Lead Hazards and Controls

BRIEF

Policy Summary
The Lead Program at Berkeley Lab intends to minimize lead exposures and to ensure that any activities performed at the Laboratory involving lead or lead-containing materials comply with all applicable regulations.

Who Should Read This Policy
All Berkeley Lab employees, affiliates, subcontractors, and visitors

To Read the Full Policy, Go To:
The POLICY tab on this wiki page

To Read the ES&H Program Details, Go To:
http://www.lbl.gov/ehs/pub3000/CH37.html

Contact Information

Lead Subject Matter Expert
EHSS Division

Policy

A. Purpose
The Lead Program at Lawrence Berkeley National Laboratory (Berkeley Lab) intends to minimize lead exposures and to ensure that any activities performed at the Laboratory involving lead or lead-containing materials comply with all applicable regulations.

B. Persons Affected
All Berkeley Lab employees, affiliates, subcontractors, and visitors

C. Exceptions
None
D. Policy Statement

1. The Lead Program at Berkeley Lab is intended to minimize lead exposures and to ensure that any activities performed at the Laboratory involving lead or lead-containing materials comply with all applicable regulations. When implemented properly, this program provides Berkeley Lab employees, subcontractors, and affiliates with a safe and healthful work environment by instituting feasible engineering controls and work practices. In addition, administrative controls and respiratory protection will be used to further reduce exposures to lead concentrations not adequately controlled by engineering methods or work practices.

2. Proper lead management safeguards the health and safety of workers and building occupants, minimizes the impact to the environment, and ensures adherence to regulations concerning lead in the work environment. The purpose of the Lead Program is to outline the guidelines and work processes required to manage, handle, alter, and/or disturb any lead or lead-containing materials at Berkeley Lab.

3. Lead at Berkeley Lab is present in various forms and processes that pose potential employee exposure hazards. Deteriorating lead-based paint, dust from lead shielding, and research processes using lead are potential exposure sources. Employees may also be exposed to lead during construction, alteration, repair, renovation, painting, or decorating that involves any sanding, grinding, welding, removal, or disturbance of surface or building materials that contain or are coated with lead. Lead exposures may also occur with installing lead-containing products.

4. Lead hazards are controlled at Berkeley Lab by:
   - Following general requirements for the application and installation of lead-containing products, proper handling of lead shielding, following necessary personal hygiene practices, and establishing regulated work areas when required: Work Process A, General Requirements
   - Requesting a lead hazard assessment when lead-containing materials are damaged or will be disturbed over the course of the work: Work Process B, Lead Hazard Assessment
   - Receiving the appropriate training and qualifications for the type of lead work being performed: Work Process C, Training and Qualifications
   - Planning lead work and receiving the necessary authorization and/or permits to begin: Work Process D, Authorizations, Permits, and Approved Work Plans
   - Using the necessary work controls: Work Process E, Controlled Operations and Work Controls
   - Disposing of lead-contaminated waste properly: Work Process F, Waste Disposal
   - Ensuring that required monitoring is performed before, during, and after work: Work Process G, Exposure and Surface Contamination Monitoring

E. Roles and Responsibilities

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<thead>
<tr>
<th>Role</th>
<th>Responsibility</th>
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</table>
| **Line management**               | • Requests for industrial hygienist to evaluate work areas and activities for all workers who may be potentially exposed to lead above established limits  
• Plans and supervises work in accordance with the Berkeley Lab Integrated Environment, Safety & Health Management Plan  
• Ensures that all available and specified engineering controls, administrative controls, and personal protective equipment (PPE) are implemented before work begins, and ensures that they are used appropriately  
• Verifies that workers have read the established job-specific Negative Exposure Assessment or the applicable Lead Compliance Work Plan  
• Verifies that workers are adequately and properly trained before starting work  
• Schedules workers who have been exposed to levels above the Action Level for medical exams and enrollment into the Berkeley Lab Health Services Lead Medical Surveillance Program  
• Ensures that individuals who may be potentially exposed to lead receive appropriate training  
• Conducts job-specific lead training  
• Provides an alternate work area and non-lead work activities for workers whom Health Services has removed from work involving lead exposure  
• Notifies the assigned industrial hygienist at least 48 hours before lead work begins |
| **Employees, subcontractors, affiliates, and visitors** | • Follow the requirements outlined in this document and other lead-work procedures for work involving lead  
• Attend required lead training as specified in Work Process C, Training and Qualifications  
• Report to line management any operation or unanticipated work activities that involve lead or lead-containing materials that were not addressed by Integrated Safety Management or pre-task planning  
• Use engineering controls and PPE in accordance with instruction and training  
• Notify Health Services if pregnant or actively trying to conceive a child, if working with lead or lead-containing materials |
## Industrial hygienist

- When possible, establishes job-specific Negative Exposure Assessments for similar lead work activities
- Performs required air monitoring
- Notifies workers, supervisors, and Health Services of:
  - Air-sample results within five days of receiving results from the analytical laboratory
  - Any requirements for medical surveillance
- Assists in the design, implementation, and testing of engineering control systems
- Reviews job-specific Negative Exposure Assessments, bid specifications, and Lead Compliance Work Plans to ensure they incorporate adequate controls
- Recommends the most appropriate type of respirator for workers involved in lead work
- Refers employees to Respiratory Protection Program Manager for issuance of appropriate respirator and testing, and to Health Services for any required medical evaluations
- Assists supervisors in identifying potential lead-disturbing activities
- Performs bulk and surface wipe sampling as required, or as appropriate

## Lead Program Manager

- Develops and maintains the Lead Program
- Develops and provides the necessary classroom training, or assists in identifying an alternate source of training
- Assists industrial hygienists with establishing job-specific Negative Exposure Assessments
- Assists industrial hygienists with reviewing facilities bid specifications and Lead Compliance Work Plans to ensure they incorporate adequate controls

## Health Services

- Performs required respirator medical approvals and focused surveillance exams to include appropriate blood chemistry tests for employees exposed above the lead Action Level
- Determines when workers must be removed from lead work activities because of abnormalities detected during medical surveillance
- Determines when workers can return to lead work activities after being removed because of medical abnormalities
- Notifies workers of any medical findings, as required
- Notifies supervisors of any work restriction related to lead work
- Requests the Industrial Hygiene Group to perform a work-site evaluation for any worker found to have an elevated blood lead level
- Coordinates exposure monitoring results with the Lead Program Manager

## Facilities Division

- Notifies the Lead Program Manager of purchases of lead-containing materials
- Prohibits Facilities personnel, supplemental labor personnel, and construction contractors from using construction products containing more than 0.06% lead, or any lead on drinking-water lines
  - This does not apply to electrical solder.
- Specifies in construction contracts if and where lead will be disturbed; alternatively, requires that subcontractors determine the presence of lead before disturbing materials that may contain it
- Develops and maintains a bid specification that implements the Berkeley Lab Lead Program in construction, renovation, and demolition contracts where lead material may be encountered

## Procurement and Property Management

- Notifies the Lead Program Manager, and obtains approval, prior to purchase of lead materials, in accordance with established protocols

## F. Definitions/Acronyms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Action Level (AL)</td>
<td>Employee exposure established by the federal Occupational Safety and Health Administration (OSHA) as airborne lead at an eight-hour time-weighted average concentration of 30 micrograms of lead per cubic meter ($\mu g/m^3$) of air or 0.030 milligrams per cubic meter ($mg/m^3$) of air, without regard to the use of respirators</td>
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<tr>
<td>Engineering controls</td>
<td>Measures other than respiratory protection or administrative controls that are implemented at the work site to contain, control, and/or otherwise reduce exposure to lead-contaminated dust and debris usually in the occupational health setting. The measures include process and product substitution, isolation, and ventilation.</td>
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<tr>
<td>Exposure monitoring</td>
<td>The sampling and analysis of air both inside and outside the work area to determine the degree of worker and occupant exposure to lead or other airborne contaminants, often involving air sampling inside a worker's breathing zone</td>
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<td>Lead Compliance Work Plan</td>
<td>A document that describes the types of tasks, workers, protective measures, and tools and other materials that may be employed to control lead-containing hazards in order to comply with the OSHA Lead Exposure in Construction standard</td>
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</table>
Lead-containing | A coating or material that contains any detectable level of lead

Lead-contaminated surface | Any surface that contains an area or mass concentration of lead in excess of a regulatory limit established by OSHA or the Environmental Protection Agency (EPA) or in excess of a guideline established by an Environment, Health, Safety, and Security (EHSS) industrial hygienist or the Lead Program Manager

Lead paint abatement | A measure or set of measures designed to permanently eliminate lead-based paint hazards or lead-based paint. Abatement strategies include the removal of lead-based paint, removal of lead-contaminated dust, and removal of lead-contaminated soil or overlaying of soil with a durable covering such as asphalt. All these strategies require preparation; cleanup; waste disposal; post-abatement clearance testing; recordkeeping; and, if applicable, monitoring.

Negative Exposure Assessment (NEA) | A Negative Exposure Assessment (NEA) is a written statement within the past 12 months by an EHSS industrial hygienist indicating that a specific lead-disturbing job (or a class of very similar lead-disturbing jobs) does not result in worker exposure above the Action Level. Work conducted pursuant to an NEA can proceed without subsequent review, provided that the controls specified in the NEA are implemented.

Permissible Exposure Limit (PEL) | The eight-hour time-weighted average concentration of airborne lead an employee exposure may not exceed without the use of respirators. The OSHA value is 50 µg/m³ of lead in air or 0.050 mg/m³ of lead in air.

Public building | A structure, or part of a structure, and its land, which are generally accessible to the public, including but not limited to schools, day-care centers, museums, airports, hospitals, stores, convention centers, government facilities, office buildings, and any other building that is not an industrial building or a residential building

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

G. Recordkeeping Requirements

Lead Compliance Work Plans are required to be developed and submitted for review by an EHSS industrial hygienist or the Lead Program Manager. Examples of lead work activities requiring a Lead Compliance Plan include but are not limited to:

- Lead paint removal prior to hot work
- Cleaning of lead bricks (or shielding)
- Cutting or machining of lead bricks or other lead shielding
- Handling more than five lead bricks or other lead shielding
- Installing enclosure booths in the Advanced Light Source (ALS) (or similar activities)

In addition, California Department of Public Health (CDPH) Form 8551 must be posted at the work site during lead paint abatement for designated public buildings.

The Berkeley Lab Lead Work Permit can be completed and submitted for small lead work activities performed by Berkeley Lab employees. The Lead Work Permit must be approved and signed by an EHSS industrial hygienist.

H. Implementing Documents

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<thead>
<tr>
<th>Document Number</th>
<th>Title</th>
<th>Type</th>
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<tbody>
<tr>
<td>07.07.019.001</td>
<td>Lead Hazards and Controls</td>
<td>Program</td>
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<tr>
<td>07.07.019.002</td>
<td>Work Process A, General Requirements</td>
<td>Process</td>
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Lawrence Berkeley National Laboratory. The official or current version is located in the online LBNL Requirements and Policies Manual. Printed or exported versions are not official. Users are responsible for working with the latest approved revision.
I. Contact Information

Lead Subject Matter Expert
EHSS Division

J. Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>By whom</th>
<th>Revision Description</th>
<th>Section(s) affected</th>
<th>Change Type</th>
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<td>1/2/2012</td>
<td>0</td>
<td>J. Heim</td>
<td>Re-write for wiki (brief)</td>
<td>All</td>
<td>Minor</td>
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<tr>
<td>5/28/2013</td>
<td>1</td>
<td>J. Fleming</td>
<td>Re-write for wiki (brief)</td>
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Document Information

DOCUMENT INFORMATION

Title: Lead Hazards and Controls
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Revision number: 1
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Policy Area: Industrial Hygiene and Safety
RPM Section (home): ESH
RPM Section (cross-reference): none
Functional Division: EHSS
Prior reference information (optional): PUB-3000 Section 4.11 moved to Chapter 37

Source Requirements Documents

- 29 CFR 1910.1450, Occupational Exposure to Hazards in Laboratories
- 17 CCR 35001-36100, Accreditation, Certification and Work Practices for Lead-Based Paint and Lead Hazards
- 29 CFR 1910.1025, Lead
- 29 CFR 1926.62, Lead

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