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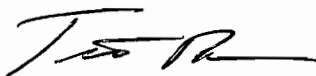
# **XL Construction Corporation**

## **Site Health and Safety Plan for Soil Disturbance**

### **Novartis – Bay Center Building B Project Emeryville, CA**

### **September, 2008**

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# **XL Construction Health and Safety Plan for Soil Disturbance**

**Novartis Bay Center Building B Project  
Emeryville, CA  
September 2008**

## **1.0 INTRODUCTION**

This Health and Safety Plan (HASP) has been prepared to assist XL Construction (XL) in protecting its employees from exposures to site-specific contaminants during soil disturbance work at the Bay Center Building B project for Novartis in Emeryville, California. The HASP will be used in conjunction with XL's overall health and safety program, i.e., Injury and Illness Prevention Program, Code of Safe Practices, Hazard Communication Program, Respiratory Protection Program, etc. The HASP may be revised during the project if changes in conditions, activities and/or hazards are encountered or occur at the site.

A copy of the HASP will be maintained at the site and copies will be provided to all XL supervisory personnel working on the site. In addition, upon request, a copy of the HASP will be made available for review by XL subcontractors and other employers working at the site.

## **2.0 SITE DESCRIPTION AND CHARACTERIZATION**

The site is located at the Novartis, Bay Center, Building B. The site consists of soil that will be disturbed as part of XL activities in preparation for placement for process drain line installation. Due to previous operations at and around the site, the soil contains a variety of contaminants.

A soil and groundwater testing report was provided by Novartis. The report (*Soil and Groundwater Characterization of Bay Center Site in Emeryville, California* prepared by Earth Metrics Inc., August 20, 1986) indicated the following:

- Contaminants primarily in evidence are lead, DDT (organochlorine pesticide) and petroleum hydrocarbons. Soil sampling has indicated that the Bay Center site has widely varying levels of metals.
- Earth Metrics noted however, that detected chlorine in the soil may be also indicative of PCBs or organochlorine pesticides other than DDT.

- According to the Earth Metrics report, surface soil around Christie Street contains levels of lead that are in excess of 10,000 mg/kg (milligrams per kilogram). Other metals including arsenic, antimony, barium, cadmium, chromium, copper, nickel were also found at the site.
- Soils contamination with hydrocarbons, organochlorine pesticides (DDT) and/or PCBs were found in the southern portion of the site near Christie Street and 64<sup>th</sup> Street.
- Soil gas monitoring by Earth Metrics at the site in 1987 near Building B has shown the presence of hydrocarbons (as methane) at concentrations of 5.4 percent by volume.

### 3.0 PROJECT OBJECTIVE AND KEY PERSONNEL

#### Objective:

The project consists of subsurface excavation of approximately 50 cubic yards of soil to a depth of approximately 3 feet below ground surface to install approximately 100 linear feet of process drain lines in the northeastern portion of Building B.

#### Key Personnel:

The following XL supervisory and safety personnel will be employed on this project:

<b>Name</b>	<b>Title</b>	<b>Contact Phone Number</b>
Leroy Hurt	Project Manager	Jobsite (510) 923-3326 Office (408) 240-6309 Cell (408) 591-7704
Jeff Brown	Superintendent	Cell (408) 592-4032
Larry J. Spencer	Safety Coordinator	Cell (408) 592-2015
Craig Pancoast	Safety Engineer	Cell (408) 592-0885

### 4.0 PROJECT HAZARDS

The following hazard analysis is for XL personnel and subcontractors who will be performing excavation and laying pipe at the jobsite or any personnel that will be in the restricted area:

Site-specific physical hazards include (but may not be limited to) those associated with uneven terrain (e.g., trips and falls), wet conditions (e.g., slips and falls), and excavations (e.g., soil collapse). These site-specific and other general hazards (equipment, material handling, etc.) will be controlled as specified in XL's overall health and safety program.

Identified site-specific chemical hazards include soil with lead, organochlorine pesticides (DDT) and petroleum hydrocarbons. Other metals, other organochlorine pesticides and PCBs may also be present. Lead may be particularly elevated as high as 10,000 mg/kg or more.

In general, exposure to chemical contaminants may occur through inhalation (from airborne chemicals), ingestion (from contamination on hands, face, food, etc.), skin/mucous membrane contact (local effects) and skin/mucous membrane absorption (internal effects). Individual chemical contaminants may have acute (short-term), chronic (long-term), systemic (internal) and local (site of exposure) health effects. Information regarding substance-specific health hazards and Cal/OSHA permissible exposure limits is provided in the Appendix.

Potential skin contact, skin absorption and ingestion exposures to soil contaminants will be controlled through avoiding direct contact with contaminated soil, use of personal protective equipment (PPE), and personal decontamination procedures.

Airborne exposures to soil contaminants that are adhered to soil particles will be controlled through wet methods, i.e., keeping the soil wet and/or using water spray to control visible airborne dust.

Based on these measures, it is anticipated that chemical hazards will be controlled, i.e., that skin contact, skin absorption and ingestion exposure will be minimized; and that airborne exposure will be controlled to levels well below applicable Cal/OSHA PELs;

Due to the relatively low levels of petroleum hydrocarbons in the soil, it is unlikely that flammable/explosive atmospheres will develop. Nevertheless, ignition sources (e.g., cigarettes and sparking equipment) will be prohibited in the soil excavation work area.

## **5.0 INFORMATION AND TRAINING**

Information concerning particulate hazards will be provided to all XL personnel who will work in the restricted area during soil disturbance and who come in contact with soil at the project site, per the requirements of Title 8 CCR 1532.1 Lead and 5214 Arsenic, 5206 Hexavalent Chromium VI and the Cal/OSHA hazard communication standard, Title 8 CCR 5194.

Training will include:

- The potential health hazards of worker exposure to site contaminants.
- The operations and activities that may result in skin, eye and/or inhalation exposures.
- The precautions and procedures that will be required to avoid exposures including personal protective equipment requirements.
- The provisions and requirements of the Site Health and Safety Plan.
- Training will be provided at a pre-construction meeting.

As the site has been characterized through soil sampling and analysis, it is not an uncontrolled hazardous waste site and therefore hazardous waste operations (HAZWOP) training (per Title 8 CCR 5192) will not be required.

## **6.0 SITE CONTROLS AND WORK ZONES**

Site controls will consist of establishing work zones and limiting access to authorized personnel only. Work site access will be limited through the use of physical features, posting and/or site supervision. Work zones within the work site will be demarcated through the use of traffic cones, barrier tape and/or similar methods. Entry into work zones will be restricted to personnel who are properly trained and equipped with personal protective equipment as specified in this HASP.

The areas of the site with identified soil and soil gas contaminants will be designated as a restricted area. Workers will wear personal protective equipment (PPE) when disturbing soil in the restricted area or may come in contact with soil. Eating, drinking and smoking are prohibited in the restricted area.

An area just outside each restricted area will be as used as a decontamination area for equipment and personnel decontamination as necessary. The decontamination area will be the location where workers decontaminate equipment and remove and clean PPE, wash hands and face prior to leaving the work area. Excess residues of potentially contaminated particulates will be rinsed from heavy equipment with water spray prior to removal from the work site. Removal of excess particulates from boots (using water, boot-scrapers and brushes) will be used to prevent tracking into personnel vehicles. Use of hygiene measures (washing of hands and face at breaks and end-of-shift) will be used to prevent accidental ingestion.

## **7.0 EXPOSURE CONTROLS AND AIR MONITORING**

Potential skin exposures to and contamination of personal items with soil contaminants will be controlled through avoiding direct contact with contaminated soil, use of personal protective equipment (PPE) and personal decontamination procedures. Direct contact with contaminated soil (to clothing and/or exposed skin) will be minimized by using careful work practices when working in or around contaminated soil. The PPE to be used for protection against potential exposure to contaminated soil will include hard hats, heavy-duty rubber safety boots, Tyvek coveralls, gloves and safety glasses. Personal decontamination procedures will include removal and disposal or cleaning of personal protective equipment as necessary and washing of exposed skin (e.g., hands, face and neck), as detailed in section 8.0.

DDT (organochlorine pesticides)/PCB/petroleum hydrocarbon-resistant gloves (i.e., nitrile) will be worn when direct contact with contaminated soil cannot be avoided, such as during cleaning of contaminated soil from equipment. Tyvek coveralls will be used to protect skin and personal clothing from accidental contact with contaminated soil but will be removed and replaced when they become soiled as they are not resistant to organochlorine pesticides, PCBs or petroleum hydrocarbons.

The safety coordinator or designee at the site will use a direct-reading combination air monitoring meter that detect flammable gas in the “percent” (%) range and total hydrocarbons in the “parts per million” (ppm) range. The meter will be used to monitor and document airborne contaminants levels at the soil surface and in the breathing zone of workers. The meter will be calibrated by the factory and/or supplier and will be utilized per the manufacturer’s instructions. Flammable gas monitoring will be conducted during soil disturbance.

In addition, personal (worker exposure) and perimeter air monitoring will be performed for metals and DDT during representative work activities. Air monitoring will be performed using battery-operated personal sampling pumps and substance-specific sampling media. Air samples will be submitted to an independent AIHA-accredited laboratory for analysis. Air monitoring results will be compared to applicable Cal/OSHA permissible exposure limits and project action levels.

The following project action levels for airborne contaminants have been established:

	<u>Worker Exposure</u>	<u>Perimeter/Adjacent Areas</u>
Lead, other metals and DDT	1 mg/m <sup>3</sup> total dust*	0.5 mg/m <sup>3</sup> total dust
Petroleum hydrocarbons	5 ppm	0.1 ppm
Flammable gas	10% of LEL	1% of LEL

\*Note: If sustained, visible dust clouds are observed in the work area, field activities will be suspended, and appropriate corrective measures to control visible dust will be implemented.

Because the control measures specified above will be implemented, it is anticipated that airborne contaminant levels will remain well below the applicable Cal/OSHA permissible exposure limits and project action levels. Nevertheless, the following contingency measures will be implemented if airborne contaminant levels exceed the applicable limits or levels.

Contingency Measures for Perimeter Levels of Airborne Contaminants: If airborne contaminant levels exceed the project action level, work will be suspended until work conditions and practices can be reevaluated and additional control measures implemented.

Contingency Measures – Other Hazardous Substances: If other hazardous substances are encountered or suspected through observations at the site (e.g., through discoloration, odor, irritation, etc), work will be suspended until the potential hazards are evaluated and appropriate control measures implemented.

## 8.0 DECONTAMINATION PROCEDURES

Equipment Decontamination Procedures: Equipment (including hand tools such as shovels) will be decontaminated prior to removal from the restricted area, as follows: Visible soil will be removed from equipment using clean water, brushes, toweling, etc. Contaminated items such as brushes, rags, etc. will be collected in 6-mil plastic lined drums for characterization and/or disposal as hazardous waste. Removed soil and wash water will be collected for disposal with excavated soil. Removed soil and wash water will be controlled so that contaminated soil and/or water does not enter previously uncontaminated areas.

Personal Decontamination Procedures: Workers will undergo decontamination whenever leaving the restricted area, as follows: Workers will remove PPE and wash exposed skin areas with soap and water. Visible soil will be removed from reusable PPE using clean water, soap, brushes, toweling, etc. Disposable PPE and contaminated items such as brushes, rags, etc. will be collected in 6-mil plastic waste bags for characterization and/or disposal as hazardous waste. Removed soil and wash water will be collected for stockpiling, drying and disposal with excavated soil. Removed soil and wash water will be controlled so that contaminated soil and/or water does not enter previously uncontaminated areas.

Sanitation Facilities: Sanitation facilities (toilets and hand washing facilities) will be provided at the work site. Workers will observe hygiene measures (washing of hands and face) when leaving the restricted area (i.e., where active soil excavation and process line installation is occurring).

## 9.0 SOIL MANAGEMENT PROTOCOLS

Soil excavation will be conducted with hand tools (e.g., shovels) and excavated soil will be temporarily stockpiled or placed into containers (e.g., drums) in the active work area. Temporary stockpiles or containers will be covered when not in use. Excavated soil will then be transferred to containers (e.g., roll-off bins) located outside of the building.

If temporary stockpiles are used in the active work area, excavated soil will be placed on plastic sheeting and covered with plastic sheeting to reduce dust generation. During transfer of excavated soil from the work area to the containers located outside of the building, excavated soil will be containerized or covered with plastic sheeting to prevent dust generation.

Soil will be sampled by the site owner representative prior to disposal. Disposal requirements will be determined by the site owner representative.



## **10.0 SAFETY MEETINGS AND INSPECTIONS**

Safety meetings led by the superintendent, foreman and/or safety coordinator will be held on a daily basis at the beginning of the work shift to review the information and procedures specified in the HASP.

Inspections of the work site will be conducted daily both prior to the start of work and during the work. Any deficiencies noted during the inspections will be immediately corrected or work will be suspended until corrective action is implemented.

The safety meetings and inspections will be documented as specified in XL's health and safety program.

## **11.0 ENGINEERING CONTROLS, EXPOSURE MONITORING AND MEDICAL SURVEILLANCE**

The only practical engineering control measure for airborne particulates during excavation of contaminated soil is the use of water spray on surfaces and the surrounding air to control the release of particulates (dust) at the point of generation. As dust levels will be controlled by wetting the soil during excavation and soil moving operations, potential personnel exposures to contaminants are expected to be minimal, with airborne exposures well below all applicable Action Levels and PELs. Nevertheless, both ambient and personal breathing zone air samples for metals (including lead, arsenic, mercury and chromium) and DDT will be conducted to document exposure levels during on or about the first full day of excavation.

The only practical engineering control for volatile petroleum hydrocarbons (e.g., diesel fuel) during excavation, stockpiling and loading of contaminated soil is to avoid direct inhalation of vapors. However, should soil that is discolored or stained or has a noticeable odor be discovered during excavation work will cease and air monitoring will be conducted as needed. Air monitoring for volatile hydrocarbons, using direct-reading instrumentation, such as an organic vapor analyzer (OVA), will be performed during project work if needed, to qualitatively identify local concentrations of hydrocarbon contamination in soil and quantitatively evaluate potential airborne exposure levels in the vicinity of contaminated soil.

If accidental or inadvertent overexposure to airborne contaminants occurs or is suspected, medical surveillance will be provided as recommended by XL's occupational medicine provider.

Employee exposure and medical surveillance records will be maintained in accordance with Title 8 CCR 3204 "Access to Employee Exposure and Medical Surveillance Records."

## 12.0 INCIDENT AND EMERGENCY RESPONSE

Injuries, illnesses, accidents and other incidents will be reported as soon as possible to the Project Manager, Superintendent and Safety Coordinator (see section 3.0 for names and phone #'s) and as specified in XL's overall health and safety program. As needed, the following medical facilities will be used during the project.

### Urgent Care Facility:

North Oakland Medical Clinic  
6105 San Pablo Ave  
Oakland, CA 94608  
(510) 658-7660

### After Hours / Emergency:

Alameda Hospital  
2070 Clinton Ave  
Alameda, CA 94501  
(510) 522-3700

Decontamination: Except where additional injury may occur, injured or ill workers will undergo decontamination as specified in section 8.0 prior to leaving or being removed from the restricted area. The superintendent/foreman or another worker will assist the injured or ill worker as necessary.

Emergency Responders: Local Ambulance, Police, Fire services are available 24 hrs. Their response time is generally 6-10 minutes. Be sure to provide accurate work site location information. In case of an emergency call Novartis emergency number ext. 7777 (internal) or (510) 923-7777.

Emergency Medical Information: Acute effects from particulate contaminants and vapors are not likely given the nature of the contaminants, the site conditions anticipated, the nature of the work to be performed and the control measures to be utilized. However, if overexposure is suspected, see the Appendix for additional information.

**APPENDIX**

**CHEMICAL HAZARD INFORMATION**

## Chemical Hazard Information

### LEAD

Cal/OSHA PEL - 0.05 mg/m<sup>3</sup>, Action Level - 0.03 mg/m<sup>3</sup>

Lead may enter the body through inhalation or ingestion. Overexposure to lead may affect the blood-forming and nervous systems and may result in symptoms such as weakness, weight loss, fatigue, insomnia, facial pallor, and anemia. Ingestion of lead may also result in gastrointestinal disturbances. Long term overexposure to lead may result in kidney damage. Additionally, lead is a reproductive toxin and can cause sperm abnormalities and damage to the developing fetus

### ARSENIC

Cal/OSHA PEL – 0.01 mg/m<sup>3</sup>, Action Level - 0.005 mg/m<sup>3</sup>

Arsenic may enter the body through inhalation or ingestion and may be harmful to the skin on prolonged contact. Overexposure to arsenic may result in respiratory and/or gastrointestinal irritation, as well as systemic effects. Arsenic is a confirmed human lung carcinogen and suspected reproductive toxin.

### MERCURY

Cal/OSHA PEL – 0.0025 mg/m<sup>3</sup>, Ceiling Limit – 0.1 mg/m<sup>3</sup>

Elemental (metallic) mercury primarily causes health effects when it is breathed as a vapor or as a dust (when present in soil) and where it can be absorbed through the lungs. High exposures (in excess of the PEL) to airborne mercury may result in damage to the gastrointestinal tract, the nervous system, and the kidneys. Mercury compounds are also absorbed through the gastrointestinal tract and affect other systems via ingestion. Skin contact should be avoided.

### CHROMIUM

CAL/OSHA PEL – 0.5 mg/m<sup>3</sup> (chromium metal)  
5.0 ug/m (hexavalent chromium)  
Action Level – 2.5 ug/m<sup>3</sup> (hexavalent chromium)

Chromium occurs in the environment primarily in two valence states, trivalent chromium (Cr III) and hexavalent chromium (Cr VI). Chromium III (chromium metal) is much less toxic than chromium (VI). The respiratory tract is also the major target organ for chromium (III) toxicity, similar to chromium (VI). Chromium (III) is an essential element in humans. Soil was tested for chromium metal only.

The respiratory tract is the major target organ for chromium (VI) toxicity, for acute (short-term) and chronic (long-term) inhalation exposures. Shortness of breath, coughing, and wheezing were reported from a case of acute exposure to chromium (VI), while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Human studies have clearly established that inhaled chromium (VI) is a human carcinogen, resulting in an increased risk of lung cancer.

## OTHER METALS

Other metals are present in low levels in the soil and should not pose a significant health risk to workers under normal controls (i.e., wetting of the soil). Heavy metals may enter the body through inhalation and ingestion. Potential health effects vary by individual metal and may include local effects (at the entry site), systemic effects (at remote locations in the body), carcinogenic effects and/or reproductive effects. Permissible exposure limits (PELs) for airborne metals have been established by Cal/OSHA under Title 8 CCR Section 5155, Airborne Contaminants.

## PETROLEUM HYDROCARBONS

Cal/OSHA PEL – 300 ppm (gasoline)  
ACGIH TLV – 100 mg/m<sup>3</sup> (~ 25 ppm) (diesel)

Petroleum hydrocarbons include a wide range of hydrocarbons blends with varying volatilities (e.g., non-volatile motor oil, moderately volatile diesel fuel, and volatile gasoline). Petroleum hydrocarbons may enter the body through inhalation or ingestion and can cause skin and/or eye irritation upon contact. Overexposure can occur through inhalation (aerosol or vapor) or ingestion (from residues on hands, face etc.) can cause respiratory and/or gastrointestinal irritation as well as central nervous system (CNS) depression. Typical symptoms of CNS depression include headache, nausea, dizziness and/or fatigue; extreme overexposure can result in loss of consciousness or death.

## METHANE

LEL – 5%

Methane is not toxic; however, it is highly flammable and may form explosive mixtures with air. Methane is also an asphyxiant and may displace oxygen in an enclosed space. The gas is flammable at approximately 5% by volume in air.

## POLYCHLORINATED BIPHENYL (CHLORODIPHENYL) Cal/OSHA PEL – 0.5 mg/m<sup>3</sup>

Polychlorinated biphenyl is potentially hazardous to the liver. PCBs are potential carcinogens. However the chronic toxicity and carcinogenicity of fully chlorinated PCBs (60% chlorine) has been subject to debate (*ACGIH Documentation of TLVs – 2001*). Skin contact may cause skin irritation and acne form dermatitis.

## DDT (DICHLORODIPHENYLTRICHLOROETHANE) Cal/OSHA PEL – 1 mg/m<sup>3</sup>

DDT affects the central nervous system at high concentrations. Acute effects likely in humans due to low to moderate exposure may include nausea, diarrhea, increased liver enzyme activity, irritation (of the eyes, nose or throat), disturbed gait, malaise and excitability; at higher doses, tremors and convulsions are possible. Adverse effects on the liver, kidney and immune system due to DDT exposure have not been demonstrated in humans in any of the studies which have been conducted to date. It is not readily absorbed through the skin unless in solution. However, as a contaminant in soil, DDT it is not in solution.