



HEALTHIER WORKPLACES | A HEALTHIER WORLD

April 19, 2023

Sarah Money
Occupational Safety and Health Standards Board

AIHA's Recommendations on California Occupational Safety and Health Standards Board on the Board's Proposed Lead Regulations

Title 8 CCR 1532.1 (Construction) and Title 8 CCR 5198 (General Industry)

Dear Ms. Money:

AIHA, the association for scientists and professionals committed to preserving and ensuring occupational and environmental health and safety (OEHS), appreciates the opportunity to provide feedback on the proposed changes to California's lead regulations (Title 8 CCR 1532.1 [Construction] and Title 8 CCR 5198 [General Industry]). We hope you find our feedback useful and are happy to answer any questions you may have.

Sections 1532.1, 5198 and 5155

It is evident that the proposed modifications in 1532.1 and 5198 are primarily medical in nature. Medical quality assurance proposals include the requirements that medical examinations and procedures be performed by or under the supervision of a licensed physician and that blood lead analyses should be performed by a Clinical Laboratory Improvement Amendments (CLIA)-approved laboratory. However, equivalent quality assurances for the exposure assessments and monitoring are not proposed.

Competent exposure assessment and monitoring are critical because they are the basis/trigger for all other elements of compliance, including medical. If not accomplished competently, exposure can be understated, which would not serve employee interests, or, if overstated, would not serve employer interests.

Exposure assessment and monitoring is a core competence of the profession of industrial hygiene. The benchmark for competence in industrial hygiene is certification by the Board for Global EHS Credentialing. Certified Industrial Hygienist (CIH) is codified in California's

Business and Professions (B&P) Code Sections 2700-2705¹.

The regulatory intent to emphasize the need for industrial hygiene competence is contained in 5155(e)(3), to wit “For the adequate protection of employees, the person supervising, directing or evaluating the monitoring and control methods shall be versed in this standard and shall be competent in industrial hygiene practice”. To be consistent, this intent needs to be added to 1532.1 and 5198. Since 5155 also has a proposed change, **we recommend that the following language be consistent and included in 1532.1, 5198, and 5155: “The employer shall ensure that all exposure assessments and monitoring are performed by or under the supervision of a Certified Industrial Hygienist as codified in B&P Sections 2700-2705”.**

To have equivalent quality assurance for the analysis of samples collected for exposure assessments and monitoring, there exists an Environmental Lead Laboratory Accreditation Program (ELLAP) which is approved under the United States Environmental Protection Agency’s (EPA) National Lead Laboratory Program (NLLAP). An ELLAP accreditation covers air samples and matrices of paint chips, dust, soil, wipes, and bulk samples. **We recommend replacing the exposure assessment and monitoring “assurance” language in sections 1532.1 and 5198 with the following: “Laboratories used for lead analysis of samples collected for exposure assessment and monitoring shall be accredited by a program like ELLAP”.**

ELLAP stands for the Environmental Lead Laboratory Accreditation Program, which is recognized by the United States Environmental Protection Agency’s National Lead Laboratory Accreditation Program.

Coverage

CDC has determined that “no safe blood lead level has been identified.”² Therefore safe blood lead levels must be determined by the limitations of lead monitoring, sampling methods, and the laboratory method used for the determination of blood lead concentrations. AIHA recommends that the proposed rule consider and address occupational health laboratory analysis sensitivity and lab performance and proficiency for lead analyses.

The California State Occupational Safety and Health Plan applies to all private sector employers with several noted exceptions including for example, private sector employers within the borders of all U.S. military installations, and private sector employers within the

¹ For additional information on the CIH credential, please visit <https://gobgc.org/cih/>.

² Centers for Disease Control and Prevention. “National Biomonitoring Program: Factsheet: Lead”. https://www.cdc.gov/biomonitoring/lead_factsheet.html

borders of national parks, national monuments, national memorials, and national recreation areas.³

The California State Plan also applies to State and local government employers, but it does not apply to U.S. Postal Services workers.⁴ Federal OSHA lead exposure rules are not as protective as those in California’s proposed lead standard, yet Federal OSHA covers the workers not covered by the California State Plan. **AIHA believes that all employers in California should be covered under the more conservative lead exposure standards established by this proposal.**

Routes of Lead Exposure

Lead body burden results from lead entering the human body via two primary routes of exposure inhalation and ingestion. Ingestion can occur in the workplace from hand-to-mouth actions when the hands become contaminated with lead-bearing dust. **AIHA believes the best way to determine body lead burdens is by periodically measuring blood lead levels in workers wherever lead may be present during workplace activities.**

Exposure to lead in the workplace can lead to contaminated clothing. When contaminated clothing is worn and taken home, the result is possible lead exposure to the workers’ family members or others they live with.

The ingestion route of exposure must be considered in the rulemaking process by identifying when clothing must not be taken home and when shower facilities should be required to be provided. Similarly, the rule should contain requirements for leaving contaminated clothing in the workplace for proper cleaning without exposure to persons who launder the contaminated clothing. Additionally, the rule should specify when workers need to wash their hands and face before eating, drinking, or smoking.

Comments on Specific Subsections of the Proposed Rule

AIHA respectfully provides the following specific comments on subsections of California’s proposed lead regulations.

Subsection (b)

Lowering the action level, which triggers certain requirements, from 30 µg/m ³ as an 8-hour TWA to 2 µg/m ³ as an 8-hour TWA.	AIHA concurs but laboratory analytical method limitations, proficiency analytical testing and possible performance limitations must be considered and addressed.
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³ United States Occupational Safety and Health Administration. “California State Plan”. <https://www.osha.gov/stateplans/ca>

⁴ United States Occupational Safety and Health Administration. “California State Plan”. <https://www.osha.gov/stateplans/ca>

Adding and defining the terms “altering or disturbing,” “blood lead level,” and “high efficiency particulate air (HEPA) filter” (subsection (b));	AIHA concurs with this provision.
Adding and defining the term “presumed hazardous lead work (PHLW),” which triggers certain required protective measures	AIHA recommends that “presumed hazardous lead work” should be determined by a comprehensive industrial hygiene evaluation by a competent and experienced IH based on possible exposure both from inhalation and ingestion. As well as evaluation of routes of exposure, PPE with quantitative fit testing of respirators should be considered.

Subsection (c)(1)

Lowering the PEL for lead, calculated as an 8-hour TWA, from 50 µg/m ³ to 10 µg/m ³	AIHA believes the proposed standard must address lab analysis methods as recommended above.
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Subsection (d)(2)

Requiring respiratory protection, protective clothing and equipment, medical surveillance, training, and warning signs for lead, when employees perform PHLW	AIHA recommends sanitation and hygiene measures be included to reduce potential ingestion route of exposure. AIHA further recommends that quantitative fit testing should be required whenever potential exposures may continuously exceed the permissible exposure limit.
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Subsection (f)(3)(A)

In the Proposed Amendments to the California Code of Regulations, Subsection (f)(3)(A) it states, “In this subsection, a requirement would be added that would prohibit employers from selecting or using filtering facepiece respirators to protect their employees when respirator use is required.” The reasoning for not allowing filtering facepieces to be used is stated as “filtering facepiece respirators are unlikely to provide adequate protection to employees, due to the difficulty in achieving and maintaining a satisfactory seal on the employee’s face.” OSHA’s final rule on assigned protection factors (APF’s) for Filtering Facepieces disagrees with that conclusion. The statement that filtering facepiece respirators are unlikely to provide adequate protection to employees is based on the opinion that it is difficult to achieve and maintain a satisfactory seal by a filtering facepiece on the employee’s face.

AIHA requests removal of the exclusion of the use of filtering facepieces by workers who may need to use a respirator for exposures up to 10x the proposed lead OEL. Further, AIHA recommends replacing the proposed subsection (f) in 1532.1 and 5198 with

something similar to, or even identical language, regarding respiratory protection as from the respirable crystalline silica standard:

Title 8 CCR 5204 (g) Respiratory protection.

(1) General. Where respiratory protection is required by this section, the employer must provide each employee an appropriate respirator that complies with the requirements of this subsection and Section 5144. Respiratory protection is required:

(A) Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls;

(B) Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible;

(C) During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL; and

(D) During periods when the employee is in a regulated area.

(2) Respiratory protection program. Where respirator use is required by this section, the employer shall institute a respiratory protection program in accordance with Section 5144.

Subsection(e)(1)(B)

Establishing a separate engineering control air limit (SECAL) for particular processes in the manufacturing of lead acid batteries.	AIHA does not agree that establishing a separate engineering control air limit for particular processes in the manufacturing of lead acid batteries is necessary. But adherence to the other proposed requirement would preclude this requirement.
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Subsection (i)(1)(A)

Establishing general hygiene requirements when employees have occupational exposure to lead, rather than exposure to lead above the PEL.	AIHA recommends available sanitation (washing hands and face, etc.) and shower facilities be specifically included for general hygiene requirements.
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Subsection (j)(1)(A)

Reducing the duration of specified work that triggers the requirement to implement medical surveillance for employees.	AIHA recommends requirements follow all potential BLLs exposures above the specific triggers as indicated in the Table “BLL Worker Monitoring and Medical Removal Criteria” below.
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BLL Worker Monitoring and Medical Removal Criteria for Worker with Significant Lead Exposure, Defined as an Airborne or Surface Lead Content Known or Reasonably Anticipated to Cause Elevated BLL (> 5 µg/dL)⁵

Category of Exposure	Recommendation
All workers with significant lead exposure are defined as airborne concentrations above the permissible exposure limit regardless of the period of time in which these exposures may occur.	<p>Baseline or preplacement medical history and physical examination,</p> <ul style="list-style-type: none"> • A baseline BLL, complete blood count, and serum creatinine before the worker is placed in a job with anticipated lead exposures. • Additional medical examinations may also be necessary periodically in specific workers based on the BLL findings, lead concentrations found in workplace surface sampling; or prior medical examinations and clinical test results.
All lead workers (defined as workers with potential lead exposures above the permissible exposure limit based on comprehensive industrial hygiene survey): frequency of blood lead levels (BLLs)	<ul style="list-style-type: none"> • BLL (measured in µg/dL) every 2 months for first 6 months of placement, or upon change to tasks resulting in higher potential exposure, • then BLL every 6 months. • Goal is < 5 micrograms of lead per deciliter of blood (µg/dL). • Additional monitoring may be required for pregnant workers or others as determined by the health care provider (Medical Doctor).
Recommendations if BLL 5–9 µg/dL	<ul style="list-style-type: none"> • BLL increases above 5 µg/dL: industrial hygiene (IH) evaluation of workplace exposure and protective measures. • Increase monitoring for women of childbearing age. levels between five and nine indicate possible risks for spontaneous abortion and possible risk for postnatal developmental delay; discuss health risks and reduce lead exposure for women who are or may become pregnant.

⁵ American College of Occupational and Environmental Medicine. “Position Statement: Workplace Lead Exposure.” https://acoem.org/acoem/media/News-Library/Workplace_Lead_Exposure.pdf

Recommendations if BLL 10–19 µg /dL	<ul style="list-style-type: none"> • Determine BLL every 2 months with IH written evaluation of exposures, engineering controls, hygiene measures, PPE and work practices; • Revert to BLL every 6 months after two BLLs are less than or equal to 10 µg/dL; • Return to regular work duties when two repeat BLLs are less than 5 µg /dL.
Recommendations if BLL >20 µg /dL	<ul style="list-style-type: none"> • IH written evaluation of potential exposures, engineering controls, PPE, hygiene measures and work practices, and medical removal recommendation from exposure if repeat BLL measured in 4 weeks remains 20 µg/dL or if the first or any single BLL greater than or equal to 30 µg/dL. • Monthly BLL testing needed and return to lead work after two BLLs are less than or equal to 15 µg/dL one month apart, then continue as above.
Recommendations if BLL > 30 µg/dL	<ul style="list-style-type: none"> • Remove from exposure immediately. • IH written evaluation of exposure, engineering controls, PPE including quantitative respirator fit testing, hygiene measures and work practices. In addition, monthly BLL testing is needed. Consider return to lead work after two consecutive BLLs are < 15 µg/dL one month apart, then monitor as above.

Subsection (j)(2)(A)

Removing the requirement to provide ZPP testing on a routine basis when blood lead testing is provided.	AIHA concurs.
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Subsection (j)(2)(A) and Subsection (j)(2)(E)

Increasing the frequency of BLL testing for employees when their BLL is at or above 10 µg/dl (subsection (j)(2)(A)), and requiring a response plan when an employee's BLL is at or above 10 µg/dl (subsection (j)(2)(E))	AIHA recommends that all potential BLLs exposures above the specific triggers as indicated in the Table BLL Worker Monitoring and Medical Removal Criteria.
Lowering the BLL at which specified employees must be offered medical examinations and consultations at least annually from 40 µg/dl to 20 µg/dl (subsection (j)(3)(A)(1))	Same comment as above.

Subsection (j)(5)

Requiring the employer to ensure that employees receive specified health	AIHA concurs.
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information from the ordering or examining physician following a blood lead test (subsection (j)(2)(D)) or medical examination.	
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Subsection (k)(1)

Expanding the type of work that employees on MRP must be removed from, to include altering or disturbing lead-containing material and torch cutting any scrap metal (subsection (k)(1)), in addition to existing requirements.	AIHA concurs.
The criteria for temporary removal from work with lead due to elevated BLLs, known as MRP, from an average BLL of 50 µg/dl to one BLL at or above 30 µg/dl, or effective one year after the effective date, the last two BLLs are at or above 20 µg/dl or the average of all BLLs in the last 6 months are at or above 20 µg/dl	AIHA recommends actions based on all potential BLL exposures above the specific triggers as indicated in the Table BLL Worker Monitoring and Medical Removal Criteria below. Please note that this table also appears in our comments under Subsection j)(1)(A).

BLL Worker Monitoring and Medical Removal Criteria for Worker with Significant Lead Exposure, Defined as an Airborne or Surface Lead Content Known or Reasonably Anticipated to Cause Elevated BLL (> 5 µg/dL)⁶	
Category of Exposure	Recommendation
All workers with significant lead exposure are defined as airborne concentrations above the permissible exposure limit regardless of the period of time in which these exposures may occur.	Baseline or preplacement medical history and physical examination, <ul style="list-style-type: none"> • A baseline BLL, complete blood count, and serum creatinine before the worker is placed in a job with anticipated lead exposures. • Additional medical examinations may also be necessary periodically in specific workers based on the BLL findings, lead concentrations found in workplace surface sampling; or prior medical examinations and clinical test results.
All lead workers (defined as workers with potential lead exposures above the permissible exposure	<ul style="list-style-type: none"> • BLL (measured in µg/dL) every 2 months for first 6 months of placement, or upon change to tasks resulting in higher potential exposure, then BLL every 6 months. • Goal is < 5 micrograms of lead per deciliter of blood (µg/dL).

⁶ American College of Occupational and Environmental Medicine. "Position Statement: Workplace Lead Exposure." https://acoem.org/acoem/media/News-Library/Workplace_Lead_Exposure.pdf

limit based on comprehensive industrial hygiene survey): frequency of blood lead levels (BLLs)	<ul style="list-style-type: none"> Additional monitoring may be required for pregnant workers or others as determined by the health care provider (Medical Doctor).
Recommendations if BLL 5–9 µg/dL	<ul style="list-style-type: none"> BLL increases above 5 µg/dL: industrial hygiene (IH) evaluation of workplace exposure and protective measures. Increase monitoring for women of childbearing age. Levels between five and nine indicate possible risks for spontaneous abortion and possible risk for postnatal developmental delay; discuss health risks and reduce lead exposure for women who are or may become pregnant.
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Recommendations if BLL >20 µg /dL	<ul style="list-style-type: none"> IH written evaluation of potential exposures, engineering controls, PPE, hygiene measures and work practices, and medical removal recommendation from exposure if repeat BLL measured in 4 weeks remains 20 µg/dL or if the first or any single BLL greater than or equal to 30 µg/dL. Monthly BLL testing needed and return to lead work after two BLLs are less than or equal to 15 µg/dL one month apart, then continue as above.
Recommendations if BLL > 30 µg/dL	<ul style="list-style-type: none"> Remove from exposure immediately. IH written evaluation of exposure, engineering controls, PPE including quantitative respirator fit testing, hygiene measures and work practices. In addition, monthly BLL testing is needed. Consider return to lead work after two consecutive BLLs are < 15 µg/dL one month apart, then monitor as above.

Subsection (k)(3)(A)(1)

Lowering the BLL that employees must achieve before returning from MRP to work involving lead from 40 µg/dl to 15 µg/dl.	AIHA recommends actions based on all potential BLL exposures above the specific triggers as indicated in the Table BLL Worker Monitoring and Medical Removal Criteria above.
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Subsection (l)(1)(E)

Expanding the contents of required training.	AIHA concurs but that training methods should specify the adequacy or inadequacy of online training versus in-person and online training limitations, for example respirator fit testing, and adequate PPE fitting.
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Sampling Method and Analytical Capabilities for Lead Measurements

The sampling method and analytical capabilities for lead measurements should be considered in the proposed regulation. For example, the National Institute for Occupational Safety and Health indicates that lead air samples can be collected at an airflow rate of 1-4 liters per minute, with most samples being collected at 2 LPM. The Wisconsin Occupational Health Laboratory reports an analytical sensitivity of detection at 2 µg for an 8-hour sample at 2 LPM. The Wisconsin Occupational Health Laboratory reports any value lower than 2 µg of detected lead in a sample as less than 2 µg because the error on that value is greater than +/- 20% in the Wisconsin laboratory. Some personal air sampling pumps will collect at higher flow rates but these personal air sampling pumps are not common. If an industrial hygienist collects a sample at 4 LPM the reporting limit is reduced to 1 µg.

Additionally, the EPA did take laboratory analytical sensitivity into consideration when the regulatory values were originally set and again when they were lowered. During regulatory proceedings, EPA requested laboratory performance data from AIHA ELPAT participants for detection and reporting limits.

Conclusion

If you have any questions about AIHA's responses to the proposed changes to California's lead regulations or other matters, please contact me at mames@aiha.org or (703) 846-0730. Thank you for your time and consideration.

Sincerely,



Mark Ames
Director, Government Relations
AIHA

About AIHA

AIHA is the association for scientists and professionals committed to preserving and ensuring occupational and environmental health and safety in the workplace and community. Founded in 1939, we support our members with our expertise, networks,

comprehensive education programs, and other products and services that help them maintain the highest professional and competency standards. More than half of AIHA's nearly 8,500 members are Certified Industrial Hygienists, and many hold other professional designations. AIHA serves as a resource for those employed across the public and private sectors as well as to the communities in which they work. For more information, please visit www.aiha.org.