

LEAD COMPLIANCE PLAN

University of California Santa Cruz

I. PURPOSE

The purpose of this program is to establish specific policy concerning occupational exposure to lead and management of construction and maintenance activities involving lead. Proper lead management will safeguard the health and safety of workers and building occupants, minimize potential negative impacts to the environment, and ensure adherence to the various regulatory issues concerning lead in University facilities.

II. SCOPE

This program applies to all occupational exposures to inorganic lead for affected UC Santa Cruz (UCSC) employees and contractors during construction work activities in which lead-containing materials are present in the work environment. Construction related activities where a worker may encounter and/or work with lead containing materials include:

- a) new construction;
- b) demolition or salvage of structures;
- c) removal or encapsulation of lead containing materials;
- d) alteration, repairs, and/or renovation of structures;
- e) installation of products containing lead;
- f) emergency clean-up;
- g) storage of lead containing materials at the work site; and
- h) maintenance operations.

III. DEFINITIONS

Action Level (AL) - Employee exposure to airborne lead at an 8-hour time-weighted average concentration of 30 micrograms of lead per cubic meter ($\mu\text{g}/\text{m}^3$) of air or 0.030 milligrams per cubic meter (mg/m^3) of air, without regard to the use of respirators.

Lead Containing: A coating or material that contains any detectable level of lead. Cal-OSHA requirements are necessary when performing a “trigger task” involving lead containing materials. Common trigger tasks include manual demolition, sanding, scraping of lead containing materials, use of heat guns, torch cutting or abrasive blasting of lead containing materials.

Permissible Exposure Level (PEL) - The allowable 8-hour time weighted average concentration of airborne lead the employee may be exposed to without regard to the use of respirators. This value is $50 \mu\text{g}/\text{m}^3$ of lead in air or $0.050 \text{mg}/\text{m}^3$ of lead in air.

Objective Data - Information from manufacturers or laboratory data that demonstrates that the use of a material in a specific operation or activity will not result in exposure to lead at the AL.

Regulated Area - Work areas where airborne exposure to lead is above the PEL.

IV. RESPONSIBILITIES

- A. **Industrial Hygienist / Certified Lead Professional / EH&S Lead Consultant** - Responsibilities include, but are not limited to, overseeing project-specific lead management programs; inspections of work activities involving potential lead exposure; lead identification/assessment techniques; and monitoring airborne lead exposures.
- B. **Lead Employee/Worker** - Each employee must have basic knowledge of the hazards associated with lead. Each employee is responsible for wearing assigned personal protective equipment; following good personal hygiene practices; and adhering to all work practices established for each specific job.
- C. **Facilities Management Site Supervision** - Each supervisor will be responsible for contacting the Industrial Hygienist to evaluate the presence of lead-containing materials, controlling access to regulated areas, and ensuring that all work practices established for a specific job are adhered to by the workers.
- D. **Contractor** - Each contractor dealing with lead-containing materials is required to follow guidelines established by the UCSC Environmental Health and Safety Office (EH&S), Physical Plant, and Physical Planning (PP) and Construction (PP&C).

V. TRAINING

A. EMPLOYEE GENERAL AWARENESS

For each employee in a work environment where lead-containing materials are present, training will be conducted initially upon job assignment. Training will consist of, as a minimum, an overview of the hazards of lead; warning signs/labels; relevant information from an MSDS; and the contents of the Lead Compliance Program.

B. LEAD WORKER TRAINING

In addition to general awareness training, each worker exposed to an airborne concentration of lead above the action level of $30 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter) shall receive at least annually information concerning:

- (1) Specific jobs that could result in an exposure above the action level (See Appendix B)
- (2) General respirator and use of personal protective equipment (See Appendix C)
- (3) Proper use of engineering controls and work practice controls

- (4) Medical surveillance/removal program
- (5) Use of chelating agents
- (6) Access to medical/exposure records/training materials
- (7) Content of Cal/OSHA's Lead in Construction Standard, Title 8 Section 1532.1.

C. RESPIRATORY PROTECTION TRAINING

All UCSC employees required to use a respirator must participate in the UCSC Respiratory Protection Program.

VI. EXPOSURE ASSESSMENT

A. LEAD IDENTIFICATION BULK SAMPLES

1. Suspect lead-containing materials are evaluated properly prior to the start of work. Lead analysis must be performed for each unique surface to be disturbed.
2. Samples must be collected by an EH&S professional or consultant according to criteria established in Title 17 of the California Code of Regulations, 35001 - 36100.
3. For surface wipe samples, consult appropriate current sections of US Department of Housing and Urban Development "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing".
4. All samples shall be submitted to AIHA and ELLAP accredited lead laboratories for analysis.
5. At UCSC, the locations listed in Appendix A have been found to contain materials with lead. Other locations may also contain lead coatings and may need to be evaluated prior to work activities.

B. EXPOSURE MONITORING

1. Air monitoring is conducted under the direction of the industrial hygienist or EH&S Consultant.
2. Air samples shall be collected in the breathing zone of employees where there is potential exposure to lead. Sampling shall be conducted in accordance with the Cal-OSHA Lead Standard and NIOSH Method No. 7082.
3. Where a determination has been made that lead containing surfaces or materials may be present at the work site, air monitoring shall be conducted during construction activities which are representative of the exposure for each job classification at the work site to represent the initial exposure assessment.

VII. CONTROL MEASURES

A. PERSONAL PROTECTIVE EQUIPMENT

1. Wear Personal Protective Equipment at all times where there may be potential exposure to lead containing materials including the initial exposure assessment phase. The minimum level of personal protective equipment shall be specified by the Industrial Hygienist or EH&S Consultant.
2. Wear the appropriate respiratory protection in accordance with Appendix B.
3. Wear respirators:
 - a. As an interim protection for tasks until exposure assessments can be completed, refer to Appendix B and C to determine the appropriate level of respiratory protection.
 - b. When an employee's exposure exceeds the Permissible Exposure Limit (PEL).
 - c. Whenever an employee requests one.
 - d. In work situations where engineering and work practice controls are not sufficient to reduce employee exposures below the PEL.
4. Do not wear coveralls contaminated with lead outside of the regulated area.
5. Wear gloves if they do not interfere with the work being performed.
6. Wear eye protection meeting the ANSI Z87.1 standard while performing construction activities.

B. ENGINEERING AND WORK PRACTICE CONTROLS

1. Provide HEPA filtered local exhaust ventilation for devices or abrasive power tools, needle guns, sanders, grinders, and other equipment that will be used to disturb lead containing surfaces.
2. Use HEPA vacuums for clean-up. Do not dry sweep or use compressed air.
3. Use wet methods to reduce airborne dust generation, e.g., a water sprayer to hold down settled leaded dust on the plastic sheeting covering the floor.
4. Wet surfaces with water prior to scraping, sweeping, or sawing.
5. Perform daily clean-up of work area and equipment to prevent leaded dust accumulations.
6. Do not eat, drink, smoke, or apply cosmetics where lead containing surfaces are being disturbed.

7. Use shoveling, wet sweeping, brushing only for clean-up to pick-up large debris. The debris should be misted with water prior to clean-up to minimize leaded dust generation.
8. Keep all surfaces as free as practicable from leaded dust accumulation and contamination.
9. Do not possess, store or consume foods, beverages, chewing gum, tobacco products, and cosmetic products in the regulated work area.
10. Establish a Regulated Area around the work location. In the absence of project-specific exposure data, the Regulated Area shall be configured to include all areas within a 25-foot radius of activities performed on structures with lead-containing coatings. The Regulated Areas shall be identified with warning signs posted at all approaches to the area such that personnel may read the signs and take necessary protective steps before entering the area marked by the signs. The signs shall read as follows:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

11. Provide a change area at the boundary of the Regulated Area for the purpose of entry and exit from the Regulated Area for any purpose except emergencies.
12. Provide employees entering the Regulated Area respiratory protection in accordance with Appendix B.
13. Provide employees entering the Regulated Area protective work clothing that prevents contamination of the employee's garments. This protective clothing shall be provided in a clean and dry condition at least weekly. Protective clothing shall include, as a minimum:
 - coveralls or similar full-body work clothing
 - gloves
 - eye protection
14. Decontaminate protective clothing before exiting the Regulated Area for any purpose by the following methods:
 - removal of outer protective clothing
 - use of a HEPA-filtered vacuum
15. Arrange for provisions in the change area for the collection of contaminated items such as work clothing, respirator cartridges, and equipment.
16. Arrange for provisions that allow employees to wash their hands and face at the completion of the activity and/or before departing from work at the end of the shift.

Also, provisions will be made to allow employees to wash their hands and face prior to eating, drinking, smoking, or applying cosmetics.

17. Provide shower facilities when deemed appropriate by the Industrial Hygienist or EH&S Consultant. This decision shall be made upon consideration of project duration and location, climate, and availability of acceptable water supply.

VIII. MEDICAL SURVEILLANCE

A. INITIAL MEDICAL SURVEILLANCE

Employees exposed on any day to airborne lead concentrations at or above $30 \mu\text{g}/\text{m}^3$ will have the opportunity to receive a baseline blood lead level (BLL) examination. This examination shall include the BLL and the zinc protoporphyrin level. Medical examinations and information provided to examining and consulting physicians shall be in accordance with Cal/OSHA Standard Section 1532.1 and under the direction of an Occupational Physician. The following information shall be provided to the consulting physicians:

- (1) Copy of Cal/OSHA's Lead in Construction Standard, Title 8 Section 1532.1, including all Appendices
- (2) Description of the affected employee's duties as they relate to the employee's exposure
- (3) Employee's exposure level or anticipated exposure level to lead and to any other toxic substance (if applicable)
- (4) Description of any personal protective equipment used or to be used
- (5) Prior blood lead determinations
- (6) All prior written medical opinions concerning the employee in the employer's possession or control

B. MEDICAL CONSULTATION

Medical consultation will be made available at least annually to any employee under the following situations:

1. The employee has a confirmed BLL of $40 \mu\text{g}/\text{dL}$ or higher within the preceding 12 months.
2. The employee exhibits signs or symptoms commonly associated with lead
3. The employee desires medical advice concerning the effects of current or past exposure to lead on the employee's ability to procreate a healthy child.

C. MULTIPLE PHYSICIAN REVIEW

UCSC will select the physician to conduct the initial medical examination, as listed under Title 8, Section 1532.1. The employee has the right to designate a second physician to review initial examination results after notification to the UCSC Worker's Compensation Office, and have a second examination conducted only after

the initial medical examination has been completed. In the event the two physicians differ in their findings, a third party physician will be agreed on by the two physicians to resolve prior disagreements.

D. MEDICAL REMOVAL PROTECTION

Medical removal protection (MRP) involves the temporary removal of an employee from a worksite, due to elevated blood lead levels, to a place of significantly lower exposure without loss of earnings or seniority or other employment rights or benefits.

An employee is included in the MRP when:

- Worker's periodic and follow-up BLL are equal to 50 micrograms per deciliter ($\mu\text{g}/\text{dL}$). The employee can return to the worksite when two consecutive BLL are less than 40 ($\mu\text{g}/\text{dL}$).
- A final medical determination indicates a medical condition that places the employee at "increased risk of material impairment to health" due to lead exposure.

An employee removed as a result of the physician's recommendation may be returned to former job status when the physician indicates it is safe to do so.

IX. RECORD KEEPING

Accurate records will be established and maintained for the following subjects. The record retention period will be in accordance with UCSC EH&S record retention guidelines or the Occupational Physician criteria for medical records. Affected employees, former employees, and their designated representatives can obtain access to the records mentioned above by providing a written request to the UCSC EH&S Office.

A. EXPOSURE ASSESSMENT

All employee monitoring data will be retained for the period of employment plus 30 years. Exposure monitoring records shall include:

- (1) Date(s), number, duration, location and results of each of the samples taken if any, including a description of the sampling procedure used to determine representative employee exposure where applicable
- (2) Description of the sampling and analytical methods used and evidence of their accuracy
- (3) Type of respiratory protective devices worn, if any
- (4) Name, employee ID number, and job classification of employee monitored and all other employees whose exposure the measurement is intended to represent
- (5) Environmental variables that could affect the measurement of employee exposure

B. MEDICAL SURVEILLANCE

Records will be maintained for employees subject to medical surveillance. Records will include at a minimum:

- employee name
- social security number
- job description/duties
- air monitoring data pertinent to the employee
- any employee medical complaints
- medical examination results including medical/work history
- biological monitoring
- any information or guidelines used to interpret laboratory tests.

Medical records appropriate to this section will be retained for a period of employment plus 30 years.

C. MEDICAL REMOVAL

Records will be maintained for employees removed from current job status due to elevated BLLs. Records will include at a minimum: employee name; social security number; date of removal and return to job status; explanation of how the removal was accomplished; and reason for removal. Records will be retained for at least the duration of the employee's employment.

D. TRAINING

Supervisors or individual employees are responsible for maintaining training records related to training on the UCSC Lead Compliance Program. Records will include: date of training; employee name; and a description or outline of training content.

X. ENVIRONMENTAL MANAGEMENT

Environmental management (i.e., waste characterization, waste disposal) will be conducted under the direction of the Industrial Hygienist or EH&S Consultant.

APPENDIX A

LOCATIONS OF LEAD CONTAINING COATINGS AND MATERIALS

** Residential and public buildings built prior to 1978 must be assumed to have lead containing coatings or materials present. Contact EH&S prior to performing “trigger” task work activities or lead related construction work that may result in exposure to lead at or in facilities built before 1978.

The following areas have been determined to possess lead containing coatings or materials:

Family Student Housing
Mt Hamilton Facilities
Granary Child Care Center
Cardiff House Women’s Center
Cook House
Kerr Hall
Kresge College
Cowell College
Stevenson College
Porter College
McHenry Library

APPENDIX B

ASSUMED EXPOSURES FOR CONSTRUCTION “TRIGGER” TASKS*

50 $\mu\text{g}/\text{m}^3$ to 500 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$ to 2500 $\mu\text{g}/\text{m}^3$	Greater than 2500 $\mu\text{g}/\text{m}^3$
<ul style="list-style-type: none">•Manual demolition•Manual scraping•Manual sanding•Heat gun use•Power tool paint removal in the HEPA vacuum-assist dust collection system	<ul style="list-style-type: none">•Cleanup on dry, abrasive blasting jobs•Abrasive blasting enclosure movement/removal	<ul style="list-style-type: none">•Abrasive blasting

*Title 8 CCR, Section 1532.1

APPENDIX C

RESPIRATORY PROTECTION FOR LEAD AEROSOLS

Airborne Concentration of Lead or Condition of Use	Required Respirator
Not in excess of 500 µg/m ³	<ul style="list-style-type: none"> • ½ mask air purifying respirator with high efficiency filters • ½ mask supplied air respirator operated in demand (negative pressure) mode
Not in excess of 1250 µg/m ³	<ul style="list-style-type: none"> • Loose fitting hood or helmet powered air purifying respirator with high efficiency filters • Hood or helmet supplied air respirator operated in a continuous-flow mode, e.g., type CE abrasive blasting respirator operated in a continuous-flow mode
Not in excess of 2500 µg/m ³	<ul style="list-style-type: none"> • Full facepiece air purifying respirator with high efficiency filters • Tight fitting powered air purifying respirator with high efficiency filters • Full facepiece supplied air respirator operated in a continuous-flow mode • ½ mask of full facepiece supplied air respirator operated in demand mode • Full facepiece self-contained breathing apparatus (SCBA) operated in demand mode
Not in excess of 50,000 µg/m ³	<ul style="list-style-type: none"> • ½ mask supplied air respirator operated in pressure demand or other positive-pressure mode
Not in excess of 100,000 µg/m ³	<ul style="list-style-type: none"> • Full facepiece supplied air respirator operated in pressure demand or other positive-pressure mode, e.g., type CE abrasive blasting respirators operated in a positive-pressure mode
Greater than 100,000 µg/m ³ unknown concentration, or fire fighting	<ul style="list-style-type: none"> • Full facepiece SCBA operated in pressure demand or other positive-pressure mode

APPENDIX D

UCSC ENVIRONMENTAL HEALTH AND SAFETY

Guidance Document for Small Projects Impacting Lead Containing Materials

This document provides guidance to UC employees who may encounter lead containing paints, coatings or materials during *maintenance, renovation, or small-scale demolition* projects. Contact EH&S for guidance involving disturbance of known lead containing paints or materials in public, child occupied or residential facilities.

- 1. Was the building erected prior to 1978 and if so will the project involve construction, alteration and/or repair work on coatings or materials suspected of containing lead? Common lead containing materials encountered on campus include:**
 - Paints and coatings on structures built prior to 1978
 - Interior and exterior coatings on historical buildings such as the Carriage House, Granary and Cook House
 - Interior and exterior coatings on residential and public facilities located at Mt Hamilton
 - Coatings on structural steel located throughout campus
 - Coatings on metal hand rails and metal doors located throughout campus
- 2. Have the materials been tested to verify lead content?**

Have materials suspected of containing lead analyzed to establish whether special work practices must be implemented. If the building was constructed prior to 1978 you must assume lead is present. If the building was constructed after 1978, THERE IS STILL THE POTENTIAL FOR LEAD CONTAINING PAINTS and MATERIALS. Contact EH&S for assistance.
- 3. Will the work activities involve any Cal-OSHA “trigger” tasks on lead containing coatings or materials? If so, specific elements of the standard must be followed including use of protective clothing, respirators, HEPA vacuums, wet methods, medical monitoring, training and hand washing facilities. Cal-OSHA “trigger” tasks include**
 - manual demolition, sanding, scraping, using a heat gun, using HEPA filtered equipment
 - using grinders, needle guns, etc without HEPA exhaust, rivet busting
 - welding, torch cutting , abrasive blasting
- 4. Have you consulted with EH&S for projects involving “target” facilities?**
 - Projects involving paints and coatings on public, residential and child occupied facilities built prior to 1978 and known to contain lead at a concentration of 0.5% (5000 parts per million) or greater AND/OR where the work activity may result in a significant lead exposure to adults and children must be done by California Dept of Public Health certified and trained workers.
 - Regulatory standards differentiate between types of facilities, concentration of lead in the materials, and the potential for significant lead exposure. Consult EH&S for assistance.

The tables below provide guidelines for performing several common tasks that may involve disturbance of lead containing paints or materials. Deviations from the work practices identified should be evaluated by EH&S.

Table 1	Interior Wall Board Renovation Impacting less than 6 square feet
Table 2	Exterior Renovation Impacting less than 20 square feet

TABLE 1

Interior Renovation Impacting less than 6 square feet

PLANNED WORK ACTIVITIES	CONDITIONS	WORK CONTROLS	PERSONAL/ AREA AIR MONITORING	WORKER TRAINING/ PPE	WASTE COLLECTION/ DISPOSAL
<ol style="list-style-type: none"> 1. Wallboard demo 2. Sanding / Scraping / Paint Preparation 	<ol style="list-style-type: none"> 1. Facility constructed prior to 1978. 2. Facility is NOT a child occupied building such as the Granary, Family Student Housing Child Care Center or a family residential structure (Family Student Housing). NOTE: Special training and certification is required for certain work activities in or on child occupied facilities, or residential structures. Consult w/ EH&S. 3. Painted surface to be impacted is known or suspected of containing lead. 4. Six (6) square feet or less of material to be impacted INSIDE the facility. 	<ol style="list-style-type: none"> 1. Cover objects with plastic sheeting or remove 2. Establish work area, close doors, windows, cover ducts. 3. Lay plastic sheeting on floor area 4. Use wet methods to suppress dust and HEPA vacuum for clean up 5. Clean area with HEPA vacuum from top to bottom, wet wipe surfaces and objects. 6. Clean and wipe down tools prior to removing from area. 	<ol style="list-style-type: none"> 1. Initial air monitoring required to evaluate exposure 	<ol style="list-style-type: none"> 1. Cal-OSHA Lead Standard Training 2. Wear respirator w/ HEPA cartridges. 3. Wear protective clothing. 4. Wash hands as soon as possible after work completed. 	<ol style="list-style-type: none"> 1. Area should be wet-wiped clean of all visible debris and/or HEPA vacuumed. 2. Paint chips should be placed in sealed bag and provided to EH&S. 3. Clean and wipe down plastic sheeting for re-use or disposal in ordinary trash.

TABLE 2

Exterior Renovation Impacting less than 20 square feet

<p>PLANNED WORK ACTIVITIE S</p>	<p>CONDITIONS</p>	<p>WORK CONTROLS</p>	<p>PERSONAL/ AREA AIR MONITORING</p>	<p>WORKER TRAINING/ PPE</p>	<p>WASTE COLLECTION/ DISPOSAL</p>
<p>1. Sanding / Scraping / Paint Preparation 2. Manual Demo</p>	<p>1. Facility constructed prior to 1978. 2. Facility is NOT a child occupied building such as the Granary, Family Student Housing Child Care Centers or a family residential structure (Family Student Housing). NOTE: Special training and certification is required for certain work activities in or on child occupied facilities, or residential structures. Consult w/ EH&S. 3. Painted surface to be impacted is known or suspected of containing lead. 4. Twenty (20) square feet or less of material to be impacted OUTSIDE.</p>	<p>1. Establish work area, close doors, and windows within 20 feet of renovation area. 2. Cover doors and windows in the immediate work area with plastic sheeting. 3. Cover the ground with plastic sheeting extending 10 feet around the perimeter of work area or sufficient distance to collect paint chips, dust, debris. 4. Use wet methods and/or HEPA vacuum to suppress dust . 5. Clean and wipe down tools prior to removing from area.</p>	<p>1. Initial air monitoring required to evaluate exposure</p>	<p>1. Cal-OSHA Lead Standard Training 2. Wear respirator w/ HEPA cartridges. 3. Wear protective clothing. 4. Wash hands as soon as possible after work completed.</p>	<p>1. Area should be wet-wiped clean of all visible debris and/or HEPA vacuumed. 2. Paint chips should be placed in sealed bag and provided to EH&S. 3. Clean and wipe down plastic sheeting for re-use or disposal in ordinary trash.</p>