



The Cal/OSHA Lead in Construction Regulation—A Guide for Employers



May 2025

This document is neither a substitute for, nor a legal interpretation of, the occupational safety and health regulations. Readers must refer directly to title 8 of the California Code of Regulations and the Labor Code for details regarding the regulations' scopes, specifications, and exceptions, and other requirements that may apply to their operations.

Workplace safety and health information is available online at:

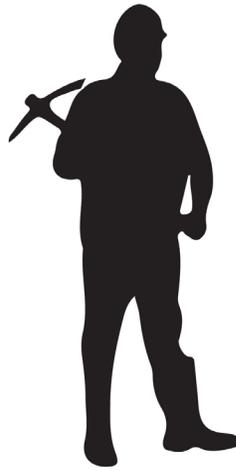
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Summary of California's Lead in Construction Standard

Under the California Labor Code and the California Occupational Safety and Health Act, all employers in California are legally required to provide and maintain a safe and healthy workplace for employees.

The California Code of Regulations, title 8, section 1532.1 Lead (T8 CCR 1532.1), is Cal/OSHA's occupational health standard for lead in Construction. Its purpose is to protect employees who may be exposed to lead while performing construction work. Cal/OSHA has a separate standard for **Lead in General Industry – T8 CCR 5198**.

Who needs to comply with this standard?

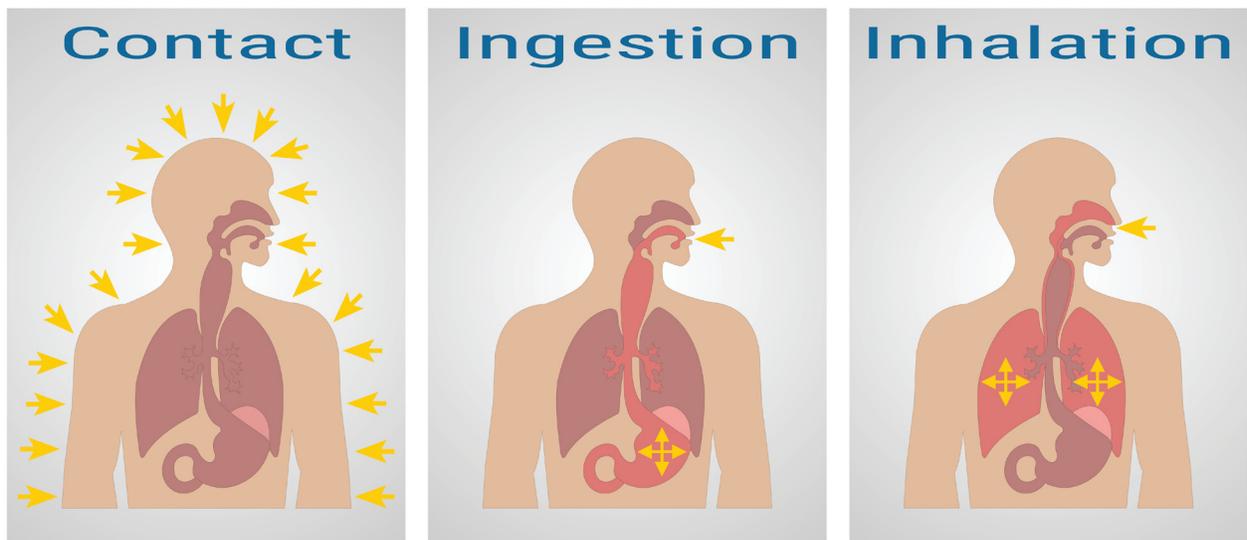
The **California Code of Regulations, Title 8, Section 1532.1** (T8 CCR 1532.1) standard applies to all **construction work**:

- Where an employee may be occupationally exposed to lead.
- Excluded from coverage in the general industry standard for lead by T8 CCR 5198 subsection (a) (2).

Construction work is defined as work for construction, alteration and/or repair, including painting and decorating, including:

- Demolition or salvage of structures where lead or materials containing lead are present
- Removal or encapsulation of materials containing lead
- New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead
- Installation of products containing lead
- Lead contamination/emergency cleanup
- Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed
- Maintenance operations associated with the construction activities described in T8 CCR 1532.1 subsection (a)

Routes of Exposure



Introduction

Pure lead is a heavy metal at room temperature and pressure and is a basic chemical element. It can combine with various other substances to form other lead compounds (new substances containing lead and other elements).

Lead has been poisoning workers for thousands of years. Lead can damage the central nervous system, cardiovascular system, reproductive system, blood system, and kidneys. When absorbed into the body in high enough doses, lead can be toxic. In addition, workers' lead exposure can harm their children's development. Biological parents' lead exposure can harm the physical and mental development of a baby before birth.

Routes of exposure

Lead can be absorbed into the bloodstream by inhalation (breathing it in) and ingestion (swallowing it). When lead is scattered in the air as dust, fume or mist, it can be inhaled and absorbed through the lungs. Lead can also be absorbed through the digestive system if lead gets into the mouth and is swallowed. This can occur when one's hands are contaminated with lead and food, beverages, cigarettes, chewing tobacco, or make-up are handled. Once in the bloodstream, lead is spread throughout the body and stored in various organs and body tissues. Some of this lead is filtered out of the body, but some stays in the blood and other tissues. As exposure to lead continues, the amount stored in the body will increase if more lead is absorbed than the body is getting rid of. Even though a person may not be aware of any immediate symptoms of lead being in the body, this lead stored in the tissues can slowly cause damage to individual cells, then to the organs and whole-body systems.

Short-term (acute) overexposure

In large amounts over a short period of time, exposure to lead can be deadly within days. A condition called acute encephalopathy can develop rapidly, leading to seizures, coma, and even death. Although such extreme exposure is rare, the consequences are severe.

Pregnant people exposed to high doses of lead may have miscarriages or give birth to underweight babies. Males may experience sperm abnormalities due to high, short-term lead exposures.

Long-term (chronic) overexposure

When exposed to lead over extended periods, serious damage can also occur in various body systems. These include the cardiovascular, blood-forming, nervous, urinary, and reproductive systems.

Typical symptoms of chronic overexposures include the following:

- Loss of appetite
- A metallic taste in the mouth
- Anxiety
- Constipation
- Nausea
- Pallor (paleness or a loss of color from normal skin tone)
- Excessive tiredness
- Weakness
- Insomnia
- Headaches
- Nervous irritability
- Muscle and joint pain
- Fine tremors (small, involuntary shaking movements)
- Numbness

- Dizziness
- Hyperactivity
- Lead colic (severe abdominal pain)

Blood lead levels previously considered harmless have been found to produce health problems, such as:

- High blood pressure
- Heart disease
- Decreased kidney function
- Reproductive and neurological effects
- Premature death due to cardiovascular, kidney and neurological effects

Some people experience no symptoms even while lead is causing harm in their bodies. It's important to know that permanent damage can occur even without noticeable symptoms.

Worker exposure

Workers in the construction industry may come into contact with lead when they demolish or salvage buildings with lead or lead-containing materials, remove or encapsulate lead-containing materials, build new buildings with lead or lead-containing materials, or install products containing lead. There are also construction-related activities that may expose workers to lead, such as the transportation, disposal, storage, or containment of lead or materials containing lead on construction sites, and the maintenance operations associated with construction activities. Projects such as removing paint from a few interior residential doors may involve limited exposure. Other projects, however, may involve removing or stripping greater quantities of lead-based paints on large bridges and other structures.

Who's most at risk?

Workers involved in the types of work listed below could be at risk of lead exposure and include:

- Iron work
- Demolition

- Painting and painting-prep
- Lead-based paint abatement
- Heating and air conditioning maintenance and repair
- Electrical
- Carpentry
- Renovation
- Remodeling
- Plumbing

Plumbers, welders, and painters are among those workers most exposed to lead.

The standard lists certain tasks which may likely result in exposures to lead above the Permissible Exposure Limit (PEL) and, in some cases, exposures more than 50 times the PEL. These tasks are known as trigger tasks and are described in the Glossary section of this guide.

Workers at the highest risk of lead exposure are those involved in Level 3 trigger tasks, which include:

- Using lead-containing mortar
- Lead burning
- Tasks where lead-containing coatings or paint are present:
 - Rivet busting
 - Power tool cleaning, grinding or sanding without dust collection systems
 - Cleanup activities where dry expendable abrasives are used
 - Abrasive blasting enclosure movement and removal
 - Abrasive blasting*
 - Welding
 - Torch cutting
 - Torch burning

***Notes on Abrasive Blasting**

Subsection **1532.1(d)** of the lead in construction regulation requires employers to perform exposure assessments for employees who may be exposed to lead at work, to determine their employees' actual exposure. This includes employees who conduct dry abrasive blasting. Until the employer performs the assessment and determines actual employee exposure, the maximum amount of time an employee can conduct dry abrasive blasting is limited to five hours per day, and after January 1, 2030, the amount of time must be limited to 2 hours per day.

Once the employer has performed the required exposure assessment, there is no limit on the maximum amount of time an employee can conduct abrasive blasting, but the employer must ensure employee exposures are below the permissible exposure limit taking into consideration the protection provided by respirators used by employees. Note that the protection factors assigned to respirators are only valid if used in accordance with section **5144**.

The permissible exposure limit for abrasive blasting is 25 micrograms of lead per cubic meter of air until January 1, 2030. Starting January 1, 2030, the permissible exposure limit is 10 micrograms per cubic meter. The permissible exposure limit is measured as an eight-hour time-weighted average concentration.

For example, if employees are correctly using respirators with a protection factor of 1,000 at all times, air concentrations of lead (measured as an eight-hour time-weighted average concentration) up to 25,000 micrograms per cubic meter are permitted for abrasive blasting until January 1, 2030. A protection factor of 1000 would reduce air concentrations of lead at 25,000 micrograms per cubic meter to a concentration of 25 micrograms per cubic meter inside the respirator. Starting January 1, 2030, the maximum air concentration allowed for abrasive blasting will be 10,000 micrograms per cubic meter for employees correctly using a respirator with a protection factor of 1,000 at all times.

The protection provided by respirators is listed in Table 1 of section **5144** Respiratory Protection. A copy of the table is on the next page.

Section 5144 Table 1 - Assigned Protection Factors⁵

Type of respirator ^{1, 2}	Quarter mask	Half mask	Full facepiece	Helmet/hood	Loose-fitting facepiece
1. Air-purifying respirator	5	³ 10	50	---	---
2. Powered Air-Purifying Respirator (PAPR)	---	50	1,000	⁴ 25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator					
- Demand mode	---	10	50	---	---
- Continuous flow mode	---	50	1,000	⁴ 25/1,000	25
- Pressure-demand or other positive-pressure mode	---	50	1,000	---	---
4. Self-Contained Breathing Apparatus (SCBA)					
- Demand mode	---	10	50	50	---
- Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	---	---	10,000	10,000	---

Notes:

- Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.
- The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section, including training, fit testing, maintenance, and use requirements.
- This APF category includes filtering facepieces, and half masks with elastomeric facepieces.
- The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a Workplace Protection Factor (WPF) or simulated WPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.
- These APFs do not apply to respirators used solely for escape. For escape respirators used in association with substances covered by substance-specific standards in Title 8, Division 1, Chapter 4, Subchapters 4, 7, and 18, employers must refer to the appropriate substance-specific standards. Escape respirators for other IDLH atmospheres are specified by subsection (d)(2)(B).

Other operations, where lead-containing coatings or paint are present, with the potential to expose workers to lead include Level 1 and 2 tasks, such as:

- Manual demolition of structures (e.g., dry wall)
- Manual scraping
- Heat gun applications
- Manual sanding
- Power tool cleaning, grinding or sanding with dust collection systems
- Spray painting with lead paint

Exposure Limits

This standard establishes maximum limits of exposure to lead for all workers covered, including a PEL and action level (AL).

Employers must ensure that no employee is exposed to an airborne concentration of lead greater than the PEL.

What is a PEL?

A PEL is the maximum allowable concentration or level of a single substance that an employee can be exposed to over a specific period.

For the purposes of this standard:

- The PEL is the maximum allowable concentration of airborne lead (Pb) that an employee can be exposed to over the entire workday. This is calculated as an 8-hour time-weighted average (TWA).

- The 8-hour time-weighted average (TWA) is the calculated employee exposure to a single substance (like lead) during the workday.

Under this standard:

- The PEL for workers' exposures to an airborne concentration of lead is 10 micrograms per cubic meter of air (10 $\mu\text{g}/\text{m}^3$) calculated as an 8-hour time-weighted average (TWA).

EXCEPTION: Until January 1, 2030, for employees conducting abrasive blasting, the PEL for lead is 25 micrograms per cubic meter of air (25 $\mu\text{g}/\text{m}^3$), calculated as an eight-hour time-weighted average (TWA).

Action Level

- The AL is an airborne concentration of lead, regardless of respirator use, of 2 micrograms per cubic meter of air (2 $\mu\text{g}/\text{m}^3$) calculated as an 8-hour time-weighted average (TWA).

How to calculate changes in exposure

During a shift, there may be periods during an operation or while performing a specific task when employees are exposed to different concentrations of lead than during other times in the same shift. The worker might not be exposed during their breaks (e.g., lunch break).

To calculate the employee’s 8-hour TWA in these types of scenarios, use the following formula, where “T” is the duration in hours (or minutes) of the exposure to a substance at the concentration “C”.

Exposure during one period of time

Exposure during another period of time

$$\text{8-hour TWA} = \frac{(C_1 \times T_1) + (C_2 \times T_2) + \dots (C_n \times T_n)}{8}$$

This number is always 8 hours, or 480 minutes

Example: An employee performed lead abatement for an 8-hour shift and was exposed to lead for the following time durations and concentrations:

- 2 hours at 0.25 µg/m³
- 2 hours at 0.17 µg/m³
- 4 hours at 0.23 µg/m³

The 8-hour TWA would be calculated like this:

$$\text{TWA} = \frac{\begin{matrix} T1 & C1 & T2 & C2 & T3 & C3 \\ (2 \times 0.25) & + & (2 \times 0.17) & + & (4 \times 0.23) \end{matrix}}{8} = 0.22 \text{ µg/m}^3$$

Same example calculated using minutes (min):

- 120 mins at 0.25 µg/m³
- 120 mins at 0.17 µg/m³
- 240 mins at 0.23 µg/m³

The 480-minute TWA would be calculated like this:

$$\text{TWA} = \frac{\begin{matrix} T1 & C1 & T2 & C2 & T3 & C3 \\ (120 \times 0.25) & + & (120 \times 0.17) & + & (240 \times 0.23) \end{matrix}}{480} = 0.22 \text{ µg/m}^3$$

The 8-hour TWA = 0.22 µg/m³ = the calculated daily exposure to lead for this worker, taking into account the exposure concentration levels, and the times spent during each exposure period.

Exposure Assessment

Prior to the start of work, employers with a workplace or operation covered by this standard must initially determine if any employee may be exposed to lead at or above the action level.

An employer is required to conduct an initial employee exposure assessment of whether employees are exposed to lead at or above the AL based on initial determinations on the employee exposure monitoring results, and any of the following:

- Any information, observation, or calculation that indicates employee exposure to lead
- Any previous measurements of airborne lead
- Any employee complaints of symptoms that may be due to lead exposure

When conducting the initial determination for lead exposure, the employer might only monitor a select group of employees. This group should represent those who, the employer reasonably believes, are subjected to the highest concentrations of airborne lead in the workplace.

Objective data and **historical measurements/data** of lead may be used to satisfy the standard's initial monitoring requirements. However, objective data may not be used for exposure assessment, including initial monitoring, in connection with trigger tasks listed in subsection (d)(2) of Section 1532.1.

Objective Data is information showing that a surface coating or material with lead, or a specific process or activity involving lead, will or will not expose employees to lead levels at or above the action level under any expected conditions of use.

Objective data includes:

- Data obtained from an industry-wide study obtained under workplace conditions closely resembling the processes, types of material, control methods, work practices and environmental conditions in the employer's current operations.
- Lead analysis for each surface coating and material that may present a health hazard to employees performing work covered by this section.

Refer to subsection (d)(9) of section 1532.1 for information on the requirements on how analysis of these coatings and materials is to be performed.

Objective data for an initial assessment that demonstrate surface coatings or material that contain lead at concentrations equal to or exceeding 0.06% lead dry weight (600 ppm) demonstrate the presence of lead surface coatings or material that may constitute a health hazard to employees engaged in lead-related construction work.

Exception: Employers may not use objective data for exposure assessment for trigger tasks listed in subsection (d)(2) of Section 1532.1.

Historical measurements/data refers to past records where the employer has checked for lead exposure. If these records were collected within the last 12 months and the work conditions were like the current ones (in terms of processes, materials, control methods, work practices, and environmental conditions), the employer can use this old data instead of new monitoring data.

Historical data must meet the standards of subsection (d)(9) and can fulfill the requirements of subsections (d)(3)(A) and (d)(6).

Positive Initial Determination & Initial Monitoring

If the employer determines that there is a possibility of employee exposure at or above the action level, the employer must conduct initial monitoring.

When monitoring is required by this section, the employer must collect personal samples representative of a full shift of the monitored employee's daily exposure to lead, including at least one sample for each job classification in each work area either for:

- Each shift
- The shift with the highest exposure level

The employer may rely on its previous lead exposure monitoring data, if the data was obtained within the past 12 months during work operations conducted under workplace conditions closely resembling the:

- Processes
- Type of material
- Control methods
- Work practices
- Environmental conditions used and prevailing in the employer's current operations.

An employer may rely on objective data instead of implementing initial monitoring, if that data demonstrates that a particular product or material containing lead or a specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the action level during:

- Processing
- Use
- Handling

If a trigger task is going to be performed, the employer cannot use objective data instead of performing an exposure assessment. In this case, an exposure assessment must be performed.

Negative Initial Determination

When an employer has made a negative initial determination, the employer shall make a written record of such determination, which at a minimum includes the following:

- The required information from an employer's initial determination that demonstrates that no employee is exposed to airborne concentrations of lead at or above the action level, as required in subsection (d)(3)(A) of Section 1532.1
- Date of determination
- Location within the worksite
- The name and another unique identifier (i.e. date of birth or employee identification number) of each employee monitored

Frequency of Exposure Assessment

If initial determination reveals employee exposure to be below the action level, then additional exposure monitoring of employees is not required, **except** whenever any of the following may result in **(1)** additional employees being exposed to at or above the action level, or **(2)** employees already exposed at or above the action level are being exposed above the PEL:

- There has been a change of equipment, process, control, or personnel
- A new task has been initiated

Additional exposure monitoring is required when initial or additional determination results demonstrate that employee exposure is:

- At or above the action level but below $30 \mu\text{g}/\text{m}^3$ as an 8-hour TWA
 - Additional monitoring is required at least every 12 months, **until** 2 additional measurements are taken, at least 7 days apart, and are below the action level
- At or above $30 \mu\text{g}/\text{m}^3$ as an 8-hour TWA but at or below $50 \mu\text{g}/\text{m}^3$ as an 8-hour TWA

- Additional monitoring is required at least every 6 months, **until at least 2** additional measurements are taken, at least 7 days apart, and are below $30 \mu\text{g}/\text{m}^3$ as an 8-hour TWA
- Above $50 \mu\text{g}/\text{m}^3$ as an 8-hour TWA
 - Additional monitoring is required quarterly (every 3 months), until at least 2 additional measurements, taken at least 7 days apart, are at or below $50 \mu\text{g}/\text{m}^3$ as an 8-hour TWA
 - Then conduct additional monitoring and at the frequency specific to those results in accordance with the requirements above, for results that are either:
 - At or above the action level but below $30 \mu\text{g}/\text{m}^3$ as an 8-hour TWA
 - At or above $30 \mu\text{g}/\text{m}^3$ as an 8-hour TWA but at or below $50 \mu\text{g}/\text{m}^3$ as an 8-hour TWA

Employee Notification

The employer must notify each employee of their exposure results:

- In writing
- Within 5 working days after the exposure assessment has been completed.

Whenever monitoring results indicate that an employee's exposure (regardless of whether they are using respirators) is at or above the Permissible Exposure Limit (PEL), the employer is required to take the following actions:

- **Written Notice:** The employer must provide a written notice to the affected employee(s). This notice should state that their exposure level was at or above the PEL.
- **Description of Corrective Action:** The notice must also include a description of the corrective action that has been taken or will be taken to reduce the exposure level below the PEL. This corrective action may involve changes in work practices, engineering

controls, or other measures to minimize exposure.

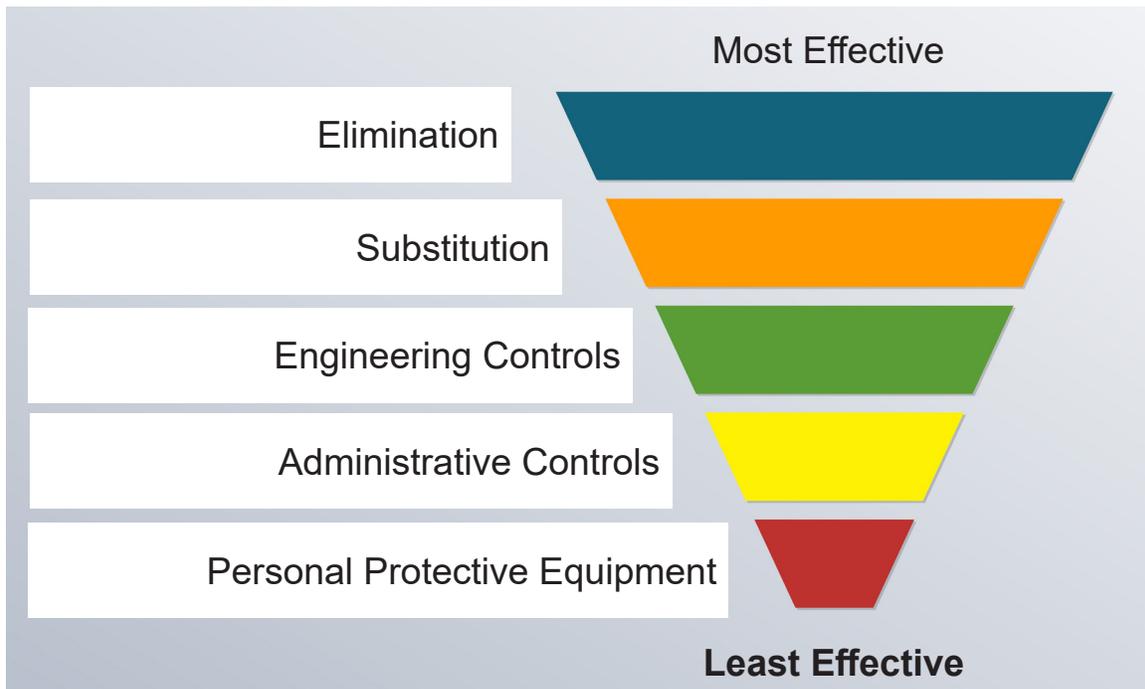
Accuracy of measurements

Employers are required to use methods that have a specific accuracy (to a confidence level of 95%), as follows:

- For air monitoring and analysis:
 - An accuracy within 20% for airborne concentrations of lead equal to or greater than $2 \mu\text{g}/\text{m}^3$
- For determining lead concentrations of surface coatings and material:
 - An accuracy within 20% at 0.06% lead dry weight (600 ppm)

Observation of Monitoring

- Employee Observation
 - Employers must provide affected employees or their designated representatives with an opportunity to see/witness any monitoring of employee exposure to lead.
- Observation Procedures
 - When observation of exposure monitoring requires going into an area where respirators, protective clothing, or equipment is required (i.e. a regulated area), the employer must:
 - Provide the observer(s) with the needed safety gear.
 - Make sure the safety gear is used correctly by the observer(s).
 - Make sure that the observer(s) follow all the employer's safety procedures.
 - Observers are allowed to:
 - Receive an explanation of the monitoring procedures.
 - Observe the entire lead exposure monitoring event.
 - Record the results or receive copies of the laboratory results.



Respiratory protection falls under the least effective level — “PPE” (Personal Protective Equipment).

Methods of Compliance

Engineering and work practice controls

Employers covered by this standard are required to ensure that no employee is exposed to lead above the PEL.

Employers must implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead at or below the PEL. If these controls are not enough, the employers must add respiratory protection that complies with the requirements of 1532.1 (f).

Compliance program

Employers must establish and implement a written compliance program before the start of the job. This program must comply with the requirements of 1532.1(e) and at least include:

- Descriptions of activities where lead is emitted
- Descriptions of means of achieving compliance
- Reports of unimplemented controls due to infeasibility
- Air monitoring data
- A detailed implementation schedule
- A work practice program
- An administrative control schedule
- Arrangements among contractors on multi-contractor sites
- Other relevant information
- The program must be reviewed frequently and regularly, and revised every 6 months. The revisions and updates need to be documented in writing

Hierarchy of Controls

Employers must use the hierarchy of controls to determine the most effective way(s) to control employee exposure to lead. The following image provides an example of this model which lists 5 levels of actions/controls for reducing or eliminating exposure to lead. These controls are ordered from top to bottom showing the most effective to least effective.

Engineering Controls

Mechanical Ventilation

If ventilation is used to control exposure, its effectiveness must be evaluated.

Administrative Controls

If administrative controls are used to reduce employee exposure to lead, a written job rotation schedule must be established, which includes:

- The names and unique identifier (like the employee identification number) of each affected employee
- Duration and exposure levels at each job or workstation
- Any other useful information

Good Work Practices

The employer must ensure that employees follow good work practices as described in Appendix B of section 1532.1.

Respiratory Protection

When employees are required to use respirators per the requirements of T8 CCR 1532.1, employers must implement a Respiratory Protection Program and provide employees with respirators that comply with section (f) of that regulation:

- When employee exposure to lead is above the PEL

- As an interim protection when trigger tasks are being performed by employees and the employer has not performed an exposure assessment
- When an employee requests one

Cal/OSHA has a **Model Written Respiratory Protection Program** as well as a **Respiratory Protection Guide for Employers**.

Respiratory Protection Program (RPP)

Employers must implement a written RPP that complies with T8 CCR 5144(b) through (m), except subsection (d)(1)(C), which in summary, at least includes the following elements:

- Procedures for selecting respirators
- Medical evaluations of employees required to use respirators
- Fit testing procedures for tight-fitting respirators
- Procedures for proper use of respirators in emergency situations
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and maintaining respirators
- Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators
- Training of employees in the respiratory hazards to which they are potentially exposed in their workplace
- Training of employees in the proper use of respirators
- Procedures for regularly evaluating the effectiveness of the RPP

Selection of Respirators

Employers must select respirators per the requirements of **T8 CCR 5144** (d)(3)(A)1.

Respirators selected for the employee to use must be:

- Paid for and provided by the employer
- Certified by NIOSH (National Institute for Occupational Safety and Health)

- Appropriate for the trigger task or employee exposure levels

The following are the types of respirators employers can consider where the only airborne hazard is lead particulate, depending on the trigger task performed or employee exposure level:

- A non-powered half- or full-facepiece air purifying respirator (APR) fitted with N100, R100 or P100 filters. These all filter at least 99.97% of airborne particles. However, N100 filters are not resistant to oil, R100 filters are somewhat resistant to oil and P100 filters are strongly resistant to oil.
- An N100, R100 or P100 filtering facepiece respirator.
- A powered, air-purifying respirator (PAPR) fitted with high efficiency particulate air (HEPA) filters. The employer must provide a PAPR to an employee if:
 - An employee requests one.
 - The PAPR will provide the employee with enough protection.
- A supplied airline respirator (SAR).
- A full facepiece respirator, required if used for protection against aerosolized lead that may cause skin/eye irritation.

The following table provides minimum respirator types and protection factors. Employers are encouraged to go with higher protection factors provided by certain PAPRs and SARs, even though a lower protection factor is allowed.

Trigger Task	Airborne Lead Levels	Minimum Required Respirator	Assigned Protection Factor (APF)	
			Half facepiece	Full facepiece
Level 1 <ul style="list-style-type: none"> Manual demolition of structures (e.g., dry wall) Manual scraping Heat gun applications 	$> 10 \mu\text{g}/\text{m}^3$ (PEL) but Not $> 100 \mu\text{g}/\text{m}^3$ (up to 10 x PEL)	Half or full-face tight fitting or helmet/hood PAPR with HEPA filters	50	25/1,000 [note that for helmet/hood the APF is either 25 or 1,000, depending on the manufacturer]
		N100, R100 or P100 filtering facepiece respirator or half mask APR with N100, R100, or P100 filters	10	NA
		Full face APR with N100, R100, or P100 filters; note that a full face respirator must be used for protection against aerosolized lead that may cause skin/eye irritation	NA	50



Trigger Task	Airborne Lead Levels	Minimum Required Respirator	Assigned Protection Factor (APF)	
			Half facepiece	Full facepiece
Level 2 <ul style="list-style-type: none"> Manual sanding Power tool cleaning, grinding, or sanding with dust collection systems. 	<p>> 100 µg/m³ (greater than 10 x PEL)</p> <p>...but...</p> <p>Not > 500 µg/m³ (up to 50 x PEL)</p>	Half or full-face tight fitting or helmet/hood PAPR with HEPA filters (endorsed by the manufacturer as having 1,000 APF)	50	1,000 [Note that for helmet/hood the APF is either 25 or 1000, depending on the manufacturer. An APF of 25 would not be suitable]
		Full face APR, including when used for protection against aerosolized lead that may cause skin/eye irritation	NA	50
		Pressure-demand or other positive pressure mode SAR	50	1,000



Trigger Task	Airborne Lead Levels	Minimum Required Respirator	Assigned Protection Factor (APF)	
			Half facepiece	Full facepiece
Level 3 <ul style="list-style-type: none"> Using lead-containing mortar or lead burning Rivet busting Power tool cleaning, grinding or sanding without dust collection systems Cleanup activities where dry expendable abrasives are used Abrasive blasting enclosure movement and removal Abrasive blasting Welding Torch cutting Torch burning 	$> 500 \mu\text{g}/\text{m}^3$ (greater than 50 x PEL)	Tight fitting or helmet/hood (if endorsed by manufacturer) PAPR with HEPA filters (up to 1,000 x PEL)	NA	1,000
		Continuous flow full-face SAR or pressure demand full-face SAR up to 1,000 x PEL	NA	1,000
		SCBA if $> 1,000$ APF needed; must be pressure-demand or other positive-pressure mode	50	10,000

Protective Work Clothing and Equipment

Employers must provide workers with clean, dry protective work clothing and equipment that are appropriate for the lead hazard, where either of the following exist:

- Worker exposure to lead is above the PEL
- It's possible that workers may be exposed to lead which may irritate their skin or eyes
- Workers are performing a trigger task, as required interim protection

Appropriate protective work clothing and equipment used on construction sites includes:

- Coveralls or other full-body work clothing
- Hats or head coverings, and shoes or disposable shoe coverlets
- Gloves, vented goggles or face shields with protective spectacles or goggles, where needed
- Welding or abrasive blasting helmets
- Respirators

Clean and dry protective work clothing must be issued at the following frequency:

- At least weekly
- Daily for employees whose exposure levels to lead are above $30 \mu\text{g}/\text{m}^3$ as an 8-hour TWA

At no cost to the employee, employers must provide the employees with and ensure that protective work clothing and equipment will be:

- Used by the employee
- Cleaned
- Repaired or replaced
- Laundered. Employer must inform the cleaners/laundrerers in writing, about the hazards of lead
- Properly disposed

For protective clothing and equipment that is to be cleaned, laundered, or disposed of, the employer must ensure that it's:

- Removed and left at the work site, at the completion of a work shift. Employers must prohibit employees from blowing or shaking protective clothing or equipment to remove lead.
- Placed in a closed container which will be discarded as lead waste.
- Waste containers are labeled, as follows:

DANGER: CLOTHING AND EQUIPMENT CONTAMINATED WITH LEAD,
MAY DAMAGE FERTILITY OR THE UNBORN CHILD.

CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM. DO NOT EAT, DRINK, OR SMOKE
WHEN HANDLING

DO NOT REMOVE DUST BY BLOWING OR SHAKING.

DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH
APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.

Housekeeping

Regardless of employee airborne exposure levels the employer must ensure that all surfaces are maintained as clean as possible of lead. This includes cleaning:

- Floors and other surfaces
- With a HEPA filter equipped vacuum
- In a way that minimizes dust
- That does not include the following methods:
 - Shoveling
 - Sweeping (dry or wet)
 - Using compressed air

Hygiene Facilities, Practices and Regulated Areas

Keeping hygiene facilities clean, following good practices, and regulating areas are key to minimizing lead absorption from inhalation or ingestion. Employers must ensure that the

following measures are followed, which can dramatically cut down on lead exposure and protect workers' health. As indicated, some of the control measures are required if there is any employee exposure to lead, while others are required as interim protection when employees are engaged in any trigger tasks, or their exposures are above the PEL.

General Hygiene

Regardless of airborne exposure levels, prevent eating, drinking, tobacco use, and applying cosmetics in lead-exposed areas.

Washing Facilities

Regardless of airborne exposure levels, provide enough washing facilities and specialized cleaning supplies for lead-exposed employees.

Hygiene Practices

Regardless of airborne exposure levels, ensure employees wash their hands, arms, and face before eating, drinking, smoking, applying cosmetics, and leaving the worksite.

Change Areas

Where employees exposures exceed the PEL, without regard to respirator use, or as interim protection for employees who are engaged in any of the trigger tasks:

- Provide clean change areas for employees.
- Store protective and street clothing separately to prevent cross-contamination.
- Prevent employees from taking used protective clothing or equipment into personal vehicles and homes, and leaving the workplace with any used protective clothing or equipment.

Showers

Where employees exposures exceed 50 µg/m³, without regard to respirator use, or as interim protection for employees who are engaged in level 3 trigger tasks:

- Provide showers when required, unless the employer can demonstrate they are not feasible.
- Provide employees with enough cleaning agents and towels, and ensure they use showers and cleaning agents after shifts.

Eating Facilities

- Provision: Provide accessible lunchroom facilities (or eating areas) for employees exposed to lead above the PEL and as interim protection for employees who are engaged in any of the trigger tasks.

- Cleanliness: Ensure employees remove lead dust from protective clothing before entering eating areas. Lead dust must be removed using a HEPA vacuum, downdraft booth, or other cleaning method that limits dispersal of lead dust.

Cleaning of Hygiene Facilities

Cleaning Policy: Establish, implement, and maintain ritten methods and schedules to ensure hygiene facilities and lunchrooms/eating areas are cleaned effectively.

Regulated Areas

Where employees exposures exceed the PEL, without regard to respirator use, or as interim protection for employees who are engaged in any of the trigger tasks:

- Establishment: Designate regulated areas for lead exposure exceeding the PEL or where trigger tasks are performed.
- Posting: Clearly mark these areas with the required signage (see “Signs” section on page 26).
- Access: Ensure that only authorized employees, employee representatives, and Cal/OSHA personnel are permitted entry.
- Protection: Authorized employees must wear the required protective equipment to enter the regulated areas.

Summary of Requirements for Hygiene Facilities, Practices and Regulated Areas

Control Measures	Where there is any employee exposure	Where employee exposures exceed the PEL, without regard to respirator use, or as interim protection if employees are engaged in any of the trigger tasks
<p>General Hygiene</p> <p>Prevent employee eating, drinking, use of tobacco or cosmetics.</p>	X	X
<p>Washing Facilities</p> <p>Provide enough washing facilities and specialized cleaning supplies.</p>	X	X
<p>Hygiene Practices</p> <p>Ensure employees wash hands, arms, and face before eating, drinking, smoking, applying cosmetics, and leaving the worksite.</p>	X	X
<p>Change Areas</p> <ul style="list-style-type: none"> • Provide clean change areas. • Store protective and street clothing separately to prevent cross-contamination. • Prevent employees from taking used protective clothing or equipment into personal vehicles and homes. 		X
<p>Showers</p> <ul style="list-style-type: none"> • Provide showers for employees unless they are not feasible. • Provide employees with enough cleaning agents and towels, and ensure they use showers and cleaning agents after shifts. 		<p>50 µg/m³ and as interim protection for Level 3 trigger tasks</p>

Control Measures	Where there is any employee exposure	Where employee exposures exceed the PEL, without regard to respirator use, or as interim protection if employees are engaged in any of the trigger tasks
Eating Facilities <ul style="list-style-type: none"> • Provide accessible lunchroom facilities (or eating areas). • Ensure employees remove lead dust from protective clothing before entering eating areas. 		X
Cleaning of Hygiene Facilities Establish, implement, and maintain written methods and schedules to ensure hygiene facilities and lunchrooms/eating areas, are cleaned effectively.	X	X
Regulated Areas <ul style="list-style-type: none"> • Designate regulated areas. • Clearly mark these areas with the required signage (see “Signs” section on page 26). • Ensure that only authorized employees and employee representatives are permitted entry. • Authorized employees must wear the required protective equipment to enter the regulated areas. 		X

Medical Surveillance

Employers must make initial blood lead level (BLL) testing available for employees:

- Prior to performing trigger tasks if no negative initial determination. Note that the exceptions below do not apply.
- Who are assigned tasks where lead exposure* is expected to be at or above the action level. Except when the employee’s exposure* is or is expected to be above the action level for:
 - 29 or fewer days (or “fewer than 30 days”) within a 12-month period and doesn’t exceed $10 \mu\text{g}/\text{m}^3$ over an 8-hour TWA.

- 14 or fewer days (or fewer than 15 days) within a 12-month period and doesn't exceed $20 \mu\text{g}/\text{m}^3$ over an 8-hour TWA.
* Exposure is without regard to the use of respirators

Or when:

- The employee has had a blood lead test in the last two months.

Employers must establish a medical surveillance program, and need to implement it:

- For any employees potentially exposed* to lead at or above the action level.
 - Except when the employees' exposure* is above the action level for: fewer than 30 days in 12 months and doesn't exceed $10 \mu\text{g}/\text{m}^3$ over an 8-hour TWA.
 - fewer than 15 days in 12 months and doesn't exceed $20 \mu\text{g}/\text{m}^3$ over an 8-hour TWA.
- * Exposure is without regard to the use of respirators.
- For all employees doing trigger tasks.

Except when:

- A negative initial determination is made.
- The employee only does level 1 trigger tasks and does them on fewer than 10 days in 12 months.

Employers must ensure:

- All medical exams and procedures are done by a physician or other licensed health care professional (PLHCP).
- Employers provide the required medical surveillance and PLHCP reviews at a reasonable time and place and at no cost to employees. The employer must provide the PLHCP with:
 - A copy of the T8 CCR 1532.1 and its appendices.
 - The employee's duties related to lead exposure.
 - Current/expected lead exposure level,

as well as exposure to any other toxic substances.

- Description of PPE used.
- Prior BLL test results.
- Prior medical opinions.
- The PLHCP who orders the BLL tests must provide the laboratory with complete employee identification information, which includes the employee's:
 - Name
 - Date of birth
 - Address
 - Phone number
 - Employer's:
 - Name
 - Address
 - Phone number
- BLL testing is made available to employees, when required by T8 CCR 1532.1 subsection (j)(1)(A) or (B), on the following schedule:
 - Prior to performing work that may result in lead exposure at or above the action level, when exclusions don't apply, and as interim protection for trigger tasks if no negative initial determination.
 - Then every 2 months for the first 6 months, and every 6 months after that.
 - After a task change increasing lead exposure:
 - Every 2 months for the first 6 months, and every 6 months after that.
 - For blood lead levels of 10 - 20 $\mu\text{g}/\text{dl}$:
 - Every 2 months until two tests, at least 30 days apart, are below 10 $\mu\text{g}/\text{dl}$.
 - For levels at or above 20 $\mu\text{g}/\text{dl}$:
 - Monthly tests, including during any removal period.
 - Interim protection for level 3 trigger tasks:
 - Monthly tests, plus a test within 3 days of stopping all level 3 tasks.
 - For airborne exposure above $500 \mu\text{g}/\text{m}^3$ as an 8-hour TWA:
 - Monthly tests, plus a test within 3 days of stopping work with such exposure.
- Ensure that BLL testing is done by a CLIA-approved lab (under federal CLIA regulations, 42 CFR Part 493).

Summary Table of BLL Testing Requirements

Type of Lead Work or after specific BLL results	Initial BLL Test	Follow-up BLL Tests	Additional-Follow-up BLL Testing
Where exposure to lead is or is reasonably expected to be at or above the action level	Prior to assignment	At least every 2 months for the first 6 months after assignment*	Every 6 months*
Trigger tasks, with no negative initial determination	Prior to assignment	At least every 2 months for the first 6 months after assignment*	Every 6 months*
After a change in task results in or likely to result in higher exposure to lead	Prior to assignment	At least every 2 months for the first 6 months after task change*	Every 6 months*
Last blood lead level was at or above 10 µg/dl but below 20 µg/dl		At least every two months	Every two months until 2 consecutive BLL, at least 30 days apart, are below 10 µg/dl
Last blood lead level was at or above 20 µg/dl		At least monthly	
During the removal period of employee (removed from exposure due to an elevated BLL)		At least monthly	
Level 3 trigger task, with no negative initial determination	Prior to assignment	At least monthly after assignment	Within 3 days after discontinuing all level 3 trigger task work
Where airborne exposure is above 500 µg/m ³ as an 8-hour TWA**		At least monthly	Within 3 days after discontinuing all work associated with airborne exposure above 500 µg/m ³ as an 8-hour TWA

*Exceptions apply

**Exposure is without regard to the use of respirators

Employer's Notification to Employees

Within five working days of getting blood lead test results, employers must inform employees in writing about:

- Their BLL
- The need for employer provided medical exams and consultations for employees exposed to lead at or above the action level, and as interim protection for those doing trigger tasks, unless an exception applies. This must be done quickly if an employee:
 - Reports lead exposure symptoms
 - Seeks advice about its impact on procreation
 - Has trouble breathing while using a respirator
- The need for temporary medical removal (with benefits) if an employee's:
 - BLL is 30 µg/dl or higher
 - Their last 2 monthly BLLs are at or above 20 µg/dl
 - Average BLL over the last 6 months is at or above 20 µg/dl

PLHCP's Notification to Employees

Employers must ensure that the employee's PLHCP:

- Explains the findings and informs the employee about:
 - Their BLL test results.
 - Any recommended follow-up testing and its schedule.
 - Recommendations for a medical exam by a PLHCP, when required

Responding to Elevated Blood Lead Levels

Whenever an employee has a BLL at or above 10 µg/dl, the employer must:

- Create and implement a written plan (BLL Response Plan) to reduce and maintain the employee's BLL below 10 µg/dl.
- Provide necessary training and instructions to

address any work practices highlighted in the plan.

Exception: A written BLL Response Plan, training and instruction, are not needed if the employee's elevated blood lead levels is only detected in the employee's initial BLL test.

Medical Exams and Consultations

Employers need to arrange medical exams and consultations for employees at the following frequency:

- As soon as possible:
 - For employees with a BLL of 20 µg/dl or more (unless the employee had a lead-specific medical exam in the past 12 months)
 - At least yearly until the BLL drops below 20 µg/dl
- Before assigning any trigger task(s) to an employee:
 - Except if the employee has had a lead-specific medical examination in the past two months
- As soon as possible if an employee notifies the employer that the employee:
 - Has developed signs and symptoms common with lead exposure
 - Seeks medical advice about lead exposure and on the employee's ability to procreate a healthy child
 - Is pregnant
 - Experiences breathing issues while using a respirator
- As soon as possible and as medically needed for employees:
 - Removed from lead exposure due to elevated BLL, or
 - Whose exposure is limited after getting a final medical determination

Per T8 CCR 1532.1 requirements, medical exams must include:

- A detailed work and medical history
- A thorough physical exam

- Blood pressure measurement
- Blood testing and laboratory analysis for:
 - BLL
 - Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology
 - Zinc protoporphyrin for each employee who last BLL was 20 $\mu\text{g}/\text{dl}$ or higher
 - Blood urea nitrogen
 - Serum creatinine
- Routine urinalysis with microscopic examination
- Any other tests the PLHCP considers to be necessary

If therapeutic or diagnostic chelation is to be performed on an employee, it must be:

- Performed only after the employee has been notified in writing
- Performed by a PLHCP

Employers need to inform employees of their right to a 2nd opinion by another PLHCP if the employer selects the 1st PLHCP.

- If the 1st and 2nd PLHCPs disagree, a 3rd PLHCP will need to review and resolve the disagreement.
- Employers must follow the third PLHCP's recommendations unless another agreement is reached.



Medical Removal Protection

When an employee's :	Temporary Medical Removal of Employee, from:	When Employee may return to work / end work limitations:
<ul style="list-style-type: none"> • Last blood lead test results are at or above 30 µg/dl or • Last 2 blood lead test results are at or above 20 µg/dl or* • Average of the results of all blood lead tests conducted in the last 6 months is at or above 20 µg/dl or* • Final medical determination results are that the employee has a health-related condition that places the employee's health at increased risk from exposure to lead 	<ul style="list-style-type: none"> • Work having an exposure to lead at or above the action level • Work involving a trigger task and an exposure assessment has not been completed • Work involving altering or disturbing lead material that is greater than or equal to 0.5% (by weight) in concentration 	<ul style="list-style-type: none"> • When two consecutive blood lead tests, taken at least 30 days apart, both show the employee's BLL is below 15 µg/dl • If the employee was removed from lead work due to a final medical determination, they may return to lead work only after a follow-up medical determination indicates it is ok

*Effective January 1, 2026

Medical Removal Protection Benefits

During the removal period, for up to 18 months, the employer must maintain the total normal earnings, seniority and other employment rights and benefits of an employee.

Communication of Hazards

Employers must provide training on lead to all employees covered by this standard.

For employees with any exposure to lead, training must include:

- The employer's Hazard Communication Program (which must include lead)
- Lead container labels
- Safety data sheets
- Training on key hazards of lead, such as:
 - Cardiovascular effects
 - Reproductive/developmental toxicity
 - Central nervous system effects
 - Kidney effects
 - Blood effects
 - Acute toxicity
- Training covering the purpose and content of, and methods used to comply with, the housekeeping and hygiene requirements specified in subsections (h), (i)(1) and (i)(5). This training shall be provided prior to the time of initial job assignment, and at least annually thereafter.

For employees with exposure more than the AL on any day, exposed to lead that may cause skin or eye irritation, and as interim protection for employees who perform any trigger tasks, training must include:

- Details of this standard (T8 CCR 1532.1) and its appendices
- Lead exposure operations
- Hygiene compliance methods (subsections (i)(2) - (i)(4))
- Respirator use and limitations
- Medical surveillance and medical removal protection programs
- Health effects of lead exposure
- Reproductive health risks
- Employer's duty for medical exams and consultations
- Lead exposure routes

- Household contamination risks
- Showering after work
- Job-specific engineering and work practice controls and Appendix B work practices
- Compliance plan and regulated areas
- Chelating agents use only as directed by PLHCP
- Right to access exposure and medical records (section 3204)
- Training must be provided:
 - Before job assignments
 - Annually
- Training and any training materials used must be appropriate to the educational level, literacy level and language of employees.

Certification of training for residential and public buildings

The employer must ensure all employees and supervisors engaged in lead-related construction work (as defined in CCR Title 17 Section 35040) and are exposed to lead at or above 50 $\mu\text{g}/\text{m}^3$ as an 8-hour TWA, meet the training requirements of T8 CCR 1532.1 subsection (l)(3).

- They must be trained by a California Department of Public Health (CDPH) accredited training provider and be certified by CDPH.

Lead-related construction work includes any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of residential or public buildings that may result in significant lead exposure to adults or children.

"Public building" refers to structures like schools, daycare centers, museums, airports, hospitals, stores, convention centers, government facilities, office buildings, and other non-industrial buildings.

Regulations for accrediting training providers and certifying employees and supervisors are in Title 17, California Code of Regulations, Division 1, Chapter 8.

Access to information, training, and certification materials

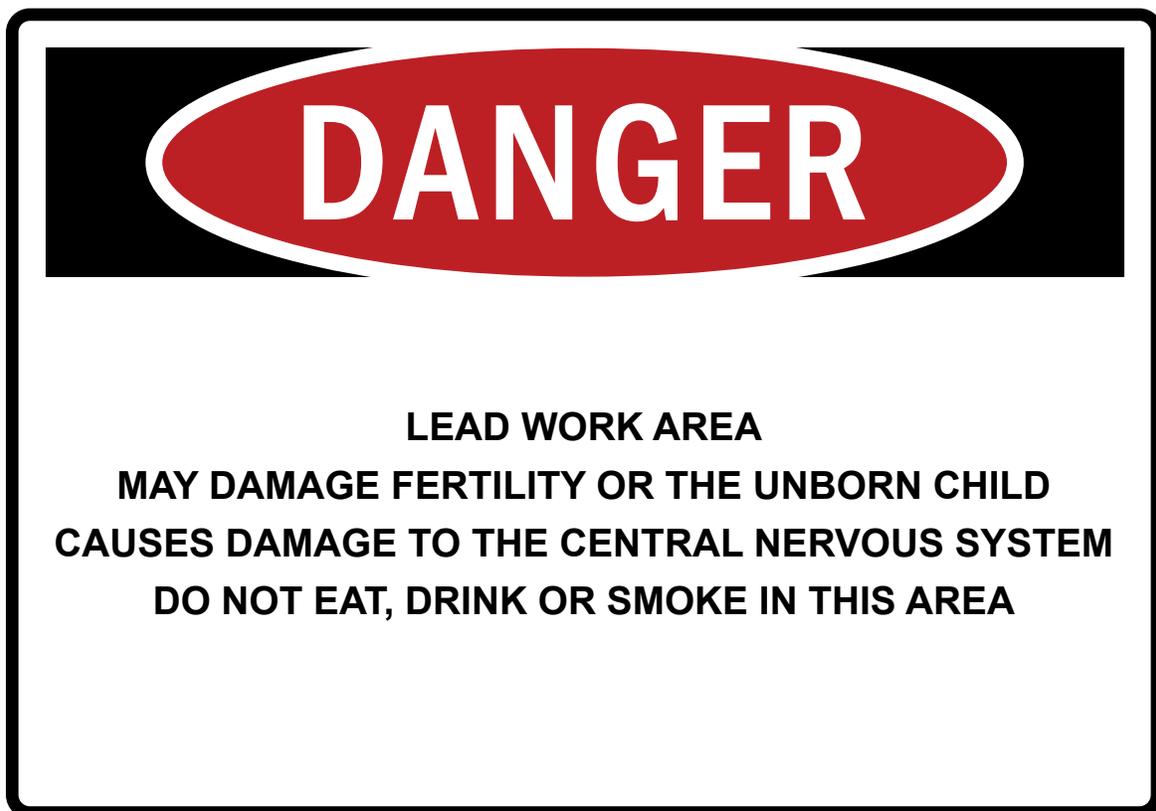
- The employer must make a copy of this standard and its appendices readily available to all affected employees
- Upon request, the employer must provide all materials relating to the employee information training program and certification to:
 - Affected employees
 - Their representatives
 - Representatives of:
 - Cal/OSHA
 - NIOSH

Signs

Every regulated area and any workspace where an employee's lead exposure is at or above the action level, must have warning signs with language indicated in the example below.

Required signs always need to be:

- Well-lit
- Cleaned regularly to stay visible
- In a language employees understand



Recordkeeping Requirements

Exposure Assessment

Employers are required to establish and maintain accurate records of exposure assessments which need to include the following details:

- Exposure Monitoring:
 - Date(s) when samples were taken
 - Number of samples collected
 - Duration of each sampling event
 - Location where the samples were taken
 - Results of each sample
 - Description of the sampling procedure used to determine representative employee exposure
- Sampling and Analytical Methods:
 - A description of the methods used for sampling and analysis
 - Evidence of the accuracy of these methods
- Respiratory Protective Devices:
 - Information about any respiratory protective devices worn by employees during monitoring
- Employee Details:
 - Name and another unique identifier (like the employees' birthdate or identification number) for the employee being monitored
 - Job classification of the employee
 - Information about other employees whose exposure the measurement is intended to represent
- Work Operations and Conditions:
 - Details of the work operations performed by the monitored employees
 - Workplace conditions during the monitored operations, including:
 - Processes involved
 - Types of material handled
 - Control methods in place

- Work practices followed
- Environmental conditions prevailing at the time
- Employers must retain these monitoring records for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

Written Compliance Program Review

- Records related to the semi-annual revision and update of the employer's written compliance program need to include:
 - Names of the person(s) who reviewed the program.
 - Date that the review was completed.
 - A summary of the changes and updates made to the program.
- These records must be kept for a period of 3 years.

Medical Surveillance

- Employers must maintain accurate records for each employee subject to medical surveillance, which needs to include the following:
 - Employee Information
 - Name and another unique identifier (such as date of birth or employee identification number).
 - Description of the employees' duties.
 - PLHCP's Opinions
 - A copy of the written opinions provided by the PLHCP (Physician or other Licensed Health Care Professional).
 - Monitoring Results
 - Results of any monitoring of exposure to airborne lead for that employee.
 - Representative exposure level supplied to the PLHCP.

- Employee Medical Complaints
 - Any complaints related to exposure to lead.
 - Employers must also maintain the following medical records:
 - Medical Examination Results
 - A copy of the medical examination results, including medical and work history required under subsection (j).
 - Laboratory Procedures
 - Description of the laboratory procedures used.
 - A copy of any standards or guidelines used to interpret test results or references to that information.
 - Blood Lead Testing Results
 - A copy of the results of blood lead testing showing BLLs.
 - These medical records must be maintained for at least 40 years or for the duration of employment plus 20 years, whichever is longer.
- Reason for Removal
 - A statement explaining the reason for the removal and if it was because of elevated blood lead level.

These medical removal records must be maintained for at least the duration of an employee's employment.

Training

- After conducting any required training, the employer must prepare a record that includes:
 - Name and job classification of each trained employee.
 - Date of the training.
 - Name(s) of the person(s) who conducted the training.
 - Topic(s) covered during the training.
- Training records must be maintained for 3 years.

Objective data for exemption from requirement for initial monitoring

- Objective data can be from an industry-wide study or from laboratory test results from manufacturers of lead containing products, including surface coatings or other materials.
 - Objective data may not be used for exposure assessment, including initial monitoring, in connection with trigger tasks listed in subsection (d)(2) of Section 1532.1.
- The employer must maintain the record of the objective data relied upon for at least 30 years.

Access to Records

- The employer must make all records required by subsection (n) of T8 CCR 1532.1 available, upon request, for copying and examination to:
 - Affected employees (including former employees)
 - Employee's designated representatives
 - Authorized representatives of:
 - Cal/OSHA
 - NIOSH

Written Elevated Blood Lead Level Response Plans

- Written response plans for elevated blood lead levels (required under subsection (j)(2)(E)) must be retained for three years.

Medical Removals

- Employers must maintain accurate records for each employee removed from current exposure to lead, which need to include the following:
 - Employee Details
 - Name and another unique identifier (such as date of birth or employee identification number).
 - Removal Dates
 - Date on each occasion when the employee was removed from current exposure to lead.
 - Corresponding date when the employee was returned to their former job status.
 - Explanation of Removal
 - A brief explanation of how each removal was done as required.

Transfer of Records

- When there is a change in employers:
 - The new employer must receive and keep all required records from the previous employer.
 - If there is no new employer, the employer must send all records to NIOSH.
- At the end of the period employers are required to keep records:
 - The employer must notify NIOSH at least 3 months before disposing of the records.
 - The employer must send those records to NIOSH if they are requested.
 - The employer must follow additional requirements found in T8 CCR Section 3204.
- No notification is needed if:
 - Disturbance is under 100 square or 100 linear feet of lead-containing materials
 - Torch cutting or welding tasks last less than 1 hour per shift.
 - If lead content is under 0.5%, 5,000 parts per million (ppm), or 1.0 mg/cm².
- Written notification must include:
 - Employer's name and contact info
 - Job location
 - Specific site of lead work
 - Start date
 - Completion date or duration of work
 - Number of workers planned to do the lead work
 - Structure type
 - Lead material quantity
 - Lead work description and practices
 - Work supervisor
 - Lead content in materials (if known)

Lead-work Pre-job Notification

- Employers are required to inform the nearest Cal/OSHA District Office in writing on the LEAD-WORK PRE-JOB NOTIFICATION form, at least 24 hours before the start of work that involves lead-containing materials, as follows:
 - As required by subsection (p)(1) to (p)(4) of T8 CCR 1532.1.
 - For tasks listed in subsection (d)(2) of T8 CCR 1532.1.
 - Sent by either of the following methods:
 - Letter
 - Fax
 - Email
 - Phone call with a follow-up in writing (within 24 hours)
 - Same applies for urgent lead work
- Employers must update Cal/OSHA on any changes to the start date, work area, or lead work methods.
- For ongoing work on stationary steel structures, notify Cal/OSHA:
 - Once per structure (if under a year)
 - With annual updates (if one year or more)

Flowchart of Main Requirements of T8 CCR 1532.1

See section 1532.1 for specific requirements.

For Occupational Exposure to Lead

- Initial determination (d)(1), (3), (4), (6), (8) - (10)
- Housekeeping (h)
- Basic hygiene (i)(1) & (i)(5)
- Training on Hazard Communication (l)(1)(A); housekeeping, hygiene (l)(1)(B)
- Access to standard, appendices and training materials (l)(4)
- Recordkeeping (n)

Initial Monitoring (d)(5), (d)(8)

For \geq AL (2 $\mu\text{g}/\text{m}^3$) w/o the use of respirators:

- Repeated exposure monitoring (d)(6)
- Initial blood lead level (BLL) testing (j)(1)(A)
 1. Exception for those not \geq AL \geq 30 days/12 mos., and not $>10 \mu\text{g}/\text{m}^3$ on any day
 2. Exception for those not \geq AL \geq 15 days/12 mos. and not $>20 \mu\text{g}/\text{m}^3$ on any day
 3. Exception for employee BLL tested in preceding 2 months
- Medical surveillance (BLL testing; med exams) (j)(1)(B)
 1. Exception for those not \geq AL \geq 30 days/12 mos., and not $>10 \mu\text{g}/\text{m}^3$ on any day
 2. Exception for those not \geq AL \geq 15 days/12 mos. and not $>20 \mu\text{g}/\text{m}^3$ on any day
 3. Exception: no medical exam for employee examined in preceding 2 months
- Training program (l)(1)(B)-(E)
- Signs (m)(1)

For BLL \geq 10 $\mu\text{g}/\text{dl}$, $<$ 20 $\mu\text{g}/\text{dl}$:

- BLL testing every 2 months (j)(2)(A)3.
- Elevated blood lead level response (j)(2)(E)

For BLL \geq 20 $\mu\text{g}/\text{dl}$:

- For BLL \geq 20 $\mu\text{g}/\text{dl}$:
- BLL testing every month (j)(2)(A)4.
- Elevated blood lead level response (j)(2)(E)
- Medical exam, ASAP and annual (j)(3)

For $>$ PEL (10 $\mu\text{g}/\text{m}^3$) w/o the use of respirators, apply these additional protections:

Respirators

- To reduce exposure to \leq PEL (accounting for respirator use):
- Implement interim use of respirators (c), (f)
- Then, after implementing required exposure controls, use supplemental respiratory protection if needed

Other Controls

- Implement exposure controls (e)(1)
- Written compliance program (e)(2)
- Protective work clothing & equipment (g)
- Full hygiene requirements (i), including change rooms, showers $> 50 \mu\text{g}/\text{m}^3$ (except where not feasible), eating areas and regulated areas

- For Occupational Exposure to Lead
- Initial determination (d)(1), (3), (4), (6), (8) - (10)
 - Housekeeping (h)
 - Basic hygiene (i)(1) & (i)(5)
 - Training on Hazard Communication (l)(1)(A); housekeeping, hygiene (l)(1)(B)
 - Access to standard, appendices and training materials (l)(4)
 - Recordkeeping (n)

Until Initial Monitoring

- Interim trigger task protections (d)(2)(E)**
- Until employee exposures are monitored and determined, provide following interim protections:**
- Respiratory protection (f)(1)(D)
 - Protective clothing (g)(1)
 - Change area and eating area (i)(2) & (4)
 - Regulated area (i)(6) (including signs)
 - Blood lead testing (prior to performing task) (j)(1)(A)
 - Medical surveillance (exception if only perform level 1 trigger tasks, on <10 days/12 months) (j)(1)(B)
 - Training program (l)(1)(A, B, & C)
 - Lead-work pre-job notification (p)
- Additional interim protections for level 3 trigger tasks:
- Shower facilities (i)(3) (except where not feasible)
 - Monthly BLL testing (j)(2)(A)5.
 - Limit abrasive blasting to 5 hrs./shift (2 hrs./shift effective 1/1/30) (d)(2)(E)7.

Medical Removal Protection (MRP)

Criteria for Removal (k) (1) & (2)	Temporary removal from (k)(1)	Medical Services	Return to Work due to (k)(3)
Either: <ul style="list-style-type: none"> • 1 BLL \geq 30 $\mu\text{g}/\text{dl}$ • Effective 1/1/26: Last 2 BLLs \geq 20 $\mu\text{g}/\text{dl}$, or average BLL in last 6 mos. \geq 20 $\mu\text{g}/\text{dl}$ (except if last BLL < 15 $\mu\text{g}/\text{dl}$) • Final medical determination 	<ul style="list-style-type: none"> • Work \geq AL (2 $\mu\text{g}/\text{m}^3$) • Work involving a trigger task when no exposure assessment has been conducted, or altering or disturbing lead materials 	<ul style="list-style-type: none"> • Medical exam ASAP & as medically appropriate (j)(3)(A) • BLL testing at least monthly (j)(2)(A)3. 	Either: <ul style="list-style-type: none"> • 2 consecutive BLLs < 15 $\mu\text{g}/\text{dl}$ (at least 30 days apart) • Subsequent final medical determination

Appendices, Resources and URLs

- **Appendix A** - Substance Data Sheet for Occupational Exposure to Lead
www.dir.ca.gov/title8/1532_1a.html
- **Appendix B** - Employee Standard Summary
www.dir.ca.gov/title8/1532_1b.html
- **Appendix C** - Medical Surveillance Requirements
www.dir.ca.gov/title8/1532_1c.html

Cal/OSHA

- **Cal/OSHA homepage — English**
www.dir.ca.gov/dosh
- **Cal/OSHA homepage — Español**
www.dir.ca.gov/dosh/Spanish/dosh1.html
- **California Code of Regulations, Title 8, Section 1532.1. Lead in Construction Standard**
www.dir.ca.gov/title8/1532_1.html
- **Lead-work Pre-job Notification Form**
www.dir.ca.gov/DOSH/leadnotification.pdf
- **Cal/OSHA Publications Webpage**
www.dir.ca.gov/dosh/puborder.asp
- **Cal/OSHA Enforcement Branch**
www.dir.ca.gov/dosh/EnforcementPage.htm
- **Cal/OSHA Consultation Services Branch**
www.dir.ca.gov/dosh/consultation.html
- **Model Respiratory Protection Program**
www.dir.ca.gov/dosh/dosh_publications/Sample-Respiratory-Protection-Program.docx
- **Respiratory Protection Guide**
www.dir.ca.gov/dosh/dosh_publications/respiratory-protection-employer-guide.pdf

Title 8 sections

- **1532.1: Lead in Construction**
www.dir.ca.gov/title8/1532_1.html
- **5198: Lead in General Industry**
www.dir.ca.gov/title8/5198.html
- **5144: Respiratory Protection**
www.dir.ca.gov/title8/5144.html

California Department of Public Health (CDPH)

- **Occupational Lead Poisoning Prevention Program**
www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/Pages/OLPPP.aspx
 - **Information for Workers & Employers**
www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/Pages/WorkersAndEmployers.aspx
 - **Construction Basics of a Lead Health & Safety Program (PDF) - checklist**
www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/CDPH%20Document%20Library/constructionbasics.pdf
 - **Lead's Revenge! ¡La Venganza del Plomo! - a training video about lead paint and ladder safety**
www.cdph.ca.gov/programs/CCDPHP/DEODC/OHB/OLPPP/Pages/LeadsRevenge.aspx
 - **Lab Requisition for Blood Lead Testing (PDF) - Sample form for health care providers ordering BLL tests**
[www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/CDPH Document Library/sampleLabReq.pdf](http://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/CDPH%20Document%20Library/sampleLabReq.pdf)
- **Laboratories Proficient in Blood Lead Analysis** (the standard requires that BLL analysis be by a CLIA-approved lab.)
www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/OLPPP/Pages/LabReq.aspx
- Childhood Lead Poisoning Prevention Branch
 - **Index of Lead-Certified Professionals in California**
www.cdph.ca.gov/Programs/CCDPHP/DEODC/CLPPB/Pages/LRCcertlist.aspx

United States Centers for Disease Control and Prevention (CDC) – National Institute for Occupational Safety and Health (NIOSH)

- **Lead in the Workplace**
www.cdc.gov/niosh/lead/site.html
- **Directory of Engineering Controls**
www.cdc.gov/niosh/engcontrols/
- **Engineering Controls Database**
www.cdc.gov/niosh/engcontrols/ecd/detail154.html
- **Leave lead at work**
www.cdc.gov/niosh/docs/2024-101/
- **NIOSH: Reducing Workers' Lead Exposure during Water Service Line Removal and Replacement**
www.cdc.gov/niosh/docs/wp-solutions/2023-141/default.html
- **NIOSH's Engineering Controls Database**
www.cdc.gov/niosh/engcontrols/ecd/

Occupational Safety and Health Administration (Federal OSHA)

- **Lead – Safety and Health Topics Page**
www.osha.gov/lead/

Other Regulations

CDPH: Accreditation, Certification and Work Practices for Lead-Based Paint and Lead Hazards

[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IC7370D905A2011EC8227000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IC7370D905A2011EC8227000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)&bhcp=1)

[Chapter 8, Section 35001](#) et seq. Requirements for lead hazard evaluation and abatement activities, accreditation of training providers, and certification of individuals engaged in lead-related construction work as defined in Title 17, Section 35040.

[https://govt.westlaw.com/calregs/Document/IC73BEF935A2011EC8227000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Document/IC73BEF935A2011EC8227000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

Lead-Related Activities in Construction Work

California Labor Code Sections [6716](#) to [6717](#). Provide for the establishment of standards that protect the health and safety of employees who engage in lead-related construction work, including construction, demolition, renovation, and repair.

Labor Code 6716: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=LAB§ionNum=6716.

Labor Code 6717: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=6717.&nodeTreePath=8.1.10&lawCode=LAB

Lead in Plumbing

California Health & Safety Code Sections [116875](#) to [116880](#). Require the use of lead-free pipes and fixtures in any installation or repair of a public water system or in a facility where water is provided for human consumption.

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=116875.&lawCode=HSC

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=116880.&lawCode=HSC

Assembly Bill 35 (AB 35) – CA Health and Safety Code 105185

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=105185.&lawCode=HSC

California's Department of Public Health (CDPH) must notify Cal/OSHA when a worker's blood lead level tests at or above 20 micrograms per deciliter ($\mu\text{g}/\text{dL}$). Once Cal/OSHA receives a report from CDPH, it is considered an official complaint from a government representative and Cal/OSHA may inspect the employer's workplace or job site.

California vs Federal OSHA Requirements

The previous California regulation for Lead in Construction was based on federal regulations [Code of Federal Regulations (CFR) title 29 section (§) 1926.62], but the existing California lead in construction regulation differs from the Federal lead regulation in a number of ways. Employers doing work in California must follow California regulations.

For example, the federal regulation establishes a Permissible Exposure Limit for lead of 50 µg/m³, as an 8-hour time-weighted average (TWA) concentration (29 CFR §1926.62(c)(1)). In addition, federal lead regulations include an action level for lead of 30 µg/m³. Amendments made to [1532.1](#) have established a PEL for lead of 10 micrograms per cubic meter of air (10 µg/m³) calculated as an 8-hour TWA, and an Action Level for lead of 2 micrograms per cubic meter of air (2 µg/m³) calculated as an 8-hour TWA.

The CA Lead in Construction standard emphasizes an increase in the use of protective measures such as substitution, engineering controls and administrative controls, with the goal of providing greater protection for employees from the hazards of lead exposure. Thus, 1532.1 establishes requirements that are more protective than existing federal regulations.

For more information on Cal/OSHA's policy on enforcement and jurisdiction, see [Division of Occupational Safety and Health Policy and Procedures Manual - Jurisdiction and Interagency Cooperation](#): www.dir.ca.gov/DOSH/Pol/P&PC-11.pdf

Glossary

Action level (AL) - Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 2 micrograms per cubic meter of air ($2 \mu\text{g}/\text{m}^3$) calculated as an 8-hour time-weighted average (TWA).

Altering or disturbing - Subjecting to a process that may result in the release of lead dust, lead mist, lead fumes, or other lead particles. Such processes include, but are not limited to, welding, torch cutting, brazing, torch soldering, melting, pouring, spraying, cutting, shredding, crushing, baling, grinding, polishing, machining, drilling, scraping, sanding, abrading, sweeping, raking, and shoveling.

Blood lead level (BLL) - The concentration of lead measured in whole blood, expressed as micrograms per deciliter ($\mu\text{g}/\text{dl}$) of whole blood.

Chief - The Chief of the Division of Occupational Safety and Health (Cal/OSHA) or designee.

High-efficiency particulate air (HEPA) filter - A filter that is at least 99.97 percent efficient in removing particles 0.3 micrometers in diameter.

Interim protection – protective measure for an employee required before an exposure assessment is done.

Lead - Metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

Level 1 trigger task – A task listed in T8 CCR 1532.1, subsection (d)(2)(A), which, until an exposure assessment as required in subsection (d) is completed, is presumed to result in employee exposure above the PEL, but not greater than 10 times the PEL.

Level 2 trigger task - A task listed in T8 CCR 1532.1, subsection (d)(2)(C), which, until an exposure assessment as required in subsection (d) is completed, is presumed to result in employee exposure above 10 times the PEL, but not greater than 50 times the PEL.

Level 3 trigger task - A task listed in T8 CCR 1532.1, subsection (d)(2)(D), which, until an exposure assessment as required in subsection (d) is completed, is presumed to result in employee exposure above 50 times the PEL.

NIOSH - the National Institute of Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services or designee.

Permissible Exposure Limit (PEL): The maximum permitted 8-hour time-weighted average concentration of lead. The PEL for lead is $10 \mu\text{g}/\text{m}^3$ as an 8-hour TWA. However, for abrasive blasting, until 1/1/2030, the PEL is $25 \mu\text{g}/\text{m}^3$ as an 8-hour TWA.

Physician or other licensed health care professional (PLHCP) - an individual whose legally permitted scope of practice (i.e., license, registration or certification) allows the individual to independently provide or be delegated the responsibility to provide some or all of the health care services required by this section.

Supervisor - One who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them. Supervisors shall be trained, as required by this section, and, when required, be certified consistent with subsection (l)(3).

Time-Weighted Average/Eight (8)-Hour Time-Weighted Average Concentration (TWA) – An employee’s exposure, as measured or calculated, to an airborne contaminant during a workday.

Trigger task – not listed – A task described in T8 CCR 1532.1, subsection (d)(2)(B), which, until an exposure assessment as required in subsection (d) is completed, is presumed to result in employee exposure above the PEL.

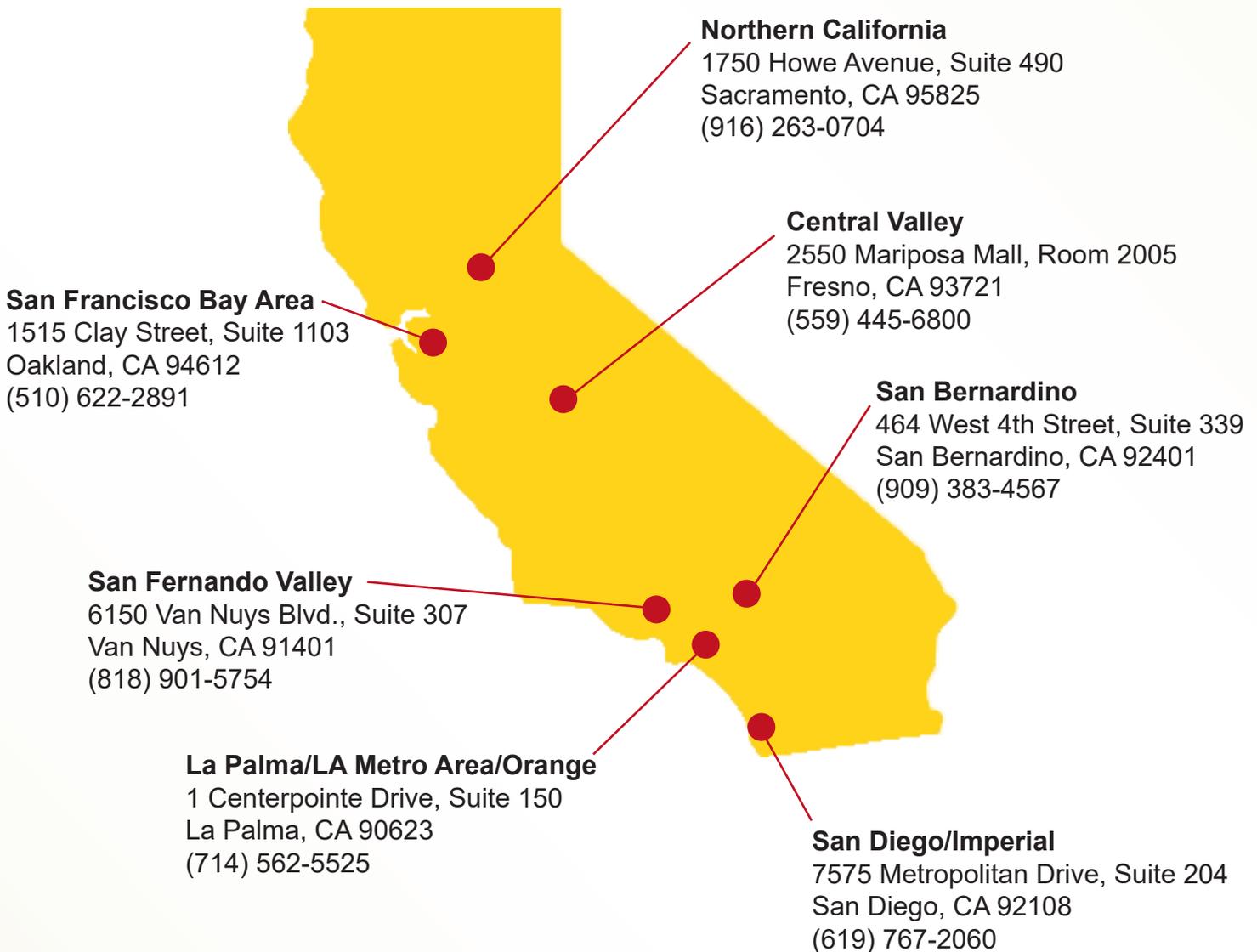


Cal/OSHA Consultation Programs

Toll-free Number: 1-800-963-9424

Internet: www.dir.ca.gov

On-site Assistance Program Area Offices



Voluntary Protection Program – Oakland, CA 94612 (510) 622-1081

This guide is available with active links at: www.dir.ca.gov/dosh/PubOrder.asp

