

DATE: July 29, 2022
TO: Phylmar Regulatory Roundtable (PRR), OSH Forum
FROM: Helen Cleary
RE: FedOSHA ANPRM: Blood Lead Level for Medical Removal

On March June 28, 2022, the U.S. Department of Labor's (DOL) Occupational Safety and Health Administration (OSHA/FedOSHA) published an Advance Notice of Proposed Rulemaking ([ANPRM](#)) to revise its standards ([1910.1025](#), General Industry; [1926.62](#), Construction) for occupational exposure to lead. Specifically, OSHA is seeking input on

- **Reducing the current triggers in the medical surveillance and medical removal protection provision** in general industry and construction; and
- How **current ancillary provisions in the lead standards can be modified** to reduce worker Blood Lead Levels (BLLs).

OSHA is accepting public comment until August 29, 2022. However, there is a high probability this date will be extended.

PRR's Written Comments

This is an *Advanced* Notice of Proposed Rulemaking – the input and comments received will influence the actual text that is proposed.

PRR members experienced in managing worker exposure to lead and those who have been involved with the revisions to lead requirements in California and Washington State have an important opportunity to share their input prior to OSHA proposing actual revisions. As a reminder, once a final rule is promulgated all State Plan States will need to implement requirements that are at least as effective as.

PRR members interested in PRR submitting comments - **please review the list of questions below and plan to attend the Lead Task Force meeting on August 15th**. If you are unable to attend, please provide responses to Helen Cleary prior to the Task Force meeting.

Background

OSHA is proposing these changes in response to recent medical research on workplace lead exposure that shows adverse health effects can occur at lower Blood Lead Levels (BLLs), $\leq 5\mu\text{g}/\text{dL}$, than currently recognized in OSHA's standards.

In addition to the above, OSHA is asking for comment on the following:

- Blood lead level triggers for medical removal protection

- Medical surveillance provisions, including triggers and frequency of blood lead monitoring
- Permissible exposure limit
- Ancillary provisions for personal protective equipment, housekeeping, hygiene, and training
- Employers' current practices and associated cost

The current permissible exposure limit (PEL) is an airborne concentration of $50\mu\text{g}/\text{m}^3$ averaged over an 8-hour period with a goal of keeping BLL below $40\mu\text{g}/\text{dL}$. Medical removal is required when periodic and a follow-up blood test results in $\geq 60\mu\text{g}/\text{dL}$ or an average of the last three blood tests result in $\geq 50\mu\text{g}/\text{dL}$.

The ANPRM does not indicate what BLL triggers will be proposed. However, it does reference a variety of public health and government organizations that have recommended lower triggers and more stringent standards. For example, the ANPRM highlights the following:

- Department of Defense (DOD's) trigger for medical removal is $\geq 20\mu\text{g}/\text{dL}$ and return to work is $\leq 15\mu\text{g}/\text{dL}$
- Michigan's OSHA State Plan (MIOSHA) revised its trigger for removal to $30\mu\text{g}/\text{dL}$ and return to work is $15\mu\text{g}/\text{dL}$
- California's OSHA State Plan's (Cal/OSHA) current discussion draft includes medical removal at $30\mu\text{g}/\text{dL}$ for a single test result or when two monthly test results are $\geq 20\mu\text{g}/\text{dL}$ or when the average of all blood tests over a 6-month period are $\leq 20\mu\text{g}/\text{dL}$. Return to work would require two consecutive blood tests to be $\leq 15\mu\text{g}/\text{dL}$ and the proposed PEL is $10\mu\text{g}/\text{m}^3$.
- Washington's State Plan (Washington DOSH) has proposed lowering medical removal to $\geq 30\mu\text{g}/\text{dL}$ for a single test result and $\geq 20\mu\text{g}/\text{dL}$ for multiple tests. Proposed for return to work is $< 15\mu\text{g}/\text{dL}$ and a PEL of $20\mu\text{g}/\text{m}^3$.

In addition, in [October 2021](#), the Centers for Disease Control and Prevention (CDC) lowered its blood lead reference value from $5.0\mu\text{g}/\text{dL}$ (BLRV) to $3.5\mu\text{g}/\text{dL}$ for children.

Overview of ANPRM

Industry Profile Information

OSHA conducted research to assess the impact of occupational exposure to lead. The following discoveries were highlighted in the ANPRM:

- The national prevalence rate of BLLs $\geq 10\mu\text{g}/\text{dL}$ for adults declined from 26.6 adults per 100,000 employed in 2010 to 15.8 in 2016.

- 90.3% of the 11,695 adults with known lead exposure of ≥ 10 $\mu\text{g}/\text{dL}$ in 2016, were from occupational exposures. Majority of those adults were employed in manufacturing, construction, services, and mining.
- [Appendix A](#) includes a table of the "Estimated Number of Firms with BLL Tests and Cases" for industry sectors/NAICS codes with reported levels of 5, 10, 25 $\mu\text{g}/\text{dL}$ and removal levels of 60.
 - Of 44,144 firms where employee BLL is tested, 8,611 were estimated to have recorded BLLs ≥ 5 $\mu\text{g}/\text{dL}$; 2,087 were estimated to have recorded BLLs ≤ 25 $\mu\text{g}/\text{dL}$; 137 were estimated to have baseline BLL cases that resulted in medical removal (annually, following OSHA's existing requirements).
 - 44% of firms that test for BLL are in five industry groups: NAICS 7139: Other Amusement and Recreation Industries; 3272: Glass and Glass Product Manufacturing; 8111 Auto Repair and Maintenance; 2383: Building Finishing Contractors; 5629: Remediation and Other Waste Management Services.

Health Effects of Lead

Adverse health effects of lead exposure include effects on reproductive, cardiovascular, neurological, respiratory, and immune systems. New research has determined that adverse health effects have been associated with BLLs as low as 5 $\mu\text{g}/\text{dL}$.

The ANPRM includes two tables that detail adverse health effects:

- [Table 1](#): *Overview of Adverse Health Effects Associated With Exposure to Lead in Adults*
- [Table 2](#): *Overview of Health Effects Associated With Elevated BLL in Adults*

Request for Input:

OSHA is seeking input on the following areas:

- OSHA's triggers for medical removal and return to lead exposed work
- OSHA's medical surveillance and management requirements
- Additional provisions and compliance protocols in review by State Plan States
- Cost and effectiveness of exposure identification and control strategies

Following are the specific questions OSHA is asking. Questions (32) – (57) in section H are specifically addressed to employers. For additional background and detail on the question, please review the text of the ANPRM.

A. Blood Lead Triggers for Medical Removal Protection

1. Requirements for Medical Removal

(1) Should OSHA consider changing the BLL at which an employee in general industry or construction is to be removed from lead exposure to match any of the approaches described above? Is there a different BLL trigger for removing a worker from lead-exposed work that you would suggest? Please explain your answer and provide supporting information or data, if available.

2. Requirements for Return to Lead-Exposed Work

(2) Should OSHA consider changing the BLL below which an employee shall be returned to lead exposure to 15 µg/dL? Is there a different BLL trigger for returning a worker to lead-exposed work following medical removal that you would suggest? Please explain your answer and provide supporting information or data, if available.

B. Medical Surveillance Provisions

1. Medical Examination and Consultation Requirements

(3) Are these still appropriate tests [full medical exam and consultations] or should a full medical examination include any other tests? OSHA is also requesting comment on the appropriateness of including the ZPP given its limitations (see also Section #6, "ZPP", below).

2. Triggers for Routine Blood Lead Monitoring

(4) Should OSHA consider expanding its criteria for blood lead monitoring to resemble the ongoing blood lead monitoring criteria that Washington DOSH and/or Cal/OSHA is considering? Are there different criteria you would suggest? Please explain your answers.

(5) Should OSHA consider adding criteria other than airborne lead exposure to its requirements for blood lead testing, such as contact with lead-contaminated surfaces, disturbance of lead-containing materials or direct contact with high-percentage lead materials? In particular, should OSHA consider adopting criteria based on contact with lead-contaminated surfaces, disturbance of lead-containing materials, or contact high lead-content metals, as Washington DOSH's stakeholder review draft and Cal/OSHA's discussion draft contemplate? Please explain your answer.

3. Frequency of Blood Lead Monitoring

(6) Should OSHA consider revising the required frequency and the BLLs related to the schedule of blood lead testing? Would requirements similar to those included in Washington DOSH and Cal/OSHA's drafts be appropriate? If not, what would be an appropriate frequency for blood lead testing? Please explain your answer.

4. Analytical Methods for BLL Testing

(7) Should OSHA consider revising its standard to require the use of a blood lead analysis laboratory that has been approved under the CMS blood lead laboratory monitoring system pursuant to the CLIA regulations, consistent with OSHA's 2018 memorandum? Please explain your answer.

(8) Are there methods other than collecting a venous sample that would meet the accuracy requirements of the lead standard? Please describe the advantages and limitations of such methods.

(9) Are portable direct reading instruments for measuring BLL available that meet the accuracy requirements of the OSHA lead standards and would be considered equivalent to an analysis conducted by a laboratory approved by OSHA or CDC?

(10) Do you use or have knowledge of other measures of lead in the body? Please describe and explain whether and how they could be used effectively for medical monitoring of workers exposed to lead and the relative costs of those measures (*i.e.*, cost-effectiveness).

5. Employee Notification of BLL Results

(11) Should OSHA revise its general industry standard to require employers to notify all employees who receive blood lead testing of their results, similar to the requirements of its construction standard and requirements under consideration by Washington DOSH and Cal/OSHA? If not, what criteria should be used to determine which employees should be notified of their results? Please explain your answer.

6. ZPP

(12) Should OSHA remove the requirement for ZPP testing currently included in its lead standards? Please explain your recommendation to continue or discontinue ZPP testing as part of medical surveillance for lead-exposed workers.

7. Provisions for Worker Privacy

- (13) Should OSHA update the lead standards' employee privacy protections, including restriction of employer access to an individual employee's BLL measurements? Please explain your recommendation.

C. Permissible Exposure Limits (PEL)

- (14) Should OSHA consider reducing its PEL of 50 µg/m³ for occupational lead exposure or its action level of 30 µg/m³? At what level do you believe the PEL should be set to reduce the harmful effects of lead exposure in exposed workers? Do you think this level would be technologically and economically feasible for affected industries (see OSH Act Sec. 6(b)(5), [29 U.S.C. 655\(b\)\(5\)](#))? Please explain your answer and, if available, provide data pertinent to the benefits, feasibility, and expected increase in costs of revising the federal PEL or action level for airborne lead. (Please note that OSHA requests detailed information on costs of already-existing requirements and voluntary practices in a series of provision-specific questions in Section H, Questions for Employers on Current Practices).
- (15) Cal/OSHA's discussion draft includes a Separate Engineering Control Airborne Limit (SECAL) for selected processes in lead acid battery manufacturing.^[13] Should OSHA consider implementing a SECAL for occupational lead exposure for specific processes if industry-wide compliance with a proposed revision to the PEL is demonstrably infeasible for specific processes?
- (16) Should OSHA consider removing the provision of OSHA's general industry lead standard that allows employers to use respiratory protection to comply with the PEL for workers exposed to lead above the PEL for 30 days or less per year? Please explain your answer and, if applicable, your recommendation on how employers should be required to limit exposures of workers exposed above the PEL for 30 days or less per year.

D. Personal Protective Equipment (PPE), Hygiene, and Training

- (17) The Washington DOSH stakeholder review draft would require employers to provide and ensure the use of impermeable PPE when employees are working with lead compounds that may be absorbed through the skin for any work covered by the scope of the rule. Should OSHA consider a similar requirement for its lead standards? Please explain your answer and any evidence available on the feasibility and cost of this requirement if adopted by OSHA.
- (18) The Washington DOSH stakeholder review draft would require employers to prohibit workers covered by the scope of the rule from cleaning or laundering protective clothing or equipment at home. Should OSHA consider a similar requirement for its lead

standards? Please explain your answer and any evidence available on the feasibility and cost of this requirement if adopted by OSHA.

(19) The Washington DOSH stakeholder review draft includes requirements that employees be provided with hygiene facilities and PPE when any of the following criteria are met:

1. Employees work in areas with surfaces at a "Surface Action Level" of 1000 µg/dm (equivalent to 9290 µg/ft);
2. Employees disturb or touch metals with a "Metals Action Level" of 20 percent or more lead content by weight;
3. Employees disturb any materials with a "Non-metal Action Level" of 0.5 percent or more lead content by weight (5000 ppm); or
4. Employees welding, burning, or grinding, or otherwise creating aerosols or fumes from materials with a "Burning/Grinding/Blasting Action Level" of 0.1 percent or more lead content by weight (1000 ppm).

Material content criteria (items #2 through 4) are applied during any activity that could release lead or lead compounds from the material in a form that could be inhaled, ingested, or absorbed through the skin. The metals action level (item #2) also applies when workers directly contact the metal with skin, personal protective equipment, or clothing.

Should OSHA add hygiene and PPE provisions similar to any or all of those described above, which are being considered for adoption by Washington DOSH? Please explain your answer and, if available, provide information on the feasibility and cost of these requirements if adopted by OSHA.

(20) Are there issues or concerns related to surface contamination or material content criteria for hygiene and PPE requirements that OSHA should consider?

(21) Should OSHA consider revising the requirements for employers to provide clean or new PPE to workers? Please provide specific recommendations for frequency and exposure triggers, and please explain your answers.

(22) Washington DOSH's stakeholder review draft would require that the training provided to all lead-exposed workers include information on special precautions for pregnant workers. Should OSHA consider including a similar requirement to include

material on precautions for pregnant workers in the training provisions of its lead standards?

E. Safe Harbor Compliance Protocols

1. Well Managed Blood Lead Levels Safe Harbor Protocols

(23) Should OSHA consider a safe harbor protocol approach similar to the *Well Managed Blood Lead Levels* protocol described above, which is being considered for adoption in Washington State? What aspects of the protocol would be beneficial? Are there issues, concerns, or different approaches to a "safe harbor" based on well-managed BLLs that OSHA should consider?

2. Clean Areas Safe Harbor Protocol

(24) Should OSHA consider a safe harbor protocol approach similar to the *Clean Areas* protocol described above, which is being considered for adoption in Washington State? What aspects of the protocol would be beneficial? Are there issues, concerns, or different approaches to a "safe harbor" based on identification of clean areas using surface sampling that OSHA should consider?

3. Safe Harbor Protocol for Handling Lead-Containing Articles in Retail Settings

(25) Should OSHA consider a safe harbor protocol approach similar to the Retail Settings Protocol described above, which is being considered for adoption in Washington? What aspects of the Protocol would be beneficial? Are there issues, concerns, or different approaches to a "safe harbor" for retail settings that OSHA should consider?

4. Safe Harbor Protocol for Office and Residential Settings

(26) Should OSHA consider a safe harbor protocol approach similar to the Office and Residential Settings protocol described above, which is being considered for adoption in Washington? What aspects of the protocol would be beneficial? Are there issues, concerns, or different approaches to a "safe harbor" that OSHA should consider for work in office and residential settings that does not involve maintenance, remodeling, or repair work?

5. Safe Harbor Protocol for Incidental Lead Paint in Construction/Renovation, Repair, and Painting (RRP) Work

- (27) Should OSHA adopt a safe harbor protocol approach similar to the protocol described above for incidental lead paint in RRP work that is being considered for adoption in Washington? What aspects of the protocol would be beneficial? Are there issues, concerns, or different approaches to a protocol for RRP work that OSHA should consider?

F. Environmental Effects

- (28) What is the potential direct or indirect environmental impact (for example, the effect on air and water quality, energy usage, solid waste disposal, and land use) from a reduction in BLL triggers or other changes to the OSHA lead standards?
- (29) Are there any situations in which reducing lead exposures to employees would be inconsistent with meeting environmental regulations?

G. Duplicative, Overlapping, or Conflicting Rules

- (30) Are there any federal regulations that might duplicate, overlap, or conflict with modifications to the current lead standards? If yes, please identify and explain how they would duplicate, overlap, or conflict.
- (31) Are there any federal programs in areas such as defense or energy that might be impacted by modifications to the current lead standards? If yes, please identify and explain how they would be impacted.

H. Questions for Employers on Current Practices

- (32) If you use criteria more stringent than OSHA's requirements for conducting blood lead testing on your employees, how do your criteria differ from OSHA's requirements?
- (33) If you use criteria more stringent than OSHA's requirements for notifying employees of their BLL and ZPP results, how do your criteria differ from OSHA's requirements?
- (34) If you use criteria more stringent than OSHA's requirements for medical removal protection in your work environment or industry, how do your criteria differ from OSHA's requirements? Please include the criteria, such as the BLL, for both medical removal and return to work status.

- (35)** What are your current costs of medical removal per employee (where possible, please monetize in terms of dollars per time unit (e.g., per month, per year))? Would your company be able to reassign the medically removed worker to a job at least at the clerical level that the employee would find acceptable? Please include specific examples of hourly wages (per job category) for the employee's regular occupation and the hourly wages for the medically assigned clerical job, if available.
- (36)** How many of your employees, over the past 10 years, have been removed from lead-exposed work due to elevated BLLs? If possible, please submit anonymized examples of employees who were brought into the medical removal program, their BLL level at the time of removal, and the time required to bring the BLL level below 40 µg/dL (or an alternative specified level).
- (37)** Over the past ten years, how many, or what percentage, of your employees were removed from lead-exposed work due to elevated BLLs exceeding the maximum 18-month time period and were unable to return to work?
- (38)** OSHA's lead standards set a BLL of below 40 µg/dL (two consecutive tests) for return to lead-exposed work for medically removed workers. As discussed earlier in this ANPRM, in Section I.A. Background; Events Leading to this Action, OSHA is considering lowering the BLL for medical removal. If possible, please submit estimated increases in the number of affected employees and in costs if the BLL for allowing return to work were reduced to a level lower than OSHA's current BLL of 40 µg/dL. Please specify the BLL for return to work you assume in your estimation.
- (39)** How many and what percentage of your employees are currently in your medical surveillance program? How many of these employees receive BLL testing? How many receive ZPP monitoring?
- (40)** What are your current costs of medical surveillance per employee? Please include specific examples of resource requirements in terms of additional staffing or time commitments (per job category), costs for purchase of testing materials (dollar cost per unit), expected life of equipment, and costs for energy usage and any other additional expenses.
- (41)** The OSHA lead standard for general industry requires the employer to institute a medical surveillance program for all employees who are or may be exposed at or above the AL (30 µg/m³) for more than 30 days per year. There are three requirements for biological monitoring that are triggered by the current AL (30 µg/m³):
- At least every 6 months for each employee;

- At least every two months for each employee whose last blood lead test indicated a BLL at or above 40 µg/dL. This frequency shall continue until two consecutive blood lead tests indicate a BLL below 40 µg/dL; and
- At least monthly during the removal period of each employee removed from exposure to lead due to an elevated BLL.

If possible, please discuss and/or submit quantitative estimates of the increases in the number of affected employees and in medical surveillance costs or other pertinent costs if the AL (30 µg/m³) were decreased. Please specify the AL you assume in your estimation.

- (42)** Have you upgraded engineering controls to reduce airborne concentrations of lead in your facility? If yes, please describe the controls and whether you observed a subsequent reduction in BLLs. If so, did you monitor to what extent workers' BLLs were reduced following implementation of upgraded controls? Please provide data, if available, on airborne lead concentrations in your facility and on workers' BLLs prior to and following the upgrades. Also provide related initial and annual engineering control costs of upgraded controls, as well as the expected life of the equipment.
- (43)** Please describe your control strategies to reduce lead surface contamination and the potential for dermal exposure to lead in your facility, such as housekeeping procedures, hygiene areas and practices, and personal protective clothing and equipment (PPE). Please describe such controls, their costs, and explain how well they work and why. To what extent were you able to lower the surface levels of lead? Did you see a subsequent reduction in employee BLLs? Please provide supporting data, if available.
- (44)** Do you provide PPE in your workplace, including equipment providing respiratory protection? If yes, has it reduced BLLs in your workers? Please describe the type of PPE that you provide.
- (45)** Does your company have triggers for PPE that are different from requirements under OSHA's lead standards? Please describe the triggers used for providing PPE.
- (46)** If your firm purchases clothing and equipment to protect employees from lead exposure, please estimate the PPE costs necessary to comply with the current OSHA lead standard. Please give costs on a per employee basis and at an aggregated level, if available.
- (47)** Have you upgraded PPE to reduce worker exposure to lead? If yes, please describe the controls and whether you observed a subsequent reduction in BLLs. If so,

to what extent were workers' BLLs reduced following implementation of upgraded PPE, if applicable? Please provide data, if available.

- (48)** Do you have housekeeping procedures? If yes, please describe.
- (49)** Does your company have cleaning criteria specific to surfaces? This may include a schedule for cleaning and periodic surface cleanliness measurements, specific types of cleaning practices and activities, or other activities associated with surface decontamination.
- (50)** What are your current housekeeping costs to comply with the OSHA lead standard? Please provide the amount of time allocated for housekeeping costs calculated on an hourly basis.
- (51)** Have you provided hygiene facilities or used hygiene practices beyond the requirements of OSHA's lead standards? This may include more frequent hand washing breaks or providing access and time for showers at exposures below the PEL. Please describe how your practices differ from requirements in OSHA's lead standards.
- (52)** What are your current costs to comply with the hygiene provisions of OSHA's lead standards? Please provide the amount of time allocated for hygiene costs calculated on an hourly basis.
- (53)** Have you taken lead dust surface measurements in your work environment? If so, what are your procedures and current costs for this testing? Please specify the labor and equipment costs for the testing. Have you experienced any impediments or limitations when using wipe sampling to identify surface contamination with lead? What can be done to overcome these barriers?
- (54)** If you have taken lead dust surface measurements, are they qualitative (presence of lead only) or quantitative? If quantitative, do you use lead dust hazard levels established by HUD and EPA? Please provide any data you have on quantitative surface contamination measurements in your work environment.
- (55)** Have you evaluated lead surface contamination to investigate elevated employee BLLs in areas where airborne lead exposure was below the PEL? If yes, what were your findings?
- (56)** Have you taken wipe samples of skin or clothing to identify lead contamination? If yes, what were your findings?
- (57)** Have you found any correlation between BLLs and lead surface contamination, particularly when airborne exposures are below the PEL?

END