposed individual goes into collapse and shock with weak, rapid pulse, cold sweats, coma, and death. Inorganic arsenicals are more toxic than organic arsenicals, and the trivalent form is more toxic than the pentavalent form. Acute arsenic poisoning usually results from ingestion exposures. Blood cell changes, blood vessel damage, and impaired nerve function can also result from chronic arsenic ingestion. Other effects include skin changes, irritation of the throat, increased risk of cancer of the liver, bladder, kidney, and lung.

- The OSHA PEL is listed as 0.01 milligrams per cubic meter (mg/m^3) for inorganic forms of arsenic and $0.5 \text{ mg}/\text{m}^3$ for organic forms.
- The Cal/OSHA PEL is listed as $0.01 \text{ mg}/\text{m}^3$ for inorganic forms of arsenic and $0.2 \text{ mg}/\text{m}^3$ for organic forms.
- The TLV is listed as $0.01 \text{ mg}/\text{m}^3$ for inorganic forms of arsenic.

BENZENE

Benzene is a clear, volatile liquid. It is colorless, highly flammable, and toxic, with a characteristic odor. It is a severe eye and moderate skin irritant. Human effects by inhalation and ingestion include euphoria, changes in sleep and motor activity, nausea and vomiting, other blood effects, dermatitis, and fever. In industry, inhalation is the primary route of chronic benzene poisoning. If the liquid is aspirated into the lung it may cause pulmonary edema. Poisoning by skin contact has also been reported. Exposure to high concentrations (3,000 ppm) may result in acute poisoning, which is characterized by the narcotic action of benzene on the central nervous system. Chronic poisoning occurs most commonly through inhalation and dermal absorption. Benzene is a known human carcinogen that can cause leukemia.

- The OSHA PEL is listed as 1 ppm.
- The Cal/OSHA PEL is listed as 1 ppm.
- The TLV is listed as 0.3 ppm.

Note: Published exposure limits designate a skin notation indicating that dermal contact can contribute to the overall exposure.

ETHYLBENZENE

Ethylbenzene is a clear, colorless liquid. It is mildly toxic by inhalation and skin contact. Inhalation can cause eye, sleep, and pulmonary changes. It is an eye and skin irritant at levels as low as 0.1% (1,000 ppm) of the vapor in air. At higher concentrations, it is extremely irritating at first, then can cause dizziness, irritation of the nose and throat, and a sense of constriction in the chest. Exposure to high concentrations of ethylbenzene vapor may result in irritation of the skin and mucous membranes, dizziness, irritation of the nose and throat, and a sense of constriction of the chest.

- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 100 ppm.
- The TLV is listed as 100 ppm.

LEAD

Lead (inorganic) is a bluish-white, silver or gray odorless solid. Short-term exposure to lead can cause decreased appetite, insomnia, headache, muscle and joint pain, colic, and constipation. Considerable data exists on the effects of lead exposure in humans. It is a poison by ingestion and a suspected human carcinogen of the lungs and kidneys. There are data to suggest that lead is a mutagen and can cause reproductive effects. Human systemic effects by ingestion and inhalation (the two routes of absorption) include loss of appetite, anemia, malaise, insomnia, headache, irritability, muscle and joint pains, tremors, flaccid paralysis without anesthesia, hallucinations and distorted perceptions, muscle weakness, gastritis, and liver changes. Recent experimental evidence suggests that blood levels of lead below 10 $\mu\text{g}/\text{dl}$ (micrograms per deciliter) can have the effect of diminishing the IQ scores of children.

- The OSHA PEL is listed as 0.05 mg/m^3 .
- The Cal/OSHA PEL is listed as 0.05 mg/m^3 .
- The TLV is listed as 0.05 mg/m^3 .

PETROLEUM HYDROCARBONS

Petroleum distillates (naphtha) are mildly toxic by inhalation. They can cause unconsciousness, dyspnea, and a bluish tint to the skin. Recovery follows after removal from exposure. In mild form, intoxication resembles drunkenness. On a chronic basis, no true poisoning occurs; however, effects may include headache, lack of appetite, dizziness, sleeplessness, indigestion, and nausea. It is combustible when exposed to heat or flame and can react with oxidizing materials.

- The OSHA PEL is listed as 500 ppm (as petroleum distillates).
- The Cal/OSHA PEL is listed as 300 ppm (as VM&P naphtha).
- The TLV is listed as 300 ppm (as VM&P naphtha).

TETRACHLOROETHYLENE (PCE)

Tetrachloroethylene (also known as perchloroethylene) is a colorless liquid with an ether-like odor. Short-term exposure to PCE may cause headaches, nausea, drowsiness, dizziness, incoordination, unconsciousness, irritation of the eyes, nose, and throat, and flushing of the face and neck. In addition, it may cause liver damage with such findings as yellow jaundice and dark urine. Liver damage may become evident several weeks after exposure. Skin contact may create a dry, scaly, itchy dermatitis. PCE is

Classified by the U.S. Environmental Protection Agency as a Group B2 probable human carcinogen.

- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 25 ppm.
- The TLV is listed as 25 ppm.

TOLUENE

Toluene is a colorless liquid with a benzol-like odor. Human systemic effects of exposure to toluene include central nervous system changes, hallucinations or distorted perceptions, motor activity changes, psychophysiological changes, and bone marrow changes. It is a severe eye irritant and an experimental teratogen. Inhalation of high vapor concentrations may cause impairment of coordination and reaction time, headaches, nausea, eye irritation, loss of appetite, a bad taste in the mouth, and lassitude.

- The OSHA PEL is listed as 200 ppm.
- The Cal/OSHA PEL is listed as 50 ppm.
- The TLV is listed as 50 ppm.

Note: Published exposure limits designate a skin notation indicating that dermal contact can contribute to the overall exposure.

TRICHLORETHYLENE (TCE)

TCE is a clear, colorless liquid with a characteristic chloroform odor. It is a mildly toxic VOC that is also an experimental carcinogen, tumorigen, and teratogen. It can cause eye effects, hallucinations and distorted perceptions when inhaled. TCE is an eye and severe skin irritant. Exposure to vapors may cause eye, nose and throat irritation. Prolonged inhalation of moderate concentrations of vapor may cause headaches and drowsiness. Inhalation of high concentrations may cause narcosis and anesthesia. Severe, acute exposure can result in cardiac failure. Significant chronic exposure may damage the liver and other organs. Prolonged repeated skin contact with the liquid may cause irritation and dermatitis.

- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 25 ppm.
- The TLV is listed as 50 ppm.

XYLENE

Xylene is a clear, colorless liquid. It exhibits the general chlorinated hydrocarbon central nervous system effects, olfactory (smell) changes, eye irritation and pulmonary changes. It is a severe skin irritant. There are three isomers: ortho, meta, and para. Exposure to high concentrations of xylene vapor may result in eye and skin irritation. Eye irritation may occur at concentrations of about 200 ppm.

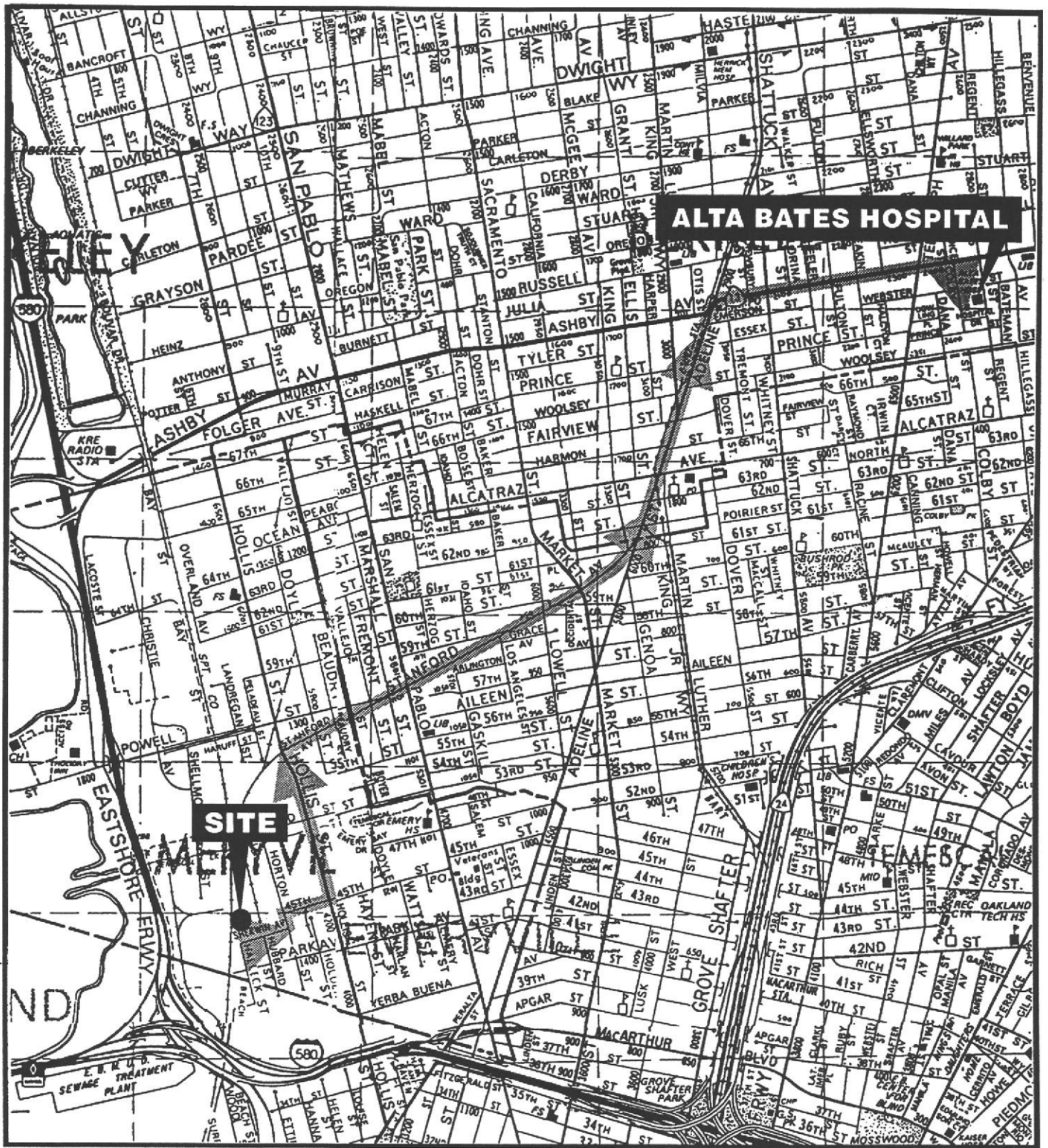
- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 100 ppm.
- The TLV is listed as 100 ppm.

APPENDIX B

LEVINE-FRICKE-RECON FORMS

APPENDIX C

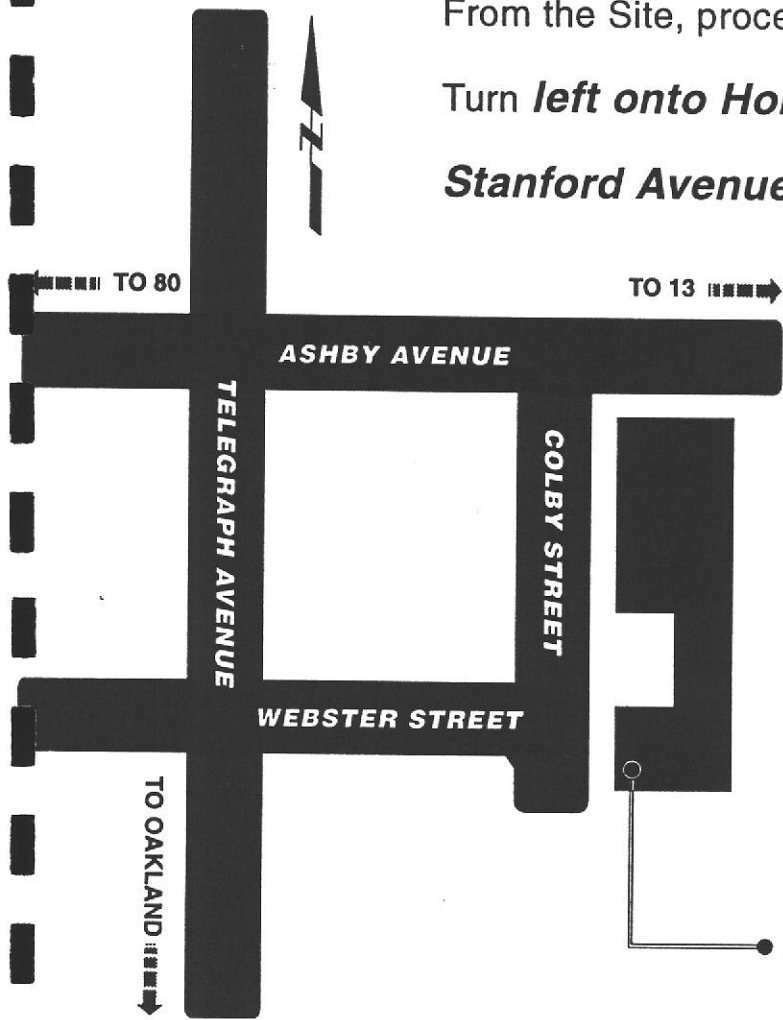
HOSPITAL ROUTE MAP



SITE LOCATION AND HOSPITAL ROUTE MAP

From the Site, proceed **east on 45th Street** to Hollis Street.
 Turn **left onto Hollis Street**. Take the **second right onto Stanford Avenue**, which will intersect Adeline Street. Take a

left onto Adeline Street. Continue for about 1/2 mile down Adeline Street. Take a **right onto Ashby Avenue**. Continue for about 1/2 mile down Ashby Avenue. Alta Bates Hospital will be on the right side of Ashby Street at the **corner of Colby Street and Ashby Avenue**.



● Alta Bates **Emergency Department**
 2450 Ashby Avenue
 Berkeley, CA 94705
 (510) 204-4444

EMERGENCY CONTACTS:

Ambulance:	911
Police:	911
Fire Department:	911
Hospital:	911
National Response Center:	(800) 424-8802
Poison Control Center:	(800) 682-9211
TOXLINE:	(301) 496-1131
CHEMTREC:	(800) 424-9300
Levine•Fricke Director of Health and Safety James A. Bucha:	(714) 955-1390
Levine•Fricke: 1900 Powell Street, 12th Floor, Emeryville, CA 94608	(510) 652-4500

NEARBY HOSPITAL

Alta Bates Medical Center
 2450 Ashby Avenue
 Berkeley, CA 94705

Emergency: (510) 204-1303
General Info: (510) 204-4444