



CALIFORNIA STATE UNIVERSITY, FULLERTON

Environmental Health & Safety

Lead Exposure Management Plan

1.0. Policy

CSUF has developed the Lead Exposure Management Plan to reduce occupational and environmental exposure to lead, a potent neurotoxin and carcinogen that causes reproductive toxicity and is regulated by federal and state agencies. To effectively reduce exposures, the plan considers the nature of the task involved, confirmed and presumed exposures, and the lead content of the material being used.

2.0 Authority

OSHA regulates lead-related construction in 29 Code of Federal Regulations (CFR) §1926.62 and Cal/OSHA in the California Code of Regulations (CCR) Title 8, §1532.1. The California Department of Health Services regulates accreditation, certification, and work practices for lead-based paint and lead hazards with CCR Title 17, Division 1, Chapter 8. And, the US Environmental Protection Agency (EPA) in 40 CFR 261.24 and the California EPA in 22 CCR 6626.1 (a) (1), 66268.40, 66261.10, 66268.7 (d), and 66268.45 regulate lead waste disposal.

3.0 Scope

This plan covers all campus lead-related construction or abatement projects.

4.0 Definitions

Abatement - is a comprehensive process to eliminate exposure to lead which includes containment, cleanup, disposal, and testing and involves lead-based paint.

Action Level (AL) - is when employee exposure to lead reaches 30 µg/m³. At this level CSUF implements control measures to reduce exposures.

Administrative Controls - are written policies such as site safety plans and SOPs which remove or prevent exposure to physical, biological, or chemical hazards.

Air Purifying Respirator (APR) - is a respirator with an air purifying filter cartridge that removes specific contaminants from the ambient air.

Blood Lead Level (BLL) - is a measure of the amount of lead in an employee's blood.

Cal/OSHA - is the California Occupational Safety and Health Administration.

Certification - is a document given by the Department of Health Services (DHS) for Lead Inspector/Assessors, Project Designers, Project Monitors, and Supervisors.

Clearance - is an on-site limited investigation to determine whether abatement or lead activities have been completed.

Components - include individual building components such as a door or window sill.

Containment - is the process for protecting both workers and the environment by controlling exposures to lead dust and debris created during abatement.

Dust Wipes - are samples collected and analyzed to determine the lead dust concentration.

Engineering Controls - are measures such as fences, safety guards, and ventilation systems to contain, control, or reduce exposure to lead dust and debris.

Exposure - means inhalation or absorption of a concentration of a contaminant.

Final Inspection - is an inspection by a qualified inspector or an industrial hygienist to determine whether abatement and cleanup are complete.

High Efficiency Particulate Air (HEPA) - describes a filter capable of removing from air particles larger than 0.3 microns at 99.97% efficiency or greater.

Lead-based Paint - is a surface coating containing by weight more than 0.5% lead. Before sampling assume that paint applied before January 1, 1993 is lead-based.

Lead-contaminated Dust - contains at least the following amounts of lead for each building component: 40 µg/ft² on interior floor surfaces, 250 µg/ft² on interior window surfaces, and 800 µg/ft² on exterior floor and window surfaces.

Lead Management - is an abatement strategy by which lead is left in place and encapsulated or covered to reduce exposure.

Lead Related Construction - means any construction activity that may result in significant exposure to lead. It involves work trigger tasks or building materials containing over 0.06% lead by weight.

Local Exhaust - capture a contaminant at or near its source.

Micrograms (µ) - is one millionth of a gram.

Negative Exposure Assessment (NEA) - means a demonstration that employee exposures during an operation are expected to be consistently below the PEL.

OSHA - is the Occupational Safety and Health Administration.

Parts per Million (PPM) - is the proportional weight of one part of lead per weight of the total amount of material expressed as lead weight/million parts weight material.

Permissible Exposure Limit (PEL) - Are legal exposure levels set by OSHA and Cal/OSHA. Exposure to lead above 50 µg/m³ requires that CSUF take special precautions to ensure employee safety.

Personal Exposure Monitoring - is the air monitoring of an employee breathing zones to determine the amount of contaminant to which they are exposed.

Personal Protective Equipment (PPE) - includes gloves, coveralls, respirators, and other items designed to reduce exposure to specific hazards.

Regulated Areas - are established areas within which protective measures are taken and which are posted with warning signs.

Trigger Tasks - are specified tasks performed when lead is present and that trigger basic protective measures.

Zinc Protoporphyrin - is a test which indicates the effect of lead on the blood-forming system and which is required when a BLL is performed.

5.0 Implementation

The Director of Environmental Health and Safety is responsible for assuring the effective distribution of this Plan and its annual review. Questions concerning this Plan and its implementation should be directed to sbourdon@fullerton.edu.

6.0 Accountability

6.1 Physical Plant

- A. Develop work procedures where there is a potential of disturbing lead containing materials.
- B. Assist EH&S with identification, location and maintenance of lead-based paint and lead containing construction materials campus-wide.
- C. Ensure that Physical Plant staff is notified of the presence of lead or lead-based materials.
- D. Assist EH&S in the collection of paint chip samples for laboratory analysis.
- E. Ensure that all lead-related construction and abatement work managed by Physical Plant is performed in accordance with current guidelines.
- F. Maintain all Certifications for abatement and lead-related construction staff.

6.2 Environmental Health and Safety (EH&S)

- A. Provide technical assistance to Physical Plant and Design and Construction regarding specification development; exposure potential of abatement and lead-related construction projects; and monitoring activities.
- B. Perform personal and environmental sampling during abatement and other lead-related construction projects.
- C. Maintain an inventory of all known lead and lead-based material locations.
- D. Inspect all phases of abatement projects.
- E. Provide hazard communication and personal protective equipment (PPE) training to staff that may be occupationally exposed to lead.
- F. Coordinate medical surveillance of workers exposed to lead.
- G. Assist contractors in meeting the CSUF Lead Management program.
- H. Monitor lead-related construction projects to prevent contamination of adjoining areas.

6.3 Design and Construction

- A. Identify lead containing building materials and surface coatings that may be disturbed during the course of a project and evaluate for abatement. Contact EH&S to determine if affected areas have been sampled prior to construction.
- B. Coordinate lead-based paint abatement and other lead-related construction.
- C. Coordinate with an environmental compliance company to ensure that contractors comply with OSHA lead-related construction requirements regarding employee protection including hazard communication, personal exposure monitoring, and PPE.
- D. Coordinate with EH&S for inspection of all phases of abatement projects.
- E. Coordinate with an environmental consulting company to ensure containment measures for abatement and other lead-related construction projects to prevent contamination of adjoining areas.

6.4 Lead Certified Personnel

- A. Identify lead-related construction tasks that may generate lead dust.
- B. Notify supervisors and/or EH&S prior to starting lead-related construction.
- C. Wear PPE when required.
- D. Follow approved lead abatement/management practices.
- E. Maintain Certification.

7.0 Program

7.1 Personal and Environmental Sampling

All lead-related construction work requires personal exposure monitoring of employee exposures to airborne lead. In particular, work involving "trigger tasks" could expose employees to lead. "Trigger tasks" are described below and require specific precautions until

personal exposure monitoring determines that a particular task will not expose an employee to lead above the PEL.

Personal exposure monitoring involves the collection of air samples from the employee breathing zone indicative of an eight hour workday. Until this initial assessment has been performed for the identified job task, staff shall presume that exposures will exceed the PEL. EH&S performs exposure assessments and maintains exposure records. If the assessment indicates that the employee was not exposed to lead above the PEL a negative exposure assessment (NEA) has been established and remains valid for up to six months for that particular task. When NEA is below the AL the exposure assessment is valid for twelve months. Changes in work practices or the expiration of the NEA requires another exposure assessment.

EH&S may collect dust wipes or air samples during the course of any project to detect the contamination of adjoining areas by lead dust. Containment, barriers, and good housekeeping can effectively prevent contamination. The State of California defines lead-contaminated dust as dust containing more than 50 micrograms of lead per square foot for floor samples.

7.2 Trigger Tasks and Personal Protection

Trigger tasks require some basic protective measures unless an NEA indicates that the particular task will not expose employees to lead above the PEL. They include lowest exposure trigger tasks, medium exposure trigger tasks, and highest exposure trigger tasks. The basic protective measures apply for all trigger tasks and the respiratory requirements vary according to the exposure level of the trigger task.

7.2.1 The Basic Protective Measures

- A. Respiratory protection
- B. PPE such as gloves, coveralls, eye protection, and foot protection
- C. Change areas with separate storage facilities for work and street clothes
- D. Hand washing facilities
- E. Medical monitoring for lead
- F. Training for hazard communication, lead, and respirators

7.2.2 Lowest Exposure Trigger Tasks

- A. Manual demolition, scraping, and sanding
- B. Heat gun applications
- C. Power tool cleaning with a dust collection system

7.2.3 Medium Exposure Trigger Tasks

- A. Use of lead containing mortar
- B. Rivet busting

- C. Power tool cleaning without dust collection system
- D. Cleanup of dry expendable abrasives
- E. Movement of abrasive blasting enclosure

7.2.4 Highest Exposure Trigger Tasks

- A. Abrasive blasting and cleanup
- B. Welding and cutting
- C. Torch burning

7.2.5 Respiratory Protection for Trigger Tasks

- A. Lowest exposure trigger tasks (<500 µg/m³ exposure) require at least a half-mask air purifying respirator with a P100 filter.
- B. Lowest exposure trigger tasks (<1,250 µg/m³ exposure) require a hood or helmet powered air purifying respirator (PAPR) with P100 filters.
- C. Medium exposure trigger tasks (<2,500 µg/m³ exposure) require full face-piece air purifying respirators or a full face-piece PAPR with P100 filters.
- D. Highest exposure tasks require even greater respiratory protection, so discuss the requirements with EH&S prior to starting the work.
- E. The CSUF Respiratory Protection Program (IIPP Appendix XXIII) provides additional information on the care, handling and training for respirators.

7.3 Reduction of Lead Exposure

Engineering and administrative controls represent the primary options for the reduction of exposure to lead. When these methods are not sufficient, respiratory protection and other PPE may effectively reduce exposures. Mechanical ventilation using a HEPA filter is often used as an engineering control, and employee rotation used as an administrative control can also reduce exposures.

7.3.1 PPE

PPE provides an effective means to shield employees from exposure of the skin or eyes to lead. These items will also reduce the risk of contaminating the employee's home or to another work area. PPE includes coveralls, booties, hoods, face shields, vented goggles, gloves, and other appropriate items.

7.3.2 Housekeeping and Hygiene

Housekeeping practices help to ensure that all surfaces are lead free. Wherever possible, HEPA vacuums and wet methods can prevent the aerosolization of lead dust. Shoveling, dry or wet sweeping, and brushing are not recommended. In addition, the consumption of food, beverages or tobacco is prohibited in areas where lead exposures may occur.

7.3.3 Medical Removal

Temporary removal of employees shall occur if blood lead levels exceed 50 mg/dl and where a "final medical determination" indicates an increased risk of health impairment to occupational lead exposure. Any employee exposed to airborne lead above the AL for more than 30 days in a year are required to undergo medical monitoring for lead levels and zinc protoporphyrin levels in the blood.

7.4 Training

All employees that may come in contact with lead containing materials shall receive Hazard Communication training with information pertaining to lead exposure. Also, before abating lead-based paint, employees shall obtain a Lead Abatement Certification approved by the Department of Health Services (DHS).

7.5 Signage

CSUF will post the following warning sign in a visible location outside of each work area where exposures are above the PEL.

**Warning
Lead Work Area
Poison
No Smoking or Eating**

7.6 Records

CSUF maintains employee exposure records for at least thirty years. The records are available upon request to the affected employees, former employees and their designated representatives and include:

- A. Exposure Assessment - all monitoring and data used in conducting an assessment (i.e. date/s, number, duration, tasks, location, results, of sampling procedures). In addition, include the type of respiratory protective device worn and environmental variables affecting measurements.
- B. Medical Surveillance - records contain employee medical history, medical examination results, and results of biological monitoring. Records will be maintained at the facility conducting the medical monitoring.
- C. Medical Removal - all information pertaining to removal of an employee from a current exposure to lead. This information will include, date of each occasion the employee was removed as well as the corresponding date the employee returned, the cause of removal and statements explaining how the removal was handled. California State University Fullerton maintains medical removal records for at least the duration of the employment.
- D. Objective Data for Monitoring Exemptions - information demonstrating a particular product, material, procedure, operation or activity where the release of lead dust or

fumes is below the action level. Objective data can be obtained from industry wide studies or exposure assessments.

7.7 Work Practices for Lead-based Paint

Before performing one of the trigger tasks mentioned in Section 3.2 surface coatings should be sampled to determine lead content. Once results have established that the paint contains lead at above 0.06% (600 parts per million) by weight the following procedures should be implemented. These procedures have been established to prevent exposure to employees in excess of the PEL when they work with lead containing paint or debris.

7.7.1 Pre Work Activities

- A. Physical Plant shall contact EH&S and to complete a jobsite survey to ensure compliance with the Lead Exposure Management Plan.
- B. Review SOP for paint removal.
- C. Review Compliance Document and requirements.
- D. Stage recommended tools, equipment, materials, PPE and HEPA vacuum.
- E. For abatement, lead-related construction, and trigger tasks establish a regulated area by setting up visual warning signs and (tape) barriers.
- F. Assure that EH&S or a consultant has been requested to evaluate the need to conduct personal exposure monitoring during each job.

7.7.2 Work Area

- A. Designate location for decontamination and change room/area.
- B. Don tyvek suit(s) with hood, shoe covers, nitrile gloves, goggles or safety glasses in the designated area. *Note: two (2) tyvek suits shall be worn.*
- C. Don the respirator and perform fit check.
- D. Check MSDS for all chemicals being used.
- E. Remove loose/peeling paint from surface by manual scraping. Do not use power tools, such as grinders or sanders.
- F. Clean tools, equipment and work area using HEPA vacuum and wet wiping.
- G. HEPA vacuum and remove protective clothing (one suit) in designated decontamination area. Remove respirator last.

7.7.3 Work Practices

- A. Use wet methods when manually disturbing lead containing materials.
- B. Establish a system to capture debris when disturbing lead overhead.
- C. For component removal use manual and wet methods.
- D. For component removal score with a razor knife to minimize paint chips.
- E. Use HEPA filtered local exhaust attachments for mechanical scraping/sanding.
- F. Remove lead containing coatings before welding or penetrating surfaces.
- G. Wash hands and face in designated decontamination area.
- H. Move to the designated clean area for change of clothing.

- I. Ensure good housekeeping to control lead dust contamination.

7.7.4 Clean-up Procedures

- A. Dispose of protective clothing and drop cloths as hazardous waste. Place in double 6 ml. plastic bags, close, seal and label.
- B. During all phases of lead-related construction work use a HEPA vacuum to clean all surfaces within the impacted work area.
- C. When using HEPA filtered vacuums remove all visible debris beginning at the area of impact and move out toward the outer perimeter of the polyethylene sheeting. Wet wipe when vacuum is not adequate to remove debris.
- D. For HEPA filters collect and place into double plastic bags. Do not overload the bags, close and seal. Label the bags and treat as hazardous waste.
- E. Use a HEPA vacuum and wet wipe all tools and equipment.
- F. Remove polyethylene sheeting, except for critical barriers, by folding it into itself beginning with the higher level sheet.
- G. After removing polyethylene sheeting clean workspace by using a HEPA vacuum, wet wiping, and using the HEPA vacuum again.
- H. A DHS certified supervisor should inspect the visible work area for debris. After debris is located, repeat the final cleaning process.
- I. All wet wiping, washing, and cleaning procedures shall include a lead specific detergent or other approved cleaning agent followed by a rinse with clean water and rags.

7.7.5 Final Inspections for Lead-related Construction

- A. Qualified consultants or EH&S can perform inspections.
- B. Visually inspect the affected areas for contamination prior to re-occupancy.
- C. Maintain the perimeter barriers until a written release has been provided.
- D. After visual inspection, collect wipe samples if contamination is suspected.

7.7.6 Final Inspections for Lead Abatement

- A. For Physical Plant abatement projects, EH&S provides final inspections. For Design and Construction projects, EH&S provides a written release based on the environmental consultant final inspection report.
- B. Visually inspect the affected areas for contamination.
- C. Collect environmental samples.
- D. Samples should comply with Title 17, CCR before area is occupied.
- E. When samples do not comply use clean up procedures.
- F. After cleaning, inspect and sample until compliance has been achieved.

7.7.7 Reestablishment of the Work Area

- A. Reoccupy the work area only after documenting the clearance inspections.
- B. Before project completion reestablish HVAC, electrical, and mechanical systems.

- C. Repair all areas of damage that occurred resulting from abatement or lead-related construction work.

7.8 Waste Management

Waste generated from demolition, surface preparations, and abatement operations that contain lead-based paint shall be categorized by the physical characteristic of the waste. Generally, the ratio of lead-based paint to the entire weight of should be considered when classifying the waste. However, if the paint is physically separated from the substrate during demolition or preparation work, it should be evaluated independently. The following **flow diagram**  lists the proper management techniques or any lead waste generated.

Revised: 7/26/2005 SB, 8/2012 tw