

**SITE HEALTH AND SAFETY PLAN  
SOIL AND GROUNDWATER SAMPLING  
FOR ELECTRO-COATINGS INC.**

**1401 AND 1421 PARK BOULEVARD, EMERYVILLE, CALIFORNIA  
PROJECT NO. RC0304.001**

ENVIRONMENTAL  
PROTECTION  
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**INTRODUCTION**

This site-specific Health and Safety Plan (HSP) has been prepared for Electro-Coatings Inc. (ECI) by Geraghty & Miller, Inc. (Geraghty & Miller). This HSP applies specifically to the subsurface investigation for ECI at 1401 and 1421 Park Boulevard, Emeryville, California. The purpose of this HSP is to reduce the risk of death, injury, or illness to Geraghty & Miller site personnel or to the general public, during our investigation at the facility referenced above. Subcontractors' clients and visitors may at their discretion review and follow this HSP.

**PROJECT OVERVIEW**

The scope of work involves the sampling of on-site and off-site monitoring wells and hand augering 4 on-site soil borings. The objective of the groundwater sampling and soil borings is to determine the magnitude of the effect of hexavalent chromium ( $\text{Cr}^6$ ), trichloroethylene (TCE), and possibly petroleum hydrocarbons have had on the subsurface at the site.

**HAZARD EVALUATION**

Elevated levels of  $\text{Cr}^6$  and TCE have been detected in groundwater. Additionally, elevated levels of total chromium have been detected in soil. The work associated with hand augering has been reviewed, together with available site-specific data, to identify potential chemical hazards to personnel conducting the activities. These hazards are identified and discussed below.

**PHYSICAL HAZARDS**

Dermal hazards could arise if  $\text{Cr}^6$ ; volatile organic compounds (VOCs), such as TCE or benzene, toluene, ethylbenzene, xylenes, (BTEX); or other petroleum hydrocarbons (liquid or vapors) observed in the borehole or well come into contact with a person's hand or body (skin)

during the field investigation. A low hazard level exists where there is no contact, and when proper dermal protection is worn. The use of protective clothing and chemical-resistant gloves is required.

The working conditions at the site could involve (but may not be limited to) the following potential physical hazards: heat stress, moving objects, and vehicular traffic. Heat-stress hazards are associated with exposure to high ambient temperatures, wearing of protective clothing, a heavy physical work load, and/or a combination of the above. Daily environmental conditions (temperature, humidity, wind conditions, etc.) must be considered when evaluating this hazard. To reduce the risk of heat stress, the Geraghty & Miller Site Health & Safety Officer (HSO) may direct personnel to take any of the following steps: drink plenty of fluids (water, juice, or soft drinks), reduce the level of exertion, and take more frequent and longer rest periods.

Moving objects are hazards present during operation of sampling pumps and 55-gallon drum handling. Only essential personnel and no bystanders will be permitted in the sampling area itself. Hard hats, steel-toed boots, and safety glasses will be worn at all times. Only project personnel wearing the appropriate personal protection equipment will be allowed in this area.

Vehicular traffic is a hazard during sampling in traffic areas and streets during on-site and off-site sampling. To reduce the risk of traffic hazards, safety cones or delineators must be appropriately placed and at a minimum reflective safety vests will be worn while working in these areas.

## **CHEMICAL HAZARDS**

A variety of inorganic or organic constituents may be detected in the subsurface. Cr<sup>6</sup> used for chrome plating; nickel used for nickel plating; TCE used as a degreaser or its daughter products; BTEX or other petroleum hydrocarbons related to additives used in gasoline; and acidic conditions related to plating processes.

Respiratory hazards related to the above-listed chemicals might arise if vapors, gases, dust, or mist are released into the breathing zone during sampling and/or hand augering. Previous air-monitoring experience indicates that dilution occurs in the immediate vicinity of the monitor wells and boreholes. Based on the physical characteristics of nickel and

chromium, they are unlikely to exist in a volatile form, but they may be present as dust. VOCs are present in groundwater and for health and safety reasons are assumed to be present in soils beneath the site. VOCs are central nervous system depressants that produce similar symptoms in victims via skin absorption or inhalation of moderate vapor-phase concentrations. General symptoms of exposure, both acute and chronic, may include euphoria, headache, weakness, dizziness, nausea, narcosis, and possibly coma. Certain constituents are also skin and eye irritants, while benzene is a suspected carcinogen.

Dust and mist of chromium (Cr<sup>6</sup>) compounds may histologic fibrosis of the lungs. Excessive exposure to chromic acids or chromate through inhalation produces respiratory irritation; through ingestion produces leukocytosis, leukemia, or monocytosis; and through contact produces eosinophilia, eye injury, conjunctivitis, skin ulcers, or dermatitis. Cr<sup>6</sup> is classified as a probable human carcinogen.

Exposure routes during the proposed activities are inhalation and skin contact. To a lesser degree, ingestion of contaminants and direct contact with the circulatory system (through cuts, abrasions, etc.) could also occur. The exposure limits are identified in the following summary of anticipated chemical hazards. The volatile constituent with the lowest PEL is benzene, with a PEL of 1 part per million (ppm).

#### SUMMARY OF ANTICIPATED CHEMICAL HAZARDS

COMPOUND	PEL/TLV TWA	STEL
Benzene	1	5
Chromium (Cr <sup>6</sup> )	0.1	NA
Ethylbenzene	100	125
Nickel, insoluble	1	NA
Nickel, soluble	0.1	NA
Toluene	100	150
TPH	300	500
TCE	50	200
Xylenes	100	150

Values from the American Conference of Governmental Industrial Hygienists (TLV); the Occupational Safety and Health Administration (PEL); or CCR Table AC-1 of Section 8-5155 of Title 26 (\*), whichever is most stringent. The Threshold Limit Value (TLV) is the time-weighted average (TWA) concentration for a 40-hour week, to which all workers may be repeatedly exposed without adverse effect. The PEL is the OSHA permissible exposure limit, and is also a TWA. The Short-Term Exposure Limit (STEL) is the concentration at which workers can be continually exposed for a short period of time. Exposures at the STEL should not be

longer than 15 minutes and should not be repeated more than four times in an 8-hour period. There should be at least 1 hour between each 15-minute exposure at the STEL.

## **CONTROL OF HAZARDS**

### **TRAINING AND SAFE WORK PRACTICES**

All field personnel for this project will have attended a 40-hour health and safety training course for conducting work at hazardous waste sites and annual 8-hour training updates. This course satisfies the initial training requirements of 29 CFR 1910.120 (OSHA regulation of hazardous waste site activities). Additionally, Geraghty & Miller has an occupational health-monitoring program in accordance with OSHA 29 CFR 1910.20. This program involves an annual physical examination. Any subcontractor is responsible for medical monitoring of its employees.

### **LEVELS OF PROTECTION**

Level D protection is required during construction activities as specified by the HSO, or his or her designee. It may become necessary during the course of the work to upgrade the level of protection to Level C in the immediate work area. Although unlikely, it may become necessary during the course of the work to upgrade the level of protection to Level B in the immediate work area. If this becomes necessary, all work will be suspended, and the area will be secured and vacated immediately. Changes in the level of protection will be determined by the Site HSO.

**Protective safety equipment for Levels D and C include the following:**

#### **Level D - Mandatory**

- Steel-toed boots
- Approved hard hat
- Approved safety glasses with side shields, splash shield, or chemical splash goggles
- Long pants

#### **Level D - At discretion of Geraghty & Miller Site Health & Safety Officer**

- Tyvek coveralls
- Plastic-coated Tyvek coveralls

#### **Level C**

- All required Level D protective equipment

- Air-purifying cartridge-equipped respirator (half- or full-face respirators)

Air-purifying respirators are to be used only in conjunction with air monitoring in the breathing zone and with strict adherence to action levels listed below. Air-purifying respirators may only be used when the device affords protection from the substances encountered. It is anticipated that respirators will provide adequate protection for the conditions that will be encountered during the site activities. However, if action levels exceed a respirator's capacity, the work will be suspended until personal protective equipment can be upgraded to supplied air (Level B).

### **Respirator Use and Maintenance**

Respirators issued to individuals will be cleaned and disinfected at least daily, if used. Where respirators are used by more than one person, the respirator will be cleaned and disinfected after each use. Respirators will be inspected during cleaning, and any necessary repairs will be made at that time. Damaged respirators will not be worn. After cleaning, respirators will be placed in clean, plastic bags and stored in a clean location convenient to work areas.

### **MONITORING**

Air monitoring will be performed during the hand augering and sampling activities. By comparing the information obtained from the monitoring with the action levels described below, the safety of environmental conditions in the work zone will be assessed.

#### **Equipment**

The following types of air-monitoring equipment will be used to obtain real-time measurements in the work zone during the sampling program. Draeger tubes will be used at a minimum to monitor for benzene. A photoionization detector (OVM), equipped with a 10 eV bulb, will be used to monitor for nonspecific VOCs. Air monitoring for VOCs will be performed at shoulder height (in the breathing zone) on those workers most likely to be exposed to potential hazardous concentrations of contaminants.

#### **Frequency of Monitoring**

Air monitoring will be performed at the beginning of each day, before the startup of any work tasks, to identify ambient conditions. During work tasks, periodic monitoring will be performed at a minimum of once an hour. Additional monitoring will be performed whenever

work begins at a different location, when meteorological conditions, such as wind direction or ambient temperature, demonstrate a sustained and noticeable change, or when vapors from either hand augering or sampling are detected by site workers.

### **Maintenance and Calibration of Monitoring Equipment**

All personnel who will be using monitoring equipment will be thoroughly briefed on the operation, limitations, and maintenance of these devices. All maintenance and calibration procedures will be in strict accordance with the manufacturer's guidelines by a designated individual familiar with the devices. Air-monitoring equipment will be calibrated every morning before the start of shift. Only routine maintenance (e. g., changing batteries or lamps) will be performed by staff members. Any additional maintenance will be performed by the manufacturer.

## **Recordkeeping**

Daily logs will be kept by the site air monitor for the duration of the job. In the daily log, the measurement from the monitoring equipment and the type and time of monitoring will be recorded.

In addition to routine air monitoring, field screening of the drum samples and of soil samples with the PID will be conducted to better understand the degree of hazard associated with the materials being sampled, excavated, and/or stockpiled. The results of field screening will be recorded in the same manner as outlined above.

## **ACTION LEVELS**

To protect against exposure to inorganic dusts or mists, when visible particulate material is observed a respirator equipped with HEPA and/or HEPA and mist filters will be worn. When breathing zone readings indicate that a worker is being exposed to a sustained level (more than 15-minute duration) less than or equal to 2 ppm total volatile hydrocarbons above the ambient air level, work will be performed in Level D. At sustained levels between 2 and 50 ppm, work will continue in Level C by all workers in the work area with air-purifying respirators equipped with organic vapor cartridges. At levels greater than 50 ppm, work will cease, the work location will be secured, and personnel will exit the work area until levels decrease below 50 ppm or until work can resume with Level B protection using either self-contained breathing apparatus or supplied air.

The following is a summary of action levels and actions.

### **SUMMARY OF ACTION LEVELS**

<b><u>Parameter</u></b>	<b><u>Action Level</u></b>	<b><u>Action</u></b>
VOCs	≤ 2 ppm above ambient	Perform in Level D
	2 to 50 ppm above ambient for 15 minutes	Can check for benzene with Draeger tubes; if detected, perform in Level C; if not detected, resume in Level D
	> 50 ppm above ambient	Can check for benzene with Draeger tubes; if detected, perform in Level B; if not detected, resume in Level C

Should persistent safety hazards occur, appropriate immediate action will be taken (e.g., administering first aid or CPR). Emergency personnel will first be notified, followed by the appropriate Geraghty & Miller personnel.



## **JOB HAZARD SUMMARY**

The potential hazards associated with the construction activities to be performed at the site are physical and chemical, and their potential severity should not be underestimated. Geraghty & Miller workers must wear the protective equipment specified by the Site HSO. The Site HSO will conduct a safety meeting before commencement of work on each working day to inform all workers of site-specific hazards and the emergency plan.

## **GENERAL SAFE WORK PRACTICES**

Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the work zone. All personnel should exit the work area and thoroughly wash their hands and faces with mild soap and water before eating or drinking. Absolutely no smoking is allowed in any work areas on the facility.

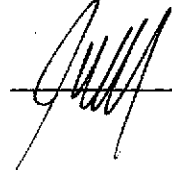
## **EMERGENCY RESPONSE**

In the event of fire, explosion, injury, or other accident, contact an appropriate site emergency response group. Site emergency telephone numbers are below:

Paramedics	911
Fire Department	911
Alta-Bates Hospital	(510) 204-1303 (Emergency Number)
Geraghty & Miller, Inc.	(510) 233-3200

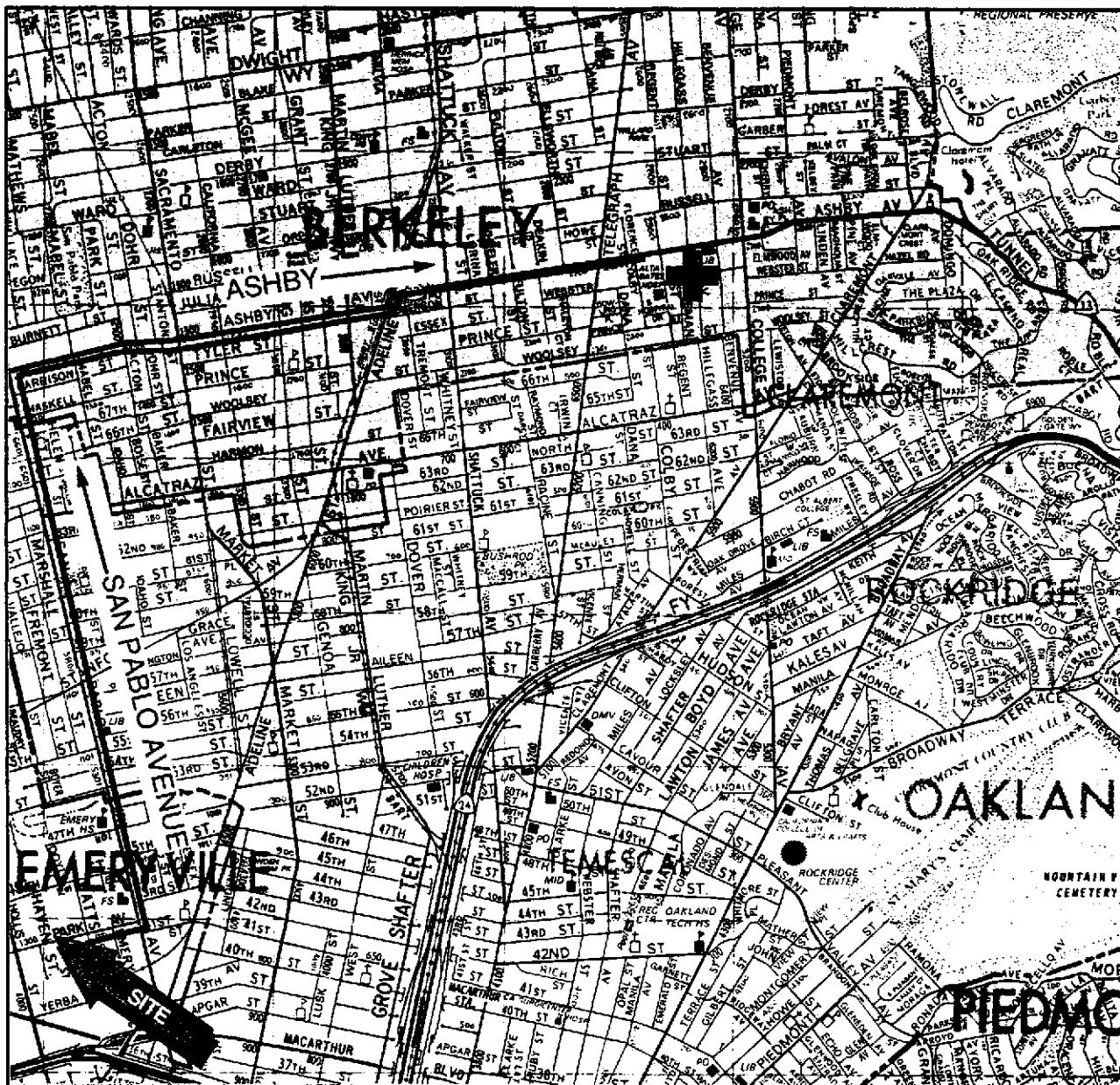
Alta Bates Hospital, the nearest hospital to the site, can be reached by heading east (left out of the Electro-Coatings facility) on Park Avenue, turning left on Adeline. Travel approximately 1.5 miles and turn right on Ashby. Alta Bates is located approximately 0.5 mile on the right at Ashby and Colby.

**RESPONSIBLE INDIVIDUALS**

<u>Position</u>	<u>Name</u>	<u>Signature</u>
Project Manager	Jeffrey W. Hawkins Geraghty & Miller	 _____ _____
Site Health and Safety Officer	Gary Crowley Geraghty & Miller	

The following have read this plan and understand its provisions:

<u>Representing</u>	<u>Name</u>	<u>Signature</u>	<u>Date</u>
_____	_____	_____	_____
_____	_____	_____	_____
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Directions: Left on Park Avenue, left on San Pablo Avenue, right on Ashby. After crossing Adeline and Telegraph, Alta Bates Hospital will be on your right.



Reference: The Thomas Guide, Alameda and Contra Costa Counties, Street Directory, 1989.

**GERAGHTY & MILLER, INC.**  
*Environmental Services*  
 A Heidemij Company  
 Project No. RC0304.000

**HOSPITAL MAP**  
 Electro-Coating  
 1401 and 1421 Park Avenue  
 Emeryville, California

FIGURE  
**1**