

Lead in General Industry

Information for Employers

Title 8 California Code of Regulations (T8 CCR) **section 5198** establishes required safety measures for employers with employees who may be exposed to lead in general industry. Implementing these measures and following industry best practices will reduce the risk of employee lead poisoning.

This fact sheet provides an overview—not all the requirements—of section 5198. The information provided is not meant to be a substitute for, nor a legal interpretation of, the regulation. Employers are cautioned to refer directly to section 5198 for detailed information regarding the regulation’s scope, specifications, exceptions, and other requirements that may be applicable to their operations. Refer to section 1532.1 should your employees be engaged in construction-related activities as defined in section 1502(a).

Why should employers be concerned?

- Lead is highly toxic. It can cause damage to the brain, nervous system, kidneys, reproductive system, and other health problems.
- Lead poisoning occurs through ingestion and inhalation, even at a very low level of exposure.
- There is a high risk of workers carrying lead home on their bodies, clothing, and shoes. This can poison family members, particularly children.

Failing to protect employees from lead exposure can have serious consequences, such as:

- Employee health problems.
- Medical and wage costs when a lead-poisoned employee must be removed from work.
- Costly shutdowns.



- Reputation costs as clients value employers who protect their employees and the workplace environment.
- Substantial Cal/OSHA fines.

What do employers need to do?

Identify the presence of lead

Lead can be present in a wide range of materials, such as scrap metal, solder, bullet fragments and dust, sheeting, cable housing, lead ingots, and lead-acid batteries. Certain tasks, such as grinding, sanding, welding, torch burning, torch cutting, and cleaning or emptying bullet traps can produce high exposure levels. Check the safety data sheets (SDSs) of the materials in use.

Regularly assess employee exposure levels

The action level (AL) and permissible exposure level (PEL) for lead have been reduced to:

- **AL:** 2 micrograms per cubic meter of air ($2 \mu\text{g}/\text{m}^3$) calculated as an 8-hour time-weighted average (TWA).
- **PEL:** $10 \mu\text{g}/\text{m}^3$ calculated as an 8-hour TWA.

The 8-hour TWA is the employees' full shift exposure to airborne lead expressed as an 8-hour average exposure.

Section 5198(d) requires employers to determine if any employee may be exposed to lead at or above the AL. This typically involves personal full-shift air sampling of employees whose lead exposures represent each job classification, in each work area, for each shift. This information determines the protective measures needed, including the type of respirator that must be worn.

Affected employees or their designated representatives must be allowed the opportunity to observe any monitoring done. If observation requires entering hazardous areas, the employer is required to develop observation procedures that include proper use of protective equipment and clothing. Access to the monitoring results must also be provided.

Refer to the "Protection of employees prior to exposure assessment" heading below for what must be implemented for workers engaged in altering or disturbing certain types of materials, or torch cutting of any scrap metal.

Reduce employee lead exposure levels

The employer must implement engineering and work practice controls, including administrative controls, to reduce airborne lead exposure to below the PEL. If that is not feasible, exposures must be reduced as low as possible and respiratory protection must also be used.

For certain processes in lead acid battery manufacturing and recycling, a Separate Engineering Control Airborne Limit (SECAL) has been set. For these processes the standard allows a phase-in period for employers to use engineering and work practice controls to meet the SECAL, which is higher than the PEL. Use of respirators

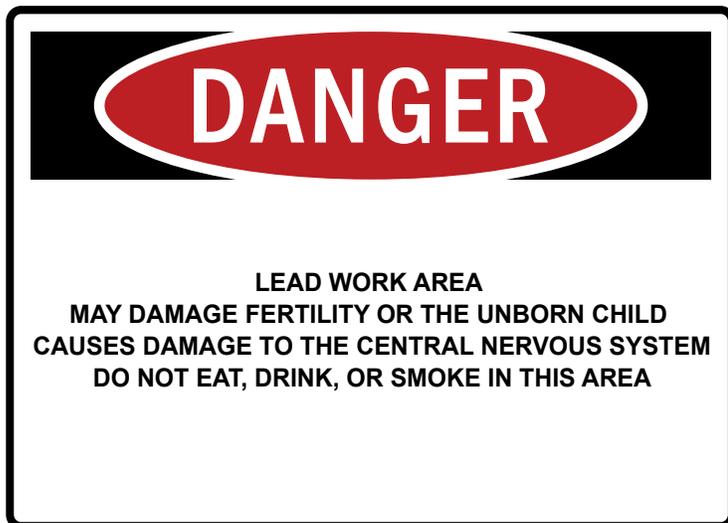


may be necessary to reduce employee exposure to lead at or below the PEL, which is required even when there is a SECAL.

Some key exposure control measures include:

- **Engineering and work practice controls, including administrative [5198(e)].**
 - Choose tools, materials, and ventilation to reduce airborne lead exposures.
 - Control how work is conducted (work scheduling, etc.) to further reduce airborne exposures.
 - Implement a job rotation schedule to reduce employees' TWA exposures.
- **Respiratory protection [5198(f)].** Implement a respiratory protection program when engineering, work practice, and administrative controls are insufficient or not feasible to reduce employees' exposures below the PEL.
 - HEPA (High-Efficiency Particulate Air), N100, R100, or P100 filters are required when air-purifying respirators are used.
 - The employer must provide a powered air-purifying respirator (PAPR) when an employee chooses to use this type of respirator, and the respirator will provide adequate protection.
- **Protective work clothing and equipment [5198(g)].** Provide, maintain, and ensure use as required. Prohibit employees from taking contaminated protective clothing or equipment to their car or home.
- **Housekeeping [5198(h)].** Regardless of employee airborne exposure levels, all surfaces must be maintained as free as possible of lead accumulations, especially in eating areas.
 - Clean surfaces, including floors, by using vacuums equipped with HEPA filters where possible. Shoveling, dry or wet sweeping, and brushing are only allowed when vacuuming or other equally effective methods are ineffective.
 - Prohibit cleaning by using compressed air unless in conjunction with an adequate ventilation system.
- **Hygiene facilities and practices [5198(i)].**

- Employees with any lead exposure:
 - Prohibit consumption of food, beverages, tobacco products, or application of cosmetics in areas where employees are exposed to lead.
 - Provide adequate hand washing facilities with special cleansing compounds.
- Employees with exposures above the PEL (for exposures above the PEL, but not above 50 ug/m³, these requirements will become effective 1/1/26):
 - Change areas
 - Showers
 - Lunchrooms
- Establish, implement, and maintain written methods and schedules to maintain cleanliness of drinking and washing facilities, change rooms, showers, and lunchrooms.
- **Hazard Communication, training, and signs** [5198(l) and (m)].
 - Post warning signs in areas where lead exposures are at or above the AL.



- Ensure all employees exposed to lead are informed of the content of Appendices A and B of section 5198 and information covering:
 - The purpose and content of, and methods used to comply with, the housekeeping and hygiene requirements.
 - Including, where applicable, how to follow written safe hydration procedures.

In addition, the employer must ensure the following employees are trained in the additional requirements of section 5198(l)(1)(D) through (F):

- Employees exposed to lead at or above the AL on any day.
- Employees for whom the possibility exists of skin or eye irritation from exposure to lead.
- Employees engaged in presumed significant lead work that involves altering or disturbing certain types of materials, or torch cutting any scrap metal.
- **Medical surveillance** [5198(j) & (k)]. The employer must implement medical surveillance for employees exposed to lead at or above the AL, depending on the number of days in any 12-month period they are exposed at this level. This includes:
 - Blood lead testing and employee notification.
 - Medical examination and consultations.
 - Temporary medical removal protection, where necessary.

Protection of employees prior to exposure assessment

Until lead exposures are measured, employers must presume significant lead work for workers engaged in altering or disturbing certain types of materials, or torch cutting of any scrap metal.

Altering or disturbing

A process that may result in the release of lead dust, lead mist, lead fume, 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.

The following interim protection must be provided:

- Respiratory protection consisting of at least a half-mask respirator with N100, R100, or P100 filters)

(continued on next page)

- Clean protective work clothing and equipment at least weekly
- Medical surveillance
- Worker training
- Posted warning signs

Written, up-to-date compliance program and other recordkeeping requirements

Employers must establish and implement a written lead compliance program to reduce employees' exposures to or below the PEL (or where applicable, the SECAL). Reference section 5198(e)(2) for requirement details. This includes:

- An explanation of how any engineering and work practice controls needed to lower exposures were determined to be infeasible.
- Documented revisions to the written program.

Other records that must be maintained include:

- A written job rotation schedule, where administrative controls are used.
- Exposure monitoring results.
- Medical surveillance.
- A written blood lead level response plan.
- Training.

Resources

Cal/OSHA

- [Lead in Construction webpage](#)
- [Title 8 Section 5198](#)
 - [Appendix A: Substance Data Sheet for Occupational Exposure to Lead](#)
 - [Appendix B: Employee Standard Summary](#)
- [Publications](#)

OSHA

- [Lead](#)

[California Department of Public Health, Occupational Lead Poisoning Prevention Program](#)

[Painting and Decorating Contractors of America](#)

[US EPA: Lead in Paint, Dust, and Soil](#)

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This document is available with active links at www.dir.ca.gov/dosh/dosh_publications
For assistance regarding this subject matter, employers may contact
Cal/OSHA Consultation Services at 1-800-963-9424 or InfoCons@dir.ca.gov
www.dir.ca.gov/dosh/consultation.html

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