OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD
2520 Venture Oaks Way, Suite 350
Sacramento, CA 95833
(916) 274-5721
www.dir.ca.gov/oshsb

FINAL STATEMENT OF REASONS

PROPOSED AMENDMENTS TO

CALIFORNIA CODE OF REGULATIONS

TITLE 8: Section 1532.1 of the Construction Safety Orders; Section 5155 of the General Industry Safety Orders; and Section 5198 of the General Industry Safety Orders

LEAD

MODIFICATIONS AND RESPONSE TO COMMENTS RESULTING FROM THE 45-DAY PUBLIC COMMENT PERIOD (March 3, 2023 - April 20, 2023)

Following the initial 45-Day public comment period from March 3, 2023, to April 20, 2023, the proposed amendments to sections 1532.1 and 5198 were modified as follows, as the result of public comments and/or Occupational Safety and Health Standards Board (Board) staff evaluation.

Section 1532.1 of the Construction Safety Orders

The phrases “he or she” were replaced with “they” and “his and her” with “their,” throughout the regulatory text. This change was necessary for the consistent use of gender-neutral language throughout the amended standard.

Subsection 1532.1(b) Definitions.

A definition was added for the term “Physician or other licensed health care professional (PLHCP).” This modification was necessary to clarify the meaning of the new term “PLHCP” and specify that it includes any individual whose legally permitted scope of practice allows the individual to independently provide or be delegated the responsibility to provide health care services required by this standard.

The terms and phrases “physician,” “by or under the supervision of a licensed physician,” “licensed healthcare provider,” and “healthcare provider” were replaced with “PLHCP,” throughout the regulatory text. These modifications were needed to expand the scope of medical providers beyond just physicians and allow nurse practitioners and other licensed health care providers to provide required health care services that are within their legal scope of practice.

Subsection 1532.1(d) Exposure assessment.

In subsection (d)(2)(E)(9), the training requirements of subsection (*l*)(1)(C) were added to the interim protection training requirements. This modification was necessary so that interim protections include all relevant training requirements.

Subsection 1532.1(i) Hygiene facilities, practices and regulated areas.

An exception was added to the shower facilities requirement of subsection (i)(3)(A), such that shower facilities are not required when an employer can demonstrate that they are not feasible. The Board

received numerous comments regarding the infeasibility of providing shower facilities due to various circumstances beyond an employer's control. This modification was necessary to account for such circumstances and excuse employers from the requirement when they can affirmatively demonstrate the inability to comply.

Subsection 1532.1(j) Medical surveillance.

Two exceptions were added to subsection (j)(1)(A)1.'s requirement for initial blood lead testing prior to assignment. Under the first proposed exception, initial blood lead testing is not required for an employee who is not, and is not reasonably expected to be, exposed to lead at or above the action level for 30 or more days in any 12 consecutive months, and who is not exposed on any day above 10 micrograms per cubic meter of air (µg/m^3) as an 8-hour time-weighted average (TWA), without regard to respirator use. Under the second proposed exception, initial blood lead testing is also not required for an employee who has had a blood lead test in the preceding two months. The first exception was necessary to provide employers relief from initial blood lead level (BLL) testing requirements in situations where exposures are not likely to lead to elevated BLLs. At the request of the Division of Occupational Safety and Health (Cal/OSHA), the Office of Environmental Health Hazard Assessment (OEHHA) modeled 29 days of exposure at 10 µg/m^3 and confirmed that employee BLLs would not exceed 10 µg/dl under these parameters. The second exception was necessary to eliminate initial BLL testing for employees who have been tested recently and for whom an additional test is therefore unnecessary.

In the exception to subsection (j)(1)(B)1.'s requirement for medical surveillance for employees who are or may be exposed at or above the action level (AL), the time period was revised from "10 or more days" to "30 or more days" in any 12 consecutive months and the maximum daily exposure level was revised from "at or above 100 µg/m^3 as an 8-hour TWA" to "above 10 µg/m^3 as an 8-hour TWA." The revisions to the exception were necessary to provide additional protection to employees and to provide employers relief from medical surveillance in situations where exposures are unlikely to lead to elevated BLLs. At Cal/OSHA's request, OEHHA modeled 29 days of exposure at 10 µg/m^3 and concluded that employee BLLs would not exceed 10 µg/dl under these parameters.

The second exception to subsection (j)(1)(B)2.'s requirement for medical surveillance as interim protection was revised to change the phrase "for 10 or more days" to "on 10 or more days." This modification was necessary to clarify that the exception does not apply if an employee performs level 1 trigger tasks for any amount of time on 10 or more days in any 12 consecutive months.

An exception was added to subsection (j)(3)(A)2.'s requirement for medical examinations prior to assignment, such that medical examinations are not required for an employee who has had a lead-specific medical examination in the preceding two months. This exception was necessary to eliminate medical examinations for employees who have been examined recently, for whom an additional examination is therefore unnecessary.

In subsection (j)(3)(F)1., the word "following" and subsections (j)(3)(F)1.a through (j)(3)(F)1.d were deleted and replaced with language in subsection (j)(3)(F)1. that specifies that the contents must include the information required by subsections (j)(3)(E)1. through (j)(3)(E)5. This is in response to comments

requesting simplified language in this subsection. The modifications were necessary to remove language in subsection (j)(3)(F) that is duplicative of language in subsections (j)(3)(E)1. through 4.

In subsection (j)(3)(F)2., the word "reveal" was replaced with the word "include." This modification was needed to provide clearer direction to the examining PLHCP to ensure that medical results and findings unrelated to occupational lead exposure are not shared with the employer.

Subsection (j)(3)(F)3. was deleted. This modification was necessary because the requirement is already set forth in subsection (j)(3)(E).

Subsection 1532.1(k) Medical removal protection.

An exception was added to subsection (k)(1)(A)3., to allow that when an employee's average blood lead test results in the last six months is at or above 20 micrograms per deciliter (µg/dl), an employee need not be removed if their last blood test indicates a BLL below 15 µg/dl. This modification was necessary because the standard allows an employee on medical removal protection (MRP) to be returned to work when their BLL is below 15 µg/dl, so it would be inconsistent to require that an employer remove an employee whose last BLL is below 15 µg/dl.

Subsection 1532.1 (*l*) Communication of hazards.

A new subsection (*l*)(1)(B) was added, which requires covered employers to provide training, prior to the time of initial job assignment and at least annually thereafter, to all employees occupationally exposed to lead, on the topics covered in subsections (h), (i)(1) and (i)(5). This subsection was needed because training on housekeeping and basic hygiene prior to job assignment is important for all employees that are occupationally exposed to lead, not just those employees covered by the subsection (*l*)(1)(C) training program requirement. Ingestion of lead can be a significant route of exposure even when air lead levels are low.

Subsections (*l*)(1)(B) through (*l*)(1)(E) were renumbered as (*l*)(1)(C) through (*l*)(1)(F). These modifications were necessary because of the addition of new subsection (B).

References to subsection "(*l*)(1)(B)," in both renumbered subsection (*l*)(1)(E) and subsection (*l*)(2), were replaced with "(*l*)(1)(C)." These modifications were necessary to reflect the renumbering of that subsection.

Renumbered subsection (*l*)(1)(C) was amended to specify that the required training program must be provided "For the employees listed below[.]" This modification was necessary to clarify that the program is required for all employees that fall within the categories described in subsections (*l*)(1)(C)1. through 3.

The training topics specified in subsection (*l*)(2)(C), which are now covered in the amended subsection (*l*)(1)(B), were deleted, and replaced with the required training topic of "the purpose and content of, and methods used to comply with, the housekeeping and hygiene requirements specified in subsections (i)(2) through (i)(4)." These modifications were necessary to remove duplicative language in the amended regulatory text.

In subsection (*l*)(2)(J), the term "pregnant women" was revised to "pregnant people." This change was necessary for the consistent use of gender-neutral language throughout the amended standard.

In the authority and reference Note, section 144.6 was added to the Labor Code References. This change was necessary to accurately reflect a complete list of the standard's sources of reference.

Appendices

There are three appendices to amended section 1532.1: A, B, and C. Per section 1532.1(q) Appendices: "The information contained in the appendices to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation."

The amendments to these purely informational appendices were modified as follows:

The language of all three amended appendices was further amended to use gender-neutral terms where reference to a particular sex or gender was not necessary. These changes were needed for the consistent use of gender-neutral language throughout the amended standard.

Appendix A

The language in Appendix A – Substance Data Sheet for Occupational Exposure to Lead was amended to reflect the modifications to the regulatory text of amended section 1532.1, described in detail above, and to reflect current scientific understanding of lead's effects on health. These amendments to the Appendix were necessary to maintain consistency with the requirements of the regulatory text and the accuracy of the statements in the Appendix.

Appendix B

The language in Appendix B –Employee Standard Summary was amended to reflect the modifications to the regulatory text of amended section 1532.1 described in detail above. These amendments to the Appendix were necessary to maintain consistency with the requirements of the regulatory text and the accuracy of the statements in the Appendix.

A reference to "telephone directory" was also deleted, to remove reference to an outdated information source.

Appendix C

The language in Appendix C – Medical Surveillance Requirements was amended to reflect the modifications to the regulatory text of amended section 1532.1, described in detail above, and to reflect current scientific understanding of lead's effects on health. These amendments to the Appendix were necessary to maintain consistency with the requirements of the regulatory text and the accuracy of the statements in the Appendix.

Appendix C was also modified to replace the term "ethnic" with the term "folk." This modification was necessary to clarify that the phrase is not intended to reference the remedies of any particular group, but rather traditional remedies not prescribed by licensed health care providers.

Section 5198 of the General Industry Safety Orders

The phrases "he or she" have been replaced with "they" and "his and her" with "their" throughout the regulatory text. These changes were necessary for the consistent use of gender-neutral language throughout the amended standard.

Subsection 5198(b) Definitions.

A definition was added for the term "Physician or other licensed health care professional (PLHCP)." This modification was necessary to clarify the meaning of the new term "PLHCP" and specify that it includes any individual whose legally permitted scope of practice allows the individual to independently provide or be delegated the responsibility to provide health care services required by this standard.

The terms and phrases "physician," "by or under the supervision of a licensed physician," "licensed healthcare provider," and "healthcare provider" have been replaced with "PLHCP," throughout the regulatory text. These modifications were needed to expand the scope of medical providers beyond just physicians and allow nurse practitioners and other licensed health care providers to provide required health care services that are within their legal scope of practice.

The term "Presumed hazardous lead work (PHLW)" was replaced with "Presumed significant lead work (PSLW)." The modification was necessary to describe the lead work at issue in more neutral terms.

The acronym "PHLW" was replaced with "PSLW" throughout the regulatory text. This was needed to reflect the amended terminology.

Subsection 5198(i) Hygiene Facilities and Practices.

An exception was added to the requirements of subsection(i)(1)(A) to allow employee access to potable drinking water if they are working under specified circumstances and the employer has met certain specified obligations. This exception was added in response to stakeholder requests that Cal/OSHA allow employee access to potable drinking water in areas where employees are exposed to lead in order to prevent heat illness. A maximum airborne exposure level of 50 $\mu g/m^3$ was included to ensure that the requirement is at least as effective as the federal Occupational Safety and Health Administration (OSHA) standard. These modifications were necessary to allow employee access to potable water under specified conditions.

Subsection (i)(2)(A)'s change rooms requirement, subsection (i)(3)(A)'s shower requirement, and subsection (i)(4)(A)'s lunchroom requirement were amended to provide a one-year implementation delay if employee exposures are not greater than 50 $\mu g/m^3$ without regard to the use of respirators. A maximum airborne exposure level of 50 $\mu g/m^3$ was included to ensure that the requirement is at least as effective as the federal OSHA standard. This was in response to comments that employers would need additional time for the planning and construction of such facilities for employees who work in areas where their lead exposure is above the new permissible exposure limit (PEL). The modifications were necessary to allow additional time for employers to construct required facilities, unless employee exposure is greater than 50 $\mu g/m^3$ (without respirators), in which case no additional time is permitted.

Subsection 5198(j) Medical Surveillance.

In the exception to subsection (j)(1)(A)2.'s requirement for medical surveillance as interim protection, the time period was revised from "10 or more days" to "30 or more days" in any 12 consecutive months and the maximum daily exposure level was revised from "at or above 100 µg/m^3 as an 8-hour TWA" to "above 10µg/m^3 as an 8-hour TWA." These modifications were necessary to provide additional protection to employees and to provide employers relief from medical surveillance as an interim protection in situations where exposures are unlikely to lead to elevated BLLs. At Cal/OSHA's request, OEHHA modeled 29 days of exposure at 10 µg/m^3 and concluded that employee BLLs would not exceed 10 µg/dl under these parameters.

An exception was added to subsection (j)(2)(A)1., such that initial blood lead testing is not required prior to assignment for an employee that has had a blood lead test in the preceding two months. The exception was necessary to eliminate initial BLL testing for employees who have been tested recently and for whom an additional test is therefore unnecessary.

In subsection (j)(6)(A), the word "following" and subsections (j)(6)(A)1. through (j)(6)(A)4. were deleted and replaced with new language in subsection (j)(6)(A) that specifies that the contents of the PLHCP written medical opinion must include the information required by subsections (j)(5)(A) through (j)(5)(E), except as specified in subsection (j)(6)(B). These modifications were in response to comments requesting simplified language in this subsection. The modifications were necessary to remove language in subsection (j)(6)(A) that is duplicative of language in subsection (j)(5)(A-D).

In subsection (j)(6)(B), the word "reveal" was replaced with the word "include." This modification was needed to provide clearer direction to the examining PLHCP to ensure that medical results and findings unrelated to occupational lead exposure are not shared with the employer.

Subsection (j)(6)(C) was deleted. This deletion was necessary because the requirement is already set forth in subsection (j)(6)(A).

<u>Subsection 5198(k) Medical Removal Protection.</u>

An exception was added to subsection (k)(1)(C)'s temporary removal requirements, such that an employee need not be removed if their last blood lead test indicates a BLL below 15 µg/dl. This modification was necessary because the standard allows an employee on MRP to be returned to work when their BLL is below 15 µg/dl, so it would be inconsistent to require that an employer remove an employee whose last BLL is below 15 µg/dl.

The phrase "of whole blood" was removed from subsection (k)(3)(A)1. This modification was necessary for consistency as units of the BLL were previously changed from µg/100 g of whole blood to µg/dl.

<u>Subsection 5198(*l*) Employee Information and Training.</u>

A new subsection (*l*)(1)(B) was added, which requires covered employers to provide training, to all employees occupationally exposed to lead, on the topics covered in subsections (h), (i)(1) and (i)(5) and, where applicable, subsection (i)(1)(A) safe hydration procedures. This training must be provided prior to the time of initial job assignment and at least annually thereafter. This modification was needed because training on housekeeping and basic hygiene prior to job assignment is important for all employees that

are occupationally exposed to lead, not just those employees covered by the subsection (*l*)(1)(C) training program requirement, to be protected against lead exposure through the ingestion route. Ingestion of lead can be a significant route of exposure even when air lead levels are low.

Subsections (*l*)(1)(B) through (*l*)(1)(E) were renumbered as (*l*)(1)(C) through (*l*)(1)(F). These modifications were necessary because of the addition of new subsection (B).

Further, references to subsection "(*l*)(1)(B)," in renumbered subsections (*l*)(1)(D), (E), and (F), were replaced with "(*l*)(1)(C)." The reference to subsection "(*l*)(1)(E)" in renumbered subsection (*l*)(1)(E) was replaced with "(*l*)(1)(F)." These modifications were necessary to reflect the renumbering of those subsections.

Renumbered subsection (*l*)(1)(C) was modified to specify that employers must "provide," rather than "institute," the required training program "For the employees listed below[.]" This modification was necessary to clarify that the program is required for all employees that fall within the categories described in subsections (*l*)(1)(C)1. through 3.

Renumbered subsection (*l*)(1)(F)3. was modified by deleting the training topics currently specified, which are covered in amended subsection (*l*)(1)(B), and adding the required training topic of "the purpose and content of, and methods used to comply with, the housekeeping and hygiene requirements specified in subsections (i)(2) through (i)(4)." These modifications were necessary to remove duplicative language in the amended regulatory text.

In subsection (*l*)(1)(F)10., the word "women" was replaced with "people." This modification was needed for the consistent use of gender-neutral language throughout the amended standard.

<u>Subsection 5198(m) Communication of Hazards.</u>

An exception was added to subsection (m)(2)'s sign posting requirements specifying that warning signs are not required where the employer has implemented written safe hydration procedures in accordance with the exception to subsection (i)(1)(A). This exception was necessary so that signage is not inconsistent with permitted practices where the conditions of the new hydration station exception in subsection (i)(1)(A) have been met by the employer.

<u>Subsection 5198(o) Observation of Monitoring.</u>

The existing language of subsection (o) was deleted. A new subsection (o)(1), Employee observation, was added, to require employers to provide employees or their designees an opportunity to observe lead exposure monitoring. A new subsection (o)(2), Observation procedures, was also added, to specify that the employer must provide the PPE, including respiratory protection, needed to observe the lead monitoring (subsection (o)(2)(A)) and set out the information to which monitoring observers are entitled (subsection (o)(2)(B)). The changes to subsection (o) were necessary to ensure that the proposed standard is at least as effective as the federal OSHA standard.

In the authority and reference Note, section 144.6 was added to the Labor Code References. This change was necessary to accurately reflect a complete list of the standard's sources of reference.

Appendices

There are three appendices to amended section 5198: A, B, and C. Per section 5198(p) Appendices: "The information contained in the appendices to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation."

The amendments to these purely informational appendices were modified as follows:

The language of all three appendices was amended to use gender-neutral terms where reference to a particular sex or gender was not necessary. These changes were needed for the consistent use of gender-neutral language throughout the amended standard.

Appendix A

The language in Appendix A – Substance Data Sheet for Occupational Exposure to Lead was amended to reflect the modifications to the regulatory text of amended section 5198, described in detail above, and to reflect current scientific understanding of lead's effects on health. These amendments to the Appendix were necessary to maintain consistency with the requirements of the regulatory text and the accuracy of the statements in the Appendix.

Appendix B

The language in Appendix B –Employee Standard Summary was amended to reflect the modifications to the regulatory text of amended section 5198 described in detail above. These amendments to the Appendix were necessary to maintain consistency with the requirements of the regulatory text and the accuracy of the statements in the Appendix. A reference to "telephone directory" was also deleted to remove reference to an outdated information source.

Appendix C

The language in Appendix C – Medical Surveillance Requirements was amended to reflect the modifications to the regulatory text of amended section 5198, described in detail above, and to reflect current scientific understanding of lead's effects on health. These amendments to the Appendix were necessary to maintain consistency with the requirements of the regulatory text and the accuracy of the statements in the Appendix.

SUMMARY AND RESPONSE TO WRITTEN AND ORAL COMMENTS RECEIVED DURING THE 45-DAY COMMENT PERIOD:

I. Written Comments

1. Tomás J. Aragón (via Christina Armatas), Director and State Public Health Officer, on behalf of the California Department of Public Health (CDPH), by written comments dated March 6, 2023.

Comment 1.1

The commenter strongly supports adoption of the revised standards noting the growing body of literature on health effects at lower levels of lead exposure, consistency with CDPH's recommendations to Cal/OSHA, and added protection to household members. The commenter states that the proposed

regulations will protect workers through enhanced training, reduction of exposure limits, and medical surveillance.

Response to Comment 1.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 1.2

The commenter supports the requirement that workers are trained on hygiene practices to avoid taking lead dust home where family members can be exposed.

Response to Comment 1.2

The Board thanks the commenter for their support for this portion of the proposed amendments.

Comment 1.3

The commenter states that the addition of a lower PEL will prevent airborne exposure to lead at levels that contribute to severe lead poisoning requiring medical removal from work.

Response to Comment 1.3

The Board thanks the commenter for their support of the proposed change.

The Board thanks the commenter for their input and participation in the rulemaking process.

2. Noel Thomas Bouche, Bouche Painting, by written comments dated March 9, 2023.

Comment 2.1

The commenter supports the regulations and notes that the employer's business would benefit because the changes would ensure an equal playing field for companies acting responsibly to protect workers from lead exposures.

Response to Comment 2.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 2.2

The commenter supports the changes because the current regulations are based on outdated lead toxicity information and the revised regulations would reduce the risk of harmful effects, have significant financial benefit due to avoided cases of lead-related illness and death and protect families by reducing take home lead exposure.

Response to Comment 2.2

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

3. Marc Connerly, Executive Director, Roofing Contractors Association of California, on behalf of Associated Roofing Contractors of the Bay Area Counties, Building Owners and Managers Association, California Association of Sheet Metal and Air Conditioning Contractors, National Association, California Building Industry Association, California Business Properties Association, Construction Employers' Association, Flasher Barricade Association, Housing Contractors of California, National Electrical Contractors Association, National Roofing Contractors Association , Northern California Allied Trades , Painting and Decorating Contractors of California, Roofing Contractors Association of California, Southern California Contractors Association, Southern California Glass Management Association, Union Roofing Contractors Association, United Contractors, Wall and Ceiling Alliance, Western Wall & Ceiling Association, Western Painting & Coatings Contractors Association, by written comments dated March 13, 2023.

Comment 3.1

The commenter believes that the existing regulatory framework has been effective in protecting construction workers as demonstrated by declines in workers' BLLs. In addition, the commenter provides references they believe support this statement. The commenter also points out that there has been a shift in lead use in recent years.

Response to Comment 3.1

The Board notes that there are many employee BLLs greater than 10 µg/dl in the CDPH, Occupational Lead Poisoning Prevention Program (OLPPP) data. Furthermore, many employees are not being tested for BLLs so OLPPP's data set is incomplete and may not be representative of actual employee BLLs.

Comment 3.2

The commenter states that Cal/OSHA does not state and cannot show an increase in BLLs in the construction industry in general, and the roofing industry in particular, which would necessitate a revised regulation. The commenter provides references to BLL data that they believe support this statement and point to potential shortcomings in the Adult Blood Lead Epidemiology and Surveillance data analyzed by CDPH.

Response to Comment 3.2

Please see response to comment 3.1.

Comment 3.3

The commenter states that focusing on worker education, work practice controls, personal protective equipment (PPE) and hygiene offers greater potential for improving worker health than lowering the AL and PEL. In addition, the commenter states that lowering the AL and PEL has not been shown to make workers safer.

Response to Comment 3.3

The attention given to training, work practices, PPE and hygiene are important to protecting employees from elevated BLLs. However, the control of airborne lead levels is essential to the effort to improve

employee health, namely the reduction of BLLs, not only because it reduces the inhalation of lead particulate, but also because the distribution and settling of airborne lead is the primary source of workplace contamination, which then necessitates diligent hygiene and housekeeping. The control of airborne lead levels, including a lowered AL and PEL, supports the other exposure controls.

Comment 3.4

The commenter states that academic stakeholders assert that health effects have been shown at low levels, but the 2012 National Toxicology Program (NTP) lead monograph acknowledges that many of these effects are not scientifically proven.

Response to Comment 3.4

The Board disagrees with the premise of the comment. The health effects at low BLLs are well documented in the scientific literature. For example, in the 2012 NTP lead monograph referred to by the commenter, NTP concludes that there is sufficient evidence to show a number of adverse health effects in adults even at BLLs below 10 µg/dl. Please see Table 1.2 in the 2012 NTP lead monograph.

The Board thanks the commenter for their input and participation in the rulemaking process.

4. Howard B. Spielman, CIH, CSP, SMS, LIC A/I & PM, CAC AIHA Fellow, CEO, Health Science Associates, by written comments dated March 17, 2023, and corrected comments dated March 24, 2023.

Comment 4.1

The commenter states that competent exposure assessment is critical because it is the basis for all other elements of compliance and proposes language to require exposure assessments to be performed by or under the supervision of a certified industrial hygienist (CIH). The commenter states that both proposals (sections 1532.1 and 5198) require that medical examinations and procedures be performed by or under the supervision of a licensed physician. No such quality assurance is proposed for exposure assessments. In addition, the commenter states that, long existing language in subsection 5155(e)(3) states that persons supervising, directing, or evaluating the monitoring and control methods shall be competent in industrial hygiene (IH) practice. The commenter states that there is no justification for requiring IH competence applicable to lead compounds listed in section 5155 but not for the lead covered in sections 1532.1 and 5198. The commenter further states that not requiring CIH competence does not serve the interests of employees or employers.

Response to Comment 4.1

The Board notes that the language in subsection 5155(e)(3) covers all exposure assessments conducted in accordance with sections 1532.1 and 5198. The language of that section specifies, "… 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." (Title 8 California Code of Regulations (CCR) section 5155(e)(3)). The Board believes that this current language is adequate for the purpose of ensuring the quality of exposure monitoring.

Comment 4.2

The commenter states that addressing ingestion exposure only through housekeeping and general hygiene requirements is insufficient and proposes language to require non-inhalation exposure assessments be performed by or under the supervision of a CIH.

Response to Comment 4.2

The Board is not persuaded by this comment, as there are several problems with this approach. With respect to housekeeping, there are no recognized levels of acceptable workplace lead contamination, and importing levels used for childhood lead poisoning residential lead abatement clearance is not scientifically defensible—these levels are meant for an entirely different purpose. In addition, the real-world limits of maintaining a given level of cleanliness in diverse industrial and construction environments would present a real barrier to compliance. A battery recycling operation, for example, will not be able to meet the level of cleanliness attainable by an operation focused on electronics manufacturing. A residential remodel job will not face the same levels of contamination as a bridge retrofit or demolition project. There is also the problem of dealing with the inherent variability in surface contamination levels; an assessment would need to be based on a statistically defensible number of samples. A workable clearance criterion would likely have to be based on a statistical test that takes this variability into account.

Similar problems would render impractical a formal regulatory approach to hygiene assessment and enforcement—the lack of recognized levels of dermal cleanliness; difficulties with assessing employee compliance over time; and the problems of interpreting the variability in results.

The Board notes that the proposed language deals with the problem of controlling non-inhalation exposure in a few ways. It proposes general hygiene requirements for all lead-exposed employees. It proposes that the employer establish, implement and maintain effective written methods and schedules to maintain the cleanliness of drinking and washing facilities, change rooms, showers, lunchrooms and eating areas. It proposes specific training for employees in non-inhalation routes of exposure, the importance of good hygiene and the prevention of take-home contamination. It proposes medical surveillance at a lower AL; the periodic BLL results are a direct measure of the effectiveness of all aspects of the employer's lead safety effort, including hygiene and housekeeping. And it proposes a required 'elevated blood lead level response' for any employee whose BLL is at or above 10 µg/dl. This should include an individual assessment of non-inhalation exposure, hygiene and housekeeping practices and employee training and instruction as needed.

Comment 4.3

The commenter states that the requirements for the accuracy of exposure monitoring and analysis are inadequate and are not consistent in character with that required for BLL testing. The commenter proposes adding language requiring that analyses be performed by labs accredited by the Environmental Lead Laboratory Accreditation Program (ELLAP).

Response to Comment 4.3

The Board is not persuaded by this comment. The Board notes that the proposed language in subsections 5198(d)(9) and 1532.1(d)(9) is slightly modified from the existing language to take account

of the proposed AL and to establish uniformity between the standards. The Board is unaware of any instances in which the current language has been inadequate to the purpose.

Comment 4.4

The commenter states that whenever CIHs recommend that CIH expertise be included in regulations they are criticized as a special interest promoting themselves. However, their special interests are employees, with collateral value to employers and the community. The commenter states that not requiring CIH competence is a disservice to employees and employers. The commenter further states that they are told that CIHs are not affordable. The commenter states that protecting employee health is an ongoing employer responsibility and when presented with the technical/professional needs of the lead standards even small to mid-size employers should welcome the requirement for CIHs.

Response to Comment 4.4

Please see response to comment 4.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

5. David Ross, Safety Engineer, Department of Transportation (Caltrans) Office of Employee Health and Safety, by written comments dated March 20, 2023.

Comment 5.1

The commenter asks whether the lead standards intend to cover the lead byproduct of the combustion of tetraethyl lead (TEL). The commenter states that if TEL byproducts are not included, it is recommended the language of the proposed standard be revised/clarified to make that clear. (The commenter references Appendix A of section 1532.1.)

Response to Comment 5.1

The Board notes that the definition of lead that constrains the scope of both standards is found in subsections 5198(b) and 1532.1(b). Lead is defined as "metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds." Combustion products of TEL, as found as a soil contaminant along roadsides due to the past use of TEL in gasoline, are forms of inorganic lead and are therefore included in the standards.

Comment 5.2

The commenter states that, if covered, the financial impacts of addressing TEL byproducts contained in roadside dirt resulting from earlier use of leaded fuels will be a financial burden to many State agencies and the public.

Response to Comment 5.2

The Board notes that the combustion products of TEL are inorganic lead compounds and are included in the scope of the existing standards. The Board is not proposing that this be changed. The Board fully expects, based on data presented as part of the advisory process, that the disturbance of lead-

contaminated soils as part of roadside construction work will not result in exposures above the proposed AL of 2 $\mu g/m^3$.

The Board thanks the commenter for their input and participation in the rulemaking process.

6. Wendy Thanassi, MD, MA, MRO, Medical Director – Workforce Health and Wellness, and Clinical Professor – Primary Care and Population Health, Stanford Medicine, by written comments dated March 11, 2023.

Comment 6.1

The commenter strongly supports the amendments to the regulations and urges the Board to adopt them to protect the health of workers and reinforce that physicians oversee the mandated medical surveillance programs.

Response to Comment 6.1

The Board thanks the commenter for their support of the proposed amendments. In addition, please see response to comment 18.2.

The Board thanks the commenter for their input and participation in the rulemaking process.

7. Perry Gottesfeld, Executive Director, Occupational Knowledge International, by written comments dated March 29, 2023.

Comment 7.1

The commenter supports the changes to the regulations because the revisions would lower the risk that employees exposed to lead will develop harmful health effects and would have a significant financial benefit due to avoided cases of lead-related illness and premature death.

Response to Comment 7.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

8. Frances Doherty, CDPH Certified Lead Supervisor, Doherty Restoration, Inc., by written comments dated April 4, 2023.

Comment 8.1

The commenter supports the regulations and notes that the employer's business would benefit because the changes would ensure an equal playing field for companies acting responsibly to protect workers from lead exposures.

Response to Comment 8.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 8.2

The commenter supports the changes because the current regulations are based on outdated lead toxicity information and the revised regulations would reduce the risk of harmful effects, have significant financial benefit due to avoided cases of lead-related illness and death and protect families by reducing take home lead exposure.

Response to Comment 8.2

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

9. Antonio Sandoval, Antonio Sandoval Painting, Inc., by written comments dated April 4, 2023.

Comment 9.1

The commenter has summarized the major proposed changes to the standards but does not support or oppose any and does not provide any further comment.

Response to Comment 9.1

The Board acknowledges and thanks the commenter for their statements summarizing certain proposed revisions in each of the standards.

The Board thanks the commenter for their input and participation in the rulemaking process.

10. Marc Connerly, Executive Director, Roofing Contractors Association of California, on behalf of American Subcontractors Association of California, Associated Roofing Contractors of the Bay Area Counties, Building Owners and Managers Association of California, California Association of Sheet Metal and Air Conditioning Contractors, National Association, California Building Industry Association, California Business Properties Association, Construction Employers' Association, Flasher Barricade Association, Housing Contractors of California, National Electrical Contractors Association, National Roofing Contractors Association, Northern California Allied Trades, Painting and Decorating Contractors, Roofing Contractors Association of California, Southern California Contractors Association, Southern California Glass Management, Union Roofing Contractors Association, United Contractors, Wall and Ceiling Alliance, Western Wall & Ceiling Association, Western Painting & Coatings Contractors Association, by written comments dated April 5, 2023.

Comment 10.1

The commenter requests an extension of the 45-day public comment period because the current period is inadequate time to review and respond to more than 50 pages of changes to the construction standard and additional time is needed to conduct a side-by-side comparison between the proposed California lead standards and the federal standards. The commenter states that they understand that many of the draft changes were made in order to bring California into compliance with federal regulations; however, industry has not been provided with a side-by-side comparison.

Response to Comment 10.1

Regarding the commenter's request to extend the public comment period, please see response to comment 24.1.

Regarding the commenter's statements about a side-by-side, please see response to comment 19.2.

The Board thanks the commenter for their input and participation in the rulemaking process.

11. Samantha B. Hardy, MPH Candidate, The George Washington University, on own behalf as a resident of the state of California, by written comments dated April 10, 2023.

Comment 11.1

The commenter commends Cal/OSHA for initiating revisions to align the standards with current medical research.

Response to Comment 11.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 11.2

The commenter states that revisions of the standards are a matter of health equity. Hispanic workers are disproportionately affected by elevated BLLs. The commenter states that a reduction in exposure limits and other provisions is a step toward health equity, especially for vulnerable populations.

Response to Comment 11.2

The Board thanks the commenter for their support of the proposed amendments.

Comment 11.3

The commenter recommends expanding the comment period to 90 days noting the concerns raised by industry representatives about the inadequacy of the comment period and the needs of industries not previously subject to the lead regulations.

Response to Comment 11.3

Please see response to comment 24.1.

Comment 11.4

The commenter states that an effective date has not been determined by Cal/OSHA, which is particularly important for small businesses. The commenter further states that it is essential that Cal/OSHA implement both an effective date and a phase-in period of at least three to five years to provide businesses with sufficient time to comply.

Response to Comment 11.4

The Board has taken comments about the need for a phase-in period under consideration. The Board agrees that delays in the effective date and certain implementation requirements may be appropriate, but does not agree that a phase-in period of three to five years is needed to enable employers to meet

the proposed requirements. The Board believes that employers will be able to achieve compliance in a much shorter period and that such a lengthy phase-in would unnecessarily delay the implementation of important protections for employees who work with lead.

As a result, the Board is proposing the following delays:

- a six-month delay of the effective date for the entirety of the revised regulations;
- an additional one-year delay, from the effective date of the regulation, in the implementation dates for requirements to provide change rooms, showers and lunchrooms in the general industry regulation; and
- an additional one-year delay, from the effective date of the regulation, in the implementation dates for requirements in both the construction and general industry regulations to remove employees from lead work when their last two blood lead tests are at or above 20 µg/dl, or the average of the results of all blood lead tests for an employee in the last six months is at or above 20 µg/dl.

A six-month delay of the effective date will enable employers to conduct exposure assessments and monitoring for their employees, as well as become familiar with and prepare for the requirements of the proposed revised regulations. Generally, regulations become effective on one of four quarterly dates based on when the final regulations are filed with the Secretary of State. Here, the anticipated effective date of the approved regulations, including the proposed six-month delay, would be January 1, 2025.

In general industry, employers will have an additional year beyond that to complete the installation of required showers, change rooms or lunchrooms, to the extent that they do not already have such facilities in place. While the Board believes that a year and a half will provide ample time to complete this work, the Board also notes that, should aspects of the process of installing permanent shower, change room or lunchroom facilities, such as budgeting, planning or permitting, create delays beyond the one-and-a-half-year compliance period, employers may utilize temporary facilities until construction is complete. The Board notes that in the construction sector, temporary, as opposed to permanent, facilities are expected to be installed on jobsites, thus the additional year to build required hygiene facilities was not included in the proposed construction standard.

Comment 11.5

The commenter states that medical removal could have serious financial consequences for the individual business, and for business at large. The commenter states that positions for reassignment may not be available and removed individuals may need to be replaced by new hires. The commenter further states that Cal/OSHA may wish to consider alternate remedies in the context of small businesses. In addition, the agency should allow employers ample time to prepare for and avoid medical removals to the greatest extent possible.

Response to Comment 11.5

The Board is not persuaded by the commenter's argument and therefore declines to propose amendments to the text allowing for alternate remedies for small businesses. The Board notes that few

employees have BLLs at or above 30 µg/dl that would require medical removal in the first year of the proposed standard. Modelling of BLLs based on employee exposures shows that the majority of elevated employee BLLs will decline adequately in the first year of the proposed standard so that the employees will not have to be medically removed in the second year of the proposed standard when the trigger for MRP is decreased to BLLs at or above 20 µg/dl. The Board believes that ample time is provided in the proposal to prepare for and avoid medical removals.

Comment 11.6

The commenter states that language of the standard is complex and not easy to follow. The commenter further states that Cal/OSHA may wish to consider conducting webinars to communicate expectations to all stakeholders and cites Center for Medicare and Medicaid Innovation webinars as a model.

Response to Comment 11.6

The Board notes that Cal/OSHA's guidance and education efforts are outside the scope of this rulemaking and the Board's jurisdiction.

Comment 11.7

The commenter, citing the requirement that employers be notified of employee BLL test results, states that Cal/OSHA must ensure any provision related to sharing personal health data of employees is compliant with contemporary Health Insurance Portability and Accountability Act (HIPAA) standards.

Response to Comment 11.7

The Board agrees with the commenter's point and thanks them for their comment. The Board notes that Cal/OSHA does not have jurisdiction over HIPAA requirements. The Board also notes that no changes to how medical information is shared or kept confidential has changed from the existing regulations.

The Board thanks the commenter for their input and participation in the rulemaking process.

12. John Corcoran (via Karen Martinez), Manhole Adjusting Inc., by written comments dated April 11, 2023.

Comment 12.1

The commenter states that lead can easily be found over the proposed AL in the simplest of settings, such as soil. In the construction industry, passing the proposed standard is overreaching and creates more burdens on a non-existent problem rather than helping employees.

Response to Comment 12.1

The Board disagrees with this statement. There is no evidence that soil disturbance activities result in employees being exposed to levels approaching the proposed AL. Lead poisoning among California employees is an existent problem.

Comment 12.2

The commenter states that federal Environmental Protection Agency (EPA) does not list lead in soils as a hazard at levels less than 400 ppm, yet the proposed regulation does not have any definition of a base or level where the lead standard should not be implemented. The proposed regulation creates a global requirement for lead training, assessments and physical examinations for any entity attempting to do business in California. This imposes a burden already listed as of no concern.

Response to Comment 12.2

The Board notes that the current proposals do not alter the scope of either lead standard; subsection (a) is existing, unchanged language. To the extent that the commenter is suggesting that the scope of the regulation be revised or further limited, this is outside the scope of this rulemaking.

Comment 12.3

The commenter points out that the current standard already requires PPE, training and exposure control methods. The commenter states that the proposed standard places an extra financial burden on small businesses that could be spent on protecting employees.

Response to Comment 12.3

The Board agrees that the current standard requires PPE, training and exposure control methods. Regarding the additional burden on small businesses, the Board notes that the requirements the commenter refers to are designed to protect employees, and believes they are necessary to protect the health of employees by supporting the goal of maintaining employee BLLs below 10 µg/dl.

Comment 12.4

The commenter states that the proposed regulation requires additional medical assessments and physical examinations for companies, but the proposed standards do not define the qualifications needed for persons evaluating exposure, prescribing PPE or other control measures. The commenter suggests identifying professionals who have the training and would have the liability to protect employers and employees and that be added into the regulation. However, the commenter further states that a better use of resources would be to remove these requirements and focus on employee training.

Response to Comment 12.4

See response to comment 4.1. The Board disagrees with the concluding comment and believes that training, while important, cannot take the place of exposure assessment, PPE and other control measures.

The Board thanks the commenter for their input and participation in the rulemaking process.

13. John Corcoran (via Karen Martinez), MEB Service & Repair Inc., by written comments dated April 11, 2023.

Comment 13.1

The commenter states that lead can easily be found over the proposed AL in the simplest of settings, such as soil. In the construction industry, passing the proposed standard is overreaching and creates more burdens on a non-existent problem rather than helping employees.

Response to Comment 13.1

Please see response to comment 12.1.

Comment 13.2

The commenter states that federal EPA does not list lead in soils as a hazard at levels less than 400 ppm, yet the proposed regulation does not have any definition of a base or level where the lead standard should not be implemented. This imposes a burden already listed as of no concern.

Response to Comment 13.2

Please see response to comment 12.2.

Comment 13.3

The commenter points out that the current standard already requires PPE, training and exposure control methods. The commenter states that the proposed standard places an extra financial burden on small businesses that could be spent on protecting employees.

Response to Comment 13.3

Please see response to comment 12.3.

Comment 13.4

The commenter states that the proposed regulation requires additional medical assessments and physical examinations for companies, but the proposed standards do not define the qualifications needed for persons evaluating exposure, prescribing PPE or other control measures. The commenter suggests identifying professionals who have the training and would have the liability to protect employers and employees should be added. However, the commenter further states that a better use of resources would be to remove these requirements and focus on employee training.

Response to Comment 13.4

Please see response to comment 12.4.

The Board thanks the commenter for their input and participation in the rulemaking process.

14. John Corcoran (via Karen Martinez), Aggregate Products Inc., by written comments dated April 11, 2023.

Comment 14.1

The commenter states that lead can easily be found over the proposed AL in the simplest of settings, such as soil. In the construction industry, passing the proposed standard is overreaching and creates more burdens on a non-existent problem rather than helping employees.

Response to Comment 14.1

Please see response to comment 12.1.

Comment 14.2

The commenter states that federal EPA does not list lead in soils as a hazard at levels less than 400 ppm, yet the proposed regulation does not have any definition of a base or level where the lead standard should not be implemented. This imposes a burden already listed as of no concern.

Response to Comment 14.2

Please see response to comment 12.2.

Comment 14.3

The commenter points out that the current standard already requires PPE, training and exposure control methods. The proposed standard places an extra financial burden on small businesses that could be spent on protecting employees.

Response to Comment 14.3

Please see response to comment 12.3.

Comment 14.4

The commenter states that the proposed regulation requires additional medical assessments and physical examinations for companies, but the proposed standards do not define the qualifications needed for persons evaluating exposure, prescribing PPE or other control measures. Identifying professionals who have the training and would have the liability to protect employers and employees should be added. However, the commenter further states that a better use of resources would be to remove these requirements and focus on employee training.

Response to Comment 14.4

Please see response to comment 12.4.

The Board thanks the commenter for their input and participation in the rulemaking process.

15. Chris Giuntoli, CAC, Senior Scientist, Geocon Consultants, Inc., by written comments dated April 13, 2023.

Comment 15.1

The commenter requests clarification of whether Level 1 trigger tasks would require CDPH certification of supervisors and employees if conducted in residential or public buildings given proposed revisions to subsections 1532.1(*l*)(3) and (d)(2)(A). The commenter states that Level 1 trigger tasks are assumed to have exposures >PEL but < 10x PEL (i.e., >10 µg/m^3 and ≤100 µg/m^3 with proposed PEL). The commenter further states that given that the proposed revision to subsection 1532.1(*l*)(3) retains the 50 µg/m^3

threshold for CDPH certification under assumed conditions, CDPH certification would be required for Level 1 trigger tasks until air monitoring demonstrates exposures below 50.

Response to Comment 15.1

The Board believes that the plain meaning of subsection 1532.1(*l*)(3) is that when an exposure assessment has been conducted and employees "have been shown" to be exposed above 50 µg/m^3 as an 8-hour TWA, certification is required. So conducting 'trigger tasks' in the absence of an exposure assessment does not require certification. The language in the regulation is also clear that the exposure assessment must be conducted.

The Board thanks the commenter for their input and participation in the rulemaking process.

16. Trent Michels (via Derek Borghi), President, on behalf of Association of Environmental Contractors, by written comments dated April 12, 2023.

Comment 16.1

The commenter suggests that the proposed standard clearly state that the requirements apply to "materials containing any detectable amount of lead and all unsampled paints, coatings and lead-containing materials" and to "facilities of any age of construction" and should provide examples of lead-containing materials that are often overlooked (ceramic tile glaze, vinyl products, flashings, etc.). The commenter states that providing clarification will improve compliance and protect workers by addressing misconceptions that the standard only applies to pre-1978 buildings or surfaces coated with lead-based paint, as well as misinterpretations of subsections 1532.1(d)(4)(C) and (d)(5)(B) to mean that materials with less than 600 ppm lead are not subject to the standard.

Response to Comment 16.1

The Board notes that the construction lead standard covers "all construction work where an employee may be occupationally exposed to lead." The Board believes that enumerating specific materials that may cause exposure to lead is best left to educational publications such as 'Lead Fact Sheet' or 'Frequently Asked Questions.'

Comment 16.2

The commenter states that most new construction is conducted without regard to section 1532.1 despite the standard stating that it applies to new construction and despite identifying spray-painting with lead paint as a trigger task. The commenter suggests that the standard emphasize lead exposure in new construction to address contractor ignorance of potential lead exposures in new construction and provides some examples.

Response to Comment 16.2

Please see response to comment 16.1.

Comment 16.3

The commenter states that subsection 1532.1(e) should reference the California Health and Safety Code and CDPH title 17 regulations as they pertain to containment and prohibition of creating a lead hazard. The commenter provides four specific code sections to be referenced. The commenter states that increased awareness of these regulations will prevent site contamination, bystander exposure and will increase compliance with no cost increase.

Response to Comment 16.3

The Board believes these kinds of helpful references are best presented as part of educational materials put forward by Cal/OSHA.

Comment 16.4

The commenter states that "disturbance of lead-contaminated soil" should be added to the proposed definition of "altering or disturbing" in subsection 1532.1(b), and that "lead-contaminated soil" be defined as "soil with any detectable amount of lead." The commenter states that, currently, lead in soil is not considered a possible hazard unless it meets the hazard criteria defined by CDPH, federal EPA or Housing and Urban Development (HUD), which are intended to protect children playing in the soil, or adults walking on top of the soil, not workers that disturb soil during construction.

Response to Comment 16.4

The Board notes that in the proposed construction standard, which applies to the disturbance of lead-contaminated soil, the proposed definition "Altering and Disturbing" is employed only in subsection 1532.1(k)(1)(A). The proposed language here specifies that employees, when medically removed, must be removed from "altering or disturbing any material containing lead at a concentration equal to or greater than 0.5% by weight." Since soil contamination levels do not reach 0.5% by weight, the commenter's proposal would have no effect, so the Board declines to amend the standards as the commenter suggests. In addition, please see response to comment 16.1.

Comment 16.5

The commenter suggests that subsection 1532.1(e) should reference title 8 CCR 1529 - Asbestos and title 8 CCR 5203 - Carcinogen Report of Use Requirements to help prevent employers from assuming that if they comply with one regulation, they have complied with, or are exempt from, other Cal/OSHA regulations. The commenter states that this occurs on a regular basis in the lead abatement industry and on HUD and EPA projects.

Response to Comment 16.5

The Board believes these kinds of helpful references are best presented as part of educational materials put forward by Cal/OSHA.

Comment 16.6

The commenter states that the proposed standard should set the AL at 10 $\mu g/m^3$ and the PEL at 2 $\mu g/m^3$ (8-hour TWA). At the AL, BLL testing, air sampling and additional training are required, but PPE is not required until the PEL is exceeded. The commenter states that it does not make sense to sample for

adverse health effects prior to providing protection from exposures that cause those effects. The commenter further states that by making the PEL lower than the AL, we provide protection first and then test to see if it is effective, which saves time, reduces costs and is more protective.

Response to Comment 16.6

The Board notes that in the current California and federal OSHA standards, and in the proposed California standards, exposures over the PEL are prohibited. Setting the AL above the PEL would therefore render it superfluous. For the logic of establishing an AL below the PEL, see the response to comment 37.4.

Comment 16.7

The commenter states that the proposed standard should clearly identify that paint often contains other hazardous ingredients, including metals, which would increase compliance with other Cal/OSHA standards and increase protection of workers during the application, disturbance and removal of paint without increasing the cost of compliance.

Response to Comment 16.7

The Board declines to amend the regulation in the manner suggested. The Board supports the commenter's interest in increasing regulatory compliance; however, the applicability of other existing standards to work involving the application, disturbance and removal of paint is outside the scope of this rulemaking.

The Board thanks the commenter for their input and participation in the rulemaking process.

17. Burt Olhiser (via Sharon Hilke, Painting & Decorating Contractors of California, Inc.), Vantage Point Consulting, by written comments dated April 15, 2023.

Comment 17.1

The commenter states that a PEL of 50 µg/m^3 and an AL of 30 µg/m^3 have served the community well and will continue to do so. The commenter further states that the model Cal/OSHA used to arrive at a PEL of 10 µg/m^3 and an AL of 2 µg/m^3 is false as it assumes exposures for 8 hours/day, 365 days/year. As a worst-case scenario, a worker is exposed to lead 30 days/year.

Response to Comment 17.1

The Board disagrees with these statements. First, the Board notes that while the current PEL and AL are 50 µg/m^3 and 30 µg/m^3, respectively, most employees in California who work with lead are not exposed to those levels. This is because of their use of respiratory protection. In addition, the current PEL of 50 µg/m^3 was set in 1978 to maintain employee BLLs below 40 µg/dl. The goal of the proposed standards is to maintain employee BLLs below 10 µg/dl, which is much more protective of employee health. Regarding the model used to determine an appropriate PEL, OEHHA assumed exposure on 250 days per year, to reflect weekends and other days where it is assumed that workers are off duty, when estimating air concentrations that would yield BLLs of interest to Cal/OSHA (OEHHA 2013). The Board notes, per California Labor Code section 144.6, in promulgating standards dealing with toxic materials, it "shall

adopt that standard which most adequately assures, to the extent feasible, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to a hazard regulated by such standard for the period of his working life."

Comment 17.2

The commenter states that the current method of detecting lead aerosols at these low levels is NIOSH 7082 flame AA (Atomic Absorption) which has a detection limit of 6 µg. The commenter states that to be able to detect 2 µg would require a different and more expensive method of NIOSH 7105 (Graphite Furnace).

Response to Comment 17.2

Please see response to comment 37.17.

Comment 17.3

The commenter states that the federal standard of 50 µg for a PEL and 30 µg for an AL works and there is no reason to change to 10 as a PEL and 2 as an AL.

Response to Comment 17.3

Please see response to comment 19.4.

The Board thanks the commenter for their input and participation in the rulemaking process.

18. Ramon Terrazas, MD MPH (via Don Schinske), President, on behalf of Western Occupational and Environmental Medical Association (WOEMA), by written comments dated April 14, 2023.

Comment 18.1

The commenter expresses strong support for the proposed changes to the lead standards noting WOEMA's long support of more protective standards consistent with recent medical findings of toxicity.

Response to Comment 18.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 18.2

The commenter urges the Board to add a specific definition of "physician" in sections 1532.1 and 5198 to clarify that the standards have mandated medical surveillance programs that must be overseen by Doctors of Medicine (MDs) or Doctors of Osteopathic Medicine (DOs), citing a federal OSHA Letter of Interpretation. The commenter further states that employers have used providers (e.g., paramedics) who lack the training, knowledge and experience to evaluate health effects.

Response to Comment 18.2

The Board notes that it has amended its proposal, replacing the word "physician" with the term "physician or other licensed health care professional" (PLHCP) throughout the standards and their appendices. Thus, all medical examinations and procedures must be performed by a PLHCP. Other

substance-specific regulations, such as those for beryllium and chromium (VI), allow PLHCPs, which includes but is not limited to physicians, to provide or be delegated the responsibility to provide medical services. The proposal has also been amended to define PLHCP, to specify that individuals who are not physicians may provide or be delegated the responsibility to provide some or all of the health care services required by the standards, so long as their legally permitted scope of practice allows them to do so.

Comment 18.3

The commenter cites recent guidance from CDPH and recommends that the proposed text in section 5198 Appendix C be revised to state that BLLs of employees who intend to parent in the near future should be maintained below 3.5 µg/dl in order to minimize adverse reproductive health effects to the mother and developing fetus.

Response to Comment 18.3

The Board agrees with this comment and has amended the text of Appendix C in both sections 1532.1 and 5198.

The Board thanks the commenter for their input and participation in the rulemaking process.

19. Marc Connerly, Executive Director, Roofing Contractors Association of California, on behalf of American Subcontractors Association of California, Associated Roofing Contractors of the Bay Area Counties, Building Owners and Managers Association of California, California Association of Sheet Metal and Air Conditioning Contractors, National Association, California Building Industry Association, California Business Properties Association, Construction Employers' Association, Flasher Barricade Association, Housing Contractors of California, National Electrical Contractors Association, National Roofing Contractors Association, Northern California Allied Trades, Painting and Decorating Contractors, Roofing Contractors Association of California, Southern California Contractors Association, Southern California Glass Management, Union Roofing Contractors Association, United Contractors, Wall and Ceiling Alliance, Western Painting & Coatings Contractors Association, Western Wall & Ceiling Association, by written comments dated April 17, 2023.

NOTE: The following submitted comments identical to letter "19,"[1] therefore the comment summaries and responses have been grouped below:

21. Christine Lacerda, Vice President of Risk Management, Lancaster Burns Construction Inc., by written comments dated April 17, 2023.

22. Erica McGrath Accel Framing, Inc., by written comments dated April 17, 2023.

23. John Pavletich, CEO, Pavletich Electric & Communications Inc., by written comments dated April 17, 2023.

[1] With one exception – Letter 31 had an additional comment, which is labeled comment 31.1.1 and addressed separately, below.

25. Sierra West Construction, Inc. by written comments dated April 17, 2023.

26. Brian Christianson by written comments dated April 17, 2023.

28. Brandon Garmo, PLP Enterprises, Inc., by written comments dated April 17, 2023.

29. Shannon Nielsen, President, Airplus of California, Inc., by written comments dated April 17, 2023.

31. Brad Stoner, President, Brad L. Stoner Painting, Inc., by written comments dated April 17, 2023.

32. Tim P. Taylor, CEO/Co-Owner, Taylor Trim & Supply, Inc., by written comments dated April 17, 2023.

33. Allan Horn (via Razzy Zapparolli), President, Precision Wallcovering and Painting, by written comments dated April 17, 2023.

34. Steve Blakley, Estimator/Project Manager, Turman Commercial Painters, by written comments dated April 17, 2023.

35. Rhode Oyen, Senior Project Manager, Turman Commercial Painters, by written comments dated April 17, 2023.

36. David Gonzales, Estimator/Project Manager, Turman Commercial Painters, by written comments dated April 17, 2023.

40. Austin Vulich, President, Endurance Painting, by written comments dated April 17, 2023.

41. Ryan Holmes, Accel Framing, Inc., by written comments dated April 17, 2023.

42. Maimu Belhumeur, Owner, IM Painting Inc, by written comments dated April 17, 2023.

43. Chris Osburn, Vice President, Wm. B. Saleh Co., by written comments dated April 17, 2023.

47. Tanner Schamber, Schamber Electric, by written comments dated April 17, 2023.

Comment 19.1, 21.1, 22.1, 23.1, 25.1, 26.1, 28.1, 29.1, 31.1, 32.1, 33.1, 34.1, 35.1, 36.1, 40.1, 41.1, 42.1, 43.1, 47.1

The commenter states that an effective advisory committee has not been conducted yet. The advisory committees that were held were ineffective and without appropriate opportunity for dialogue and input. The commenter states that after seven years of inaction, there should have been an effective advisory committee conducted.

Response to Comment 19.1, 21.1, 22.1, 23.1, 25.1, 26.1, 28.1, 29.1, 31.1, 32.1, 33.1, 34.1, 35.1, 36.1, 40.1, 41.1, 42.1, 43.1, 47.1

The Board disagrees with the commenter's assertion that advisory meetings were ineffective. The six advisory meetings conducted by Cal/OSHA complied with all requirements of the Administrative Procedures Act (APA).

Comment 19.2, 21.2, 22.2, 23.2, 25.2, 26.2, 28.2, 29.2, 31.2, 32.2, 33.2, 34.2, 35.2, 36.2, 40.2, 41.2, 42.2, 43.2, 47.2

The commenter states that the current draft had additions made to it that were apparently required in order to be in compliance with federal regulations. Those additions should have been clearly communicated and a side-by-side comparison provided. Also, the draft should have had indentations to allow the people trying to review it, to follow it more easily.

Response to Comment 19.2, 21.2, 22.2, 23.2, 25.2, 26.2, 28.2, 29.2, 31.2, 32.2, 33.2, 34.2, 35.2, 36.2, 40.2, 41.2, 42.2, 43.2, 47.2

The Board wishes to clarify that the proposed regulations, as Noticed on March 3, 2023, did not have any additions to them based on the need for Cal/OSHA's standards to be in compliance with or at least as effective as the federal OSHA standards. The necessity of the proposed changes are set forth clearly in the Initial Statement of Reasons (ISOR). This document was provided to stakeholders with the notice of rulemaking.

To the extent that subsequent modifications to the proposed amendments were necessary in order to ensure the requirements of the standards were at least as effective as those in the federal OSHA standard, the necessity of those changes is set forth in this document, under the descriptions of Modifications Resulting From The 45-Day Notice and Modifications Resulting From The First 15-Day Notice.

The Board declined to provide a side-by-side as it pertains to information that is outside of the scope of the current rulemaking. The subject of this rulemaking is the current text of proposed amendments. The proposed text was sent to interested stakeholders with the notice of rulemaking and is also available on the Board's website.

Prior iterations of the proposed amendments and the text of current federal OSHA lead regulations are not at issue in this rulemaking. To the extent stakeholders wish to compare the current proposed regulatory text to such documents, they are all publicly available for review and comparison.

The Board did not include indentations in the proposed text, as the lettering and numbering styles used identify the content of the separate sections and subsections.

Comment 19.3, 21.3, 22.3, 23.3, 25.3, 26.3, 28.3, 29.3, 31.3, 32.3, 33.3, 34.3, 35.3, 36.3, 40.3, 41.3, 42.3, 43.3, 47.3

The commenter states that the current draft goes well beyond the federal regulations in several areas; examples provided – PEL and AL; definitions, showers.

Response to Comment 19.3, 21.3, 22.3, 23.3, 25.3, 26.3, 28.3, 29.3, 31.3, 32.3, 33.3, 34.3, 35.3, 36.3, 40.3, 41.3, 42.3, 43.3, 47.3

In addition to its duty to comply with Labor Code section 142.3, which requires that California's regulations be at least as protective of worker health and safety as the relevant federal regulations, the Board must also comply with Labor Code section 144.6. That section requires that the Board, when dealing with standards for toxic materials and harmful physical agents, adopt standards that most adequately assure, to the extent feasible, that no employee suffer material impairment of health or

functional capacity even if such employee has regular exposure to the hazard for the period of their working lifetime.

Generally, the proposed amendments that make additions to the regulations beyond the relevant federal regulations are necessary to meet this requirement. The specific basis for each is clearly set forth in the ISOR, which was provided to stakeholders with the notice of rulemaking. Regarding the requirement to provide showers in subsection 1532.1(i)(3)(A), please see response to comment 19.16. See also response to comment 19.4, which addresses the basis of specific additions raised by the commenter.

Comment 19.4, 21.4, 22.4, 23.4, 25.4, 26.4, 28.4, 29.4, 31.4, 32.4, 33.4, 34.4, 35.4, 36.4, 40.4, 41.4, 42.4, 43.4, 47.4

The commenter states that there is no justification in the information provided by Cal/OSHA for the unprecedented reductions in the PEL and AL.

Response to Comment 19.4, 21.4, 22.4, 23.4, 25.4, 26.4, 28.4, 29.4, 31.4, 32.4, 33.4, 34.4, 35.4, 36.4, 40.4, 41.4, 42.4, 43.4, 47.4

The Board does not agree with the comment. The following information was presented by the Board in the ISOR:

The proposed amendments, including the reductions in the proposed PEL and AL, are needed to adequately protect the health of employees who have occupational exposure to lead. Existing requirements in sections 1532.1, 5155 and 5198 are based on lead toxicity information and medical and epidemiological data that is now more than 40 years old. More recent evidence demonstrates that even very low levels of lead exposure can have harmful health effects. Such adverse health effects include high blood pressure, heart disease, decreased kidney function, lower birth weight, reproductive and neurological effects. These harmful effects can occur at levels well below those currently allowed by the regulations. The proposed amendments to the regulations are designed to mitigate more recently recognized adverse health effects from lower levels of exposure to lead.

The Board's proposed changes, including the reductions in the PEL and AL, are based in part on recommendations from the California Department of Public Health (CDPH, 2010) to Cal/OSHA. The CDPH Occupational Lead Poisoning Prevention Program (OLPPP) reviewed the scientific information, including a review from the National Toxicology Program (NTP, 2012) and a report issued by the US Environmental Protection Agency (EPA, 2013), and concluded that there is convincing evidence that chronic, low-level exposure to lead can cause harmful health effects. CDPH concluded that the BLL of employees should not exceed 5-10 micrograms per deciliter (µg/dl) over a working lifetime.

This proposal is designed to maintain employee BLLs below 10 µg/dl, whereas existing regulations were designed to maintain employee BLLs below 40 µg/dl, a level four times higher. To achieve this goal, the proposed amendments would (1) reduce exposure to airborne lead; (2) reduce exposure to lead through the oral route of exposure; and (3) expand requirements for blood lead testing of employees who work with lead, independent of measured levels of airborne lead. Reductions in both the proposed PEL and AL are central to achieving this goal.

Existing title 8 regulations establish a PEL for lead of 50 micrograms of lead per cubic meter of air (µg/m^3), as an 8-hour TWA concentration. CDPH submitted health-based recommendations to Cal/OSHA for revising its Construction and General Industry lead standards (CDPH, 2013). The recommendations were based on a physiology-based pharmacokinetic (PBPK) model developed by OEHHA in CalEPA (California Environmental Protection Agency); (OEHHA, 2013). This model correlates exposure levels to airborne lead with resulting BLLs. In its recommendations, CDPH stated that in order to prevent chronic BLLs at or above 5-10 µg/dl, air lead levels in the workplace must not exceed an 8-hour TWA concentration of 0.5-2.1 µg/m^3. At a PEL of 2.1 µg/m^3, 95% of employees would have a BLL less than 10 µg/dl over their working lifetime. Cal/OSHA concluded that lowering the PEL to this low level was not a feasible regulatory option. However, a PEL of 10 µg/m^3, along with the suite of additional revisions, would have the same effect of reducing BLLs to 10 µg/dl for nearly all employees with occupational exposure to lead.

With regard to the proposed AL, please see the response to comment 37.4.

Comment 19.5, 21.5, 22.5, 23.5, 25.5, 26.5, 28.5, 29.5, 31.5, 32.5, 33.5, 34.5, 35.5, 36.5, 40.5, 41.5, 42.5, 43.5, 47.5

The commenter states that the Standardized Regulatory Impact Assessment (SRIA) is outdated, is not based on the current proposal and contains information in contradiction to statements made by Cal/OSHA. The SRIA does not account for the impact of COVID on small and medium businesses due to increased costs and supply chain issues. The commenter further states that the SRIA was based on the November 2016 draft; the current draft has substantial differences.

Response to Comment 19.5, 21.5, 22.5, 23.5, 25.5, 26.5, 28.5, 29.5, 31.5, 32.5, 33.5, 34.5, 35.5, 36.5, 40.5, 41.5, 42.5, 43.5, 47.5

The Board notes that the SRIA is based on requirements that are consistent with the proposed text that was issued on March 3, 2023. Any change in costs due to subsequent revisions to the proposed text are shown in the final Form 399 (Economic and Fiscal Impact Statement) and in the Final Statement of Reasons (FSOR).

The Board further notes that the monetary figures shown in the SRIA have been adjusted to account for inflation and price increases resulting from the COVID-19 pandemic. One impact that a supply constraint imparts on the market is a higher price; to the extent that supply constraints occurring in the supply chain caused price increases, such price increases are captured by our inflation adjustment on costs. This adjustment is shown in the final Form 399 and FSOR.

Comment 19.6, 21.6, 22.6, 23.6, 25.6, 26.6, 28.6, 29.6, 31.6, 32.6, 33.6, 34.6, 35.6, 36.6, 40.6, 41.6, 42.6, 43.6, 47.6

The commenter requests that the public comment period be extended through June 15 to allow stakeholders to review and analyze the proposal and for labor and management to have discussions on the regulations.

Response to Comment 19.6, 21.6, 22.6, 23.6, 25.6, 26.6, 28.6, 29.6, 31.6, 32.6, 33.6, 34.6, 35.6, 36.6, 40.6, 41.6, 42.6, 43.6, 47.6

Please see response to comment 24.1. Further, regarding commenter's statements about an advisory committee, please see response to comment 66.10.

Comment 19.7, 21.7, 22.7, 23.7, 25.7, 26.7, 28.7, 29.7, 31.7, 32.7, 33.7, 34.7, 35.7, 36.7, 40.7, 41.7, 42.7, 43.7, 47.7

The commenter recommends that Cal/OSHA provide an "appropriate and truly scientific analysis" for the reductions in the PEL and AL.

Response to Comment 19.7, 21.7, 22.7, 23.7, 25.7, 26.7, 28.7, 29.7, 31.7, 32.7, 33.7, 34.7, 35.7, 36.7, 40.7, 41.7, 42.7, 43.7, 47.7

Please see responses to comments 19.4 and 37.4.

Comment 19.8, 21.8, 22.8, 23.8, 25.8, 26.8, 28.8, 29.8, 31.8, 32.8, 33.8, 34.8, 35.8, 36.8, 40.8, 41.8, 42.8, 43.8, 47.8

The commenter recommends that Cal/OSHA provide an "appropriate and truly scientific analysis" of the "suggestion" that lead causes harm at lower levels than previously understood.

Response to Comment 19.8, 21.8, 22.8, 23.8, 25.8, 26.8, 28.8, 29.8, 31.8, 32.8, 33.8, 34.8, 35.8, 36.8, 40.8, 41.8, 42.8, 43.8, 47.8

Please see response to comment 60.2.

Comment 19.9, 21.9, 22.9, 23.9, 25.9, 26.9, 28.9, 29.9, 31.9, 32.9, 33.9, 34.9, 35.9, 36.9, 40.9, 41.9, 42.9, 43.9, 47.9

The commenter recommends that all additions to the regulation in excess of the federal regulations be eliminated, since none of them were discussed nor was a justification given.

Response to Comment 19.9, 21.9, 22.9, 23.9, 25.9, 26.9, 28.9, 29.9, 31.9, 32.9, 33.9, 34.9, 35.9, 36.9, 40.9, 41.9, 42.9, 43.9, 47.9

The Board does not agree to the requested change. Please see responses to comments 19.3 and 66.10.

Comment 19.10, 21.10, 22.10, 23.10, 25.10, 26.10, 28.10, 29.10, 31.10, 32.10, 33.10, 34.10, 35.10, 36.10, 40.10, 41.10, 42.10, 43.10, 47.10

The commenter suggests a three-year delay in implementation after approval by the Office of Administrative Law (OAL) to allow employers time for exposure analysis, equipment purchases and other requirements.

Response to Comment 19.10, 21.10, 22.10, 23.10, 25.10, 26.10, 28.10, 29.10, 31.10, 32.10, 33.10, 34.10, 35.10, 36.10, 40.10, 41.10, 42.10, 43.10, 47.10

Please see response to comment 11.4.

Comment 19.11, 21.11, 22.11, 23.11, 25.11, 26.11, 28.11, 29.11, 31.11, 32.11, 33.11, 34.11, 35.11, 36.11, 40.11, 41.11, 42.11, 43.11, 47.11

The commenter states that proposed reductions in the PEL and AL to "extremely low thresholds" will impose significant burdens on construction, most notably mid and small businesses, and increase the economic leverage of underground employers.

Response to Comment 19.11, 21.11, 22.11, 23.11, 25.11, 26.11, 28.11, 29.11, 31.11, 32.11, 33.11, 34.11, 35.11, 36.11, 40.11, 41.11, 42.11, 43.11, 47.11

The Board notes that while the SRIA shows that there will be additional costs to construction employers to comply with the proposal, the monetary benefits of the proposal will exceed its costs within 10 years of its enactment. The Board also notes that all employers in California are legally obligated to comply with Cal/OSHA regulations. The Board acknowledges that underground employers who do not comply with Cal/OSHA regulations have an unfair advantage over compliant employers. However, Cal/OSHA has an enforcement unit, Labor Employment Task Force, to root out underground employers and see that they are not allowed to continue to work without complying with its regulations.

Comment 19.12, 21.12, 22.12, 23.12, 25.12, 26.12, 28.12, 29.12, 31.12, 32.12, 33.12, 34.12, 35.12, 36.12, 40.12, 41.12, 42.12, 43.12, 47.12

The commenter states that Cal/OSHA has not provided evidence and real-world experience of the need for these "radical changes" to worksites and cost of customers.

Response to Comment 19.12, 21.12, 22.12, 23.12, 25.12, 26.12, 28.12, 29.12, 31.12, 32.12, 33.12, 34.12, 35.12, 36.12, 40.12, 41.12, 42.12, 43.12, 47.12

Please see response to comment 60.2.

Comment 19.13, 21.13, 22.13, 23.13, 25.13, 26.13, 28.13, 29.13, 31.13, 32.13, 33.13, 34.13, 35.13, 36.13, 40.13, 41.13, 42.13, 43.13, 47.13

The commenter states that Cal/OSHA has not provided evidence of an increase in employee lead exposure in construction. The trend in construction products has been to reduce lead and, therefore, employee exposure is decreasing, not increasing. The commenter suggests that longer-term studies that include actual exposure on the jobsite and workers compensation claims for lead exposure are needed to prove that the reduction in AL and PEL is warranted.

Response to Comment 19.13, 21.13, 22.13, 23.13, 25.13, 26.13, 28.13, 29.13, 31.13, 32.13, 33.13, 34.13, 35.13, 36.13, 40.13, 41.13, 42.13, 43.13, 47.13

Please see response to comment 60.2.

Comment 19.14, 21.14, 22.14, 23.14, 25.14, 26.14, 28.14, 29.14, 31.14, 32.14, 33.14, 34.14, 35.14, 36.14, 40.14, 41.14, 42.14, 43.14, 47.14

The commenter states that the cost estimate on page eight of the SRIA for "Cost Impacts on a Representative Private Person or Business" is incorrect.

Response to Comment 19.14, 21.14, 22.14, 23.14, 25.14, 26.14, 28.14, 29.14, 31.14, 32.14, 33.14, 34.14, 35.14, 36.14, 40.14, 41.14, 42.14, 43.14, 47.14

The Board notes that as is standard for an impact assessment, cost estimates reflect only the proposed changes to the existing standard and do not represent the full cost of complying with existing requirements. The Board further notes that the proposal impacts only those business establishments in which at least one employee is exposed to potentially harmful lead exposure levels - an estimated 21,500 establishments statewide according to the CDPH. In addition, the Board notes that the SRIA estimates have been updated to account for inflation and wage growth between 2017 and 2022. The SRIA estimates have also been updated to reflect the most current version of the proposed regulatory text including revisions to the text that postdate the SRIA. The revised cost impact on a representative business is computed by dividing the number of impacted businesses into the Total Private Cost:

Year 1: $233,389,709 ÷ 21,500 = $10,855 per business on average

Year 2+: $231,921,216 ÷ 21,500 = $10,787 per business on average

Comment 19.15, 21.15, 22.15, 23.15, 25.15, 26.15, 28.15, 29.15, 31.15, 32.15, 33.15, 34.15, 35.15, 36.15, 40.15, 41.15, 42.15, 43.15, 47.15

The commenter states that the SRIA does not consider the impact of out-of-state competition or non-compliance with the regulations by underground contractors. California contractors face competition from out-of-state contractors, many of whom are unfamiliar with California regulations or do not comply with them. The commenter further states that contractors following the regulations are less competitive with underground contractors who underbid them by avoiding the costs of the regulations.

Response to Comment 19.15, 21.15, 22.15, 23.15, 25.15, 26.15, 28.15, 29.15, 31.15, 32.15, 33.15, 34.15, 35.15, 36.15, 40.15, 41.15, 42.15, 43.15, 47.15

The Board notes that all employers operating in California, legally or not, are required to comply with Cal/OSHA regulations. Employers found to be out of compliance may be cited for violations.

Comment 19.16, 21.16, 22.16, 23.16, 25.16, 26.16, 28.16, 29.16, 31.16, 32.16, 33.16, 34.16, 35.16, 36.16, 40.16, 41.16, 42.16, 43.16, 47.16

The commenter states that the SRIA and the regulations burden employers with unnecessary compliance requirements placing contractors at a competitive disadvantage. The commenter states, "… providing portable showers and washrooms at construction jobsites is infeasible, dramatically increases costs, and is an unrealistic departure" from the federal lead construction regulations.

Response to Comment 19.16, 21.16, 22.16, 23.16, 25.16, 26.16, 28.16, 29.16, 31.16, 32.16, 33.16, 34.16, 35.16, 36.16, 40.16, 41.16, 42.16, 43.16, 47.16

Regarding the feasibility of providing showers at construction jobsites, the following exception was added to subsection 1532.1(i)(3)(A): "Shower facilities are not required when the employer can demonstrate that shower facilities are not feasible."

Regarding costs associated with the provision of showers, the Board notes that the proposed text in subsection 1532.1(i)(3)(A) has been amended to require shower facilities when an employee's exposure is above 50 µg/m^3, without regard to the use of respirators. This airborne exposure trigger for the provision of showers at construction jobsites is consistent with the existing requirements. Thus, there are no additional costs of providing showers in construction associated with the proposed PEL. The Board also notes that shower facilities are required in the proposed standard as interim protection for employees performing level 3 trigger tasks. Thus, there may be additional costs associated with this requirement, but those costs would not be incurred if the employer has conducted an exposure assessment.

With regard to the feasibility of washing facilities, the provision of washing facilities is an existing, unchanged requirement in the standard and applies to all construction sites. Employers must already be in compliance with this requirement and there would be no new costs associated with the provision of washing facilities.

Finally, the Board also notes that there is no departure from the federal OSHA lead construction regulations regarding showers and washing facilities, with the exception of the proposed requirement to provide showers as interim protection for employees performing level 3 trigger tasks.

Comment 19.17, 21.17, 22.17, 23.17, 25.17, 26.17, 28.17, 29.17, 31.17, 32.17, 33.17, 34.17, 35.17, 36.17, 40.17, 41.17, 42.17, 43.17, 47.17

The commenter states that the SRIA does not show the need for extensive BLL testing. Cal/OSHA's statement that the "vast majority of the 930,000 [construction] workers have no lead exposure whatsoever," made in response to a question from the Department of Finance about MRP costs in the SRIA, is contradictory to a sweeping need by Cal/OSHA to revise the construction lead standard. The commenter states that instead the focus should be a compliance effort based on those workers with significant lead exposure.

Response to Comment 19.17, 21.17, 22.17, 23.17, 25.17, 26.17, 28.17, 29.17, 31.17, 32.17, 33.17, 34.17, 35.17, 36.17, 40.17, 41.17, 42.17, 43.17, 47.17

The Board notes that the proposed standards are targeted at improving the health of those construction workers who are exposed to lead. The SRIA estimates that approximately 85,000 California construction workers are exposed to lead, of whom 17% routinely have BLLs over 10 µg/dl.

Comment 19.18, 21.18, 22.18, 23.18, 25.18, 26.18, 28.18, 29.18, 31.18, 32.18, 33.18, 34.18, 35.18, 36.18, 40.18, 41.18, 42.18, 43.18, 47.18

The commenter states that the SRIA does not show the increased public works or consumer costs and does not provide proof of benefit justifying the costs. The proposed regulations will add significant costs to public works construction projects without scientifically demonstrating the blood exposure levels/BLLs of which we should be wary.

Response to Comment 19.18, 21.18, 22.18, 23.18, 25.18, 26.18, 28.18, 29.18, 31.18, 32.18, 33.18, 34.18, 35.18, 36.18, 40.18, 41.18, 42.18, 43.18, 47.18

The Board notes that the compliance costs shown in the SRIA are expected to accrue to the sectors whose employees are exposed to lead. These costs would ultimately be passed along to consumers of products or services in these industries. However, to avoid the double counting of these costs in the SRIA, the costs of compliance are assigned to the employers whose employees are exposed to lead.

Regarding benefits of the proposed revisions, please see response to comment 19.11.

Regarding the commenter's assertion that the proposed regulations impose additional costs without scientifically demonstrating the blood exposure levels of which we should be wary, the Board is unsure what the commenter means by "blood exposure levels," but interprets it to mean BLLs and refers the commenter to the response to comment 19.4.

Comment 19.19, 21.19, 22.19, 23.19, 25.19, 26.19, 28.19, 29.19, 31.19, 32.19, 33.19, 34.19, 35.19, 36.19, 40.19, 41.19, 42.19, 43.19, 47.19

The commenter cites federal OSHA data that BLLs are declining in the United States. The commenter also cites to a statement from the National Association of Home Builders October letter to federal OSHA that "OSHA does not and cannot provide any evidence to show that there is increased occupational exposure to lead."

Response to Comment 19.19, 21.19, 22.19, 23.19, 25.19, 26.19, 28.19, 29.19, 31.19, 32.19, 33.19, 34.19, 35.19, 36.19, 40.19, 41.19, 42.19, 43.19, 47.19

Please see response to comment 60.2.

Comment 19.20, 21.20, 22.20, 23.20, 25.20, 26.20, 28.20, 29.20, 31.20, 32.20, 33.20, 34.20, 35.20, 36.20, 40.20, 41.20, 42.20, 43.20, 47.20

The commenter states that requiring BLL testing prior to lead work assumes that existing rules are not working and that employers are doing nothing to project workers, which is false. The commenter states that the proposed testing is intrusive, administratively burdensome and costly.

Response to Comment 19.20, 21.20, 22.20, 23.20, 25.20, 26.20, 28.20, 29.20, 31.20, 32.20, 33.20, 34.20, 35.20, 36.20, 40.20, 41.20, 42.20, 43.20, 47.20

The Board agrees in part with the statements made by the commenter. As a result, three exceptions have been added in the proposed text to the requirements for initial blood lead testing in subsection 1532.1(j)(1)(A)1., as follows:

EXCEPTION 1: Initial blood lead testing is not required for an employee who is not, and is not reasonably expected to be, exposed to lead at or above the AL for 30 or more days in any 12 consecutive months, and who is not exposed on any day above 10 µg/m^3 as an 8-hour TWA, without regard to respirator use.

EXCEPTION 2: Initial blood lead testing is not required for an employee who is not, and is not reasonably expected to be, exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use.

EXCEPTION 3: Initial blood lead testing is not required for an employee who has had a blood lead test in the preceding two months.

Similar exceptions have been added in the proposed text for section 5198.

Comment 19.21, 21.21, 22.21, 23.21, 25.21, 26.21, 28.21, 29.21, 31.21, 32.21, 33.21, 34.21, 35.21, 36.21, 40.21, 41.21, 42.21, 43.21, 47.21

The commenter recommends adding a summary table that defines tasks and respiratory protection levels (like Table 1 in the Silica standard).

Response to Comment 19.21, 21.21, 22.21, 23.21, 25.21, 26.21, 28.21, 29.21, 31.21, 32.21, 33.21, 34.21, 35.21, 36.21, 40.21, 41.21, 42.21, 43.21, 47.21

Please see response to comment 70.2. Additionally, the request assumes that objective data can be used to determine exposure levels for tasks. However, it cannot be used for trigger tasks, so a table is not possible.

Comment 19.22, 21.22, 22.22, 23.22, 25.22, 26.22, 28.22, 29.22, 31.22, 32.22, 33.22, 34.22, 35.22, 36.22, 40.22, 41.22, 42.22, 43.22, 47.22

The commenter opposes the proposed change to 10 days annually for the threshold for providing full protections for employees performing trigger tasks. The commenter suggests that the threshold should go back to the original language allowing for a 30-day period in a year, because it would allow employers to more effectively use administrative controls to manage exposures.

Response to Comment 19.22, 21.22, 22.22, 23.22, 25.22, 26.22, 28.22, 29.22, 31.22, 32.22, 33.22, 34.22, 35.22, 36.22, 40.22, 41.22, 42.22, 43.22, 47.22

The Board notes that subsections 1532.1(j)(1)(A) and (B), as currently written, leave significantly exposed employees, with lead exposures assumed to be above the PEL, not covered by medical surveillance. Requiring medical surveillance, as interim protection for employees who perform trigger tasks, as a default ensures these exposed employees are covered, irrespective of the timing of an employer's compliance with exposure monitoring requirements. This requirement is necessary to ensure that rising BLLs and lead-related adverse health effects are detected early and supports the overall goal of maintaining employee BLLs below 10 µg/dl. Therefore, the Board declines, in its proposed text, to return the threshold to provide medical surveillance for an employee who performs trigger tasks to the original language that does not require medical surveillance for an employee until they are exposed at or above the AL for more than 30 days in any 12 consecutive months.

The Board thanks the commenter for their input and participation in the rulemaking process.

20. Rocco Davis (via Amber Novey), Special Assistant to the General President, Vice President at Large and Pacific Southwest Regional Manager, LiUNA! Pacific Southwest Region, by written comments dated April 15, 2023.

Comment 20.1

The commenter supports the changes to the lead standards because the current regulations are based on outdated toxicity information and the revised regulations would reduce risk of harmful effects, have significant financial benefit due to avoided cases of lead-related illness and death and protect families by reducing take home lead exposure.

Response to Comment 20.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

24. Tim Taylor, California Chief Legislative Advocate, National Federation of Independent Business, by written comments dated April 14, 2023.

Comment 24.1

The commenter expresses serious concern that insufficient time is provided for public comment and requests the comment period be extended by 180 days to allow impacted parties sufficient time to receive notification and comment. The commenter states supporting arguments for the requested extension. The commenter states that extensive changes were made between the 2016 drafts and the current drafts, the page count tripled, and there are an additional 25 documents relied on, but only the bare minimum statutory comment period was provided. In addition, the commenter states that the current proposals have more stringent requirements and broader scope than previous drafts resulting in an increase in facilities, groups and small businesses covered by the standards. These parties are not aware of the changes and did not participate in the advisory meetings. They are entitled to notice and time to comment.

Response to Comment 24.1

The Board has complied with all legal and regulatory notice requirements for a regular APA rulemaking.

The Board notes that the comment overstates the expansion in length of the regulatory requirements since the time of the last advisory committee. The proposal now includes approximately 95 pages of non-mandatory appendices, but the regulatory requirements themselves are only slightly lengthier, by a matter of a few pages, than the prior draft discussed at the most recent advisory committee meeting.

The Board also notes that proposed amendments have not changed the scope of employers covered by the regulations at issue. The language of subsection (a) in both sections 1532.1 and 5198 is unchanged, existing text. While certain employers may now be subject to additional requirements due to the amendments, they would not be newly subject to the standards themselves.

To the extent that certain stakeholders did not participate in the advisory committee process, but would now be subject to new requirements under the proposed amendments and are interested in providing input on the proposed amendments, they received proper notice and an opportunity to do so during the public comment periods and at the public hearing held by the Board in April 2023.

The Board understands that the regulations are complex and that it would take time to meaningfully review and comment on the proposed amendments, but believes that approximately seven weeks was

sufficient time for stakeholders to review and comment on the proposed amendments. Additionally, given the one-year rulemaking period, the Board sought to maximize the time available for proposed modifications based on stakeholder comments and additional public comment periods for those changes. Based on the foregoing, the Board declines to extend the initial public comment period.

The Board thanks the commenter for their input and participation in the rulemaking process.

27. Ernesto Ordonez (via Amber Novey), Pacific Southwest Assistant Regional Manager, LiUNA!, by written comments dated April 18, 2023.

Comment 27.1

The commenter supports the changes because the current regulations are based on outdated toxicity information and the revised regulations would reduce risk of harmful effects, have significant financial benefit due to avoided cases of lead-related illness and death and protect families by reducing take home lead exposure. The commenter further states that the proposed regulation will standardize hygienic practices and proven workplace controls that will protect workers and become standard industry practices.

Response to Comment 27.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

30. Ariana Makau, President & Principal Conservator, Nzilani Glass Conservation, by written comments dated April 18, 2023.

Comment 30.1

The commenter supports any regulations that empower both workers to require a safe working place and employers to have guidelines to which they should adhere. However, the commenter states that their company is disadvantaged when bidding against most other companies who are less stringent with safety. The commenter suspects that they are the only stained-glass company that adheres to the current rigorous lead and safety training, plus regulatory requirements for PPE while working on leaded art glass. The commenter states that they have been in business for 20 years but have never been visited by a state or local enforcer nor have they heard of it happening to their competitors. The commenter states that without enforcement there is no reason for competitors to adhere to current or future laws that will have a negative financial impact. The commenter states that those employers who have done the work to comply are adversely affected by their efforts.

Response to Comment 30.1

The Board acknowledges the commenter's statements regarding bidding competition and regulatory enforcement; however, these issues are outside the scope of either this rulemaking or the Board's jurisdiction.

Comment 30.2

The commenter states that it costs an average of three thousand dollars per employee to pay for outside safety classes to onboard a new employee and that those tutors are only trained in general lead safety (most often geared towards mitigation of lead-based paint). The commenter states that though their employees are certified trained lead workers, the current state mandated curriculum is not tailored to their needs. The commenter states that there is a disconnect between what stained glass workers need to know, and what is currently required.

Response to Comment 30.2

The Board notes that certification training for lead workers is required only for construction employees and supervisors who are engaged in lead-related construction work as defined in title 17 CCR section 35040, and have been shown to be exposed to lead at or above 50 µg/m^3 as an 8-hour TWA. The certification is by the CDPH. The Board further notes that this training is not meant to be for employees working in general industry, but for those in construction. The Board believes that the topics included in the required training program in general industry subsection 5198(*l*) are adequate and appropriate for training employees who work in general industry.

The Board thanks the commenter for their input and participation in the rulemaking process.

31. Brad Stoner, President, Brad L. Stoner Painting, Inc., by written comments dated April 19, 2023.

Comment 31.1.1

The commenter is opposed to the lead standard being proposed. The commenter listed their issues with portable showering stations.

- Shortage of portable showering stations for rent in the state.
- Estimated daily cost per showering station ranges from $600-$1,300, which could double to $2,000 daily based on pending legislation that would require separate bathroom facilities for men and women.
- Need for city encroachment permits to park shower stations.
- Showering will take up one hour of an eight-hour paid workday.
- Increased costs to consumers will drive up the underground economy of unlicensed painters.

Response to Comment 31.1.1

Please see response to comment 19.16.

The Board thanks the commenter for their input and participation in the rulemaking process.

37. Helen Cleary, Director, Phylmar Regulatory Roundtable Occupational Safety and Health, PRR-OSH Forum, by written comments dated April 19, 2023.

Comment 37.1

The commenter states that the concerns industry raised in advisory meetings regarding the impact of proposed changes on thousands of workers who perform a small amount of work that *may* result in low

exposure levels have not been addressed and there has been no follow-up from Cal/OSHA in the seven years since the last meeting.

Response to Comment 37.1

The Board believes that the current language in the construction lead standard goes some way towards answering the commenter's concern. The Board also agrees with the commenter's concern that the originally proposed language does not appropriately address the risk to employees with intermittent, low-level exposure. First, the Board notes that, following current language in the construction standard, industries with low-level exposures, irrespective of whether they are frequent or infrequent, need to conduct an initial determination of these tasks in accordance with subsection 1532.1(d)(3) to determine whether any of these tasks can expose employees at or above the AL. Under the proposed standard, this determination would be made with respect to the lower proposed AL. This initial determination may make use of an employer-conducted exposure assessment or may make use of 'objective data' as outlined in subsection 1532.1(d)(3)(D) to demonstrate that a "specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the action level." Appendix B further explains, "[o]bjective data may be compiled from various sources, e.g., insurance companies and trade associations and information from suppliers or exposure data collected from similar operations. Objective data may also comprise previously-collected sampling data [.]"

If the initial determination is negative, then subsection 1532.1(d)(6)(A) makes it clear that the employer's assessment obligation is complete unless (following subsection 1532.1(d)(7)), "there has been a change of equipment, process, control, personnel or a new task has been initiated that may result in additional employees being exposed to lead at or above the action level or may result in employees already exposed at or above the action level being exposed above the PEL."

In this manner, following the logic of the construction standard exposure assessment in subsection 1532.1(d), the Board believes that employers with low-level exposure tasks can effectively lessen their regulatory obligations through documenting negative initial determinations for these tasks—showing that these tasks cannot result in exposures at or above the proposed AL.

However, with respect to tasks that are found to sometimes result in exposures at or above the proposed AL, the Board agrees with the commenter's concern that the proposed language does not appropriately address the lower risk to employees with intermittent, low-level exposures. In consultation with staff at CalEPA, the Board has amended the proposed text of subsection 1532.1(j)(1)(B)1. to exclude from medical surveillance those employees with only intermittent, low-level exposure to lead. The Board chose to take this approach rather than granting a conditional exemption from the scope of the standard for telecommunications work as recommended by the commenter. The Board took this approach to ensure that telecommunications workers received the appropriate protections provided by inclusion in the standard. Also, workers with intermittent, low-level exposure may be found in other industrial sectors and would benefit from a standard that more appropriately addresses their risk.

Comment 37.2

The commenter states that the proposed amendments are not reasonably tailored by application of the science to actual potential exposure opportunities and exposures for employees of all employers contemplated to comply with the proposed amendments as drafted.

Response to Comment 37.2

The Board believes that the proposed AL and PEL are set appropriately based on the application of science. Please see responses to comments 19.4 and 37.4. The Board notes that the goal of the revised regulations is to maintain employee BLLs below 10 µg/dl. The Board believes that the requirements of the proposed revisions to the standards will serve to protect employees in all industry sectors from the hazards of exposure to lead. The Board notes that while the regulations apply to all employees with occupational exposure to lead, the specific protections required by the regulations are based on actual, measured employee exposures to lead.

Comment 37.3

The commenter supports the overall objective of reducing the blood lead burden of workers and the intent of the proposed amendments to protect workers from lead exposure. However, the commenter states that they have significant concerns regarding the unintended consequences and unreasonable burden the proposed amendments will create on the expanded scope of industries who will be required to implement them.

The commenter supports amending current requirements and lowering the PEL and AL but strongly recommends that the Board reject this draft and ask Cal/OSHA to continue working with stakeholders to draft simplified amendments that will protect workers and address industry's concerns. The commenter states that workers will not be left unprotected -- the current lead standards provide a level of protection to workers at the highest risk. The commenter states that despite the *[existing]* PELs and ALs being out of alignment with the current understanding of the adverse health effects at lower levels of exposure, these regulations have resulted in effective lead management programs in the industries with known exposure, and according to the CDPH, BLLs are trending down in California. The commenter further states that federal OSHA is drafting amendments to the standards and once proposed Cal/OSHA could "Horcher" the federal requirements or expand on them. The commenter states that though Cal/OSHA's proposals have been in the works for years it is not sufficient reason enough to adopt them as proposed.

Response to Comment 37.3

The Board thanks the commenter for their support of the overall objective of the proposed amendments.

The Board notes that early in the pre-rulemaking process, it was decided to essentially adopt the structure of the existing California lead standards and to propose improvements to these standards that would better protect worker health. Other approaches to the regulatory structure could conceivably have been chosen, and the commenter outlines one of them here. But the choices that were then made, guided by advisory committee meetings over a few years, have been fundamental to what has become a multi-year rulemaking effort. The requested change would amount to a wholesale revision of part or all

of the existing regulatory framework, which the Board declines to do at this juncture in the rulemaking process.

Regarding the comment that federal OSHA is drafting amendments to the standards and, once proposed, Cal/OSHA could "Horcher" the federal requirements or expand on them, the Board notes that it is unknown how many years federal OSHA will take to amend their lead regulations. Delaying protection to employees in California until this occurs would result in additional illnesses and deaths. In addition, Labor Code 6717.5 requires Cal/OSHA to submit a proposal to revise the lead regulations and the Board to vote on the proposal by September 20, 2020, which has already passed. As a result, the Board declines to wait for federal OSHA to amend its lead regulations.

Regarding commenter's request to reject this draft and continue working with stakeholders, please see response to comment 66.10.

Comment 37.4

The commenter's primary concern is that when the triggers *[AL/PEL]* were significantly lowered, which greatly expanded the regulatory scope, the required controls either did not change or they became more onerous. The commenter states that these extreme reductions in rates coupled with minimal change to the current complex employer requirements is excessive. The commenter states that virtually any lead work will likely result in an exposure over the AL, resulting in a significant number of employers who are not covered under the current standards needing to determine if they are covered by the new amendments and, until determinations are made, implementing interim protections. The commenter states that the requirements may include determining actual exposure for each task by performing exposure assessments and implementing interim protections until the assessment is complete. The commenter further states that a different strategy is needed.

Response to Comment 37.4

The Board disagrees with the assertion that the proposed reductions in the PEL and the AL are excessive. See the response to comment 19.4 on the necessity for the proposed PEL of 10 $\mu g/m^3$.

The Board has proposed that the AL be defined as 2 $\mu g/m^3$ for two reasons: an AL of 2 $\mu g/m^3$ is consistent with the goal of maintaining employee BLLs below 10 µg/dl, and, given the underlying intent of setting an AL, it is statistically consistent with a proposed PEL of 10 $\mu g/m^3$.

CDPH's 'Recommended Permissible Exposure Limit (PEL) for Lead' (2013) states that the likelihood that employee BLLs will exceed 10 µg/dl becomes significant (>5%) above an exposure of 2 $\mu g/m^3$. [2] For this reason, the Board believes that 2 $\mu g/m^3$ is the appropriate exposure level at which blood lead testing should be made available to employees. And, since blood lead testing is triggered by the AL, it is therefore the appropriate level at which to set this value.

In initially proposing a statistical logic for setting ALs, Leidel and Busch (1975) argued that it should be set at the value which, based on a single sampling result limits to 5% the probability that no more than 5%

[2] CDPH-OLPPP "CDPH Letter to the Department of Industrial Relations recommending changes to the Cal/OSHA Lead Standards," September 2013.

of the employee's daily (8-hour TWA) exposures would exceed the PEL.[3] Therefore, the appropriate value for an AL, as a proportion of the PEL, depends on the spread of the within-worker lognormal distribution of exposures. The higher the within-worker geometric standard deviation ($_wS_g$), the lower the AL must be set to minimize the risk of underestimating an employee's probability of exceeding the PEL. The Board has decided to adopt this logic in proposing an AL for the lead standards.

While Leidel and Busch, at the time, went on to recommend that an AL be set at one-half the PEL based on a $_wS_g$ of 1.22, the Board has determined that better-supported estimations of $_wS_g$ values are to be found in Kromhout et al. (1993).[4] This assessment, based on a database of 20,000 exposures, reported $_wS_g$ values of 3.27 for work outdoors, 1.73 for work indoors, and 2.07 for both combined. A lognormal exposure distribution with a $_wS_g$ value of 2.0 requires that the AL be set at 11.5% of the PEL. Given a proposed lead PEL of 10 µg/m^3, this argues for an AL value of 1 µg/m^3. Considering the various aspects of this decision, the Board has decided to propose a lead AL of 2 µg/m^3.

The Board disagrees that virtually all lead work will result in exposure at or above the proposed AL. The proposed definition of "Action Level" is an 8-hour TWA of 2 µg/m^3. Many exposures that result in low-level exposure and are of limited time duration will likely not reach or exceed the AL. For example, in their recent comment letter to the Board, AT&T reports that, during 2022, 1209 telecommunications technicians worked on an assignment involving lead-sheathed cable. Appended to its letter, AT&T presented data from 28 IH surveys of this work which showed that 8-hour TWA exposures ranged from non-detectable levels (<0.38 µg/m^3) to 51 µg/m^3, resulting in a 95% upper confidence limit exposure of 3.5 µg/m^3. This indicates that a sizable proportion of these exposures fell below the proposed AL.

Comment 37.5

The commenter appreciates that the definition of PHLW in section 5198 has a of threshold 8 hours in a 30-day period for a task to be considered PHLW and that interim protection of medical surveillance in section 5198 also has an exception of 10 or more days in any 12 consecutive months. The commenter states that the construction standard does not contain any similar exceptions.

Response to Comment 37.5

Preliminarily, the Board wishes to clarify to the commenter that the exception to the medical surveillance requirements in the general industry standard only applies to subsection 5198(j)(1)(A)1. (for employees who are or may be exposed at or above the AL). The exception to enrolling infrequently exposed employees in medical surveillance does not apply to employees enrolled in medical surveillance because of PSLW (formerly PHLW in prior amendments). The exception is based on the results of exposure monitoring, which does not apply to PSLW, which triggers interim protections only in the absence of exposure monitoring. A proposed amendment to the regulatory text was added in the second 15-Day Notice of Proposed Modifications to clarify the application of the exception.

[3] NIOSH/CDC "Exposure Measurement Action Level and Occupational Environmental Variability," December 1975.
[4] Kromhout et al., "A Comprehensive Evaluation of Within- and Between-Worker Components of Occupational Exposure to Chemical Agents," Ann. Occup. Hyg., 1993 Vol. 37, No. 3, pp 253-270.

With regard to the proposed construction standard, the exceptions on the definition of PSLW do not apply because it does not contain the concept of PSLW; instead, it contains the analogous 'trigger tasks' concept. The Board notes that with regard to trigger tasks, there is a proposed exception to medical surveillance for level 1 trigger tasks, such that medical surveillance would not be required for an employee who only performs level 1 trigger tasks and who does not perform these level 1 trigger tasks on 10 or more days in any 12 consecutive months.

Comment 37.6

The commenter states that the definition of "trigger tasks—not listed" in section 1532.1 expands the number of tasks that need to be treated as high risk simply because the task is not identified in the standard. The commenter states that the definition of "trigger tasks – not listed" requires the employer to perform an exposure assessment (subsection 1532.1(d)) if they have any reason to believe the employee may be exposed above the PEL.

Response to Comment 37.6

The proposed inclusion of this definition in subsection 1532.1(b) merely draws attention to existing language in subsection 1532.1(d)(2)(B). It does not expand the list of tasks that would trigger the requirements of that subsection.

Comment 37.7

The commenter states that the required protections may be reasonable for workers known or anticipated to be exposed to the PEL on a daily basis, or anticipated to be exposed above the PEL every time they perform a certain task, but the commenter states that implementing interim protections for infrequent and unpredictable exposures that may reach a PEL of 10 $\mu g/m^3$ are burdensome steps that will result in unnecessary over-protection. The commenter is especially concerned that the Construction Safety Orders (CSO) proposal does not consider frequency of exposure, especially at low levels. The commenter states that the draft was built around employees who have continuous or high levels of exposures such as manufacturing and abrasive blasting, and the trigger levels of 2 $\mu g/m^3$ is based on everyday exposures over a working lifetime of 40 years.

Response to Comment 37.7

The Board notes that the existing language, which is not changed in the proposal, in subsection 1532.1(d)(2)(B) ("Trigger tasks – not listed.") requires interim protections if "the employer has any reason to believe that an employee performing the task may be exposed to lead in excess of the PEL." The plain language meaning of this requirement is not that interim protections are required for any task whose potential to expose employees over the PEL is not known. The employer must have a reason to believe that the task can expose an employee over the PEL. The employer's reason would likely be that the task is similar to a task specifically named as a trigger task or that the task is similar to a task for which an exposure assessment has been conducted showing exposure over the PEL.

Comment 37.8

The commenter states that it is not appropriate to make pre-exposure BLL testing available to every employee who may be exposed to an AL of 2 µg/m^3.

Response to Comment 37.8

The Board agrees in part with the statements made by the commenter. As a result, a proposed exception has been amended in the requirements for a medical surveillance program (which includes initial BL testing) in the proposed text for subsection 5198(j)(1)(A)1. The proposed amended exception states: "Medical surveillance is not required for an employee who is not exposed to lead at or above the action level for 30 or more days in any 12 consecutive months, and who is not exposed on any day above 10 µg/m^3 as an 8-hour TWA, without regard to respirator use." In addition, a second exception has been added in the proposed text for subsection 5198(j)(1)(A)1. The second exception states: "Medical surveillance is not required for an employee who is not exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use." Also, an exception has been added in the requirements for initial blood lead testing in subsection 5198(j)(2)(A)1. The proposed exception states: "Initial blood lead testing is not required prior to assignment to work covered by subsection (j)(1)(A) or when work is first determined to be covered by subsection (j)(1)(A) for an employee who has had a blood lead test in the preceding two months." As a result of these exceptions, fewer employees would be required to be offered pre-exposure blood lead testing. In addition, similar exceptions have been added in the proposed text for section 1532.1.

Comment 37.9

The commenter states that it is unlikely that employers will be able to determine concentrations or airborne exposures when a task is infrequent, cannot be repeated, is not long enough to collect the necessary sample and should not be disturbed simply for the sake of assessment.

Response to Comment 37.9

The Board does not agree with this comment. The need to characterize infrequent, short-term exposures is part of the existing standard, and is accomplished with sufficient planning and technical knowledge. Short-term tasks (for example, drilling holes through a lead containing painted wall) can be sampled as part of a longer sampling period to meet minimum necessary sample volumes.

The specific example given (drilling holes through lead-containing paint) is likely to result in very low exposure levels relative to the full-shift AL and can best be dealt with by documenting a negative initial determination as covered by existing language in subsections 1532.1(d)(5) and 5198(d)(6) (see also the description in subsection 1532.1(n)(7), and in Appendix B, section II following both standards). The same is true of the other example given—disturbing lead-contaminated soil. There is no data to suggest that the disturbance of lead-contaminated roadside soil results in full-shift exposures that approach the AL. This task is also most appropriately dealt with by a negative initial determination.

The issue of paint or soil lead content variability is best dealt with by collecting a body of data that documents a negative initial determination for the existing range of lead content found in the material. This has been done for the disturbance of roadside lead-contaminated soil. The existing language in the

standards makes it clear that this burden does not fall on each individual employer alone; the initial determination may be provided by insurance companies, trade associations and information from suppliers or exposure data collected from similar operations.

The commenter's assertion that construction tasks not listed are automatically deemed a trigger task is not correct. Trigger tasks are those tasks specifically listed, and any tasks that the employer has reason to believe may result in exposures over the PEL. This does not apply to the two examples given; it also does not apply to a long list of infrequent, short-term tasks.

Comment 37.10

The commenter's primary concern with the General Industry Safety Orders (GISO) proposal is the complexity and potential impact it will have on employers and industries not currently subject to Cal/OSHA's lead standards. The commenter states that this will be a major surprise and burden for industries and employers who were not involved during the drafting of the rule and are not prepared to implement and manage such extensive policies and procedures. The commenter states that both exposure assessment and implementation of interim protections require expert input, which is not reasonable for the expanded scope of employers and is not feasible for all employers.

Response to Comment 37.10

The Board notes that the scope of employers subject to the standard itself has not changed. Subsection (a) is existing, unchanged language.

Regarding covered employers that may be subject to new or additional requirements based on the proposed amendments, the Board notes that it is proposing delays in both the effective date of the standard and the implementation dates for certain requirements, to allow time for employers to prepare for and implement the amended regulations. Please see response to comment 11.4.

Comment 37.11

The commenter states that the proposals do not appropriately consider workers whose contact with lead-containing materials is incidental/infrequent to their primary duties.

Response to Comment 37.11

Please see response to comment 37.1.

Comment 37.12

The commenter states that the proposed standard does not consider *how non-occupational exposures* to lead will impact employer responsibilities and medical surveillance.

Response to Comment 37.12

The Board believes that the source of an employee's lead exposure is irrelevant to the protective measures needed to minimize the hazardous effects of lead exposure at an employee's place of employment. If an employee's BLL is found to be elevated in an initial BLL test, they must be protected accordingly. Further, the Board believes that this issue is best addressed by the standards through

education, medical consultation and the proposed elevated BLL response. The proposed elevated BLL response (see subsections 1532.1(j)(2)(E) and 5198(j)(2)(E)) includes a provision for "training and instruction […] provided as needed for an employee who has a blood lead level at or above 10 µg/dl, to correct any employee work practices identified in the elevated blood lead level response plan established for that employee[.]" However, exceptions have been added in the text of proposed subsections 1532.1(j)(2)(E) and 5198(j)(2)(E) such that a written elevated blood lead level response plan, training and instruction, are not required when a BLL at or above 10 µg/dl is detected only in an employee's initial blood lead testing. The Board notes that pre-placement BLL tests will detect lead exposures that occurred prior to an employee beginning work with lead for a new employer. The previous lead exposures could be due to non-occupational exposures or exposures while working for a previous employer. The Board believes this would protect the employee's new employer. Pre-placement or initial BLL tests also protect employees.

Comment 37.13

The commenter is concerned about the unintended consequences of the extremely low triggers on industries where workers are not typically/consistently exposed to lead. The commenter strongly urges the Board to ensure that a frequency threshold is included prior to adopting amendments to the Construction Safety Orders (CSO) lead standard. The commenter states that exemptions for interim protections and pre-exposure assessments should be based on frequency and duration of exposure and not just in response to a trigger task.

Response to Comment 37.13

Please see responses to comments 37.1 and 37.7.

Further, with respect to the interim protections associated with conducting 'trigger tasks,' the Board notes that in the current federal and California construction lead standards the language is not limited by frequency or duration. The Board declines to add this language, as this would be less protective than the federal standard. The Board also notes that the list of 'trigger tasks' in the proposed standard (which mandate interim protections) is unchanged from the current standard; the proposed language does not expand the listed 'trigger tasks.'

Comment 37.14

The commenter appreciates the strategy, specifically the scope and application, federal OSHA took in the amended Respirable Crystalline Silica standard and suggests Cal/OSHA use it as a model for the amendments to lead, for example:

- Consider short-term exposure and maintenance tasks that involve occasional, brief exposures to silica that are incidental to the employee's primary work.
- Provide protective measures and controls necessary to work safely while alleviating employer compliance with other parts of the program.
- Table 1 in the Silica standard provides controls and requirements that are easy to understand by employers of all sizes and levels of expertise.

Response to Comment 37.14

The Board notes that the federal OSHA Construction standard for Silica, 29 Code of Federal Regulations (CFR) 1926.1153, does not exclude brief exposures to silica that are incidental to the employee's primary work from the scope of the standard. The Board further notes that maintenance tasks, mentioned by the commenter, are considered construction work. Please also see response to comment 37.15.

Comment 37.15

The commenter recommends that in lieu of exposure monitoring and implementation of interim protections, employers are required to have a lead management program to reduce exposure that includes recommended administrative and engineering controls for tasks known to create a hazard. The commenter provides some examples such as wet methods, time limits or prohibitions on some tasks. The commenter states that monitoring/assessment are needed when an activity extends beyond a specific timeframe "(i.e., eight (8) hours a day, one (1) week, eighty (80) hours a year)."

Response to Comment 37.15

The Board notes that early in the pre-rulemaking process, it was decided to essentially adopt the structure of the existing California lead standards and to propose improvements to these standards that would better protect worker health. Other approaches to the regulatory structure could conceivably have been chosen, and the commenter outlines one of them here. But the choices that were then made, guided by advisory committee meetings over a few years, have been fundamental to what has become a multi-year rulemaking effort. The requested change would amount to a wholesale revision of part or all of the existing regulatory framework, which the Board declines to do at this juncture in the rulemaking process.

Comment 37.16

The commenter requests that employers be given two years from adoption to implement to allow them to collect necessary exposure data, build new spaces, etc.

Response to Comment 37.16

Please see response to comment 11.4.

Comment 37.17

The commenter is concerned about the accuracy of analytical methods for air leads at such low levels. The commenter recommends that the standard specify which NIOSH analysis methods are acceptable and capable of detection to 2 $\mu g/m^3$. The commenter requests an implementation date two years from OAL adoption to allow for collection of necessary data.

Response to Comment 37.17

The Board notes that available sampling and analytical methods make it feasible to monitor compliance with the proposed AL of 2 $\mu g/m^3$. The OSHA Salt Lake Technical Center has reviewed the issue, and has determined that the OSHA Method 1006 (ICP-MS) has the required sensitivity and accuracy to meet the

requirements of assessing compliance with the proposed standards. The Board further notes that while Cal/OSHA will not specify acceptable analytical methods in the regulation; it does plan to specify acceptable analytical methods in guidance documents. The Board declines to insert a two-year delayed implementation date to allow for the collection of necessary data, but notes that it has proposed a six-month delay in the effective date of the proposed standards. The Board believes that this gives employers adequate time to allow for the collection of necessary data. The Board notes that only exposure monitoring previously found to be below the limit of quantitation (LOQ), when that limit was above the proposed AL of 2 µg/m^3, will need to be updated. New sampling will be restricted to those areas or activities that previously had not been sampled, where there is reason to believe exposures may exceed the proposed AL.

Comment 37.18

The commenter states that exposure assessments will be a significant challenge for small employers and others without in-house CIHs due to complexities of monitoring exposures at such low levels. The commenter states that outside consultants may be required. The commenter states that the large reduction in the AL will limit the usefulness of historical data. The commenter further states that the cost will be higher than indicated in the SRIA.

Response to Comment 37.18

The Board notes that while the laboratory analytical method may have changed, this does not affect the complexity of the sampling itself, which remains unchanged. It will not require an additional level of expertise to conduct the exposure assessment, merely that the laboratory employ a more sensitive and accurate analytical method. Some negative initial determinations (levels found to be less than the current AL) will have to be reevaluated in light of the proposed lower AL. Estimated costs associated with exposure assessment were included as part of the SRIA.

Comment 37.19

The commenter states that per subsection 5198(d), positive initial determinations must be made in the previous 12 months; however, older data may still be accurate. The commenter recommends surveys older than 12 months should not need to be repeated, unless “there has been a production, process, control or personnel change which may result in new or additional exposure to lead[.]”

Response to Comment 37.19

The Board notes that the relevant language regarding measurements of airborne lead made in the preceding 12 months, located in subsections 5198(d)(4)(C) and (d)(5)(B), is currently in the federal lead standards. The proposed revised California lead standards are constrained by the need to be ‘at least as effective’ as the current federal OSHA lead standards. Therefore, the Board declines to amend these requirements to allow data older than 12 months to be used.

Comment 37.20

The commenter is highly concerned about the high number of employees impacted by pre-exposure BLL testing and the impact and subsequent employer responsibility of a positive blood lead test result

obtained prior to exposure (employer would be responsible for all follow-up requirements even when BLLs impacted by non-work activities). The commenter states that it is not clear how a pre-exposure blood lead test is a *protective* measure when it is done *prior* to occupational exposure, especially when follow up testing may not be required. The commenter states that it is reasonable to assume that any detected levels will be impacted by non-occupational exposure or exposure from another employer. The commenter further states that this is a major burden to the employer and the commenter does not see an occupational value in a pre-exposure test when the source of exposure cannot be determined by the employer. The commenter recommends removal of the pre-exposure blood lead testing element when exposures are less than 10 days per year. In addition, the commenter recommends that the amendments consider work-relatedness.

Response to Comment 37.20

Please see responses to comments 37.8 and 37.12.

Comment 37.21

The commenter states that employers are required to provide powered air purifying respirators (PAPRs) when requested by an employee, including during interim protections for all trigger tasks. The commenter states that PAPRs are expensive; employers should only be required to provide a PAPR if an employee is medically unable to wear a tight-fitting air-purifying respirator, but they can safely use a PAPR. PRR recommends subsections 1532.1(f)(3)(B) and 5198(f)(3)(B) be amended to require employers to provide PAPRs only when an employee is medically unable to wear an alternate respirator.

Response to Comment 37.21

This is existing, unchanged text in the standard and is outside the scope of this rulemaking.

Comment 37.22

The commenter states that the SRIA did not address the requirement to provide respiratory protection as an interim protection as required in the proposal and did not include the cost of a PAPR or address the cost for the employer to provide one when requested.

Response to Comment 37.22

The Board notes that for the SRIA, it is assumed that the employer has performed an employee exposure assessment, so no costs for providing interim protection are included. Further, the Board notes that providing a PAPR upon request is not a new requirement and thus the cost to do so is not included in the SRIA.

Comment 37.23

The commenter is concerned that the new definition “altering and disturbing” unnecessarily increases the number of employers subject to the regulations. The commenter states that employers not typically required to follow the lead standards will need to consider the tasks their employees perform because there is a “potential for low risk” lead exposure.

For example, the commenter states that digging where there is aerially deposited lead could trigger the AL and subsequent requirements. The commenter states that potential exposure is dependent on soil lead levels, which are likely to be unknown. The commenter states that it may not be feasible to determine exposures prior to digging in all situations, therefore interim protections would be required, which is overly burdensome on employers. The commenter provides an example of the potential consequences on utility underground work including maintenance and repair delays, creating unnecessary public concern, potential to create additional hazards to workers from heat illness and injuries. The commenter references the silica standard and recommends that Cal/OSHA develop work methods for low-risk activities (e.g., wetting soil) rather than require the use of interim protections during digging operations on roadways with contaminated soil. Alternatively, the commenter suggests that Cal/OSHA could add exemptions for utility work that impacts soil.

Response to Comment 37.23

The Board disagrees with this comment. The Board believes that airborne exposures during the disturbance of roadside lead-contaminated soil do not approach the AL. Therefore, the employer can employ a negative initial determination to satisfy the requirements of the standard. In addition, the disturbance of soil is not a construction-related 'trigger task' and therefore does not require interim protections.

Further, regarding the commenter's recommended revisions and reference to the silica standard, the Board notes that early in the pre-rulemaking process, it was decided to essentially adopt the structure of the existing California lead standards and to propose improvements to these standards that would better protect worker health. Other approaches to the regulatory structure could conceivably have been chosen, and the commenter outlines one of them here. But the choices that were then made, guided by advisory committee meetings over a few years, have been fundamental to what has become a multi-year rulemaking effort. The requested change would amount to a wholesale revision of part or all of the existing regulatory framework, which the Board declines to do at this juncture in the rulemaking process.

Comment 37.24

The commenter objects to the removal of the words "where feasible" from subsection 1532.1(i)(3). The commenter states that it is not feasible to provide mobile showers for all operations that may "come into contact with lead." The commenter states that it may be acceptable for extended projects but not mobile or emergency operations. The commenter recommends that "where feasible" be added back in.

Response to Comment 37.24

Please see response to comment 19.16.

Comment 37.25

The commenter states that portable showers to wash lead off would need a containment system to capture and dispose of contaminated water. The commenter states that it is not clear if the SRIA included these costs, or the required number needed for field workers.

Response to Comment 37.25

Please see response to comment 19.16.

Comment 37.26

The commenter states that providing portable showers for lead workers in remote field locations is not the same as providing them in the asbestos industry. The commenter states that asbestos workers are highly trained, there are specific exemptions and guidelines, removing asbestos in a building is an extended project, showers are only required during certain asbestos work and the shower requirement considers feasibility.

Response to Comment 37.26

Please see response to comment 19.16.

Comment 37.27

The commenter states that in section 5198, the requirement to train workers with exposure at or above the new AL on any day, is unnecessary and is a major burden to employers. The commenter recommends removal of this requirement.

Response to Comment 37.27

The Board notes that the federal OSHA language in the Lead in Construction standard requires training each employee who is subject to exposure to lead at or above the AL on any day. The Board believes that employees working in General Industry should have the same protection. The training is necessary so that these employees understand the potential health hazards of exposure to lead, so they will follow the employer's procedures and those required by the regulations to minimize their exposure to lead, and so they will participate in the employer's medical surveillance program.

Comment 37.28

The commenter states that the proposed CSO amendments will bring additional complexity with minimal benefit for medical surveillance. The commenter states that each trigger now has its own criteria for monitoring which will need to be individually tracked. The commenter states that some employees may perform tasks identified in the various trigger levels (i.e., level 1, 2, 3 or not listed) periodically over the course of the year. The commenter states that this could require tracking and medical surveillance requirements at different frequencies (i.e., (12) twelve months, (6) six months, (2) two months and quarterly) for multiple tasks for the same employee. The commenter states that the complexity in tracking which frequency will be required will be a substantial challenge to determine and may be beyond the capabilities of smaller employers. The commenter states that clinics may not want to manage these additional requirements and employees may be confused/concerned if they move from one BLL testing frequency to another.

Response to Comment 37.28

The Board notes that the required frequency of medical surveillance is not tied to trigger task levels. After the initial BLL testing and medical exam, additional BLL tests and exams are based on the employee's BLL. Additional BLL tests are also required after a change in task resulting in or likely to result

in higher exposure to lead. The more frequent BLL testing requirements are necessary to adequately protect employees who work with lead.

The Board thanks the commenter for their input and participation in the rulemaking process.

38. Mark Ames, Director, Government Relations, on behalf of American Industrial Hygiene Association, by written comments dated April 19, 2023.

Comment 38.1

The commenter states that medical examinations and procedures must be performed under the supervision of a licensed physician and BLLs must be performed by a Clinical Laboratory Improvement Amendments-approved laboratory. However, the commenter states that equivalent quality assurances for exposure assessment and monitoring are not proposed. The commenter recommends that Cal/OSHA require that air sampling is conducted under the supervision of a CIH and sample analysis is done by an accredited laboratory. The commenter states that competent exposure assessment and monitoring are critical because they are the basis for all other elements of compliance including medical. The commenter states that the intent to emphasize IH competence is currently contained in subsection 5155(e)(3). The commenter proposes specific language to be added.

Response to Comment 38.1

Please see responses to comments 4.1 and 4.3.

Comment 38.2

The commenter recommends that Cal/OSHA require that laboratories used for the analysis of samples collected for exposure assessments be ELLAP accredited for quality assurance.

Response to Comment 38.2

Please see response to comment 4.3.

Comment 38.3

The commenter recommends that the proposed rule consider and address occupational health laboratory analysis sensitivity and lab performance and proficiency for lead analyses.

Response to Comment 38.3

The Board believes the accuracy of blood lead testing is adequately addressed in the proposed requirements in subsection (j)(2)(B) of both standards.

Comment 38.4

The commenter points out that federal workers and private sector employers within the borders of federal properties (e.g., military installations, national parks, etc.) are not covered by the state OSHA plan and would continue to be covered by federal OSHA's less protective lead standards. The commenter believes that all employers in California should be covered by the more conservative proposed lead exposure standards.

Response to Comment 38.4

The Board acknowledges commenter's statements about federal and state jurisdiction; however, this issue is outside the scope of this rulemaking and the Board's jurisdiction.

Comment 38.5

The commenter believes that the best way to determine body lead burdens is by periodically measuring BLLs in workers wherever lead may be present during workplace activities.

Response to Comment 38.5

The Board appreciates the commenter's support for the blood lead testing requirements of the proposed regulations.

Comment 38.5.1

The commenter states that the rule should address ingestion exposure by specifying when showers should be provided and when workers need to wash their hands and face before eating, drinking or smoking. The commenter states that the rule should also contain requirements for leaving contaminated clothing in the workplace for proper cleaning without exposure to persons who launder the contaminated clothing.

Response to Comment 38.5.1

The Board notes that the language in proposed subsection 1532.1(i)(3) requires showers for employees whose airborne exposure to lead is above 50 µg/m^3, without regard to the use of respirators, and as interim protection for employees performing level 3 trigger tasks. The language in proposed subsection 5198(i)(3) requires showers for all employees exposed above the PEL, without regard to the use of respirators.

In addition, the proposed language in subsections 1532.1(i)(1) and 5198(i)(1) requires that employees exposed to lead wash their hands, exposed arms and face prior to entering eating areas, eating, drinking, smoking or applying cosmetics and at the end of their shift. Existing language in subsections 1532.1(g)(2) and 5198(g)(2) requires that all protective clothing is removed at the completion of a work shift, and that the employer inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead. Also, language has been added to the proposed text of subsection 1532.1(i)(2)(C) and new subsection 5198(i)(2)(C) that require the employer to ensure that employees do not leave the workplace with any protective clothing or equipment that is required to be worn during the work shift. The Board believes these provisions are adequately protective and sufficiently address the ingestion route of exposure.

Comment 38.6

The commenter concurs with the proposed AL but laboratory analytical method limitations, proficiency analytical testing and possible performance limitations must be considered and addressed.

Response to Comment 38.6

Please see response to comment 37.17.

Comment 38.7

The commenter concurs with adding and defining the terms "altering or disturbing," "blood lead level" and "high efficiency particulate air (HEPA) filter."

Response to Comment 38.7

The Board thanks the commenter for their support of the proposed amendments.

Comment 38.8

The commenter recommends that PHLW be determined by a comprehensive industrial hygiene evaluation performed by a competent and experienced industrial hygienist based on possible exposure from inhalation and ingestion. The commenter states that evaluation of routes of exposure, PPE with quantitative respirator fit testing should be considered.

Response to Comment 38.8

The Board disagrees with this comment. Requiring a comprehensive IH survey in order to determine interim protections would not be consistent with the intent of establishing the concept of PSLW (formerly PHLW). PSLW is only employed to require interim protections until the employer performs an exposure assessment. PSLW does not supplant the determination of exposure-based requirements; it merely offers interim protections for certain employees prior to required exposure assessment. Its proposed function in section 5198 is analogous to the function played by the concept of 'trigger tasks' in section 1532.1.

With respect to mandating quantitative fit-testing for respiratory protection required as interim protection for employees doing PSLW by subsection 5198(d)(2)(A), the Board declines, at this point, to address the issue of qualitative versus quantitative fit-testing of respirators as part of this substance-specific proposal.

Comment 38.9

The commenter believes the proposed reduction in the PEL must address lab analysis methods.

Response to Comment 38.9

Please see response to comment 37.17.

Comment 38.10

The commenter recommends that sanitation and hygiene measures be included in subsection (d)(2) to reduce ingestion exposure.

Response to Comment 38.10

The Board notes that housekeeping measures are currently required for all occupational exposure (see subsection 5198(h)(1)), and that hygiene measures are now proposed to be required for all occupational exposure (see proposed subsection 5198(i)(1)).

Comment 38.11

The commenter recommends that quantitative fit testing be required whenever potential exposures may continuously exceed the PEL.

Response to Comment 38.11

With respect to mandating quantitative fit testing for respiratory protection required for exposures over the PEL, the Board declines, at this point, to address the issue of qualitative versus quantitative fit testing of respirators as part of this substance-specific proposal. Title 8 CCR section 5144 (Respiratory Protection) allows the use of either qualitative or quantitative fit testing methods.

Comment 38.12

The commenter requests removal of the exclusion of filtering facepieces for exposures up to 10 times the proposed PEL. The commenter states that federal OSHA's final rule on assigned protection factors for filtering facepieces disagrees with the statement in the ISOR that "filtering facepieces are unlikely to provide adequate protection to employees, due to the difficulty in achieving and maintaining a satisfactory seal on the employee's face."

Response to Comment 38.12

In response to this comment, the Board has removed the exclusion of filtering facepieces for protection against lead. The proposed text has been revised to specify that if the employer selects filtering facepiece respirators for protection against lead, they shall be N100, R100 or P100. In this way, filtering facepiece respirators provided for protection against lead would be of the most protective type.

Comment 38.13

The commenter recommends replacing subsections 1532.1(f) and 5198(f) with something similar or identical to language in the respirable crystalline silica standard.

Response to Comment 38.13

The Board notes that the substance of the language in subsection 5204(h) is similar to the language in subsection 5198(f), and thus declines to amend the proposal as the commenter recommends.

Comment 38.14

The commenter disagrees that establishing a separate engineering control action limit (SECAL) for lead acid battery manufacturing is necessary. "But adherence to the other proposed requirement would preclude this requirement."

Response to Comment 38.14

The Board notes that these SECALs were included in the proposal at the request of Battery Council International. The industry group presented the estimated costs of complying with the proposed PEL for certain battery manufacturing operations. And the Board was persuaded by the argument that the cost of complying with the PEL solely through engineering controls was likely not feasible for the industry, and decided that it was appropriate to propose including the SECALs. Proposing these SECALs does not mean that employees in the industry can be exposed to levels of lead above the proposed PEL. It does mean that they may be required to wear more protective levels of respiratory protection. It may also mean the levels of clothing, dermal and surface contamination will be higher in these work areas. This will require the industry to be assiduous in the on-going implementation of its respiratory protection, housekeeping, hygiene and training programs. The extent to which the industry succeeds at maintaining all employees' BLLs below 10 µg/dl will be monitored by the California Occupational Blood Lead Registry.

Comment 38.15

The commenter recommends available sanitation (washing hands and face, etc.) and shower facilities be specifically included for general hygiene requirements in subsection (i)(1)(A) of sections 1532.1 and 5198.

Response to Comment 38.15

The Board believes that current distribution of language between subsection (i)(1)(A) and the other subsections of sections 1532.1 and 5198 laying out the requirements for handwashing and shower facilities is effective and does not need to be modified.

Comment 38.16

The commenter has provided a table of recommended medical surveillance and MRP requirements for workers with "significant" lead exposure, defined as "airborne or *surface lead content* known or *reasonably anticipated to cause" BLLs >5* µg*/dl*. Each section of the table is included as a separate comment below.

Response to Comment 38.16

Please see responses to comments 38.17 through 38.36.

Comment 38.17

The commenter recommends that for all workers with airborne lead exposure above the PEL, *regardless of the period of time in which these exposures occu*r, the following be provided— a pre-placement medical history and physical examination, baseline BLL, complete blood count and serum creatinine level. The commenter states that additional medical exams may be required based on BLL findings, workplace surface lead sampling, or prior medical exams and clinical test results.

Response to Comment 38.17

The Board notes that the proposed regulations require full medical examinations prior to assignment for employees exposed at or above the AL, with some exceptions, and as interim protection for employees who perform trigger tasks (again with some exceptions) or PSLW. The Board further notes that

additional medical exams are required based on BLL findings along with other criteria. This is more protective than triggering pre-placement medical examinations based on exposure above the PEL, as the commenter recommends, and is appropriate to maintaining employees' BLLs below 10 µg/dl. Please see response to comment 37.4. The Board is unsure how to respond to the recommendation that exposure above the PEL "regardless of the period of time in which these exposures occur" be used as a trigger. The Board notes that the PEL is defined as an 8-hour TWA; all exposures compared to the PEL must be expressed as 8-hour TWAs.

With respect to using levels of surface contamination as a trigger for additional medical exams, the Board believes there are problems with using surface contamination levels as a trigger for any requirement. Please see response to comment 4.2. The Board believes that the additional requirements in the proposed regulations for general hygiene and training of all exposed employees in the employer's methods of compliance with housekeeping and general hygiene requirements eliminate the need to base requirements for medical exams on surface lead contamination levels.

Comment 38.18

The commenter recommends that for all lead workers, defined as workers with potential exposures above the PEL based on a *comprehensive IH survey*, BLL testing following the schedule in subsections 1532.1(j)(2)(A)2. and 3. should be provided. Any potential additional monitoring should be provided for pregnant workers or others as determined by a medical doctor.

Response to Comment 38.18

The Board notes that the proposed regulations require on-going BLL testing for employees exposed at or above the AL, with some exceptions, and as interim protection for employees who perform trigger tasks (again with some exceptions) or PSLW. This is more protective than triggering BLL testing based on exposure above the PEL, as the commenter recommends, and is appropriate to maintaining employees' BLLs below 10 µg/dl.

The Board also notes that the regulations require air monitoring when any employee may be exposed at or above the AL but do not require a comprehensive industrial hygiene survey that evaluates both inhalation and ingestion exposures, as the commenter recommends. The Board's proposed revisions to the lead regulations are based on the federal OSHA requirements that do not require comprehensive industrial hygiene surveys. In addition, the Board believes that requiring comprehensive industrial hygiene surveys would add significant costs to compliance with the regulations and would be economically infeasible for some employers.

Comment 38.19

The commenter states that for BLLs 5-9 µg/dl, AIHA recommends an IH evaluation of exposures and protective measures and increased monitoring for women of childbearing age; discuss health risks and reduce lead exposure for women who are or may become pregnant.

Response to Comment 38.19

The Board declines to adopt the approach recommended by the commenter. The standards make it clear that while an employer is required to offer BLL testing under certain circumstances, the employee's participation is voluntary. This means that using BLLs as a trigger for any intervention beyond individual medical and exposure management is not a practicable regulatory strategy. Furthermore, requiring a comprehensive industrial hygiene survey for BLLs above 5 µg/dl would be a significant increase in the regulatory burden on employers above what is being proposed. The Board also believes that the goal of the proposed revisions-- to maintain employee BLLs below 10 µg/dl—is adequately protective of employee health, while not being overly burdensome on employers. The Board also notes that there are provisions in the proposal such that an employee covered under a workplace medical surveillance program, who desires medical advice concerning the effects of their exposure to lead on their ability to procreate a healthy child, must be provided with a medical examination and consultation.

Comment 38.20

The commenter states that for BLLs 10-19 µg/dl, AIHA recommends the BLL testing schedule in subsection 1532.1(j)(2)(A)3. and an *IH written evaluation* of exposures, engineering controls, hygiene measures, PPE and work practices. The commenter also recommends a return to regular work duties when two repeat BLLs are less than 5 µg/dl.

Response to Comment 38.20

Please see the response to comment 38.19. In addition, the Board notes that the proposed language requires a written elevated BLL response plan for all BLLs at or above 10 µg/dl. The plan describes specific means that will be used to reduce and maintain the employee's BLL below 10 µg/dl. The Board believes that requiring a written IH evaluation as stated by the commenter would add significant costs to compliance with the regulations and would be economically infeasible for some employers. Further, requiring a BLL of less than 5 µg/dl before allowing an employee to return to regular work duties would also add significant costs to compliance with the proposal and would be economically infeasible for some employers.

Comment 38.21

The commenter states that for BLLs >20 µg/dl, AIHA recommends an *IH written evaluation* of exposures, engineering controls, hygiene measures, PPE and work practices and repeat BLL testing and MRP per proposed subsections 1532.1(j)(2)(A)4., (k)(1)(A) and (k)(1)(C)1.a. and proposed subsections 5198 (j)(2)(A)5., (k)(1) and (k)(3)(A)1.

Response to Comment 38.21

Please see responses to comments 38.19 and 38.20.

Comment 38.22

The commenter states that for a BLL >30 µg/dl, AIHA recommends an *IH written evaluation* of exposures, engineering controls, hygiene measures, PPE and work practices and repeat BLL testing and MRP per

proposed subsections 1532.1(j)(2)(A)4., (k)(1)(A) and (k)(1)(C)1.a. and proposed subsections 5198 (j)(2)(A)5., (k)(1) and (k)(3)(A)1.

Response to Comment 38.22

Please see responses to comments 38.19 and 38.20.

Comment 38.23

The commenter concurs with the removal of routine zinc protoporphyrin (ZPP) testing.

Response to Comment 38.23

The Board appreciates the commenter's support for this aspect of the proposed regulations.

Comment 38.24

The commenter states that regarding increasing BLL testing frequency for workers with BLLs above 10 µg/dl per subsection (j)(2)(A) of sections 1532.1 and 5198 and requiring a written response plan per subsection (j)(2)(E) of sections 1532.1 and 5198, the commenter recommends the requirements they have laid out in their table.

Response to Comment 38.24

Please see responses to comments 38.19 and 38.20.

Comment 38.25

Regarding reducing the BLL at which a worker must be offered a medical exam/consultation from 40 µg/dl to 20 µg/dl, the commenter recommends the requirements they have laid out in their table – additional medical examinations may be necessary periodically in specific workers based on BLL findings, workplace surface sampling or prior medical examinations and clinical test results.

Response to Comment 38.25

Please see response to comment 38.17.

Comment 38.26

The commenter concurs with the requirement in sections 1532.1 and 5198 that employees receive specific health information from the ordering or examining physician following a BLL test or medical examination.

Response to Comment 38.26

The Board appreciates the commenter's support for this aspect of the proposed regulations.

Comment 38.27

The commenter concurs with expanding the type of work that employees on MRP must be excluded from to include altering or disturbing lead-containing material and torch cutting on scrap metal.

Response to Comment 38.27

The Board appreciates the commenter's support for this aspect of the proposed regulations.

Comment 38.28

The commenter recommends criteria for temporary removal from lead work per their table (see comments 38.21 and 38.22).

Response to Comment 38.28

Please see response to comment 38.20.

Comment 38.29

The commenter recommends that for all workers with airborne lead exposure above the PEL, *regardless of the period of time in which these exposures occur*, the following be provided— a pre-placement medical history and physical examination, baseline BLL, complete blood count and serum creatinine level. The commenter states that additional medical exams may be required based on BLL findings, workplace surface lead sampling or prior medical exams and clinical test results.

Response to Comment 38.29

Please see response to comment 38.17.

Comment 38.30

The commenter recommends that for all lead workers, defined as workers with potential exposures above the PEL based on a *comprehensive IH survey*, BLL testing following the schedule in subsection 1532.1(j)(2)(A)2. and 3. and should be provided. Any potential additional monitoring should be provided for pregnant workers or others as determined by a medical doctor.

Response to Comment 38.30

Please see response to comment 38.18.

Comment 38.31

The commenter states that for BLLs 5-9 µg/dl, AIHA recommends an IH evaluation of exposures and protective measures and increased monitoring for women of childbearing age; discuss health risks and reduce lead exposure for women who are or may become pregnant.

Response to Comment 38.31

Please see response to comment 38.19.

Comment 38.32

The commenter states that for BLLs 10-19 u/dl, AIHA recommends the BLL testing schedule in proposed subsection 1532.1(j)(2)(A)3. and an *IH written evaluation* of exposures, engineering controls, hygiene

measures, PPE and work practices. The commenter also recommends a return to regular work duties when two repeat BLLs are less than 5 µg/dl.

Response to Comment 38.32

Please see response to comment 38.20.

Comment 38.33

The commenter states that for BLLs >20 µg/dl, AIHA recommends an *IH written evaluation* of exposures, engineering controls, hygiene measures, PPE and work practices and repeat BLL testing and MRP per proposed subsections 1532.1(j)(2)(A)4., (k)(1)(A) and (k)(1)(C)1.a. and proposed subsections 5198(j)(2)(A)5., (k)(1) and (k)(3)(A)1.

Response to Comment 38.33

Please see response to comment 38.21.

Comment 38.34

The commenter states that for a BLL >30 µg/dl, AIHA recommends an *IH written evaluation* of exposures, engineering controls, hygiene measures, PPE and work practices and repeat BLL testing and MRP per proposed subsections 1532.1(j)(2)(A)4., (k)(1)(A) and (k)(1)(C)1.a. and proposed subsections 5198(j)(2)(A)5., (k)(1) and (k)(3)(A)1.

Response to Comment 38.34

Please see response to comment 38.22.

Comment 38.35

The commenter states that regarding lowering the BLL at which an employee on MRP may return to work from 40 µg/dl to 15 µg/dl, the commenter recommends actions based on their table (see comments 38.21 and 38.22).

Response to Comment 38.35

Please see response to comment 38.20.

Comment 38.36

The commenter concurs with the expansion of the contents of required training, but training methods should specify the adequacy or inadequacy of online versus in-person training (e.g., respirator fit testing and adequate PPE fitting).

Response to Comment 38.36

The Board is not persuaded that this level of specificity is needed in the proposed regulation, and declines to amend the proposal as suggested by the commenter.

The Board thanks the commenter for their input and participation in the rulemaking process.

39. Nicholas McGarel, CHST, CIT, by written comments dated April 19, 2023.

Comment 39.1

The commenter appreciates the goal of the proposals to reduce illness/morbidity and agrees that lower BLLs correlate with reduced harm but the commenter is concerned that the proposed rule will not have the desired effect on BLLs and will have a significantly greater financial and social cost burden than anticipated.

Response to Comment 39.1

The Board thanks the commenter for their input and support of the proposed amendments. The Board's response to commenter's concerns are addressed separately below.

Comment 39.2

The commenter is concerned that the focus in the proposals on air lead levels will not inherently produce lower BLLs. The commenter has not seen a relationship between air lead concentrations and BLLs during their work in the demolition industry. The commenter states that their success in keeping BLLs low is more directly attributable to training, procedures, work practices and hygiene rather than reducing airborne lead.

Response to Comment 39.2

The Board agrees, in part, with this comment. The attention given to training, procedures, work practices and hygiene are important to protecting employees from elevated BLLs. However, the control of airborne lead levels is essential to the effort to reduce BLLs not only because it reduces the inhalation of lead particulate, but also because the distribution and settling of airborne lead is the primary source of workplace contamination, which then necessitates diligent hygiene and housekeeping. The control of airborne lead levels supports the other exposure controls.

Comment 39.3

The commenter states that the proposed rule does not adequately predict direct or indirect costs for implementation, particularly in the demolition industry. The commenter states that torch cutting is so common in demolition that the proposed reductions in the AL/PEL will lead to more employees being under medical surveillance, which could motivate companies to reduce their workforce or decrease working hours to reduce compliance costs. Also, the commenter states that workers doing torch cutting would need upgraded respiratory protection, which is more expensive and in shorter supply, greatly increasing the costs for contractors and potentially leading to delays due to lack of equipment.

Response to Comment 39.3

The Board notes that the demolition industry is part of the three-digit North American Industry Classification System (NAICS) 238, which is included in the cost estimates for construction. An estimated 67 percent of construction's exposed employees are part of NAICS 238, which suggests that demolition is represented in the cost estimates (SRIA page 11).

The SRIA (page 20) does account for the differences in prices among three types of respiratory protection (half-mask air purifying respirators, full-face air purifying respirators, and supplied-air respirators).

Although certain respiratory protection was in limited supply during the COVID-19 pandemic, those supply concerns do not appear to have persisted into 2023. One impact that a supply constraint imparts on the market is a higher price; to the extent that supply constraints occurring in the respiratory protection market caused price increases, such price increases are captured by our inflation adjustment on costs. This adjustment is shown in the final Form 399 and FSOR.

Comment 39.4

The commenter states that the proposed AL of 2 $\mu g/m^3$ would make it extremely difficult to achieve compliance during torch cutting. The commenter states that this could force contractors to either abandon torch cutting, resulting in less controlled and more dangerous demolition practices, or to abate all lead-based paint prior to cutting, significantly increasing the duration and cost of the job.

Response to Comment 39.4

The Board believes that secondary exposure to fugitive lead-containing torch fumes can be adequately controlled using standard administrative controls. On multi-employer worksites, the 'controlling employer' is responsible for timing and spacing work so that fugitive lead fume exposure to other contractors is controlled. The Board believes that it may, on occasion, be necessary to reduce exposures by stripping lead-containing coatings back from cut or weld lines.

Comment 39.5

The commenter states that the proposed rules will result in a major change to standard demolition best practices and an appreciable increase in costs and time to complete projects. Consequently, the commenter states that the users of demolition services will be less inclined to undertake demolition projects due to increased costs and timelines. The commenter states that the result will be a decrease in projects, loss of jobs, a decrease in land use for new construction, an increase in blighted properties and an increase in converting virgin land into commercial and residential property.

Response to Comment 39.5

The Board is not persuaded by the commenter's assertions. The Board believes that the cost of compliance with the proposed revisions is justified by the increase in health benefits that will result.

Comment 39.6

The commenter states that a more effective approach to reducing BLLs would be greater focus on hygiene, lead awareness training and employer procedures and work practices that reduce exposure.

Response to Comment 39.6

Please see response to comment 39.2.

Comment 39.7

The commenter states that lowering the PEL to 30 µg/m^3 and the AL to 15 µg/m^3, would be more reasonable "with a moderately reduced negative impact on the demolition industry."

Response to Comment 39.7

The Board does not believe that merely reducing the PEL and AL to these levels would be adequate to ensure that BLLs remain below 10 µg/dl. See response to comment 37.4.

Comment 39.8

The commenter suggests that Cal/OSHA consult with demolition stakeholders to ensure the practicality of implementation and to understand the true impacts of the proposed rule. The commenter states that further research and evidence-based approaches may be needed to understand the air lead/BLL relationship and to identify effective strategies for reducing exposure.

Response to Comment 39.8

Please see response to comment 19.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

44. Dan Napier, MS, CIH, by written comments dated April 19, 2023.

Comment 44.1

The commenter has submitted a transcript of a keynote address presented at the Second International Occupational Hygiene Association Conference in Hong Kong on lead exposure and children's intelligence. The presenters concluded, "The arguments which have been put forward in support of the view that low level lead exposure causes mental deficit cannot be sustained and the reverse causation hypothesis is a much more plausible explanation of the facts." The keynote presenters state that if the claim that very low-level lead exposure to the fetus or young children is associated with mental deficit there will be a very difficult industrial hygiene problem to keep women workers' BLLs below 15 µg/dl. The commenter would like the presentation to be added to the information considered.

Response to Comment 44.1

The Board acknowledges and appreciates the commenter's submission of the research paper for consideration. All submissions timely made during the public comment period have been reviewed and considered.

The Board thanks the commenter for their input and participation in the rulemaking process.

45. Matthew DeAngelis, MS, MSN, MBA, ANP-BC, COHN-S, CSP, President, California State Association of Occupational Health Nurses, by written comments dated April 19, 2023.

Comment 45.1

The commenter applauds the effort and intention of the proposed changes, but suggests that Silica standard, subsection 5204(i)(5), be used as a model for treatment providers throughout the standard, using PLHCPs (physician or other licensed health care professional) rather than exclusively physicians.

The commenter states that PLHCPs are effective and essential to providing worker health care and health protective services.

Response to Comment 45.1

The Board agrees with this comment and has modified the proposed amendments accordingly. A definition of 'PLHCP' has been added to subsection (b) Definitions in both sections 1532.1 and 5198. All proposed language now consistently uses this term.

Comment 45.2

The commenter states that there is inconsistency in the proposed language, including but not limited to page 17 subsections 1532.1(j)(1)(C), (D), and (E), where examinations are required to be performed by a physician but the term "licensed health care professional" is used, but is not defined.

Response to Comment 45.2

Please see response to comment 45.1.

Comment 45.3

The commenter states that the processes outlined on pages 20-22, with medical examinations being performed by 1st, 2nd and 3rd "physicians," are unnecessarily complex and unwieldy. The commenter states that PLHCPs are able to perform this kind of care.

Response to Comment 45.3

Please see response to comment 45.1.

Comment 45.4

The commenter states that PLHCPs are trained and capable of the outlined tasks, including but not limited to worker examinations and diagnosis, ordering and interpreting tests and ordering and providing treatment, and should be allowed to practice to the full extent of their licensure and provide care under the standard.

Response to Comment 45.4

Please see response to comment 45.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

46. Nicole Vars McCullough (via Dan Curts), PhD, CIH, Vice President, on behalf of 3M Personal Safety Division, by written comments dated April 20, 2023.

Comment 46.1

The commenter states that Cal/OSHA's proposed amendments to the lead standards are, in general, a positive step in helping to ensure that California workers are protected from workplace lead exposure. The commenter states that the proposed amendments note the importance of the hierarchy of controls to reduce inhalation exposure as well as ingestion exposure due to surface contamination. The

commenter states that engineering controls followed by the use of appropriate NIOSH-approved respiratory protection within complete respiratory protection programs, would be even more important if the proposed lower PELs are enacted.

Response to Comment 46.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 46.2

The commenter recommends abandoning the proposed amendment prohibiting the use of filtering facepiece respirators since:

- It is not supported by evidence or data and would limit access by workers and employers to a key instrument in exposure reduction.
- The statement in the ISOR that filtering facepiece respirators are unlikely to provide adequate protection to employees due to the difficulty in achieving and maintaining a satisfactory face seal is not supported by scientific evidence and contradicts a longstanding, well-researched federal OSHA rule on respirator assigned protection factors.
- Filtering facepiece respirators have been successfully used by millions of workers over a half-century, in diverse work environments, to help reduce workers' exposures to airborne particulate hazards.
- Workers' ability to achieve and maintain a satisfactory seal with any tight-fitting respirator is supported by training and fit testing as part of a Respiratory Protection Program.
- The blanket ban would restrict health and safety professionals from selecting a scientifically effective respirator option that may be deemed optimally protective of workers' health, per site-specific hazard evaluations, because of their disposable design.
- Keeping respirator requirements science-based and consistent for all workers may result in greater compliance, proper use of respirators and help ensure effective respiratory protection for all workers.

Response to Comment 46.2

Please see response to comment 38.12.

The Board thanks the commenter for their input and participation in the rulemaking process.

48. Mark DeLaquil (via Thomas E. Hogan), General Counsel, on behalf of Association of Battery Recyclers, by written comments dated April 20, 2023.

Comment 48.1

The commenter states that the lead acid battery recycling industry has had significant reductions in BLLs under the current regulations. The commenter states that the most effective approaches have been improvements in worker hygiene, work practices and personal protective equipment. The commenter states that different approaches for reducing worker blood-lead levels may be more effective and efficient for different industries and across workplaces within those industries. The commenter states that the best approach for Cal/OSHA to take is to identify feasible goals and provide flexibility for

industry experts to develop and implement the most effective, facility-specific ways to manage blood-lead levels consistent with those goals.

Response to Comment 48.1

Please see response to comment 39.2.

Comment 48.2

The commenter's overarching concern is the lack of a phase-in period for proposed changes.

- The proposed changes would take effect immediately except for a brief phase in period for the step down in MRP level.
- The lack of a phase-in period does not account for the "practical realities" of meeting much more stringent proposed standards including 1) laboratory capacity for an "exponential increase" in BLL testing, 2) availability of qualified medical professionals to manage BLL testing and elevated response plans, 3) local permitting requirements, 4) access to contractors/materials and lead time to make major facility modifications and 5) availability of employee-uniform companies willing to serve the industry. There is nothing in the rulemaking record indicating that Cal/OSHA has consulted with third parties responsible for these aspects of compliance or accommodated real-world impediments to compliance.
- The commenter provided an estimate of costs and time needed to implement engineering controls (Appendix A to their letter). The time needed to implement such controls would likely exceed 30 months and cost millions of dollars demonstrating the need for a phase-in period for Cal/OSHA's proposed changes of at least three years.

Response to Comment 48.2

Please see response to comment 11.4.

Further, regarding laboratory capacity, the Board agrees that the number of occupational BLL tests will likely increase, however, it is not expected to increase "exponentially" as stated by the commenter. Generally, blood testing needs may reasonably be expected to rise by a factor of approximately three in General Industry and by a factor of approximately five in Construction. The Board also notes that under the proposed standards, ZPP testing would no longer be required to be provided in the vast majority of cases. The Board believes that there is adequate capacity in California to analyze the increased amount of occupational BLL tests that is likely to result. Analytical blood testing is an established and pervasive industry in California and the Board is aware of no basis to conclude that it would not be able to absorb any additional testing required by the proposed amendments. In addition, please see response to comment 37.8.

Regarding the availability of qualified medical professionals to manage BLL testing and elevated response plans, the Board does not anticipate the lack of availability of qualified medical professionals to manage testing and plans. The Board notes that there is no requirement in the proposed standards for a medical professional to manage BLL testing or elevated BLL response plans. Further, the Board notes that an exponential increase in required BLL testing is not anticipated, as discussed above.

Regarding the commenter's point that the length of a phase-in period should be based on the anticipated time it will take for permitting requirements or major facility modifications necessary to implement required engineering controls, the Board notes that both standards already contain compliance and feasibility provisions relevant to these concerns. The proposed standards anticipate that implementation of certain controls may not occur immediately and requires employers to establish and implement written compliance programs, including a "detailed schedule for implementation of the program" to reduce exposures to or below the PEL. Further, the proposed standards require the use of engineering and work practice controls to maintain employee exposure to below the PEL, *except to the extent that such controls are not feasible*. During the reasonable time period necessary to install or implement engineering controls, an employer may be able to demonstrate that such controls are not feasible. Where the implementation of engineering and work practice controls is not sufficient to reduce exposures to or below the PEL, the standards provide that respiratory protection can be used to supplement employee protection.

Regarding the availability of uniforms, please see the response to comment 59.18.

Comment 48.3

The commenter states that individual employers may be eligible for a variance, but Cal/OSHA is likely to be inundated with requests (proposed orders likely to apply to 227,000 employees) and unable to process them in time to avoid enforcement actions for circumstances beyond employers' control. The commenter states that Cal/OSHA's failure to incorporate a compliance schedule is likely to result in immediate and widespread non-compliance with the revised orders.

Response to Comment 48.3

Please see response to comment 48.2.

Comment 48.4

The commenter recommends that Cal/OSHA amend the orders to incorporate the compliance schedule recommendations in the 11/14/22 letter, which recommended including language that establishes a phase-in period or including cross references to the Compliance Program provisions in subsection 5198(e)(2).

Response to Comment 48.4

Please see response to comment 57.3.

Comment 48.5

The commenter states that a reduction in the PEL is not warranted for several reasons:

- The current "PEL first" approach is outdated; it emerged during a time when PPE was ineffective, and workers did not understand the need to protect their health. This is no longer true. A more effective approach is a focus on work practices, hygiene, housekeeping and PPE.
- Given the goal is to manage blood-lead levels and not air-lead for its own sake, it would be more efficient and effective to identify the blood-lead level goals and allow for facility-specific ways to

achieve those goals.

Response to Comment 48.5

Please see response to comment 39.2.

Comment 48.5.1 (Comments 48.5.1a, 48.5.1b and 48.5.1c)

- Comment 48.5.1a: The commenter states that the relationship between air lead concentrations and BLLs is highly uncertain and variable and cannot be considered constant over various occupational settings. The commenter states that the essential premise for an occupational exposure limit is that there is a direct correlation between the BLLs of workers and concentrations of lead in workplace air but that this is not so. The commenter references the comments submitted by International Lead Association (ILA) and states that recent data shows there is no consistent relationship between air lead and blood lead. The magnitude of exposure varies markedly across workplaces and is heavily influenced by multiple factors including particle size, solubility, personal versus area lead measurements, temporal relationship of air lead measurements and blood lead measurements, respirator use and other practices of air lead measurements for exposures, whether air measurements represent total lead or respirable lead, employee's smoking and hygiene practices, length of employment and inter-individual variability in lead absorption. Empirical research shows no clear correlation between air lead levels and BLLs in the workplace.

- Comment 48.5.1b The commenter states the Leggett+ model used to characterize the air lead/BLL relationship has been subject to numerous critiques including: 1) model parameters are used in error or not based on the latest science, 2) questionable validity of the Multiple-Path Particle Dosimetry (MPPD) model, which does not include the recommended adjustment factor for evaluating larger particles, 3) questionable validity of the particle deposition modeling because it relies on a particle size distribution that does not fully represent the likely exposure conditions in US industries, and 4) questionable model validation, which relied on a low number of individuals, all from the 1960s and 1970s when workplace and background environmental exposures differed significantly from the present day.

  The commenter states that points one through three relate to the derivation of the inhalation transfer ITC and that an overestimate of this coefficient (perhaps three-fold) has significant implications for BLLs predicted by the model.

  The commenter states that point four raises questions about the model's applicability to current workplace exposures. Studies reflecting decades-old workplace conditions are not representative of current day exposures for many reasons including air lead concentrations were higher, smaller particles may have been more prevalent, measurements were less descriptive and background lead levels in the population were significantly higher. The commenter states that OEHHA relied on a data set from primary smelter workers in the 1970s to adjust model parameters and therefore the Leggett+ model is highly dependent on one data set from the

1970s. The commenter further states the OEHHA model validation relied on two data sets with 40 individual measurements, one assuming work exposures from the late 1940s/early 1950s and one experimental, which is not reflective of normal occupational exposure. Therefore, the conditions underlying the model are not reflective of present-day conditions and the model does not have reliable predictive value for current exposures.

- Comment 48.5.1c: The commenter says that given the deficiencies in the PBPK modeling and contradictory empirical research a scientific basis for reducing the PEL is lacking. The commenter states that some international agencies have determined that uncertainties in the air lead/BLL relationship are too great to develop an occupational exposure level (OEL). The commenter concludes that Cal/OSHA should not reduce the PEL absent a demonstrable relationship between air lead and BLLs in the workplace, which current research does not support.

Response to Comment 48.5.1 (Comments 48.5.1a, 48.5.1b and 48.5.1c)

The Board notes that multiple commenters, including the Association of Battery Recyclers, submitted similar comments and supporting evidence in their critiques of the OEHHA PBPK modeling efforts that support Cal/OSHA's proposal for a revised PEL. Their major critiques include: a consistent relationship between air lead levels and BLLs has not been established by empirical studies and therefore it cannot be used as a basis for determining an occupational exposure limit; exposure to lead other than in workplace air is an important source of lead in blood and therefore the OEHHA model is a flawed tool for correlating air and BLLs; previously identified issues and errors in the OEHHA PBPK model have not been addressed; model calibration and validation is not reliable; and OEHHA model simulations are not representative of current workplace exposure conditions.

The Board strongly disagrees that the PBPK model originally developed by Richard Leggett, and updated and modified by OEHHA for occupational settings, is a flawed tool to correlate constant workplace air lead levels and BLLs at the end of a working lifetime. The Board contends that a mechanistic (i.e., biokinetic/PBPK) model must be used to correlate BLLs and air lead levels because there are no chamber studies or workplace observational studies that include measurements of air lead concentrations and BLLs over the timespan of interest to Cal/OSHA (40 - 45 year working lifetime) and which extend to lower BLLs in the range associated with harmful effects on health. The Board notes that federal OSHA used a biokinetic model when developing the 1978 lead standard. It is a characteristic of physiologically based pharmacokinetic models that they can be used for a wide range of exposure scenarios, including scenarios beyond the range of air lead/BLL data used to develop the model. In addition, use of a biokinetic model allows statistical procedures to be used to evaluate how well the model predictions agree with real-world observations.

The Leggett model is a comprehensive mathematical model of lead metabolism in humans (i.e., the distribution, metabolism, storage and excretion of lead after it is absorbed into the blood). It is based on numerous, diverse data sources including studies of adult volunteers and findings from studies in laboratory animals receiving lead tracers by injection, ingestion, or inhalation, postmortem measurements of persons environmentally exposed to lead, balance studies on adult humans, biopsy and autopsy measurements on occupationally exposed subjects, and experimental, occupational,

environmental and medical data on elements with similar biokinetics to lead. Leggett also provided a lung deposition and uptake model based on available data at the time.

Because the original 1993 Leggett model was a general model not specifically designed for workplace exposure, OEHHA established and tested a method for estimating a typical worker's body burden of lead from non-workplace sources of exposure and added an updated simple exposure uptake model to address workplace exposure. The resulting model was renamed Leggett+ (OEHHA 2013). The exposure component includes factors such as a default breathing rate and an estimate of how much of the lead in the air a worker breathes is transferred to the blood (called the inhalation transfer coefficient, or "ITC") based on updated respiratory tract deposition and clearance models (ICRP 1994, ARA 2015, Smith et al. 2014 as described in Vork et al. 2023). OEHHA also made limited adjustments to the original Leggett model to incorporate updated information on lead deposition and uptake into blood.

OEHHA calibrated and compared the Leggett+ PBPK model against a large set of experimental and worker study data and addressed problems identified after the publication of the 2013 OEHHA report. The OEHHA PBPK modeling scenarios were deliberately designed for Cal/OSHA's purpose of selecting a PEL. The scenarios model workers with similar personal characteristics, workplace exposure over a working lifetime, lead uptake from background sources and starting body burden of lead. Scenarios do not include respirator use, uptake from the extremes of the particle size distribution range examined and uptake from hand-to-mouth transfer from contaminated workplace surfaces. The overall purpose of the modeling simulations is not to predict any single workplace or exposure scenario. Rather, the purpose of PBPK modeling in this context is to capture the air lead/BLL relationship of similarly exposed workers at the end of a working lifetime and then estimate the population distribution of that relationship based on estimates of variability in biological factors such as body weight, breathing rate and metabolic differences, in the general adult population. While uncertainty remains in any PBPK model, the Board is confident that the model developed by OEHHA reasonably represents the air lead/BLL relationship in the timeframe and BLL range of interest.

The Board addresses the specific comments and critiques of the model below.

- Response to Comment 48.5.1a

The Board agrees that the workplace air lead/BLL relationship can be heavily influenced by multiple factors including particle size, respirator use, hygiene practices, job tenure, individual biological attributes and other factors. However, the Board strongly disagrees with the conclusion that study data do not support a clear correlation between air lead levels and BLLs in the workplace. Recent studies of long-term workplace exposure have reported significant relationships between air and BLLs in the published peer-reviewed literature (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). These researchers saw higher BLLs in operations where there were higher air lead levels than in operations with lower air lead levels and similar particle size. In their reevaluation, Vork et al. (2023) further examined these empirical studies that controlled for the influence of exposure factors such as respirator use, particle size and job tenure (including the influence of past high lead in air exposures). Regression models derived from these data reported similar relationships between air and blood lead for chronically exposed workers. Furthermore, comparisons of air/BLL relationships in these

studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace exposure scenarios (Vork et al. 2023). This confirms that the PBPK modeling approach applied in the OEHHA report (OEHHA 2013) is appropriate for estimating the contribution of workplace air lead to BLLs from exposure over a working lifetime. The use of a PBPK model allows for the exclusion of factors that obscure or bias the air lead/BLL relationship such as high historic exposure from previous background and workplace sources, mixed respirator use among workers and hand-to-mouth transfer from contaminated surfaces in the workplace.

The Board acknowledges that the air lead/BLL relationship for a particular occupational setting will not be exactly the same as the relationship for the exposure scenario used to estimate the proposed PEL, but Cal/OSHA has to develop a single PEL appropriate for a wide variety of occupational settings. The Board believes that the OEHHA model produces a reasonable estimate for Cal/OSHA's purposes recognizing that there will be deviations from that estimate in particular workplaces and work settings.
Regarding the commenter's reference to the comments submitted by ILA and its statement that recent data shows there is no consistent relationship between air lead and blood lead, the Board notes that the study referenced by the commenter has not been published and therefore insufficient information is available for the Board to assess the study and its conclusion. Recent studies of long-term workplace exposure have reported significant relationships between air and BLLs (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). The reported relationships in these studies are log-log or log-linear relationships, not linear relationships (Vork et al., 2023). Furthermore, comparisons of air/BLL relationships in these studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace chronic exposure scenarios (Vork et al. 2023).

The Board also notes that the study data provided do not reflect the lifetime chronic exposure scenarios that Cal/OSHA must consider when setting a PEL.

- Response to Comment 48.5.1b

The commenter raises multiple issues related to alleged errors and problems with the derivation of the inhalation transfer coefficient (ITC) (i.e., the estimate of the proportion of inhaled lead transferred to blood) which it alleges invalidate the Leggett+ model.

Regarding the commenter's statements that the model relies on outdated and/or inappropriate lead particle size data that do not fully represent the particle size distribution in US industries, the Board notes that additional publications on the size of particles found in a variety of workplaces have appeared in the peer-reviewed literature since publication of the 2013 OEHHA lead modeling report, such as findings in battery manufacturing and recycling facilities, shooting ranges and primary smelter facilities (Wu et al. 2016, Petito-Boyce et al. 2017, and Lach et al. 2015, as cited in Vork et al. 2023). As a result, OEHHA's reevaluation of particle deposition in and clearance from the respiratory tract expanded the range of particle size distributions to include size distributions ranging from the mass median physical diameter of 0.01 µm to the aerodynamic diameter of 40 µm. The ITCs derived from these particle size distributions range from 9% to 52% (Vork et al. 2023). OEHHA concluded, and the Board agrees, that the default ITC of 30% used in Leggett+ is a reasonable mid-point of this range.

In addition, the Board notes that in a recent large study of battery manufacturing and recycling facilities (Petito-Boyce et al. 2017), particle sizes in the respirable particle range were observed in various operations within facilities. Several other studies have also shown respirable particles in these industries (Vork et al. 2023).

The Board reminds the commenter that the purpose of the OEHHA modeling simulations is not to predict BLLs from workplace air lead in any single workplace or industry. Cal/OSHA must develop a PEL that protects workers across a wide range of industries. It is not feasible or practical for Cal/OSHA to develop multiple PELs specific to varying particle size distributions, breathing rates, solubility differences, nose blowing habits, etc. found in individual workplace settings.

Regarding the commenter's statements pertaining to the MPPD model used, OEHHA's reevaluation of particle deposition and clearance used the most recent MPPD and Smith clearance models (version 3.04 ARA 2015 and Smith et al 2014 as cited in Vork et al 2023) with inhalability adjustments to accommodate particles larger than 8 µm. In addition, regarding use of inadequate particle clearance models, the reevaluation considered an updated model based on data for clearance to the gastrointestinal tract of lead deposited in the head region (Smith et al. 2014 as cited in Vork et al. 2023). The reevaluation and updates based on the particle clearance model presented in Smith et al. 2014 are described in Vork et al. 2023.

In sum, OEHHA's reanalysis after considering all issues listed as errors and problems with the MPPD and particle size assumptions, provided no evidence of a significant impact on the model's original air lead/BLL relationship.

The commenter states that the conditions underlying the model predictions are not reflective of present-day conditions and therefore the model does not have reliable predictive value for current exposures. Specifically, the commenter states that the adjustment of model parameters (model calibration) is heavily dependent on one data set of workers from a smelter in the 1970s, and that OEHHA's model validation relied on only two data sets, a workplace study on a small number of individuals with exposure during the 60s and 70s when occupational and background lead exposures were different and therefore not relevant to modern exposures and an experimental study, which is not reflective of workplace exposure conditions.

The Board notes that Leggett used multiple, diverse data sets when developing and calibrating his model. OEHHA used data from a smelter in the 1970s to address the influence of bone lead kinetics and high body burden on BLL (OEHHA 2013, Vork and Carlisle 2020).

OEHHA addressed the concerns about model confirmation in their reevaluation of the model (Vork et al. 2023) by comparing Leggett+ simulations to four additional data sets, with over 1,000 subjects, from workers exposed to lead in the workplace from the 1970s to 2008. These simulations showed that predictions from the Leggett+ model are consistent with BLLs observed in more recent worker studies of BLLs after several years of chronic exposure, confirming that the Leggett+ model calibration and confirmation are sound.

- Response to Comment 48.5.1c

Regarding the commenter's statement that some international agencies have determined that uncertainties in the air lead/BLL relationship are too great to develop an OEL, the Board disagrees with the conclusion reached. The OEHHA Leggett+ model was developed, calibrated and confirmed based on diverse and rich data sets. The Board agrees with the assessment and rationale given by the European Chemicals Agency (ECHA) Committee for Risk Assessment who concluded that despite critiques of the OEHHA PBPK model, the results of the model are accurate and the OEHHA modelling approach is appropriate (European Chemicals Agency, 2020). The ECHA Committee proposed a health-based occupational exposure limit based on the OEHHA Leggett+ model. In addition, the BLLs predicted by a different PBPK model developed for the U.S. Department of Defense were comparable to those from the Leggett+ model, providing further corroboration of the reasonableness of the Leggett+ predictions (Vork et al. 2023).

Regarding the commenter's statements about the deficiencies in the PBPK modeling, the Board notes that since the publication of their report in 2013, OEHHA has reevaluated the Leggett+ model to address comments provided by industry and independent experts and published their updated results in the peer-reviewed literature (Vork and Carlisle 2020 and Vork et al. 2023). OEHHA considered the findings from this reevaluation and concluded that the BLLs and corresponding air lead levels predicted by Leggett+ in the 2013 report were not affected and remain reasonable estimates. Therefore, predictions upon which CDPH made its health-based recommendation to Cal/OSHA for a PEL have not changed.

Regarding the commenter's statements about contradictory empirical evidence and the lack of a demonstrable relationship between air lead levels and BLLs, as stated previously, while the Board agrees that the workplace air lead/BLL relationship can be heavily influenced by multiple factors including particle size, respirator use, hygiene practices, job tenure, individual biological attributes and other factors, the Board strongly disagrees with the conclusion that current research does not support a clear correlation between air lead levels and BLLs in the workplace. Recent studies of long-term workplace exposure have reported significant relationships between air and BLLs in the published peer-reviewed literature (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). These researchers saw higher BLLs in operations where there were higher air lead levels than in operations with lower air lead levels and similar particle size. In their reevaluation, Vork et al. (2023) further examined these empirical studies that controlled for the influence of exposure factors such as respirator use, particle size and job tenure (including the influence of past high lead in air exposures). Regression models derived from these data reported similar relationships between air and blood lead for chronically exposed workers. Furthermore, comparisons of air/BLL relationships in these studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace exposure scenarios (Vork et al. 2023). This confirms that the PBPK modeling approach applied in the OEHHA report (OEHHA 2013) is appropriate for estimating the contribution of workplace air lead to BLLs from exposure over a working lifetime. The use of a PBPK model allows for the exclusion of factors that obscure or bias the air lead/BLL relationship such as high historic exposure from previous background and workplace sources, mixed respirator use among workers and hand-to-mouth transfer from contaminated surfaces in the workplace.

The Board acknowledges that the air lead/BLL relationship for a particular occupational setting will not be exactly the same as the relationship for the exposure scenario used to estimate the proposed PEL, but Cal/OSHA has to develop a single PEL appropriate for a wide variety of occupational settings. The Board believes that the OEHHA model produces a reasonable estimate for Cal/OSHA's purposes recognizing that there will be deviations from that estimate in particular workplaces and work settings.

Comment 48.6

The commenter states the following:

- Labor Code 144.6 requires that Cal/OSHA demonstrate that a proposed standard is both technically and financially feasible for industry.
- The commenter would like Cal/OSHA to develop SECALs for secondary lead smelting/battery recycling. It is not feasible to attain even the current PEL for all processes in battery recycling when applying engineering controls.
- Process hooding and ventilation have technical limits.
- Installing better ventilation exposure controls inside a building means that more air has to be exhausted from the building, meaning more environmental emissions.
- Blood lead testing can confirm the adequacy of PPE.
- Thus, SECALs should be considered by Cal/OSHA for secondary lead smelters (or at least for certain areas within them) based on demonstrative evidence from industries that currently rely on a combination of industrial hygiene controls, including respiratory protection, and that show results of blood lead testing to be below required and recommended established worker removal levels.

Response to Comment 48.6

In response to this comment and information provided by the commenter, SECALs have been proposed in subsection 5198(e)(1)(C) for specific processes in lead acid battery recycling.

Comment 48.7

The commenter opposes reducing the AL because it is unnecessary. The commenter states that in battery recycling, medical surveillance programs for employees at the current AL include employees in positions with exposure that could realistically lead to BLLs that exceed the removal levels in the proposal. In addition, the commenter states that research does not support a meaningful relationship between air lead and BLL levels and Cal/OSHA should not assume a correlation between reducing the AL and identifying additional employees with elevated BLLs.

Response to Comment 48.7

The Board disagrees with the comment's assertion. The proposed AL of 2 $\mu g/m^3$ is necessary, together with the proposed PEL of 10 $\mu g/m^3$, in order to ensure BLLs remain below 10 µg/dl. See response to comment 37.4. Regarding the relationship between air lead and blood lead levels, see response to comment 48.5.1a.

Comment 48.8

The commenter states that at the lower AL the likelihood of triggering the AL based on contamination of samples from background sources increases.

Response to Comment 48.8

The Board disagrees with the comment's assertion. The South Coast Air Quality Management District's 2021 'Multiple Air Toxics Exposure Study in the South Coast AQMD (MATES V)' Final Report indicates that the ambient average air lead level in the Los Angeles area was found to be less than 2 nanograms per cubic meter (ng/m^3), with none of the site-specific 95 percentile confidence intervals exceeding 10 ng/m^3.[5] Expected levels of environmental airborne lead contamination are three orders of magnitude below the proposed AL.

Comment 48.9

The commenter states that if Cal/OSHA does reduce the AL, it should not automatically do so for all purposes; in particular, a lowered AL should not trigger engineering control requirements not required under the current AL.

Response to Comment 48.9

The Board disagrees with the premise of this comment. Exceedance of the proposed AL does not trigger engineering controls. Exceedance of the PEL triggers the application of feasible engineering and work practice controls to be supplemented, when necessary, by respiratory protection.

Comment 48.10

The commenter does not support using PHLW or any criteria other than airborne lead exposure to require medical surveillance because doing so would be burdensome and problematic. The commenter states that non-airborne exposure criteria for medical surveillance are duplicative. The commenter states that non-airborne exposure criteria should apply, if at all, exclusively for workplaces where airborne lead is not already monitored for the current AL.

Response to Comment 48.10

The Board notes that the proposed language in subsection 5198(d)(2) makes it clear that the definition of 'Presumed Hazardous Lead Work' (now 'Presumed Significant Lead Work') is only employed to require interim protections until the employer performs an exposure assessment. PSLW does not supplant the determination of exposure-based requirements; it merely offers interim protections for certain employees prior to required exposure assessment. Its proposed function in section 5198 is analogous to the function played by the concept of 'trigger tasks' in section 1532.1.

Comment 48.11

[5] SCAQMD "Multiple Air Toxics Exposure Study V, MATES V, Final Report," August 2021.

The commenter states that if Cal/OSHA does adopt non-airborne exposure criteria for medical surveillance, it should not adopt the PHLW terminology because there is nothing in the rulemaking record establishing that the work tasks described are hazardous.

Response to Comment 48.11

The Board, in response to this comment, has replaced the term "Presumed Hazardous Lead Work" with the more neutral term "Presumed Significant Lead Work."

Comment 48.12

The commenter states that because health effects are primarily the result of cumulative exposures, the commenter supports maintaining the current MRP trigger based on an average of multiple results over time (at least six months). The commenter does not support removal based on the last two tests because a standard based on a fixed number of tests could discourage voluntary testing that is more frequent than is currently required.

Response to Comment 48.12

The Board is not persuaded by the commenter's argument. The criterion for removal based on the average BLL being at or above 20 µg/dl over six months, while useful, is susceptible to over-sampling intended to drive down the average BLL value. The criterion for removal based on the last two BLLs being at or above 20 µg/dl is not similarly susceptible. The BLL samples must be taken at most one month apart (see subsections 1532.1(j)(2)(A)4. and 5198(j)(2)(A)5.); if both results are at or above 20 µg/dl the employee must be removed. While an employer in possession of a single result at or above 20 µg/dl may be motivated to delay the second BLL test for the full month, this delay will allow changes the employer makes to reduce employee exposure to take full effect and show results in a lowered subsequent BLL.

Comment 48.13

The commenter states that Cal/OSHA should justify the proposed MRP levels based on studies of occupationally exposed populations rather than general population studies since effects on endpoints such as cardiovascular, renal and the nervous system occur at much higher BLLs in workers. The commenter states that uncertainty in epidemiological studies of workers and the general population affects the ability to associate exposure levels with adverse health effects. The commenter further states that extrapolating dose-response analyses to the low dose region of exposure and BLLs with few observed results is particularly vulnerable to the effects of uncontrolled confounding.

Response to Comment 48.13

The Board is not persuaded by the commenter's argument. The proposed MRP levels were appropriately based on CDPH's review of the findings of authoritative bodies based on toxicology and epidemiology literature, both occupational and non-occupational.

Comment 48.14

The commenter states that in situations where an employee is subject to MRP based on the average of BLLs in the last six months, the commenter opposes eliminating the language that an employee need not be removed if the result of the last BLL test is below a certain level.

Response to Comment 48.14

The Board agrees in part with the commenter's comment. As a result, the language of the proposal has been amended in subsections 1532.1(k)(1)(A)3. and 5198(k)(1)(C), such that an employee need not be removed if their last blood lead test indicates a BLL below 15 µg/dl.

Comment 48.15

The commenter states that any test result exceeding a removal level should be subject to a prompt follow-up test confirming the result. The commenter states that if the follow-up test does not confirm the initial result, MRP should not be required and BLL testing would continue on the regular schedule.

Response to Comment 48.15

The Board is not persuaded by the commenter's argument. The Board believes it is more protective of an employee's health to not be required to wait for confirmatory results from a mandated follow-up blood lead test before removing an employee from exposure to lead. Since the Lead in General Industry regulation was promulgated in 1978 and the Lead in Construction regulation was promulgated in 1993, there has been a marked increase in the reliability of blood testing and analysis. Thus, the Board declines to amend subsection 5198(k)(1)(A) to require a follow-up test confirming the result of a BLL test which exceeds the removal level prior to removal, as suggested by the commenter.

Comment 48.16

The commenter requests an exception to MRP when a physician performs a medical examination and concludes that the exposure source is non-occupational. The commenter states that in these situations, removal from the workplace should not be required, as it does not address the exposure causing the elevated BLL.

Response to Comment 48.16

The Board believes there are several reasons why the suggested amendment is not persuasive. The Board believes that the source of an employee's lead exposure is irrelevant to the steps that must be taken to protect their health. If an employee's BLL is elevated, they must be removed from further exposure to lead above the AL, and steps must be taken as otherwise stated required in subsection 5198(k)(1). In addition, the proportion of employees covered by the standards (i.e., with occupational exposure) in which non-occupational exposure is a determining contribution to body burden is likely small. Furthermore, it would be very difficult for a physician to quantify the non-occupational exposure. And it would be impossible for the physician (now PLHCP) to fairly apportion the relative historical contribution of occupational and non-occupational sources to the employee's accumulated body burden of lead. It would also unfairly put the PLHCP in a position in which they could well feel pressured to make a determination for which there is not adequate, objective support. Therefore, the Board declines to add an exception as requested by the commenter.

Comment 48.17

The commenter states that if Cal/OSHA does make changes to the standards for removal, it should have a phase-in period, at least for battery recycling, with the removal trigger being decreased incrementally each year. The commenter states that if the removal levels are decreased by as much as Cal/OSHA has proposed, it should consider a phase-in period of five years.

Response to Comment 48.17

The Board reviewed individual employees' BLL data (obtained from CDPH) for a recent 12-month period (May 1, 2022 – April 30, 2023) for employees who work in the secondary smelting sector, which consists primarily of those who work in battery recycling. Of 1,670 BLLs in that data set, only one BLL was at or above 20 µg/dl. Therefore, the Board declines to include a phase-in period of the medical removal levels for the battery recycling industry.

The Board notes, however, that it is proposing a one-year delay in the implementation dates for requirements in both the construction and general industry regulations to remove employees from lead work when their last two blood lead tests are at or above 20 µg/dl, or the average of the results of all blood lead tests for an employee in the last six months is at or above 20 µg/dl. In addition, the Board is proposing a six-month delay of the effective date for the entirety of the revised regulations.

Comment 48.18

The commenter encourages Cal/OSHA to consider replacing the current standard for return to work (two consecutive BLL tests) with a single result rather than delaying return until after the second test. The commenter states that assuming that the elevated BLL resulted from occupational exposure, a second test during the removal period is unlikely to show a rebound.

Response to Comment 48.18

The Board declines to amend its proposal. A second blood lead test, taken at least 30 days after the initial one indicates that the employee's BLL has declined to below 15 µg/dl, is necessary to ensure that a decline in an employee's BLL is persistent over a 30 day period rather than being a short-lived condition.

Comment 48.19

If Cal/OSHA reduces removal levels as currently proposed, the commenter recommends that the level for return be a single result below 15 µg/dl.

Response to Comment 48.19

Please see response to comment 48.18.

Comment 48.20

The commenter states that any reduction in the current return-to-work standard should be accompanied by a change to the employer's MRP obligations based on source of exposure. The commenter states that at lower removal and return levels it will be more likely that employees could be in the removal period due to non-occupational exposure. The commenter states that Cal/OSHA should provide an exception to

MRP benefits where the employee is out of work because of non-occupational exposure. The commenter states that the exception would be based on a physician's determination that the employee's BLLs persist above the return threshold for six or more months due to non-occupational exposure.

Response to Comment 48.20

The Board believes there are several reasons why the proposed change is not persuasive. The proportion of employees covered by the standards (i.e., with occupational exposure) in which non-occupational exposure is a determining contribution to body burden is likely small. It would be very difficult for a physician to quantify the non-occupational exposure. And it would be impossible for the physician (now PLHCP) to fairly apportion the relative historical contribution of occupational and non-occupation sources to the employee's accumulated body burden of lead. It would also unfairly put the PLHCP in a position in which they could well feel pressured to make a determination for which there is not adequate, objective support.

The Board believes that this issue is best addressed by the standards through education, medical consultation and the proposed elevated BLL response. The proposed elevated BLL response (see subsections 1532.1(j)(2)(E) and 5198(j)(2)(E)) includes a provision for "training and instruction … provided as needed for an employee who has a blood lead level at or above 10 µg/dl, to correct any employee work practices identified in the elevated blood lead level response plan established for that employee...."

Comment 48.21

The commenter opposes increasing BLL testing frequency to every two months for the first six months or during the six months following a change in work task/process resulting in or likely resulting in a "higher" exposure. The commenter states that the proposal is ambiguous as to what constitutes "higher" exposure measured over what period. The commenter states that any requirement for increased testing should be supported by workplace studies demonstrating a connection between that degree of increase in exposure and higher BLLs.

Response to Comment 48.21

The Board believes these proposed changes are necessary, as it is important to more frequently monitor an employee's BLL when their exposure to lead has increased. Increased exposure may lead to a sudden rise in an employee's BLL, which must be detected early.

The Board is not persuaded that the proposed language is ambiguous as to what constitutes "higher exposure to lead." The Board notes that, pursuant to other requirements in the standard, employers will have conducted exposure assessments that will indicate an employee's exposure level to lead while performing a particular task. Given that the employer will have numerical values associated with exposure levels for different tasks, the plain meaning of the term "higher" is sufficient. The need for increased BLL testing after a change in task resulting in higher exposure to lead is supported by the established relationship between air lead levels and BLLs. Please see response to comment 48.5.1a regarding the air lead/BLL relationship.

Comment 48.22

The commenter also opposes increasing BLL testing frequency to every two months for employees with BLLs at/above 10 µg/dl but below 20 µg/dl until at least two consecutive tests at least 30 days apart are below 10. The commenter supports maintaining the current testing schedule because it is ingrained in medical surveillance programs, is accepted by employees and has been successful in identifying employees who require greater attention for managing their BLLs. The commenter states that increasing the testing frequency needlessly consumes resources better spent elsewhere.

Response to Comment 48.22

The Board believes that the proposed BLL testing frequency requirements support the goal of maintaining employee BLLs below 10 µg/dl and therefore declines to retain the existing BLL testing frequencies. A BLL that has risen above 10 µg/dl warrants more frequent testing as any further rise in BLL is increasingly hazardous and must be better tracked. In addition, the more frequent testing provides on-going feedback to both the employer and employee on the success of efforts to bring the elevated BLL back down to below 10 µg/dl.

Comment 48.23

The commenter states that Cal/OSHA should be mindful of laboratories limited capacity to analyze a greater number of tests if changes are made that increase the number of employees tested or the frequency of testing.

Response to Comment 48.23

The Board believes that there is adequate capacity in California to analyze the proposed increase in occupational BLL tests. Analytical blood testing is an established and pervasive industry in California and the Board is aware of no basis to conclude that it would not be able to absorb any additional testing required by the proposed amendments.

Comment 48.24

The commenter recommends revising the BLL employee notification requirement so that employers may notify employees of their BLLs within the later of five working days of when the employer receives the results or five working days of the first day after the employee is physically present at work. The commenter states that timing is not always practicable because an employee may not be available within that timeframe (e.g., if on vacation).

Response to Comment 48.24

The requirement for employers to provide employees with notification of their BLL within five working days after the receipt of blood lead test results is existing, unchanged text in the standard and is outside the scope of this rulemaking.

Comment 48.25

The commenter supports training on the importance of hygiene practices. The commenter states that to the extent that Cal/OSHA requires that employers provide medical advice to employees about specific health effects associated with specific BLLs, Cal/OSHA should articulate its specific approved message.

Response to Comment 48.25

The Board notes that the proposed revisions to the standards do not require employers to provide medical advice to employees about specific health risks associated with specific BLLs. The Board suggests that for information about adverse health effects associated with lead exposure, section 5198, Appendix A to the proposed revisions of the standards (Substance Data Sheet for Occupational Exposure to Lead) is a good source of information. In particular, Section II, Health Hazard Data, provides this information.

Comment 48.26

The commenter supports training/instructing employees about good hygiene but opposes the proposal to tie training and instruction to a mandated written response plan triggered by a BLL at or above 10 µg/dl.

Response to Comment 48.26

The Board believes this proposed requirement supports the goal of maintaining employee BLLs below 10 µg/dl. When an employee's BLL is at or above 10 µg/dl, the Board believes that it is important for the employee to receive training, as needed, specifically tailored to the individual's work practices to ensure the employee knows what practices to follow to reduce their BLL to below 10 µg/dl. Tying this training to the written response plan will help ensure that the training will be narrowly tailored to the specific means that will be used to reduce and maintain that employee's BLL. The Board notes that an exception has been added to the requirements in subsections 5198 and 1532.1(j)(2)(E), such that a written elevated BLL response plan, training and instruction are not required when a BLL at or above 10 µg/dl is detected only in an employee's initial blood lead testing. The Board also notes that the proposed standards also include training requirements on housekeeping and hygiene for all employees occupationally exposed to lead.

Comment 48.27

The commenter opposes the proposed requirement that employers provide medical examinations/consultations following a single result of 20 µg/dl. The commenter supports medical examinations for employees whose BLL triggered MRP.

Response to Comment 48.27

The Board notes that the current standard requires medical examinations at BLLs below the medical removal level. The Board believes that the proposed decrease in the BLL at which a medical examination is required is consistent with current knowledge on the risk of health damage at lower BLLs.

Comment 48.28

The commenter recommends that during medical examinations physicians address recreational and non-occupational lead exposures. The commenter states that non-workplace exposures may account for BLLs that exceed standards for removal and return.

Response to Comment 48.28

The Board notes that the current standard as well as the proposed revisions require the medical examination to address both occupational and non-occupational lead exposure. The Board therefore declines to amend the standards in response to the commenter's suggestion.

Comment 48.29

The commenter supports the principle that physicians should provide relevant medically accurate information to their patients, which Cal/OSHA proposes in subsections 5198(j)(2)(D) and (j)(5), but the commenter's members do not have the authority to dictate what medical advice physicians give their patients. The commenter states that at most, employers can make a recommendation and point to what Cal/OSHA has determined is medically appropriate advice.

Response to Comment 48.29

The Board notes that the proposal does not mandate that the employer dictate what medical advice physicians give to their patients. The proposal requires employers to ensure that certain items are covered within the scope of the medical examination.

Comment 48.30

The commenter recommends that Cal/OSHA reinstate language from the 2016 draft allowing properly designed hydration stations in high-heat work environments. The commenter states that this exception is critical for workers in unavoidably high heat environments, such as confined or unconditioned spaces or near high temperature equipment or processes. The commenter states that quick access to water is the single most important factor preventing heat illness. The commenter states that removal of this language conflicts with Cal/OSHA's outdoor heat standard and the newly proposed indoor heat standard. The commenter states that hydration stations can be designed to prevent lead exposure (e.g., sheltered or specially ventilated areas, hands-free fountains, single-use cups). In addition, the commenter states that employees should be trained in the proper use of these stations.

Response to Comment 48.30

The Board agrees with the commenter's suggestions. As a result, the proposed text in subsection 5198(i)(1)(A) has been amended to include an exception which allows for the provision of potable water in areas where employees are exposed to lead at or below 50 $\mu g/m^3$ without regard to the use of respirators. In order to meet the requirements of the exception, the employer must implement, provide training on and ensure compliance with written safe hydration procedures. In addition, the employer must be able to demonstrate that employees following these procedures are not exposed to lead above the PEL in accordance with subsection 5198(c)(2), and that water is consumed in a manner that prevents the ingestion of lead.

The Board thanks the commenter for their input and participation in the rulemaking process.

49. Marc D. Blakeman (via John Malone), President, on behalf of AT&T California, by written comments dated April 20, 2023.

Comment 49.1

The commenter states that the revised standard, as proposed, imposes unnecessary burdens without commensurate protective benefits to workers whose potential exposures are limited to performing tasks that involve infrequent, intermittent and limited-duration exposures to lead. The commenter states that amending the proposal to provide alternative compliance standards to employers of these workers is justified, appropriate and desirable.

Response to Comment 49.1

Please see response to comment 37.1.

Comment 49.2

The commenter does not challenge the epidemiological, medical and toxicity data that led to CDPH's conclusion that BLLS should not exceed 5-10 µg/dl over their working lifetime and recognizes that the proposed revisions are intended to maintain employee BLLs below 10 µg/dl. However, the commenter states that the proposed revisions are overboard in relation to the research underlying the changes and are not appropriate to the very low-level, infrequent exposures in the telecommunications industry.

Response to Comment 49.2

Regarding the proposed revisions and the research underlying the changes, please see responses to comments 19.4 and 37.4.

With regard to the appropriateness to low-level, infrequent exposures in the telecommunications industry, please see response to comment 37.1.

Comment 49.3

The commenter states that the revised standard is based on daily exposure and does not align with telecommunications work. The commenter recommends that the standard be amended to add an exception for telecommunications work performed under certain conditions and provides recommended exception language for (a) Scope. The commenter's supporting points:

- Exposures in telecommunications average fewer than eight hours per year; maximum number of hours in a year was 71.5; the AL and PEL are based on 40 years/250 days/year.
- The commenter's air monitoring data (2019-2022) shows low levels upper confidence limit (UCL) 95% 3.5 µg/m^3 8-hour TWA; maximum 20.5 µg/m^3. The commenter prohibits use of a torch and solder to close repaired cable to minimize exposure.
- The commenter is confident that technicians will not experience BLLs of concern given limited potential exposure (frequency/duration). The commenter used the OEHHA model to estimate

employee BLLs based on exposure and concluded that the types of exposures experienced by telecommunications workers do not result in BLLs above 10 µg/dl, even in a worst-case scenario.

- Telecommunications work/worksites are distinct. Proposed revisions are intended for fixed site work; by contrast, the commenter's work is in the field, technicians are dispatched, often with little notice to work in manholes, on poles, and alongside roadways. The commenter's work does not lend itself to the types of controls required by the proposed regulation.
- The exception for telecommunications is protective of employees without subjecting the industry to burdensome, overboard regulation.

Response to Comment 49.3

Please see response to comment 37.1.

Comment 49.4

Notwithstanding the commenter's comments about an exception for telecommunications work, the commenter states that the medical surveillance exception in subsection 1532.1(j)(1)(B)1. should be based on hours not days, i.e., rather than "10 or more days in any 12 consecutive months" the exception should state "80 or more hours …." The commenter states that the proposed language does not accommodate duration of exposure (an exposure of 30 minutes or eight hours each represents a single day for purposes of the exemption). The commenter states that the proposed revision ensures that cumulative exposure does not exceed the total time (expressed in hours) which might result in elevated BLLs.

Response to Comment 49.4

The Board notes that the AL refers to an 8-hour TWA exposure. Thus, any exception to the requirements to provide medical surveillance to employees must be based on days of exposure, rather than hours of exposure.

Comment 49.5

The commenter states that the requirement to provide initial BLL testing prior to assignment to work potentially at or above the AL, without regard to the number of days the employee may perform that work, does not align with the exception to permit employers to forgo medical surveillance and BLL testing when employers are exposed to lead less than 10 days in a 12-month period. The commenter would be required to perform BLL testing for ~3,824 technicians for whom no further testing would be required since the commenter plans on limiting exposure to less than 10 days ("i.e., 80 hours"). This "represents an extreme burden with no potential benefit to employee health and safety." The commenter proposes an exception to subsection 1532.1(j)(1)(A) such that initial BLL testing is not required when there are administrative controls limiting the employee's work to less than 80 hours/12 months or exposures do not exceed 100 µg/m^3 TWA on any day.

Response to Comment 49.5

The Board notes that the AL refers to an 8-hour TWA exposure. Thus, any exception to the requirements to provide medical surveillance to employees must be based on days of exposure, rather than hours of exposure. In addition, the Board declines to adopt the commenter's proposed modification. However, the Board has proposed two amendments to the exception in subsection 1532.1(j)(1)(A)1. for initial BLL testing in its proposal, such that "initial blood lead testing is not required for an employee who is not, and is not reasonably expected to be, exposed to lead at or above the action level for 30 or more days in any 12 consecutive months, and who is not exposed on any day above 10 µg/m^3 as an 8-hour TWA, without regard to respirator use," and "initial blood lead testing is not required for an employee who is not, and is not reasonably expected to be, exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use." To determine the parameters for the amended exception, CalEPA staff were contacted and asked to perform modeling for BLLs that would result from exposures to various air concentrations of lead. Based on the modeling, the BLL of an employee exposed to 10 µg/m^3 for 29 days in 12 consecutive months would remain below 10 µg/dl, as would the BLL of an employee exposed to 20 µg/m^3 for 14 days in 12 consecutive months. Keeping employee BLLs below 10 µg/dl is consistent with the goal of the regulation.

Comment 49.6

The commenter states that the proposed standard no longer considers the infeasibility and impracticality of requiring showers in certain situations, especially where disturbance of small quantities of lead is incidental to operations and maintenance tasks. The commenter suggests that the language on feasibility in subsection 1532.1(i)(3)(A) should be retained. The commenter also states that alternative language that requires showers only where significant amounts of lead/lead-containing material are disturbed is also reasonable. Other Cal/OSHA standards (e.g., Asbestos section 1529) provide for feasibility. The commenter's technicians perform work in the field, often under emergency conditions, and providing showers in not feasible/practical. The commenter states that given the short exposure durations and limited amount of lead-sheathed cable contacted, providing showers does not provide a health and safety benefit. The commenter states that this negatively impacts the commenter's ability to provide/maintain essential services because the commenter may be in a position where it would either violate the standards because it could not provide showers/changing rooms or be unable to efficiently complete emergency repairs.

Response to Comment 49.6

Please see response to comment 19.16. In addition, the Board notes that change areas are only required for employees whose airborne exposure to lead, without regard to the use of respirators, is above the PEL. The Board believes that when employees are exposed above the PEL, change areas are necessary to prevent additional exposure to lead and protect the health of those employees. Therefore, the Board declines to amend the requirements of subsection 1532.1(i)(2).

Comment 49.7

The commenter states that establishing change areas, showers, eating facilities and regulated areas creates significant burdens for telecommunication providers (equipment, permits to locate equipment in

right-of-way where traffic may be impeded). The commenter states that given the infrequent, intermittent, low level and limited duration of exposures, requiring these facilities would delay necessary repair work and would provide little health benefit to employees. The commenter provides language for exempting telecommunications work in the field from subsections 1532.1(i)(2), (3), (4), (5) and (6). The commenter provides alternate language that provides these facilities "where feasible" or that is focused more generally on mobile workforces and is also reasonable.

Response to Comment 49.7

The Board notes that shower facilities are required in the current standard for employees whose airborne exposure to lead, without regard to the use of respirators, is above the PEL. However, the Board agrees in part with the commenter's suggestion. As a result, the proposed text in subsection 1532.1(i)(3)(A) has been amended. In that subsection, shower facilities would be required for use by employees whose airborne exposure to lead is above 50 $\mu g/m^3$ (the same level as in the current standard), without regard to the use of respirators, and as interim protection for employees performing level 3 trigger tasks. In addition, an exception was added as follows: "Shower facilities are not required when the employer can demonstrate that shower facilities are not feasible." The Board also notes that change areas, eating facilities and regulated areas are only required for employees whose airborne exposure to lead, without regard to the use of respirators, is above the PEL. Further, proposed subsection 1532.1(i)(6) [Regulated areas] includes a provision for feasibility. The Board believes that when employees are exposed above the PEL, change areas, eating facilities and regulated areas are necessary to prevent additional exposure to lead and protect the health of those employees. Therefore, the Board declines to amend the requirements of subsections 1532.1(i)(2), (i)(4) and (i)(6).

Comment 49.8

The commenter is concerned that appropriate consideration has not been given to the analytic methods necessary to evaluate exposures at the proposed AL. The typical method, flame atomic absorption spectrophotometry, has a detection limit of 4 $\mu g/m^3$ and will not be a viable test method. Other methods, such as inductively coupled plasma, may be difficult to perform under certain circumstances. The commenter states that this will create additional costs to employers ("for which the Board should account"). The commenter states that Cal/OSHA may have difficulty enforcing the standard if sufficiently accurate test methods are not readily available. The commenter further states that employers should be made aware of the limited test methods available for exposure assessment and that Cal/OSHA should consider specifying acceptable test methods in the regulation.

Response to Comment 49.8

See response to comment 37.17. In addition, the Board did account for the additional cost of air sample analysis in the SRIA. While Cal/OSHA will not specify acceptable analytical methods in the regulation, it does plan to specify acceptable analytical methods in guidance documents.

The Board thanks the commenter for their input and participation in the rulemaking process.

50. AnaStacia Nicol Wright, Staff Attorney, on behalf of Worksafe, California Labor Federation, California Rural Legal Assistance Foundation, Breast Cancer Prevention Partners, Center on

Environmental Health, Santa Clara County Wage Theft Coalition, SEIU California, Center for Social Epidemiology, UFCW Western States Council, Northern Ca. District Council, International Longshore and Warehouse Union, SEIU Local 721, Employee Rights Center, Neyhart, Anderson, Flynn & Grosboll, Glenn Shor, Former Manager, Census of Fatal Occupational Injuries, Cal/OSHA, Ellen Widess, Former Chief of Cal/OSHA, by written comments dated April 19, 2023.

Comment 50.1

The commenter expresses strong support for the proposed changes to the standards, noting that the amendments will not only safeguard the health of workers and provide guidance to employers, but will also reduce "take-home" lead exposure for non-employees and California society at large.

Response to Comment 50.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

51. Dan Napier, MS, CIH, CAC, by written comments dated April 20, 2023.

Comment 51.1

In rebuttal to the proposed trigger task assignments, the commenter has submitted air-monitoring data from sampling conducted between the years 2007 and 2022 during automated stripe removal while operating the MRL (Mark Rite Lines, MRL Equipment Company, Inc.) lead-based paint removal truck and high-pressure water jetting equipment. All data were collected during operations using containerized equipment. The commenter states that, "In all cases the levels were below the detection limit for the NIOSH Method is NIOSH Method 7082 Issue 2." The commenter further states that, "This study demonstrates that the 2 µg action level can be approached and was met in one instance in the last sixteen years. The employees have never shown more than a 3 µg (Detection Level) blood lead levels."

Response to Comment 51.1

The Board notes that, while several abrasive blasting tasks are included as 'trigger tasks' in the proposal, 'high pressure water jetting' is not included in the existing or the proposed construction lead standard as a 'trigger task.' In any event, the exposure data presented by the commenter determines the level of protection mandated by the proposal; a 'trigger task' mandates interim protections only in the absence of exposure data.

The Board thanks the commenter for their input and participation in the rulemaking process.

52. Brian Mello (via Tresten Keys), Associate Vice President of Engagement & Regulatory Affairs on behalf of Associated General Contractors of California, by written comments dated April 20, 2023.

Comment 52.1

The commenter states that the proposed reductions to the AL and PEL to such remarkably low levels poses serious questions about feasibility and practicality, imposes significant burdens on the construction industry and brings in tasks that did not historically meet the AL.

Response to Comment 52.1

The Board partially agrees with the comment. The Board notes that the proposed construction standard includes the existing language in subsection 1532.1(e)(1)(A); it requires the use of engineering and work practice controls to maintain employee exposure to below the PEL "to the extent that such controls are feasible. Wherever all feasible engineering and work practices controls that can be instituted are not sufficient to reduce employee exposure to or below the PEL prescribed in subsection [1532.1](c), the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them by using respiratory protection that complies with the requirements of subsection [1532.1](f)." This language addresses the limits on feasibility that the commenter raises.

The proposed AL does lower the required exposure level at which repeated exposure monitoring, initial blood lead testing, medical surveillance, added training and posted signs are required in the proposed construction standard. These requirements will newly apply to construction tasks in which employees are exposed at or above 2 µg/m^3 but below 30 µg/m^3. While this will impose additional burdens on construction employers, the Board believes that this is justified in light of the goal to reduce and maintain all employees' BLLs to below 10 µg/dl.

Comment 52.2

The commenter states that Cal/OSHA has not shown evidence indicating an increase in employee lead exposure in construction. Cal/OSHA's citing of "estimated and extrapolated" data from NAICS codes to show lead exposure is flawed. The commenter states that to justify the reduction in the AL and PEL Cal/OSHA must conduct and share comprehensive research on the impacts of the proposed regulation, which includes actual on-the-job exposures and workers compensation claims for lead exposure.

Response to Comment 52.2

The Board does not agree with the premise of this comment. The need to revise the construction lead standard is not founded on increases in employee lead exposures. It is based on evidence that employees suffer health effects at levels of exposure, and at resulting BLLs, allowed by the current standard. Data from NAICS codes were used in the SRIA to arrive at a best estimate of the costs and benefits of the proposed standard. The arguments for the proposed PEL and AL are not based on an assessment of current employee exposures, but a review of the toxicological literature and on the use of a pharmacokinetic model. See responses to comments 19.4 and 37.4.

Comment 52.3

The commenter appreciates that objective data may be used instead of implementing initial monitoring. However, the commenter is concerned that the products, materials, processes, operations or activities eligible for objective data exemptions will be very limited. This could result in small jobs with little lead exposure being required to have air monitoring and to provide showers and protection until monitoring results come back. The commenter recommends the addition of a summary table that clearly defines tasks and respiratory protection, similar to Table 1 in the Silica Standard.

Response to Comment 52.3

The Board notes that subsection 1532.1(d)(3)(D) makes it clear that that the option of establishing objective data as a form of initial determination is open to all materials and tasks, not including trigger tasks. The full description of what constitutes objective data is laid out in subsection 1532.1(n)(7). If the employer can demonstrate exposures will be below the AL for this work, the objective data functions as a negative determination as detailed in subsection 1532.1(d)(5).

In addition, the Board notes that in the construction lead standard only trigger tasks are presumed to result in exposure over the PEL and therefore require interim protections. Trigger tasks are those tasks specifically listed, and any other task that the employer has reason to believe may result in exposures over the PEL. This does not apply to small jobs with little lead exposure.

With respect to the request for a table outlining prescribed levels of respiratory protection for given tasks (like Table 1 in the Silica standard) the Board notes that early in the pre-rulemaking process, it was decided to essentially adopt the structure of the existing California lead standards and to propose improvements to these standards which would better protect worker health. Other paths could conceivably have been chosen, and the commenter outlines one of them. But the choices that were then made, guided by advisory committee meetings over a few years, have been fundamental to what has become a multi-year rulemaking effort. Comments that propose wholesale revisions to the basic approach taken are not appropriate to the current stage of the rulemaking. In addition, please see response to comment 62.8.

Comment 52.4

The commenter states that the medical surveillance subsection 1532.1(j) gives physicians the authority and responsibility for determining job restrictions when a worker may have a health condition that places them at greater risk from lead exposure. The commenter states that this additional liability on a medical opinion will deter physician's from doing this work, resulting in decreased physician availability and increased costs.

Response to Comment 52.4

The Board disagrees with this comment. The relevant requirements, found in proposed subsections 1532.1(j)(3)(E)1. and (j)(3)(E)2., are identical to language found in the existing regulation under subsections 1532.1(j)(3)(E)1.a. and (j)(3)(E)1.b. No changes to the required medical opinion have been proposed in the amendments and therefore there is no basis to believe physicians would be deterred from doing this work based on the proposed regulatory text.

Comment 52.5

The commenter states that pre-assignment medical examinations require a physician to assess and monitor signs and symptoms commonly associated with lead intoxication (e.g., high blood pressure, constipation) which are prevalent in the workforce without lead exposure. The commenter states that this raises the concern that workers might be restricted from work on projects with lead exposure even if their current health conditions are unrelated to previous lead exposure.

Response to Comment 52.5

The Board notes that a PLHCP who has performed a medical examination on an employee is expected to make recommendations on special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to lead, based on what is best for the employee's health. Even if an employee's current health conditions are unrelated to previous lead exposure, they may be relevant to measures needed to protect against or limit current or future lead exposure.

Comment 52.6

The commenter states that the drastic reduction in the MRP level will significantly increase the number of workers removed from the job, resulting in more workers' compensation claims.

Response to Comment 52.6

The Board disagrees with the comment. Based on modeled lead exposures and resulting BLLs, as described in the SRIA, those employees covered under the Construction Safety Order, section 1532.1, are not expected to have to be placed on MRP as a result of the proposal. However, the Board notes that the regulations allow that, to the extent that a workers' compensation award is made to the employee for earnings lost during the period of removal, the employer's MRP obligation will be reduced by that amount. Further, the Board notes that Cal/OSHA does not have jurisdiction over workers' compensation requirements.

Comment 52.7

The commenter states that the large reductions in the MRP levels will make it more difficult to differentiate workplace and home exposure. Previous higher removal levels were not triggered by outside exposure. The commenter states that the proposed MRP levels could lead to workers with outside lead exposure being medically removed and not allowed to work on a job that has any level of lead exposure.

Response to Comment 52.7

Please see response to comment 48.20.

Comment 52.8

The commenter strongly recommends that revisions to the standard be practical so as not to create unnecessary and costly burdens on employers, especially small employers, and customers, while balancing the protection of worker health.

Response to Comment 52.8

The Board appreciates commenter's recommendation and shares this goal.

Comment 52.9

The commenter requests that Cal/OSHA reconvene an advisory committee meeting due to the substantive changes between the current and November 2015 versions of the lead standards.

Response to Comment 52.9

Please see response to comment 66.10.

The Board thanks the commenter for their input and participation in the rulemaking process.

53. Cris A. Williams, Ph.D., Senior Scientist, on behalf of International Lead Association, by written comments dated April 20, 2023.

Comment 53.1.1 (Comments 53.1.1a, 53.1.1b and 53.1.1c)

- Comment 53.1.1a: The commenter states that many studies of worker lead exposure in occupational settings suggest that exposures to lead other than lead in air are important sources of lead in the blood and that therefore the PBPK model developed by the OEHHA that correlates a BLL of above 5 to 10 µg/dl with workplace air lead levels of 0.5 to 2.1 µg/m^3 is a flawed tool to make such a correlation. The commenter further states that the air lead/BLL relationship in the workplace is complicated by the ingestion route of exposure from hand-to-mouth activity, smoking and eating in the workplace. The intensity of exposure from these habits varies as a function of personal hygiene and levels of lead contamination on work surfaces. The commenter discusses multiple studies that found significant associations between worker BLLs and hygiene behaviors as well as lead on workers' hands.

- Comment 53.1.1b: The commenter cites a 1994 study by Kentner and Fischer which the commenter states showed that the relationship between air lead and blood lead was non-linear and that there is a great deal of variability in worker BLLs when exposed to the same air lead concentration. The commenter says this variability is due to differences in worker hygiene, variability between individuals in lead absorption, background exposure in older studies, the size of inhaled particles, length of employment and past occupational exposure. The commenter says that not all these factors have been considered in published studies or in models developed to predict air lead concentrations that would result in measured BLLs in workers. Published observational studies are limited by the fact that study subjects had much higher BLLs than observed in current workforces and background exposures from leaded gasoline complicated the analyses. The published literature contains little data on measured air lead concentrations for employees with BLLs below 20 µg/dl. The commenter further says that much of the existing evidence on the air lead/BLL relationship is from cross-sectional studies of workers with elevated bone lead stores due to long-term occupational exposure. Lead from these stores is released to the blood confounding the air lead/BLL relationship.

- Comment 53.1.1c**:** The commenter states that data from a new study, The Study for the Promotion of Health in Recycling Lead, which is summarized in their letter, show poor correlation between the air lead/BLL relationship determined from real-world workplace conditions and that from PBPK modeling. The commenter states that the inclusion of study participants with initial background BLLs allows an investigation of the relationship uncomplicated by study participants with high bone lead stores resulting from chronic long-term exposure and is likely to be more reflective of near-term workplace exposure without the complication of legacy exposures. The commenter further states that the OEHHA model calibration was based on

minimal data from two older studies which are of limited relevance to modern exposures compared to the new data set. The commenter states that the OEHHA model is a worse fit for the measured data than a simple linear regression, which itself exhibits a poor fit, and does not support a statistically significant relationship between air lead and BLL. Finally, the OEHHA model over predicts BLLs corresponding to a given air lead measurement across a wide range of air lead measurements.

Response to Comment 53.1.1 (Comments 53.1.1a, 53.1.1b and 53.1.1c)

The Board notes that multiple commenters, including the International Lead Association (ILA), submitted similar comments and supporting evidence in their critiques of the OEHHA PBPK modeling efforts that support Cal/OSHA's proposal for a revised PEL. Their major critiques include: a consistent relationship between air lead levels and BLLs has not been established by empirical studies and therefore it cannot be used as a basis for determining an occupational exposure limit; exposure to lead other than in workplace air is an important source of lead in blood and therefore the OEHHA model is a flawed tool for correlating air and BLLs; previously identified issues and errors in the OEHHA PBPK model have not been addressed; model calibration and validation is not reliable; and OEHHA model simulations are not representative of current workplace exposure conditions.

The Board strongly disagrees that the PBPK model originally developed by Richard Leggett, and updated and modified by OEHHA for occupational settings, is a flawed tool to correlate constant workplace air lead levels and BLLs at the end of a working lifetime. The Board contends that a mechanistic (i.e., biokinetic/PBPK) model must be used to correlate BLLs and air lead levels because there are no chamber studies or workplace observational studies that include measurements of air lead concentrations and BLLs over the timespan of interest to Cal/OSHA (40 - 45 year working lifetime) and which extend to lower BLLs in the range associated with harmful effects on health. The Board notes that federal OSHA used a biokinetic model when developing the 1978 lead standard. It is a characteristic of physiologically based pharmacokinetic models that they can be used for a wide range of exposure scenarios, including scenarios beyond the range of air lead/BLL data used to develop the model. In addition, use of a biokinetic model allows statistical procedures to be used to evaluate how well the model predictions agree with real-world observations.

The Leggett model is a comprehensive mathematical model of lead metabolism in humans (i.e., the distribution, metabolism, storage and excretion of lead after it is absorbed into the blood). It is based on numerous, diverse data sources including studies of adult volunteers and findings from studies in laboratory animals receiving lead tracers by injection, ingestion, or inhalation, postmortem measurements of persons environmentally exposed to lead, balance studies on adult humans, biopsy and autopsy measurements on occupationally exposed subjects, and experimental, occupational, environmental and medical data on elements with similar biokinetics to lead. Leggett also provided a lung deposition and uptake model based on available data at the time.

Because the original 1993 Leggett model was a general model not specifically designed for workplace exposure, OEHHA established and tested a method for estimating a typical worker's body burden of lead from non-workplace sources of exposure and added an updated simple exposure uptake model to

address workplace exposure. The resulting model was renamed Leggett+ (OEHHA 2013). The exposure component includes factors such as a default breathing rate and an estimate of how much of the lead in the air a worker breathes is transferred to the blood (called the ITC) based on updated respiratory tract deposition and clearance models (ICRP 1994, ARA 2015, Smith et al 2014 as described in Vork et al 2023). OEHHA also made limited adjustments to the original Leggett model to incorporate updated information on lead deposition and uptake into blood.

OEHHA calibrated and compared the Leggett+ PBPK model against a large set of experimental and worker study data and addressed problems identified after the publication of the 2013 OEHHA report. The OEHHA PBPK modeling scenarios were deliberately designed for Cal/OSHA's purpose of selecting a PEL. The scenarios model workers with similar personal characteristics, workplace exposure over a working lifetime, lead uptake from background sources and starting body burden of lead. Scenarios do not include respirator use, uptake from the extremes of the particle size distribution range examined and uptake from hand-to-mouth transfer from contaminated workplace surfaces. The overall purpose of the modeling simulations is not to predict any single workplace or exposure scenario. Rather, the purpose of PBPK modeling in this context is to capture the air lead/BLL relationship of similarly exposed workers at the end of a working lifetime and then estimate the population distribution of that relationship based on estimates of variability in biological factors such as body weight, breathing rate and metabolic differences, in the general adult population. While uncertainty remains in any PBPK model, the Board is confident that the model developed by OEHHA reasonably represents the air lead/BLL relationship in the timeframe and BLL range of interest.

The Board addresses the specific comments and critiques of the model below.

- Response to comment 53.1.1a:

Regarding the commenter's statement related to the OEHHA model and the effect of exposures to lead other than lead in air, the Board agrees that the workplace air lead/BLL relationship can be heavily influenced by multiple factors including particle size, respirator use, hygiene practices, job tenure, individual biological attributes and other factors. However, the Board strongly disagrees with the conclusion that study data do not support a clear correlation between air lead levels and BLLs in the workplace. Recent studies of long-term workplace exposure have reported significant relationships between air and BLLs in the published peer-reviewed literature (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). These researchers saw higher BLLs in operations where there were higher air lead levels than in operations with lower air lead levels and similar particle size. In their reevaluation, Vork et al. (2023) further examined these empirical studies that controlled for the influence of exposure factors such as respirator use, particle size and job tenure (including the influence of past high lead in air exposures). Regression models derived from these data reported similar relationships between air and blood lead for chronically exposed workers. Furthermore, comparisons of air/BLL relationships in these studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace exposure scenarios (Vork et al. 2023). This confirms that the PBPK modeling approach applied in the OEHHA report (OEHHA 2013) is appropriate for estimating the contribution of workplace air lead to BLLs from exposure over a working lifetime. The use of a PBPK model allows for the exclusion of factors that obscure or bias the air lead/BLL relationship such as high historic exposure from previous

background and workplace sources, mixed respirator use among workers and hand-to-mouth transfer from contaminated surfaces in the workplace.

The Board acknowledges that the air lead/BLL relationship for a particular occupational setting will not be exactly the same as the relationship for the exposure scenario used to estimate the proposed PEL, but Cal/OSHA has to develop a single PEL appropriate for a wide variety of occupational settings. The Board believes that the OEHHA model produces a reasonable estimate for Cal/OSHA's purposes recognizing that there will be deviations from that estimate in particular workplaces and work settings.

Regarding the commenter's statement that the air lead/BLL relationship is complicated by ingestion exposure, the Board agrees that ingestion exposure can affect an individual's BLL, which is why Cal/OSHA strengthened the hygiene and housekeeping requirements in the standards with the goal of eliminating ingestion exposure. However, the Board does not believe that the air lead/BLL relationship predicted by the OEHHA model (OEHHA 2013) is invalid because it may have been affected by ingestion exposure in the studies used for model calibration and confirmation. Workers in the studies used for calibration and confirmation likely had some unknown ingestion exposure. The data in these studies were not pristine and no such workplace data exists. The lack of pristine data introduces some uncertainty. However, the comparisons in the reanalysis showed BLLs from the studies were consistent with those predicted by the model. OEHHA had reviewed studies on workplace ingestion exposure cited by the ILA and those studies did not provide persuasive evidence that ingestion of lead from workplace sources precluded the significant contribution of inhaled lead.

- Response to comment 53.1.1b

As stated previously, the Board agrees that the workplace air lead/BLL relationship can be heavily influenced by multiple factors including particle size, respirator use, hygiene practices, job tenure, individual biological attributes and other factors. However, the Board strongly disagrees with the conclusion that study data do not support a clear correlation between air lead levels and BLLs in the workplace. Recent studies of long-term workplace exposure have reported significant relationships between air and BLLs in the published peer-reviewed literature (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). These researchers saw higher BLLs in operations where there were higher air lead levels than in operations with lower air lead levels and similar particle size. In their reevaluation, Vork et al. (2023) further examined these empirical studies that controlled for the influence of exposure factors such as respirator use, particle size and job tenure (including the influence of past high lead in air exposures). Regression models derived from these data reported similar relationships between air and blood lead for chronically exposed workers. Furthermore, comparisons of air/BLL relationships in these studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace exposure scenarios (Vork et al. 2023). This confirms that the PBPK modeling approach applied in the OEHHA report (OEHHA 2013) is appropriate for estimating the contribution of workplace air lead to BLLs from exposure over a working lifetime. The use of a PBPK model allows for the exclusion of factors that obscure or bias the air lead/BLL relationship such as high historic exposure from previous background and workplace sources, mixed respirator use among workers and hand-to-mouth transfer from contaminated surfaces in the workplace.

The Board acknowledges that the air lead/BLL relationship for a particular occupational setting will not be exactly the same as the relationship for the exposure scenario used to estimate the proposed PEL, but Cal/OSHA has to develop a single PEL appropriate for a wide variety of occupational settings. The Board believes that the OEHHA model produces a reasonable estimate for Cal/OSHA's purposes recognizing that there will be deviations from that estimate in particular workplaces and work settings.

Regarding the comment that conditions underlying the model predictions are not reflective of present-day conditions, the Board notes that, as stated earlier, Leggett used multiple, diverse data sets when developing and calibrating his model. OEHHA used data from a smelter in the 1970s to address the influence of bone lead kinetics and high body burden on BLL (OEHHA 2013, Vork and Carlisle 2020). OEHHA addressed the concerns about model confirmation in their reevaluation of the model (Vork et al. 2023) by comparing Leggett+ simulations to four additional data sets, with over 1,000 subjects, from workers exposed to lead in the workplace from the 1970s to 2008. These simulations showed that predictions from the Leggett+ model are consistent with BLLs observed in more recent worker studies of BLLs after several years of chronic exposure, confirming that the Leggett+ model calibration and confirmation are sound.

Regarding the commenter's statement that published literature contains little data on measured air lead concentrations for employees with BLLs below 20 µg/dl, as stated previously, the lack of workplace studies that include air lead measurements and which extend to lower BLLs is one of the reasons that a PBPK model is needed. PBPK models can be used to model scenarios beyond the range of air lead/BLL data used to develop the model.

Finally, regarding the commenter's statement that much of the existing data on the air lead/BLL relationship is from studies of workers with elevated lead bone stores, the Board agrees that BLLs are influenced by lead released to the blood from bone stores from past exposures. However, the Board does not believe that invalidates the model predictions of BLLs from workers without very high body burdens of lead. For example, to remove the influence of internal releases of lead from bone that accumulated from higher levels of past airborne lead in ambient air and in the workplace, Hodgkins et al. stratified workers by their job tenure. The researchers found a statistically significant relationship between air and blood lead among workers with fewer years of high exposure (i.e., less than 22 years of employment) in battery manufacturing (Hodgkins et al. 1992). In addition, when OEHHA compared the results from the Hodgkins et al. analysis, there was reasonable agreement with the predictions from Leggett+.

- Response to comment 53.1.1c

Regarding the comment that new study data show a poor correlation between air lead levels and BLLs, the Board notes that the study referenced by the commenter has not been published and therefore insufficient information is available for the Board to assess the study and its conclusion. Recent studies of long-term workplace exposure have reported significant relationships between air and BLLs (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). The reported relationships in these studies are log-log or log-linear relationships, not linear relationships (Vork et al.,

2023). Furthermore, comparisons of air/BLL relationships in these studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace chronic exposure scenarios (Vork et al. 2023).

Regarding the comment that new study data allow investigation of the air lead/BLL relationship uncomplicated by high bone stores, the Board notes that the study data provided do not reflect the lifetime chronic exposure scenarios that Cal/OSHA must consider when setting a PEL. While the Board agrees that BLLs are influenced by lead released to the blood from bone stores from past exposures, the Board does not think that invalidates the model predictions of BLLs from workers without very high body burdens of lead. For example, to remove the influence of internal releases of lead from bone that accumulated from higher levels of past airborne lead in ambient air and in the workplace, Hodgkins et al. stratified workers by their job tenure. The researchers found a statistically significant relationship between air and blood lead among workers with fewer years of high exposure (i.e., less than 22 years of employment) in battery manufacturing (Hodgkins et al. 1992). In addition, when OEHHA compared the results from the Hodgkins et al. analysis, there was reasonable agreement with the predictions from Leggett+.

Regarding the comment that the OEHHA model calibration is based on minimal data from two older studies, the Board notes that, as stated earlier, Leggett used multiple, diverse data sets when developing and calibrating his model. OEHHA used data from a smelter in the 1970s to address the influence of bone lead kinetics and high body burden on BLL (OEHHA 2013, Vork and Carlisle 2020). OEHHA addressed the concerns about model confirmation in their reevaluation of the model (Vork et al. 2023) by comparing Leggett+ simulations to four additional data sets, with over 1,000 subjects, from workers exposed to lead in the workplace from the 1970s to 2008. These simulations showed that predictions from the Leggett+ model are consistent with BLLs observed in more recent worker studies of BLLs after several years of chronic exposure, confirming that the Leggett+ model calibration and confirmation are sound.

Concerning the commenter's finding that the OEHHA model predictions do not resemble the data from the recent study, as stated above the study has not been published and there is insufficient information available to adequately address this comment. The Board declines to speculate on possible reasons for the discrepancy between the study findings and the OEHHA model predictions.

Comment 53.2

Section 1532.1, Appendix A, Page 40, ¶ 1: "A significant portion of the lead that you inhale or ingest gets into your blood stream."

The commenter recommends that Cal/OSHA modify their statement about lead absorption via inhalation or ingestion to reflect factors that may increase or decrease absorption.

Response to Comment 53.2

This is existing, unchanged text in the standard and is outside the scope of this rulemaking.

The Board notes, however, that it modified the proposed text to remove the phrase "a significant portion."

Comment 53.3

Section 1532.1, Appendix A, Page 40, ¶ 1: "Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems."

The commenter believes that the statement about lead causing irreversible damage should be modified to acknowledge that there are effects attributable to lead that are reversible.

Response to Comment 53.3

This is existing, unchanged text in the standard and is outside the scope of this rulemaking.

The Board notes, however, that it modified the proposed text to remove the term "irreversible."

Comment 53.4

Section 1532.1, Appendix A, Page 40, ¶ 2: "Short- term (acute) overexposure. Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days."

The commenter recommends that the word "taken" in the statement "Taken in large doses…" be change to "exposed to."

Response to Comment 53.4

This is existing, unchanged text in the standard and is outside the scope of this rulemaking.

The Board notes, however, that it modified the proposed text to remove the words "taken in."

Comment 53.5

Section 1532.1, Appendix A, Page 40, ¶ 2: "Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead."

The commenter would like Cal/OSHA to change qualitative statements like "lower doses" or "higher doses" to quantified statements.

Response to comment 53.5

This is existing, unchanged text in the standard and is outside the scope of this rulemaking.

Comment 53.6

Section 1532.1, Appendix A, Page 40, ¶ 3: "Sperm abnormalities may develop at relatively high blood lead levels (at or above 20 micrograms of lead per deciliter of whole blood (µg/dl))."

The commenter states that changes in semen quality that may adversely impact reproductive function require exposures much higher than the 20 µg/dl stated by Cal/OSHA.

Response to Comment 53.6

The Board disagrees with this comment. The Board notes that adverse effects on sperm and male fertility occur at lower levels than the commenter mentions. Vigeh, et al. (2011) states "Although unfavorable reproductive effects usually occur at relatively high levels of lead exposure, lower doses for longer time periods may also alter the male reproductive system in a manner similar to that previously reported at higher doses for shorter periods."[6] The Board further notes that effects on sperm have been detected at BLLs ≤ 10 µg/dl.[7]

Comment 53.7

Section 1532.1, Appendix A, Page 40, ¶ 4: "Some people may not experience any symptoms even though lead is causing toxic effects in their bodies. It is important to note that permanent damage may occur even in the absence of symptoms."

The commenter believes that the statement that some persons may have health effects or permanent damage even though they have no symptoms is inaccurate or at least incomplete. The commenter wants Cal/OSHA to acknowledge that it is also entirely likely that no damage is occurring in the absence of symptoms.

Response to Comment 53.7

The Board disagrees with this comment. The Board believes that the use of the word "may" makes it an accurate and complete statement. The phrase "for some people" has been added to the proposed text of the second sentence, to reaffirm that it is a possibility, not a certainty.

Comment 53.8

Section 1532.1, Appendix A, Page 41, ¶ 1: "Long-term, low dose lead exposures may result in high blood pressure. Since high blood pressure is a significant risk factor for heart disease, stroke, and kidney (renal) disease, lead exposure may exert an important influence on death related to the effects on the heart, brain, and kidneys."

The commenter states that terms "long-term" and "low dose" in the statement about blood pressure should be better defined or quantified. The commenter further states that researchers have repeatedly reported only marginal increases, or a lack of an increase, in blood pressure with lead exposure. The commenter further states that the idea that hypertension explains the association between total and cardiovascular mortality rests on three National Health and Nutrition Examination Survey (NHANES) reports and provides a critique of those reports.

Response to Comment 53.8

[6] Vigeh, M., Smith, D.R., Hsu, P.C. How does lead induce male infertility? Iranian Journal of Reproductive Medicine. Winter 2011; 9(1):1-8.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4212138/
[7] ATSDR (U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry). Toxicological Profile for Lead. August 2020.
https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf

In response to this comment, the Board has removed the terms "long term" and "low dose" and has modified the proposed text to specify that exposure to lead may cause increased blood pressure, heart disease, and stroke.

Comment 53.9

Section 1532.1, Appendix A, Page 41, ¶ 2: "Nervous system dysfunction, including declines in brain (cognitive) function and slowing of nerve conduction velocity, may occur at long-term, low blood lead levels."

The commenter states that terms "long-term" and "low blood lead levels" in the statement about nervous system effects are imprecise and could be misleading. The commenter references research that they state shows no relationship between lead exposure and cognitive performance or nerve conduction velocity.

Response to Comment 53.9

In response to this comment, the Board has removed the terms "long-term" and "low blood lead levels" and has modified the proposed text to state possible effects of lead exposure on the brain and nervous system.

Comment 53.10

Section 1532.1, Appendix A, Page 41, ¶ 3: "High-dose exposures may damage the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy."

The commenter states the term "high dose exposure" in the statement about damage to the central nervous system is imprecise and the conditions referenced are not relevant to modern occupational exposures. The commenter further states the exposure intensity required to induce lead neuropathy was likely more than 70 µg/dl.

Response to Comment 53.10

Please see response to comment 53.9.

Comment 53.11

Section 1532.1, Appendix A, Page 41, ¶ 4: "Decreases in kidney function can start at low levels of exposure to lead. With higher levels of lead exposure, kidney disease may progress with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred."

The commenter states that the term "low levels of exposure" in the statement about exposure necessary to cause decreases in kidney function is imprecise and potentially misleading. The commenter provides a review of selected studies in the literature. The commenter further states that decreases in kidney

function *can start* at lower levels of lead exposure but *don't necessarily occur* at lower levels of lead is supported by a recent study.

Response to Comment 53.11

In response to this comment, the Board has removed references to exposure levels and has modified the proposed text to state possible effects of lead exposure on kidney function.

Comment 53.12

Section 1532.1, Appendix A, Page 41, ¶ 5: "Reduced birth weight of children exposed to lead during pregnancy has been documented with low-level chronic lead exposures."

The commenter states that the term "low level chronic exposures" in the statement about exposure to lead during pregnancy and low birthweight is imprecise and potentially misleading. The commenter further states that the data relating prenatal BLLs to preterm delivery, gestational age or birthweight are mixed and provide uncertain results.

Response to Comment 53.12

In response to this comment, the Board has removed references to exposure levels.

Comment 53.13

Section 1532.1, Appendix A, Page 41, ¶ 5: "Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood."

The commenter states that the term "excess lead levels" in the statement about the increased likelihood of birth defects and behavioral disorders in children born to parents exposed to lead is imprecise and potentially misleading. The commenter further states that the categories "birth defects" and "behavioral disorders" are too broad making it difficult to assign a more precise BLL associated with these categories.

Response to Comment 53.13

This is existing, unchanged text in the standard and is outside the scope of this rulemaking.

The Board notes, however, that it has modified the proposed text to state that biological parents' lead exposure can harm the physical and mental development of a baby before birth.

Comment 53.14

Section 1532.1, Appendix A, Page 41, ¶ 5: "Lead exposure also may result in decreased fertility and abnormal menstrual cycles in women."

The commenter states that the term "lead exposure" in the statement about lead exposure and decreased fertility and abnormal menstrual cycles in women is imprecise and may imply "any exposure." The commenter further states that effects on female fertility likely occur at BLLs more than 50 µg/dl as probable side effects of more generalized systemic toxicity.

Response to Comment 53.14

The Board believes this statement is reasonable and thus declines to change this language. There is evidence of effects on female fertility at lower than 50 µg/dl.[8]

Comment 53.15

Section 1532.1, Appendix A, Page 41, ¶ 6: "Overexposure to lead may result in decreased sex drive, impotence, and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves."

The commenter states that the term "overexposure" in the statement about lead overexposure and decreased sex drive, impotence and sterility in men is imprecise and potentially misleading, unless by overexposure Cal/OSHA means BLLs more than 45 µg/dl. Further, the evidence of "miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves" should be qualified.

Response to Comment 53.15

In response to this comment, the Board has replaced the term "overexposure" with "exposure."

The second sentence that the commenter comments on is existing, unchanged text in the standard and is outside the scope of this rulemaking.

Comment 53.16

Section 1532.1, Appendix A, Page 42, ¶ 1: "Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia."

The commenter states that the term "overexposure" in the statement about lead overexposure and disruption to the blood forming system is imprecise and potentially misleading. The commenter further states that δ-aminolevulinic acid dehydrogenase (ALAD) inhibition does not affect overall levels of heme production and is not regarded as a clinically significant effect.

Response to Comment 53.16

This is existing, unchanged text in the standard and is outside the scope of this rulemaking.

The Board notes, however, that it has modified the proposed text to replace the term "overexposure" with "exposure."

Comment 53.17

[8] Kumar, S. Occupational and Environmental Exposure to Lead and Reproductive Health Impairment: An Overview. Indian Journal of Occupational & Environmental Medicine. September-December 2018. 22(3):128-137. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6309352/#:~:text=Lead%20exposure%20also%20affects%20female,its%20outcome%2C%20and%20so%20on.

Section 1532.1, Appendix A, Page 42, ¶ 2: "The blood lead BLL of female employees who intend to have children should be maintained below 5 µg/dl to minimize adverse reproductive health effects to the mother and to the developing fetus."

The commenter states that the lowest possible BLL in pregnant women should be maintained to protect the developing fetus, not for the protection of the "mother and the developing fetus" as stated by Cal/OSHA. The commenter further states that effects on female employees' fertility and menstrual cycles do not appear to occur at BLLs less than 50 µg/dl.

Response to Comment 53.17

In response to this comment, the Board has removed the phrase "to the mother and to the developing fetus" from the proposed text.

Comment 53.18

Section 1532.1, Appendix A, Page 42, ¶ 5: "Health damage has been found at chronic BLLs of 5 µg/dl and greater, including high blood pressure, reduced birth weight, essential tremor, and kidney dysfunction."

The commenter states that characterizing high blood pressure, reduced birth weight, essential tremor and kidney dysfunction as being associated with a BLL of 5 µg/dl is misleading. The commenter reviews the conclusions made by NTP.

Response to Comment 53.18

In response to this comment, the Board has removed reference to "essential tremor" from the proposed text.

Comment 53.19

Section 1532.1, Appendix C, Page 74, ¶ 3: "The most recent scientific evidence shows multiple health effects at BLLs once thought to be without recognized harm. Prolonged exposure to these low levels of lead can result in adverse cumulative effects. These health effects may be permanent."

The commenter states that the terms "most recent scientific evidence" and "low levels of lead" in the statement about health effects of prolonged exposure to lead are vague, overly broad and potentially misleading. The commenter further states that the permanence of lead health effects is purposefully misleading as it ignores the multitude of effects that have been shown to be reversible and without clinical significance.

Response to Comment 53.19

In response to this comment, the Board has modified the proposed text to provide further specificity as to the levels of lead being referenced and also to clarify that some lead health effects are reversible.

Comment 53.20

Section 1532.1, Appendix C, Page 74, ¶ 4: "BLLs of female employees who are trying to conceive should be maintained below 5 µg/dl to minimize adverse reproductive health effects to the mother and developing fetus."

The commenter states that the lowest possible BLL in pregnant women should be maintained to protect the developing fetus, not for the protection of the "mother and the developing fetus" as stated by Cal/OSHA since effects on female fertility likely occur at BLLs above 50 µg/dl as side effects of more generalized toxicity.

Response to Comment 53.20

In response to this comment, the Board has removed the phrase "to the mother and developing fetus" from the proposed text to address the commenter's concern.

Comment 53.21

Section 1532.1, Appendix C, Page 75, ¶ 3: "Current evidence indicates a causal relationship between lead exposure and hypertension, and between lead exposure and coronary heart disease."

The commenter states that the term "current evidence" in the statement about a causal relationship between lead exposure and hypertension and coronary heart disease, is non-specific and should be supported by citations to the scientific literature.

Response to Comment 53.21

The Board declines to change the language in this passage. The Board notes that a systematic review concluded there is evidence of causal relationships between lead exposure and hypertension and coronary heart disease.[9]

Comment 53.22

Section 1532.1, Appendix C, Page 75, ¶ 3: "Prospective cohort studies have demonstrated an approximate 50% increase in cardiovascular mortality associated with chronic BLLs of 10 µg/dl or greater."

The commenter states that Lanphear et.al. (2018) is the most likely source for the statement that prospective cohort studies have demonstrated an approximate 50% increase in cardiovascular mortality associated with chronic BLLs of 10 µg/dl or greater. The commenter questions the results of the study and identifies study design flaws.

Response to Comment 53.22

[9] Navas-Acien, A., et al. Lead Exposure and Cardiovascular Disease--A Systematic Review. Environmental Health Perspective. March 2007; 115(3):472-482. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1849948/; see also, ATSDR (U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry). Toxicological Profile for Lead. August 2020. https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf

The Board disagrees with the commenter's assertion. Schober et al. (2006) found BLLs > 10 µg/dl were associated with cardiovascular mortality, with a relative risk (RR) of 1.55.[10]

Regarding the referenced study by Lanphear et al. (2018),[11] the Board believes that the commenter's criticisms of the paper are not persuasive. The study was robust in design and included follow-up through 2011, so the data was not very remote from the current era. The paper did not claim to provide a "firmly proven causal pathway," as it is an epidemiological study of association. In addition, the authors included multiple adjustments in their models.

Comment 53.23

Section 1532.1, Appendix C, Page 75, ¶ 4: "The earliest hematologic effect involves lead's ability to inhibit at least two enzymes of the heme synthesis pathway at very low BLLs. Inhibition of delta-aminolevulinic acid dehydratase (ALA-D) which catalyzes the conversion of delta-aminolevulinic acid (ALA) to protoporphyrin is observed at a BLL as low as 10 µg/dl."

Referring to Cal/OSHA's statement about lead's ability to inhibit enzymes in the production of heme, the commenter states that the inhibition of ALAD (an enzyme involved in the production of heme) does not affect overall levels of heme production and is therefore not a clinically adverse effect.

Response to 53.23

The Board notes that the statement referenced in this comment does not address reversibility. Thus, the Board declines to change the language of this statement.

Comment 53.24

Section 1532.1, Appendix C, Page 75, ¶ 5: "Inhibition of ferrochelatase leads to increased free erythrocyte protoporphyrin (FEP) in the blood which can then bind to zinc to yield ZPP. At a BLL of 50 µg/dl or greater, nearly 100% of the population will have an increase in FEP. There is also an exponential relationship between BLLs greater than 40 µg/dl and the associated ZPP level, which has led to the development of the ZPP screening test for lead exposure."

Referring to Cal/OSHA's statement about the development of the ZPP screening test for lead exposure, the commenter states that ZPP elevation occurs at BLLs between 25-30 µg/dl in males and 15-20 µg/dl in females. The commenter further states that since occupational exposures and BLLs are lower today, and there is poor association between ZPP and contemporary exposures, the ZPP test requirement should be, and is being, removed from the proposed revisions to the construction and general industry lead standards.

[10] Schober, S. E., et al. Blood Lead Levels and Death from All Causes, Cardiovascular Disease, and Cancer: Results from the NHANES III Mortality Study. Environmental Health Perspectives. October 1, 2006. 114(10), 1538–1541. https://doi.org/10.1289/ehp.9123

[11] Lanphear, B., et al. Low-level lead exposure and mortality in US adults: a population-based cohort study. The Lancet Public Health. March 12, 2018. 3: e177–84 https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(18)30025-2/fulltext

Response to Comment 53.24

This is existing, substantively unchanged text in the standard and is outside the scope of this rulemaking.

Comment 53.25

Section 1532.1, Appendix C, Page 76, ¶ 2: "Recent evidence suggests that bone lead stores may exert a subclinical effect on hematopoiesis, since bone lead levels have been found to correlate with decreased hemoglobin and hematocrit in individuals with low BLLs (mean BLL<10 µg/dl)."

The commenter states that the credibility of statements about the effects of lead on specific endpoints would be increased if statements such as "recent evidence" were replaced by reference to a specific study or studies.

Response to Comment 53.25

In response to this comment, the Board has modified the proposed text to remove reference to "recent evidence." It would state, "Hematopoietic effects tend to occur at a BLL threshold of 10-20 µg/dl; however, bone lead stores from chronic exposure may continue to exert subclinical effects on hematopoiesis, regardless of current BLL."

Comment 53.26

Section 1532.1, Appendix C, Page 76, ¶ 6: "While there is disagreement about what exposure levels are needed to produce the earliest symptoms, most experts agree that symptoms and neurocognitive deficits definitely can occur at BLLs of 40 µg/dl. Subclinical neurocognitive deficits are possible at lower levels, and therefore a 10 µg/dl maximum is recommended. The central nervous system effects frequently are not reversible following discontinued exposure or chelation therapy and when improvement does occur, it is almost always only partial."

In reference to a statement about neurocognitive deficits the commenter states that the phrase "most experts agree" is uninformative and without reference to specific experts or studies authored by these experts. The commenter further states that many neurological effects attributed to lead are frequently reversible following a discontinuance of exposure.

Response to Comment 53.26

In response to this comment, the Board has modified the proposed text to remove the phrase "most experts agree" and provide clarification as to the potential reversibility of the health effects described.

Comment 53.27

Section 1532.1, Appendix C, Page 76, ¶ 7: "[P]eripheral neuropathy can occur with varying degrees of severity. The earliest and mildest form which can be detected in employees with blood lead BLLs as low as 30 µg/dl is manifested by slowing of motor nerve conduction velocity often without clinical symptoms."

Referencing Cal/OSHA's statement about peripheral neuropathy at BLLs as low as 30 µg/dl, the commenter states that studies suggest that elevated lead exposure for a duration of a least one year at levels more than 70 µg/dl is required to produce neuropathy.

Response to Comment 53.27

In response to this comment, the Board has modified the proposed text to replace the phrase "as low as" with the term "over."

Comment 53.28

Section 1532.1, Appendix C, Page 77, ¶ 4: "Lead may also affect the gastrointestinal system producing abdominal colic or diffuse abdominal pain, constipation, obstipation, diarrhea, anorexia, nausea, and vomiting. Lead colic may develop at chronic BLLs of 40 µg/dl and greater, or at acutely elevated BLLs of 80 µg/dl or greater."

Referencing Cal/OSHA's statement about lead cholic developing at chronic BLLs of 40 µg/dl, or acute BLLs of 80 µg/dl, the commenter states that such non-specific symptoms have been observed in workers with BLLs in the range of 100 to 200 µg/dl, and only rarely at levels as low as 40 µg/dl.

Response to Comment 53.28

In response to this comment, the Board has modified the second sentence in this proposed statement to "Lead colic may develop at 80 µg/dl, whereas milder, nonspecific gastrointestinal discomfort and constipation occur with levels higher than 60 µg/dl."[12]

Comment 53.29

Section 1532.1, Appendix C, Page 77, ¶ 5: "Kidney dysfunction is thought to occur at chronic BLLs of 5-10 µg/dl or greater but also may arise after acute high-dose lead exposures."

Referencing Cal/OSHA's statement that kidney dysfunction can occur at chronic BLLs of 5-10 µg/dl or greater, the commenter states that this is far below the threshold for known renal effects of lead in adults. The commenter includes a discussion of studies that they believe support their position.

Response to Comment 53.29

The Board disagrees with this comment. The commenter's statements are not consistent with Agency for Toxic Substances and Disease Registry (ATSDR) review, which describes renal toxicity at BLLs ≤ 10 µg/dl.[13] Thus, the Board declines to change the language of this statement.

Comment 53.30

[12] Goldman, R. H., and Weissmann, L. (2019). A Diagnosis to Chew On. The New England Journal of Medicine. August 1, 2019. 381(5), 466–473. https://doi.org/10.1056/NEJMcps1900774
[13] ATSDR (U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry). Toxicological Profile for Lead. August 2020. https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf

Section 1532.1, Appendix C, Page 77, ¶ 7: "Malformed sperm (teratospermia), decreased number of sperm (hypospermia), and sperm with decreased motility (asthenospermia) can all occur. These adverse effects may occur at BLLs of 20 µg/dl or greater. Furthermore, there appears to be a dose-response relationship for teratospermia in lead-exposed employees."

Referencing Cal/OSHA's statement about adverse effects on sperm at BLLs of 20 µg/dl or greater, the commenter states that the available data indicate that BLLs much greater than 20 are required to have marked adverse effects on semen quality.

Response to Comment 53.30

The Board disagrees with this comment. The commenter's statements are not consistent with ATSDR review, which describes sperm effects at BLLs ≤ 10 µg/dl.[14] Thus, the Board declines to change the language of this statement.

Comment 53.31

Section 1532.1, Appendix C, Page 78, ¶ 2: "Women exposed to lead may experience menstrual disturbances including dysmenorrhea, menorrhagia, and amenorrhea. Following exposure to lead, women have a higher frequency of sterility, premature births, spontaneous miscarriages, and stillbirths."

The commenter states the phrase "women exposed to lead" in the statement about female reproductive effects, is imprecise and may imply any exposure. The commenter further states that effects on female fertility likely occur at BLLs more than 50 µg/dl as side effects of systemic toxicity.

Response to Comment 53.31

The Board notes that according to ATSDR, most of the studies of reproductive effects in women have been in women with BLLs ≤ 10 µg/dl.[15] Thus, the Board believes the statement is accurate and declines to change the language of this statement.

Comment 53.32

Section 1532.1, Appendix C, Page 78, ¶ 3: "Germ cells can be affected by lead and lead can cause genetic damage in the egg or sperm cells before conception and result in failure to implant, miscarriage, stillbirth, or birth defects."

The commenter states that the statement "lead can cause genetic damage in the egg" is imprecise and may imply any exposure. The commenter further states that the statement implies that the effects on germ cells are directly responsible for the failure to implant, miscarriage, stillbirth or birth defects, when such effects may be caused by a multitude of other factors unrelated to lead exposure.

---

[14] ATSDR (U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry). Toxicological Profile for Lead. August 2020. https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf

[15] ATSDR (U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry). Toxicological Profile for Lead. August 2020. https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf

Response to Comment 53.32

This is existing, substantively unchanged text in the standard and is outside the scope of this rulemaking.

The Board notes, however, that it has replaced the phrase "result in" with "contribute to" in the proposed text.

Comment 53.33

Section 1532.1, Appendix C, Page 78, ¶ 4: "Infants of mothers with lead poisoning have a higher mortality during the first year and suffer from lowered birth weights, slower growth, and nervous system disorders."

The commenter states that the term "lead poisoning" in the statement about effects of lead poisoning in the mothers of infants is imprecise. The commenter further states that a weight-of-evidence evaluation indicated that effects do not occur at BLLs up to 30 µg/dl.

Response to Comment 53.33

This is existing, substantively unchanged text in the standard and is outside the scope of this rulemaking.

The Board notes, however, that it has removed the term "lead poisoning" and modified the proposed text regarding the association of certain health effects with maternal lead exposure.

Comment 53.34

Section 1532.1, Appendix C, Page 78, ¶ 8: "Debate and research continue on the effects of lead on the human body. Lead may impair the immune and endocrine systems, including thyroid function and the pituitary-adrenal axis, but these effects have not been well defined. Also, although the epidemiologic data is limited and inconsistent, based on toxicologic data and animal studies, lead is considered a probable human carcinogen by several authoritative sources."

The commenter states that the phrase "lead may impair" in the statement about the effects of lead on the immune and endocrine systems, is imprecise and may imply any amount of lead. The commenter further states that this is especially misleading given the wide array of health effects listed.

Response to Comment 53.34

In response to this comment, the Board has modified the proposed text to clarify that both the effects and "and the corresponding level of exposure" have not been well defined.

The Board thanks the commenter for their input and participation in the rulemaking process.

54. Kannan Krishnan, Ph.D., DABT, FCAHS, Chief, on behalf of Office of Environmental Health Hazard Assessment (OEHHA), by written comments dated April 20, 2023.

Comment 54.1

The commenter would like to bring a recent publication on pharmacokinetic modeling of workplace lead exposure to the Board's attention (Vork, Brown, and Carlisle, 2023). The publication describes the

exposure model and reevaluation of the inhalation transfer coefficient (ITC) components that complete the Leggett+ model used to estimate air and blood lead concentrations among workers under various exposure conditions. These estimates were the basis of CDPH-OLPPP's 2013 recommendation to Cal/OSHA on an updated PEL. Overall, the findings from this study suggest that predictions from Leggett+ are a reasonable representation of workplace air concentrations that predict BLLs of interest to Cal/OSHA.

Response to comment 54.1

The Board acknowledges and appreciates the commenter's submission of the recent publication on pharmacokinetic modeling for consideration. All submissions timely made to the Board during the comment period have been considered.

The Board thanks the commenter for their input and participation in the rulemaking process.

55. Jo Forchione, CIH, CAC, CDPH Lead I/A/PM, Industrial Hygienist, Pacific Gas and Electric Company, by written comments dated April 20, 2023.

Comment 55.1

The commenter states that the proposed changes to section 1532.1 discussed during the advisory meetings were initially based on lowering BLLs due to findings that adverse health effects occurred at much lower BLLs than previously thought. The commenter states that the intent was to change the outdated lead regulations to shift efforts from a focus on airborne lead to actual BLLs, which the commenter fully supports. For the last five years, commenter's company has focused on BLLs assuming the maximum allowable BLL would be 10 µg/dl and has achieved this within the requirements of the existing standard. The commenter states that this supports reconvening the advisory committee because the existing proposal sets unrealistic and unnecessary requirements while downplaying the intent of keeping BLLs as low as possible. The commenter states that the proposed regulation will be costly, difficult to comply with, and far too restrictive. The commenter states that BLLs can be kept low without dragging portable showers all over our service territory and forcing our employees to wear respirators.

Response to Comment 55.1

Regarding the request for reconvening the advisory committee meetings, please see response to comment 66.10.

Regarding the requirements of the existing proposal, the Board is unsure how to respond to this comment as it is unclear to what extent the commenter's employees are currently being exposed over the proposed PEL. The Board believes that a lower PEL is essential to the effort to reduce BLLs. Not only because it reduces the inhalation of lead particulate, but also because the distribution and settling of airborne lead is the primary source of workplace contamination, which then necessitates diligent hygiene and housekeeping. The control of airborne lead levels supports the other exposure controls.

Regarding the requirements for providing showers in construction, please see response to comment 19.16.

The Board thanks the commenter for their input and participation in the rulemaking process.

56. Kenji Saito (via Dane Farrell), MD, JD, FACOEM, President, on behalf of American College of Occupational and Environmental Medicine (ACOEM), by written comments dated April 20, 2023.

Comment 56.1

The commenter expresses strong support for the proposed amendments, noting the revisions are consistent with the current literature and medical findings on occupational lead poisoning and the commenter's past recommendations.

Response to Comment 56.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 56.2

The commenter strongly recommends that the Board consider ACOEM's recent Position Statement published in the March 2023 Journal of Occupational and Environmental Medicine in response to federal OSHA's "Advance Notice of Proposed Rule Making (ANPRM) related to Blood Lead Level for Medical Removal." The commenter believes that the proposed revisions to the lead standards represent a cost-effective approach to reducing morbidity and mortality resulting from occupational lead exposure.

Response to Comment 56.2

The Board acknowledges and appreciates the submission of the position statement for consideration. All submissions timely made during the public comment period have been reviewed and considered.

Comment 56.3

The commenter states that the Board should define the term "physician" to clarify that it applies only to medical professionals trained and licensed as a MD or DO. The commenter states that some employers have used other health care professionals (paramedics, chiropractors) that lack the requisite training, knowledge and experience to evaluate lead exposure. The commenter states that clarifying the definition of "physician" is consistent with a 2016 federal OSHA Letter of Interpretation on the matter.

Response to Comment 56.3

Please see response to comment 18.2.

Comment 56.4

The commenter requests that the Board consider any comments provided by WOEMA.

Response to Comment 56.4

The Board acknowledges the commenter's request and has given consideration to the comments provided by WOEMA.

The Board thanks the commenter for their input and participation in the rulemaking process.

57. Andrea Abergel, (via Christy Christensen), Manager of Water Policy, California Municipal Utilities Association; Kerry Stackpole, FASAE CAE, CEO & Executive Director, Plumbing Manufacturers International; Doug Kurkul, CEO, American Foundry Society; Mark Delaquil, Association of Battery Recyclers; Bryan Leiker, Executive Director, Metal Finishing Association of California; Jack Monger, CEO, Industrial Environmental Association; James Simonelli, Executive Director, California Metals Coalition; Christopher E. Ochoa, Esq., Senior Counsel – Codes, Regulatory and Legislative Affairs, California Building Industry Association; Roger Miksad, Executive Vice President and General Counsel, Battery Council International; Lawrence Gayden, Policy Director, Government Relations, California Manufacturers and Technology Association; Rodney Pierini, President and CEO, CAWA-Representing the Automotive Parts Industry; Lisa Spooner Foshee, SVP, Government Affairs and General Counsel, Auto Care Association; Cris Williams, Ph.D., Senior Scientist, International Lead Association; Ryan Allain, Director, Government Affairs, California Retailers Association; and Eric Stuart, Vice president, Energy, Environment, and Infrastructure Policy, Steel Manufacturers Association, by written comments dated April 20, 2023.

Comment 57.1

The commenters appreciate the phase-in for the step down in MRP level but notes that the balance of the proposed changes would take effect immediately. The commenter states that the lack of a phase-in period does not account for the "practical realities" of meeting much more stringent standards including laboratory capacity for an "exponential increase" in BLL testing, availability of qualified medical professionals to manage BLL testing and elevated response plans, local permitting requirements, and access to contractors/materials and lead time to make major facility modifications. The commenters state that there is nothing in the rulemaking record indicating that Cal/OSHA has consulted with third parties responsible for these aspects of compliance or accommodated real-world impediments to compliance.

Response to Comment 57.1

Please see response to comment 48.2.

Comment 57.2

The commenters state that they are aware that individual employers may be eligible for a variance, but Cal/OSHA is likely to be inundated with requests (proposed orders likely to apply to 227,000 employees) and unable to process them in time to avoid enforcement actions for circumstances beyond employers' control.

Response to Comment 57.2

Please see response to comment 48.2.

Comment 57.3

The commenters recommend that Cal/OSHA amend the orders to incorporate the compliance schedule recommendations in their November 14, 2022, letter. In the commenters' November 14, 2022, letter they request that Cal/OSHA use a phased implementation schedule as was done in the original standard

and reference the 1978 federal standard. The commenters state that if that approach is not feasible, they ask that Cal/OSHA include cross references to the Compliance Program provisions in subsection 5198(e)(2). The commenters offer language (in italics) to be added to subsections 5198(e)(1)(A) and (B) – [T]o the extent that the employer *is implementing such controls in accordance with the employer's Compliance Program as required by subsection 5198(e)(2)(A) or* can demonstrate that controls are not feasible.

Response to Comment 57.3

Regarding commenters' request for phase-in of requirements, please see response to comment 11.4.

Regarding the request for inclusion of a cross-reference to the Compliance Program provisions in subsection 5198(e)(2): The Board is not persuaded by this comment. The existing language in subsections 5198(e)(2)(A) and 1532.1(e)(2)(A) state that the employer must establish a detailed schedule for implementing a compliance program to achieve compliance with subsection (c) of sections 5198 and 1532.1. In this schedule, the employer must lay out what controls are feasible and when they can be feasibly implemented.

Establishing an exception to the requirements of subsections 5198(e)(1) and 1532.1(e)(1)(A) predicated on compliance with controls as set out in a written compliance program is not logical. Establishing a compliance program, as specified in subsections 5198(e)(2)(A) and 1532.1(e)(2)(A), is required in existing language, and details the employer's plan to comply with the requirements of subsections 5198(e)(1) and 1532.1(e)(1)(A). Further, the Board notes that if engineering and work practice controls to adequately reduce employee exposures are not feasible, they must nonetheless be used and supplemented with respiratory protection to ensure that employees are not exposed above the PEL.

Comment 57.4

The commenters estimate that pre-assignment BLL testing would "create a surge of more than 800,000" BLL tests in the first six months of implementation. The commenters state that Cal/OSHA has not demonstrated there is adequate laboratory capacity for this testing. The commenters further state that absent evidence that suppliers and service providers are taking immediate steps to expand capacity, that are sufficient to meet the demand, a more gradual phase-in is needed for employers to comply with BLL testing requirements.

Response to Comment 57.4

The Board disagrees with the commenters' assertion that pre-assignment BLL testing would "create a surge of more than 800,000 BLL tests in the first six months of implementation" (of the proposed standards). The Board estimates that only approximately a quarter of that number of tests would be required in the first six months of the effective date of the proposed standards. The Board believes that there is adequate capacity in California to analyze the proposed increase in occupational BLL tests. In addition, the Board notes that under the proposed standards, ZPP testing would no longer be required to be provided in the vast majority of cases.

Analytical blood testing is an established and pervasive industry in California and the Board is aware of no basis to conclude that it would not be able to absorb any additional testing required by the proposed amendments.

The Board also notes that it is proposing a six-month delay of the effective date for the entirety of the revised regulations.

Comment 57.5

The commenters state that the term "presumed hazardous lead work (PHLW)" in section 5198 should be removed and replaced with "trigger amount of lead work" from the 2016 draft language. The commenters state that PHLW triggers pre-emptive mitigation measures prior to an assessment of whether they are needed, and nothing in the rulemaking record shows that the described work tasks are hazardous. The commenters state that the PHLW terminology leaves employers at the mercy of inspectors as to whether they are in compliance and exposes them to litigation by third parties exploiting the subjectivity of the PHLW language.

Response to Comment 57.5

Please see response to comment 48.11.

Comment 57.6

The commenters state that a strict interpretation of the MRP language requires employers to provide MRP benefits to any employee whose BLL exceeds the proposed MRP levels regardless of whether the elevated BLL is due to workplace or non-occupational exposure. The commenters state that this places an unjustified burden on the employers and employees assigned to cover the removed worker's job. The commenter suggests that Cal/OSHA include additional language clarifying that medical removal benefits are required when: 1) workplace exposures are determined to exceed relevant ALs and 2) a medical examination by a qualified physician concludes that those exposures are the primary cause of the employees' elevated BLL.

Response to Comment 57.6

Please see response to comment 48.20.

Comment 57.7

The commenters state that the drastically lower proposed airborne lead exposure limits unintentionally create more hazardous conditions for workers in enclosed and confined spaces. Where the limits cannot be achieved, workers will need to wear Tyvek suits and respirators putting them at higher risk for heat illness, especially during the summer. Historically, maintaining lower BLLs in workers has been achieved through hygiene. The commenters state that the minimal gains in health protection expected from the five-fold reduction in the PEL are not justified when weighed against the greater potential for harm from increased heat exposure.

Response to Comment 57.7

The Board notes that the proposed revised standards require "Coveralls or similar full-body clothing" (subsections 1532.1(g)(1)(A) and 5198(g)(1)(C)(1)), and do not require the use of Tyvek or other similar clothing for exposure above the PEL. While exposures which cannot be controlled to below the PEL may necessitate the use of respiratory protection, and the use of respiratory protection can contribute to heat stress, a range of strategies to prevent heat illness are available to the employer.

Comment 57.8

The commenters recommend that Cal/OSHA reinstate language from the 2016 draft that allowed properly designed hydration stations in high-heat work environments. The commenter states that this exception is critical for workers in unavoidably high heat environments, such as confined or unconditioned spaces or near high temperature equipment or processes. The commenters state that quick access to water is the single most important factor preventing heat illness. The commenters state that removal of this language conflicts with Cal/OSHA's outdoor heat standard and the newly proposed indoor heat standard. The commenters further state that hydration stations can be designed to prevent lead exposure.

Response to Comment 57.8

Please see response to comment 48.30.

The Board thanks the commenters for their input and participation in the rulemaking process.

58. Michael J. Kosnett, MD, MPH, by written comments dated April 20, 2023.

Comment 58.1

The commenter is pleased to express their strong support for the proposed revisions to the Cal/OSHA lead standards. The commenter submitted four articles for the record that pertain to the need and feasibility of these revisions (Kosnett et.al. (2023), Vork et.al. (2023), Vork and Carlisle (2020), Sweeney (2021)).

Response to Comment 58.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 58.2

The commenter states that they would like to draw to the attention of the Standards Board that the provisions of the proposed revisions in Cal/OSHA lead standard already contain substantial concessions and compromises to address feasibility concerns raised by some members of industry:

- "Chronic lead exposure associated with blood lead concentrations across the range of 10 to 25 µg/dl are an established cause of increased mortality from cardiovascular disease. The risk, on the order of 50 percent, exceeds that associated with smoking, elevated cholesterol, and hypertension. There is no health endpoint more profound and serious than death. The goal of the proposed Cal/OSHA revisions are to maintain blood lead concentrations less than 10 µg/dl. However, while laudable, this provides no margin of safety. Most health-based standards in occupational and environmental health

provide margins of safety, often 10-fold or greater, below levels of exposure that are associated with adverse health effects. The lack of any margin of safety in the proposed lead standard should be seen as a significant concession to industry."

- By proposing a PEL of 10 μg/m^3, the proposed standards intentionally provided industry with some leeway in their approach to maintain blood lead concentrations < 10 μg/dl. Two recent independent dose response models for airborne lead exposure found that the PELs would have to be much lower than 10 μg/m^3 to accomplish this. According to the Leggett+ model developed by OEHHA, the PEL would have to be 2.1 μg/m^3, and according to the Department of Defense O'Flaherty model (Sweeney 2021), the PEL would have to be 3.6 μg/m^3.
- The SECAL provisions contained in the proposed standards represent additional concessions to the lead battery industry concerning airborne lead exposure.

Response to Comment 58.2

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 58.3

The commenter notes that from the standpoint of feasibility, several existing Cal/OSHA and federal OSHA standards for hazardous metals are at least as stringent, and in many cases more stringent, than the PEL of 10 μg/m^3 now proposed for airborne lead. The PEL for arsenic is 10 μg/m^3, that for cadmium is 5 μg/m^3, that for hexavalent chromium is 5 μg/m^3 and that for beryllium is 0.1 μg/m^3.

Response to Comment 58.3

The Board agrees that there are existing Cal/OSHA and federal OSHA standards for hazardous metals that are at least as stringent, and in some cases more stringent, than the PEL of 10 μg/m^3 now proposed for airborne lead.

The Board thanks the commenter for their input and participation in the rulemaking process.

59. Roger Miksad (via Susan E. Bernard), Executive Vice President and General Counsel, on behalf of Battery Council International, by written comments dated April 20, 2023.

Comment 59.1

The commenter states that the reduction in the PEL and AL is not supported by the available science or real-world battery industry experience, is unreasonable and is technically and economically infeasible.

- The proposed reductions in AL and PEL are contradicted by real world industry experience showing that when facilities operate in compliance with current federal standards, they achieve BLLs below the BLLs proposed by Cal/OSHA.
- The proposed PEL is technologically infeasible. While the ISOR and SRIA "properly summarize" the data BCI provided to justify adoption of the SECALS, Cal/OSHA has not met its burden to establish that the PEL is affirmatively feasible in other industries, facilities, or work areas.
- Significant reductions in the PEL and AL would substantially increase the potential for sample contamination to impact measurement reliability, given the presence of lead in the environment in

some regions due to natural background levels or historical contamination from roads and other sources. Background concentrations of lead in the environment are far greater than many of those other substances for which Cal/OSHA or OSHA has chemical standards. For an AL of 2 µg/ m^3, as currently proposed, even very small amounts of lead introduced into a sample may exceed this threshold, thus triggering additional requirements, and rendering the AL technologically infeasible.

- The "bulk air controls" considered by Cal/OSHA as a method to reduce PELs are cost prohibitive and ineffective. The addition of filtration equipment that would be required is highly capital and equipment intensive and may require the redesign of the facility. New baghouses can cost between $800,000 and $8 million or more.

Response to Comment 59.1

Regarding the necessity for the proposed PEL and AL: The Board disagrees with the commenter's assertion. The proposed PEL of 10 µg/m^3, together with an AL of 2 µg/m^3, are necessary to ensure that all BLLs remain below 10 µg/dl (see responses to comments 19.4 and 37.4). The Board notes that the commenter presents data showing the average employee BLL as 9 µg/dl; this indicates that a sizable proportion of employees (likely close to 50%) have had BLLs above 10 µg /dl. The intent of the proposed standard is to reduce all BLLs to below 10 µg/dl.

Regarding the feasibility of the proposed PEL and the engineering controls required to meet it: The Board does not agree with this comment. The proposed standard includes the existing language in subsection 5198(e)(1)(A); it requires the use of engineering and work practice controls to maintain employee exposure to below the PEL "except to the extent that the employer can demonstrate that such controls are not feasible." In addition, subsection 5198(e)(1)(B) includes language which makes it clear that where the implementation of engineering and work practice controls are not sufficient to reduce exposures to or below the PEL, respiratory protection can be used to supplement employee protection. This language adequately addresses the issue of the feasibility of the proposed PEL, within the context of the proposed standard.

Regarding background environmental contamination: See response to comment 48.8 with respect to the concern that background environmental contamination will affect exposure-monitoring results.

Regarding "bulk air controls" being cost prohibitive and ineffective, the Board disagrees with this comment. See the second paragraph in this response regarding engineering controls that are technologically infeasible. The Board notes that the requirement to use engineering and work practice controls to maintain employee exposure to below the PEL "except to the extent that the employer can demonstrate that such controls are not feasible" applies to economic feasibility as well as technical feasibility. If an employer provides data showing that engineering controls and work practice controls are not economically feasible, such controls are not required to be used.

Comment 59.1.1 (Comments 59.1.1a, 59.1.1b, 59.1.1c and 59.1.1d)

- Comment 59.1.1a: The commenter states that Cal/OSHA relied on a flawed model – the Leggett+ PBPK model – to support the lowered PEL and AL. The model is outdated and has not been revised to address the deficiencies identified by industry commenters and independent experts.

- Comment 59.1.1b: The commenter states that the model relies on outdated and inappropriate particle sizes and unnecessarily limits the modeled particle sizes to 15 µm. The commenter provided data to Cal/OSHA in 2014 showing that mass median aerodynamic particle (MPPD) sizes in domestic battery manufacturing range from 21-32 µm and from 15 – 25 µm in battery recycling. Particle size is meaningful because larger particle sizes pose less risk of uptake to the blood than smaller sizes, even at the same air lead levels. The commenter states that the model does not reflect real-world worker exposure in battery manufacturing and recycling.

  The commenter states that the model fails to apply the appropriate MPPD model inhalability adjustment factor to accommodate particles larger than 8 µm. The commenter further states that the model relies on inadequate inhaled particle clearance models, uses an outdated version of the model's underlying code, despite recognizing that an improved ICRP model was available, and contains a mass balancing error.

  The commenter states that correcting the errors they have identified in the modeling would have a significant impact on the model's predicted air lead/BLL relationship. The commenter further states that corrections to the Leggett+ model's derivation of the ITC (an estimate of the fraction of inhaled lead absorbed into the body) based on the identified problems with the MPPD and particle size assumptions could alter that parameter by three-fold, which would have significant implications for the BLLs predicted by the model.

- Comment 59.1.1c: The commenter notes that the relationship between air lead levels and BLLs is highly uncertain and variable and cannot be considered consistent over various occupational settings and therefore reducing air lead levels should not be the primary method Cal/OSHA relies on for achieving health protective BLLs.

- Comment 59.1.1d: The commenter states that data from studies conducted after the model's development suggest that the Leggett+ model significantly overestimates the contribution of air lead to BLLs at lower air levels. The commenter states that initial analyses using the new data set of a cohort of workers in a modern battery facility, which is summarized in the ILA letter, suggest that the Leggett+ model dramatically overestimates BLLs and does not represent real-world results. The commenter further states that initial analysis of the new data set suggests that due to variability in blood lead results, current approaches to PBPK modeling may not be capable of predicting workplace BLLs with any accuracy or reliability.

  The commenter states that statistical analyses of the new data set suggest a poor model fit and do not support a statistically significant relationship between occupational air lead levels and corresponding BLLs.

Response to Comment 59.1.1 (Comments 59.1.1a, 59.1.1b, 59.1.1c and 59.1.1d)

The Board notes that multiple commenters, including Battery Council International (BCI), submitted similar comments and supporting evidence in their critiques of the OEHHA PBPK modeling efforts that support Cal/OSHA's proposal for a revised PEL. Their major critiques include: a consistent relationship between air lead levels and BLLs has not been established by empirical studies and therefore it cannot be used as a basis for determining an occupational exposure limit; exposure to lead other than in workplace air is an important source of lead in blood and therefore the OEHHA model is a flawed tool for correlating air and BLLs; previously identified issues and errors in the OEHHA PBPK model have not been addressed; model calibration and validation is not reliable; and OEHHA model simulations are not representative of current workplace exposure conditions.

The Board strongly disagrees that the PBPK model originally developed by Richard Leggett, and updated and modified by OEHHA for occupational settings, is a flawed tool to correlate constant workplace air lead levels and BLLs at the end of a working lifetime. The Board contends that a mechanistic (i.e., biokinetic/PBPK) model must be used to correlate BLLs and air lead levels because there are no chamber studies or workplace observational studies that include measurements of air lead concentrations and BLLs over the timespan of interest to Cal/OSHA (40 - 45 year working lifetime) and which extend to lower BLLs in the range associated with harmful effects on health. The Board notes that federal OSHA used a biokinetic model when developing the 1978 lead standard. It is a characteristic of physiologically based pharmacokinetic models that they can be used for a wide range of exposure scenarios, including scenarios beyond the range of air lead/BLL data used to develop the model. In addition, use of a biokinetic model allows statistical procedures to be used to evaluate how well the model predictions agree with real-world observations.

The Leggett model is a comprehensive mathematical model of lead metabolism in humans (i.e., the distribution, metabolism, storage and excretion of lead after it is absorbed into the blood). It is based on numerous, diverse data sources including studies of adult volunteers and findings from studies in laboratory animals receiving lead tracers by injection, ingestion, or inhalation, postmortem measurements of persons environmentally exposed to lead, balance studies on adult humans, biopsy and autopsy measurements on occupationally exposed subjects, experimental, occupational, environmental and medical data on elements with similar biokinetics to lead. Leggett also provided a lung deposition and uptake model based on available data at the time.

Because the original 1993 Leggett model was a general model not specifically designed for workplace exposure, OEHHA established and tested a method for estimating a typical worker's body burden of lead from non-workplace sources of exposure and added an updated simple exposure uptake model to address workplace exposure. The resulting model was renamed Leggett+ (OEHHA 2013). The exposure component includes factors such as a default breathing rate and an estimate of how much of the lead in the air a worker breathes is transferred to the blood (called the ITC) based on updated respiratory tract deposition and clearance models (ICRP 1994, ARA 2015, Smith et al. 2014 as described in Vork et al. 2023). OEHHA also made limited adjustments to the original Leggett model to incorporate updated information on lead deposition and uptake into blood.

OEHHA calibrated and compared the Leggett+ PBPK model against a large set of experimental and worker study data and addressed problems identified after the publication of the 2013 OEHHA report.

The OEHHA PBPK modeling scenarios were deliberately designed for Cal/OSHA's purpose of selecting a PEL. The scenarios model workers with similar personal characteristics, workplace exposure over a working lifetime, lead uptake from background sources and starting body burden of lead. Scenarios do not include respirator use, uptake from the extremes of the particle size distribution range examined and uptake from hand-to-mouth transfer from contaminated workplace surfaces. The overall purpose of the modeling simulations is not to predict any single workplace or exposure scenario. Rather, the purpose of PBPK modeling in this context is to capture the air lead/BLL relationship of similarly exposed workers at the end of a working lifetime and then estimate the population distribution of that relationship based on estimates of variability in biological factors such as body weight, breathing rate and metabolic differences, in the general adult population. While uncertainty remains in any PBPK model, the Board is confident that the model developed by OEHHA reasonably represents the air lead/BLL relationship in the timeframe and BLL range of interest.

The Board addresses the specific comments and critiques of the model below.

- Response to Comment 59.1.1a

The Board disagrees with this comment. Since the publication of their report in 2013, OEHHA has reevaluated the Leggett+ model to address comments provided by industry and independent experts and published their updated results in the peer-reviewed literature (Vork and Carlisle 2020 and Vork et al. 2023). OEHHA considered the findings from this reevaluation and concluded that the BLLs and corresponding air lead levels predicted by Leggett+ in the 2013 report were not affected and remain reasonable estimates. Therefore, predictions upon which CDPH made its health-based recommendation to Cal/OSHA for a PEL have not changed.

- Response to Comment 59.1.1b

The commenter raises multiple issues related to errors and problems with the derivation of the ITC (i.e., the estimate of the proportion of inhaled lead transferred to blood) which it alleges invalidate the Leggett+ model.

Regarding the commenter's statements that the model relies on outdated and/or inappropriate lead particle size data, the Board notes that additional publications on the size of particles found in a variety of workplaces have appeared in the peer-reviewed literature since publication of the 2013 OEHHA lead modeling report, such as findings in battery manufacturing and recycling facilities, shooting ranges and primary smelter facilities (Wu et al. 2016, Petito-Boyce et al. 2017, and Lach et al. 2015, as cited in Vork et al. 2023). As a result, OEHHA's reevaluation of particle deposition in and clearance from the respiratory tract expanded the range of particle size distributions to include size distributions ranging from the mass median physical diameter of 0.01 µm to the aerodynamic diameter of 40 µm. The ITCs derived from these particle size distributions range from 9% to 52% (Vork et al. 2023). OEHHA concluded, and the Board agrees, that the default ITC of 30% used in Leggett+ is a reasonable mid-point of this range.

In addition, the Board notes that in a recent large study of battery manufacturing and recycling facilities (Petito-Boyce et al. 2017), particle sizes below 15 µm were observed in various operations within facilities. Several other studies have also shown respirable particles in these industries (Vork et al. 2023).

The commenter also states that larger particle sizes pose less risk of uptake to the blood than smaller sizes, even at the same air lead level. The Board agrees that this is generally true considering larger particles are less likely to penetrate the lower region of the respiratory tract where deposited lead can be absorbed into blood with high efficiency. However, larger particles tend to deposit on respiratory mucosa, are swallowed and absorbed to the blood through the gastrointestinal tract. Although larger particles are absorbed with less efficiency than particles deposited in the lower region of the respiratory tract, OEHHA's reevaluation showed that lead absorbed into the blood after inhaling larger particles can be substantial (>10% absorption of the air concentration of lead) (Vork et al. 2023).

The Board reminds commenters that the purpose of the OEHHA modeling simulations is not to predict BLLs from workplace air lead in any single workplace or industry. Cal/OSHA must develop a PEL that protects workers across a wide range of industries. It is not feasible or practical for Cal/OSHA to develop multiple PELs specific to varying particle size distributions, breathing rates, solubility differences, nose blowing habits, etc. found in individual workplace settings.

Regarding the commenter's statements pertaining to the MPPD model used, OEHHA's reevaluation of particle deposition and clearance used the most recent MPPD and Smith clearance models (version 3.04 ARA 2015 and Smith et al 2014 as cited in Vork et al. 2023) with inhalability adjustments to accommodate particles larger than 8 µm. In addition, regarding use of inadequate particle clearance models, the reevaluation considered an updated model based on data for clearance to the gastrointestinal tract of lead deposited in the head region (Smith et al. 2014 as cited in Vork et al. 2023). The reevaluation and updates based on the particle clearance model presented in Smith et al. 2014 are described in Vork et al. 2023. Concerning a mass balance error, the Board believes the commenter is referring to an error discovered in the 2013 Matrix Laboratory (MATLAB) code for running Leggett+. OEHHA corrected this error in an updated version of the code (OEHHA 2015) and found that differences in simulation runs before and after this correction were negligible. In sum, OEHHA's reanalysis after considering all issues listed as errors and problems with the MPPD and particle size assumptions, provided no evidence of a significant impact on the model's original air lead/BLL relationship.

- Response to Comment 59.1.1c

Regarding the uncertainty of the air lead/BLL relationship, please see response to comment 48.5.1a. Regarding the comment that reducing air lead levels should not be the primary method Cal/OSHA relies on for achieving protective BLLs, the Board notes that Cal/OSHA has strengthened the housekeeping and hygiene requirements to largely eliminate ingestion exposure in the workplace and strengthened the training requirements.

- Response to Comment 59.1.1d

Regarding the commenter's reference to the comments submitted by ILA, the Board notes that the study referenced by the commenter has not been published and therefore insufficient information is available for the Board to assess the study and its conclusion. The Board declines to speculate on possible reasons for the discrepancy between the study findings and the OEHHA model predictions referenced by the commenter. The Board does note that the study data provided do not reflect the lifetime chronic exposure scenarios that Cal/OSHA must consider when setting a PEL.

Regarding the comment that current approaches to PBPK modeling may not be capable of predicting workplace BLLs with accuracy and reliability, the Board notes that recent studies of long-term workplace exposure have reported significant relationships between air and BLLs in the published peer-reviewed literature (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). In their reevaluation, Vork et al. (2023) further examined these empirical studies that controlled for the influence of exposure factors such as respirator use, particle size and job tenure (including the influence of past high lead in air exposures). Regression models derived from these data reported similar relationships between air and blood lead for chronically exposed workers. Furthermore, comparisons of air/BLL relationships in these studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace exposure scenarios (Vork et al. 2023). This confirms that the PBPK modeling approach applied in the OEHHA report (OEHHA 2013) is appropriate for estimating the contribution of workplace air lead to BLLs from exposure over a working lifetime. The use of a PBPK model allows for the exclusion of factors that obscure or bias the air lead/BLL relationship such as high historic exposure from previous background and workplace sources, mixed respirator use among workers, and hand-to-mouth transfer from contaminated surfaces in the workplace.

Finally, regarding the statement that the new data set does not support a statistically significant relationship between workplace air lead levels and BLLs, as stated previously the Board declines to speculate on the findings of the unpublished study. However, the Board notes that as stated above, recent studies of long-term workplace exposure have reported significant relationships between air and BLLs in the published peer-reviewed literature (Park and Paik, 2002, 2004, Hodgkins et al. 1992, Pierre et al. 2002 as cited in Vork 2023). Furthermore, comparisons of air/BLL relationships in these studies confirm that the BLLs simulated by Leggett+ are consistent with real workplace exposure scenarios (Vork et al. 2023).

The Board acknowledges that the air lead/BLL relationship for a particular occupational setting will not be exactly the same as the relationship for the exposure scenario used to estimate the proposed PEL, but Cal/OSHA has to develop a single PEL appropriate for a wide variety of occupational settings. The Board believes that the OEHHA model produces a reasonable estimate for Cal/OSHA's purposes recognizing that there will be deviations from that estimate in particular workplaces and work settings.

In sum, the Board agrees with the assessment and rationale given by the ECHA Committee who concluded that despite critiques of the OEHHA PBPK model, the results of the model are accurate and the OEHHA modelling approach is appropriate (European Chemicals Agency, 2020). The Committee proposed a health-based occupational exposure limit based on the OEHHA Leggett+ model. In addition, the BLLs predicted by a different PBPK model developed for the U.S. Department of Defense were

comparable to those from the Leggett+ model, providing further corroboration of the reasonableness of the Leggett+ predictions (Vork et al. 2023).

Comment 59.2

The commenter encourages Cal/OSHA to reevaluate whether it is appropriate to rely on air lead levels below 50 µg/m^3 to achieve desired BLLS. Focusing on more practical and feasible measures has proven health protective, acceptable to employees and cost effective. Cal/OSHA should build on the "dramatic improvements in employee protection achieved by the lead battery industry, among others."

Response to Comment 59.2

Please see response to comment 39.2.

Comment 59.3

The commenter states that Cal/OSHA should provide a three-year phase-in for the AL.

- The reduction in the AL will dramatically and instantly increase the number and scope of employees, employers and facilities subject to the existing standard and alter the requirements for those subject to the existing standard.
- Given the breadth of the revisions, and the potentially significant economic impact, phase-in or implementation periods are critical.
- Without a phase-in/implementation or compliance schedule, the provisions will be immediately in effect, leaving employers little or no time to prepare.

Response to Comment 59.3

Please see response to comment 11.4.

Comment 59.4

The commenter estimates that 200,000 newly regulated employees will require pre-assignment BLL testing creating a surge of more than 800,000+ BLL tests in the first six months of implementation. An additional 400,000 tests annually would be required thereafter. The commenter states that it is not clear that Cal/OSHA has evaluated whether there is adequate laboratory capacity for this testing. The commenter states that any backlog in processing BLLs will impede an employer's ability to comply. The commenter states that a more gradual phase-in is required for industry and healthcare providers to build the needed collection and processing procedures and capacity to comply.

Response to Comment 59.4

Please see response to comment 57.4.

Comment 59.5

The commenter states that Cal/OSHA should provide at least a three-year phase-in for medical monitoring and MRP levels. The commenter states that employees need training on lead reduction

tactics, and for employees with BLLs above 20, sufficient time for their bodies to clear the lead. The commenter states that if MRP reductions are immediate, a significant number of workers could be on MRP before their employers have a chance to implement revised standard requirements causing a significant disruption to the industry and its employees.

Response to Comment 59.5

The Board believes that the one-year phase-in period for the proposed MRP level of 20 µg/dl is adequate. Therefore, the Board declines to amend the phase-in period to three years, as the commenter suggests.

In addition, the Board notes that it is proposing a six-month delay of the effective date for the entirety of the revised regulations.

Comment 59.6

The commenter states that Cal/OSHA should provide a three-year phase-in period for the PEL.

- Employers will need sufficient time to conduct air monitoring, investigate/evaluate exposure sources, and to identify and implement engineering, work practice and administrative controls to reduce and maintain exposure below the PEL.
- For most facilities with exposures above the PEL, changes to airflow, ventilation and filtration will be required. Per the commenter's report (Appendix B to their letter), implementing major changes for air handling systems is likely to exceed 30 months and cost hundreds of thousands, or millions, of dollars.
- Compliance with the requirement for protective clothing will not be feasible in the short term as facilities newly required to provide clothing will need to identify/contract with these services. Those with these services already may need to find new providers willing/able to handle "theoretically" lead contaminated clothing.
- Adding separate lunchrooms, change rooms and showers, in workplaces not currently required to provide them will require significant construction time.
- Lack of a phase-in period puts employers at greater risk of non-compliance even in cases where the employer is acting in good faith but cannot comply due to circumstances beyond their control. To help mitigate this risk, Cal/OSHA must include in the final lead standards a delayed effective date and a phase-in or implementation period or compliance schedule. This will provide employers with the necessary time to come into compliance with relevant requirements, particularly the PEL requirements.

Response to Comment 59.6

Please see response to comments 11.4 and 48.2.

Regarding the infeasibility of protective clothing requirements, the Board is not persuaded by this comment. The number of additional lead-exposed employees who will require protective clothing under the proposed PEL is not likely to represent a significant increase in demand for industrial uniform and laundry services that currently supply this service to a broad range of industries. The Board does not

believe that there will be a shortage of clean uniforms because of the proposed revisions. The uniform companies have been required under the current regulations to protect their employees from exposure to lead, so the Board does not anticipate any reluctance to handle dirty uniforms by the uniform companies. In addition, the Board believes that when airborne levels of lead are at or above 10 µg/m^3, significant amounts of lead will accumulate on work surfaces, necessitating the need for protective clothing.

Comment 59.7

If Cal/OSHA determines that a phased-in approach is not feasible, the commenter asks that Cal/OSHA include cross references to the Compliance Program provisions in subsection 5198(e)(2). The commenter offers language to be added to subsections 5198(e)(1)(A) and (B). Subsection 5198(e)(1)(A) example: Except as specified in subsection 5198(e)(1)(B) where any employee is exposed to lead above the PEL, for more than 30 days per year, the employer shall implement engineering, and work practice controls, including, administrative controls, to reduce and maintain employee exposure to lead at or below the PEL except to the extent the employer *is implementing such controls in accordance with the employer's Compliance Program as required by subsection 5198(e)(2)(A) or* can demonstrate that controls are not feasible.

Response to Comment 59.7

The Board is not persuaded by this comment. Establishing an exception to the requirements of subsections 5198(e)(1) and 1532.1(e)(1)(A) predicated on compliance with controls as set out in a written compliance program is not logical. Establishing a compliance program, as specified in subsections 5198(e)(2)(A) and 1532.1(e)(2)(A), is required in existing language, and details the employer's plan to comply with the requirements of subsections 5198(e)(1) and 1532.1(e)(1)(A). Further, the Board notes that if engineering and work practice controls to adequately reduce employee exposures are not feasible, they must nonetheless be used and supplemented with respiratory protection to ensure that employees are not exposed above the PEL.

Comment 59.8

The commenter states that since exposure is undefined, provisions of the standard could be interpreted as being triggered by the presence of lead even if there is no risk of uptake. The commenter believes Cal/OSHA's intent is only to regulate situations where there is an actual risk of uptake. The commenter believes that excluding "articles" as defined in the Hazard Communication standard provided the necessary clarification. The commenter recommends modifying subsection 5198(a)(2) and provides specific language.

Response to Comment 59.8

The phrase "occupational exposure to lead" in subsection 5198(a) is unchanged existing text. Likewise, "[exposure] to lead" is the trigger for unchanged existing requirements in the standards. The Board is unaware of any basis to conclude that the term requires clarification or that the plain language meaning of the term is insufficient. The Board declines to modify this subsection to add a new definition of "exposure" or add language to exclude "articles."

Comment 59.9

The commenter states that in discussion drafts Cal/OSHA referred to work tasks for which medical monitoring or respirators is required as "trigger amount of lead work." The commenter strongly opposes the characterization in the proposed standard of these tasks as "presumed hazardous lead work." The commenter states that Cal/OSHA has not affirmatively determined that they are "hazardous" and there is no mechanism for an employer to "overcome" the "presumed" characterization nor to demonstrate that PHLW is sufficiently non-hazardous to eliminate the need for medical monitoring and respiratory protection. The commenter urges Cal/OSHA to revert to the more appropriate neutral and objective characterization of these tasks as 'trigger amount of lead work' or 'trigger tasks' as proposed under the construction standard.

Response to Comment 59.9

Please see response to comment 48.11.

Comment 59.10

While the commenter does not believe changes to the PEL are needed or justified, they strongly support the SECALS for specific areas of battery manufacturing. The commenter believes this approach will significantly protect employee health and will help retain good manufacturing jobs in California by addressing economic and technical feasibility concerns regarding the revised lead standards.

Response to Comment 59.10

The Board appreciates the commenter's support for these amendments.

Comment 59.11

The commenter states that the calculated costs (that were submitted to Cal/OSHA with their justification for SECALs) did not include any other costs imposed by the proposed rule. The commenter states, "That level of investment, on top of the other compliance costs" could lead to closure of California facilities, as they would not be competitive with companies in other states or nations.

Response to Comment 59.11

The Board is not persuaded by the commenter's assertion. The Board believes that the cost of compliance with the proposed revisions is justified by the increase in health benefits that will result.

Comment 59.12

The commenter believes that SECALS are likely appropriate and necessary for work areas in other industries such as lead battery recycling. The commenter urges Cal/OSHA to consider information submitted by those industries.

Response to Comment 59.12

Please see response to comment 48.6.

Comment 59.13

The commenter states that subsection 5198(e)(1)(C), which provides a limited exception for the implementation of engineering controls where an employee is exposed above the PEL for fewer than 30 days per year, should be retained. The commenter states that in practice, this exception does not apply to standard work areas but rather to infrequently accessed areas (e.g., maintenance spaces, mechanical areas, etc.). The commenter states that implementing engineering controls in infrequently accessed areas would be incredibly costly and not provide meaningful protection to employees since they are generally not present in those areas.

Response to Comment 59.13

The Board is not persuaded by this comment. This change is necessary to provide greater health protection for employees who work with lead for 30 days per year or less. The change would also provide consistency with the requirements given in subsection 1532.1(e)(1). In accordance with subsection 5198(e)(1)(A) the employer may demonstrate that certain engineering controls are not feasible.

Comment 59.14

The commenter disagrees with the addition of subsection 5198(f)(3)(A) prohibiting employers from using filtering facepiece respirators. The commenter states that when properly worn under conditions for which they are rated, filtering facepieces can provide proper protection. The commenter states that filtering facepieces are more acceptable to employees for comfort reasons, particularly in hot environments, and may be a preferred option for employees who must communicate regularly with others.

Response to Comment 59.14

Please see response to comment 38.12.

Comment 59.15

The commenter states that subsection 5198(f)(3)(D) should allow the use of N-95, R-95 or P-95 filters in non-powered air-purifying respirators when they provide the appropriate protection factor. The commenter states that proposed language limits filters to N-100, R-100 or P-100.

Response to Comment 59.15

The Board does not agree with this comment. In existing California and federal language, these filters are designated as 'HEPA.' The proposed change to 'N-100, R-100 and P-100' filter designations is to bring the standard into agreement with NIOSH's rules that were updated in 1995. The Board notes that the proposed revised California lead standards need to be 'at least as effective' as the current federal OSHA lead standards. The inclusion of N-95, R-95 and P-95 filters as acceptable would be less protective than the current federal standards.

Comment 59.16

The commenter recommends retaining the language in subsection 5198(i)(1)(A) that triggers hygiene obligations (no eating, drinking, etc. where employees are exposed to lead) on exposures above the PEL.

Likewise, the PEL trigger language should be added to subsection 5198(i)(1)(D) (employees exposed to lead must wash their hands, etc.). The commenter states that the phrase "exposed to lead" without a de minimis threshold is vague and ambiguous for employers and inspectors.

Response to Comment 59.16

The Board disagrees with the comments and declines to retain existing language in subsection 5198(i)(1)(A) and add PEL trigger language to subsection 5198(i)(1)(D) as suggested. Exposure to lead through ingestion can occur even in the absence of significant airborne exposures. The Board believes that to reduce employee exposure to lead through ingestion, employees with any level of exposure to lead must be provided with basic hygiene protections, such as those proposed in subsections 5198(i)(1) and (i)(5). The Board does not believe the term "exposed to lead" is vague and ambiguous. Indeed, the scope in subsection (a) of section 5198, which is existing language, states, "this section applies to all occupational exposure to lead …." Thus, all employees included in the scope of section 5198 would be subject to the proposed hygiene requirements in subsections 5198(i)(1)(A) and (D).

Comment 59.17

The commenter urges Cal/OSHA to reinstate language from the 2016 draft that allowed properly designed hydration stations in high-heat work environments. The commenter states that omitting this provision will exacerbate high-heat hazards and heat injury risks for employees working in metals and other industries. The commenter states that because the revised standards require employees to wash when leaving a lead work area and require physical segregation of breakrooms for exposures above the PEL, it will be infeasible for employees to travel to potentially distant breakrooms to frequently consume small amounts of water, as Cal/OSHA recommends. The commenter's members have developed hydration stations and procedures that allow employees to hydrate while preventing exposure.

Response to Comment 59.17

Please see response to comment 48.30.

Comment 59.18

The commenter states that employees performing tasks at outdoor or remote locations not under the control of the employer would likely be subject to the revised hygiene requirements. The commenter states that it may be impossible for employers to provide remote employees with employer-controlled change rooms, lunchrooms and showers, or to perform or confirm required cleaning protocols. In addition, the commenter states that employers may not be able to provide laundry services to employees in remote locations. The commenter states that Cal/OSHA must provide a compliance pathway for these employers and their employees.

Response to Comment 59.18

The Board declines to revise the proposed regulations in response to the commenter's suggestion. The situation described by the commenter (e.g. mobile technicians or service personnel who work at customer sites) is considered by Cal/OSHA as a multi-employer worksite. The employers may cooperate with one another in fulfilling their duties and are both responsible for assuring compliance. The Board

notes that the multi-employer worksite concept is not new; it applies to all Cal/OSHA regulations. The Board also notes that employers, under the existing regulations in such multi-employer worksites, are required to provide protective clothing and equipment, change rooms, lunchrooms and showers to employees exposed above the current PEL. Further, the Board notes that the regulations do not require employers to provide employees with laundry services. However, employers are required to provide employees with clean and dry protective clothing and equipment when required by subsection 5198(g)(2)(A); this may be accomplished through the provision of disposable protective clothing and equipment, or by other means.

Comment 59.19

The commenter requests that Cal/OSHA exempt employees from pre-assignment BLL testing if they have had a BLL test in the prior two months. The commenter states that in battery manufacturing and recycling the "pre-work" testing could be triggered repeatedly by employees who transition between lead-exposed and non-exposed positions, which "can be expected with some regularity" as employees rotate through multiple positions for training or change employers within the industry. The commenter states that this would impose unnecessary costs on employers and unnecessary testing of employees without providing any meaningful data to either.

Response to Comment 59.19

The Board agrees with the statements made by the commenter. As a result, an exception has been added in the proposed text to the requirements for initial blood lead testing in subsection 5198(j)(2)(A)1., such that initial blood lead testing is not required for an employee who has had a blood lead test in the preceding two months.

Comment 59.20

The commenter states that if the Board adopts the proposed AL and other medical surveillance triggers, the state will need a substantial increase in BLL testing capacity (may more than double the number of BLL tests conducted nationwide). The commenter states that Cal/OSHA must evaluate and ensure adequate BLL testing laboratory capacity.

Response to Comment 59.20

Please see responses to comments 37.8 and 48.23.

Comment 59.21

The commenter recommends revising the BLL employee notification requirement so that employers may notify employees of BLL test results within five working days of the employer's receipt of the biological monitoring results, or no later than the employee's fifth working day after the employer's receipt of the biological monitoring results, whichever is later. The commenter states that this would add clarity to situations where an employee may be absent from work (e.g., they were on vacation).

Response to Comment 59.21

Please see response to comment 48.24.

Comment 59.22

The commenter states that Cal/OSHA should revise the standard to explicitly allow employers to provide BLL test results to employees through electronic means. The commenter states that many modern workplaces provide employees with electronic access to employee records (e.g., secure employee website) and paper-based communications may no longer be the norm.

Response to Comment 59.22

The Board declines to amend the standards in response to the commenter's suggestion. The Board notes that while the regulation requires written notifications, paper is not mentioned. Electronic means of notification are acceptable.

Comment 59.23

The commenter recommends that Cal/OSHA add a new subsection 5198(j)(3)(B)(7) requiring an examining physician to also evaluate an employee's non-occupational exposure and recreational activities that may result, or may have resulted in, lead exposure. The commenter states that non-occupational exposures can meaningfully contribute to BLL levels, and at the lower BLLs now under consideration, may even exceed the occupational contribution. The commenter states that reducing an individual employee's BLL requires addressing all sources of exposure and employers cannot control, and may not be aware of, outside exposures.

Response to Comment 59.23

The Board notes that the current standard as well as the proposed revisions require the medical examination to address both occupational and non-occupational lead exposure. The Board therefore declines to amend the standards in response to the commenter's suggestion.

Comment 59.24

The commenter states that proposed subsection 5198(j)(6)(A) should be modified to simply require that the employer receive a copy of any information provided to the employee in subsection 5198(j)(5), except for information redacted or withheld by the physician per subsection 5198(j)(6)(B), unless the employee approves in writing the sharing of the information. The commenter states that subsection 5198(j)(6)(C) should be removed to avoid confusion and duplication.

Response to Comment 59.24

The Board agrees in part with the commenter's suggestion. As a result, the Board has amended the proposed text in subsection 5198(j)(6)(A). The amended text would require the employer to obtain a written medical opinion containing the information required by subsections 5198(j)(5)(A) through (j)(5)(E), except as specified in subsection 5198(j)(6)(B). In addition, the Board has removed proposed subsection 5198(j)(6)(C) as suggested by the commenter.

Comment 59.25

The commenter believes that the MRP levels proposed by Cal/OSHA are appropriate, represent the lowest feasible levels, and correlate with conservative health objectives based on the state of today's science.

Response to Comment 59.25

The Board appreciates the commenter's support for this aspect of the proposed regulation.

Comment 59.26

The commenter supports retaining the framework of two thresholds for MRP: removal after a single BLL at a higher level and after a series of tests averaged over six months at a lower level. The commenter states that the standard should not base removal on a fixed number of tests (e.g., "last two tests") unless the requirement is linked to a time-based averaging period (e.g., six months) so as not discourage additional, more frequent, voluntary testing.

The commenter further states that the timeframe for testing should be aligned with the requirements elsewhere in the revised lead standards to require monthly testing for any employee whose last BLL was at or above 20 µg/dl. Cal/OSHA should, at a minimum, use the same period as the minimum duration for averaging in subsection 5198(k).

Response to Comment 59.26

Please see response to comment 48.12.

Comment 59.27

The commenter supports the modern practice of referring to BLL levels in micrograms per deciliter rather than micrograms per 100 grams of whole blood.

Response to Comment 59.27

The Board appreciates the commenter's support for this aspect of the proposed regulation.

Comment 59.28

The commenter strongly disagrees with the elimination of the provision that allows an employee to remain in their position if their most recent BLL is below the return-to-work BLL. The commenter states that other modifications to the standard (more frequent testing for those with BLLs at or above 20 µg/dl, medical examination, BLL response plan) mean that it is entirely likely that immediate reductions in an employee's BLLs will be achieved. The commenter states that if those efforts are successful, an employee should be allowed to remain in their position if their most recent BLL demonstrates such a reduction even if the mathematical average remains above 20 µg/dl. The commenter recommends that Cal/OSHA retain the following provision from the current rule in the text proposed for subsection 5198(k)(1)(C): Effective [OAL insert 1 year from effective date here], the average of the results of all blood lead tests conducted for the employee in the last 6 months is at or above 20 µg/dl; *provided, however, that an employee need not be removed if the last blood sampling test indicates a blood lead level below 15 µg/dl of whole blood.*

Response to Comment 59.28

Please see response to comment 48.14.

Comment 59.29

The commenter urges Cal/OSHA to adopt a provision that employers are not required to provide MRP benefits when an employer has assessed exposures in the work area and confirmed that ongoing exposures are below "all action levels," and a physician performs an exam and concludes that there is a non-occupational or recreational source of blood lead. The commenter's supporting arguments are:

- Existing MRP levels are generally higher than levels observed for non-occupational and recreational exposure, so it is relatively rare for an employer to have to remove an employee due to outside exposure.
- At the proposed levels, it would be more common for this to occur as studies have shown BLLS in excess of these levels resulting from non-occupational/recreational exposures.
- Provision would be extremely costly and may place severe and undue economic and technical burdens on employers.

Response to Comment 59.29

Please see response to comment 48.20.

Comment 59.30

The commenter states that existing requirement that an employee be allowed to return to work only after two consecutive tests below the numerical criterion is no longer appropriate at the levels under consideration.

- A single BLL below 15 µg/dl in combination with the elevated BLL response plan will be sufficient to demonstrate that the worker may return.
- The employee was removed from any potential occupational exposure so there will be no potential for an increase during the MRP period (unless the employee has non-occupational/recreational exposure).
- Extending the removal period by 30 days is unnecessary, highly costly to employers and unfair to employees.

Response to Comment 59.30

Please see responses to comments 48.16 and 48.18.

Comment 59.31

The commenter states that Cal/OSHA should allow employees on MRP to be placed in areas with air lead concentrations above the AL but below the PEL.

- The availability of locations to which an employee on MRP could be reassigned will be significantly constrained by the proposed reduction of the AL to 2 µg/m^3.

- The proposed PEL is designed to reduce lifetime BLLs to 10 µg/dl therefore, it is appropriate to allow workers to work in areas above the AL but below the PEL.

Response to Comment 59.31

The Board is not persuaded by the commenter's argument and therefore declines to amend the proposed text as suggested. The Board believes that removing an employee from work with exposure to lead at or above the AL of 2 µg/m^3 (compared with allowing the employee to work in areas with airborne concentrations of lead below the PEL) will cause a more rapid decline in the employee's BLL and the MRP period will therefore be shortened.

The Board thanks the commenter for their input and participation in the rulemaking process.

60. Dan Napier MS, CIH, by written comments dated April 19, 2023.

Comment 60.1

The commenter states that the recommendations and proposed changes from the advisory meetings have been ignored.

Response to Comment 60.1

The Board disagrees with this comment. Please see response to comment 19.1.

Comment 60.2

The commenter states that the current standard is not frequently cited and there is no evidence of significant health issues among workers. The commenter states that changing the standard simply because of the passage of time is not appropriate.

Response to Comment 60.2

The Board does not agree with the comment. The proposed amendments, including the reductions in the proposed PEL and AL, are needed to adequately protect the health of employees who have occupational exposure to lead. Existing requirements in sections 1532.1, 5155 and 5198 are based on lead toxicity information and medical and epidemiological data that is now more than 40 years old. More recent evidence demonstrates that even very low levels of lead exposure can have harmful health effects. Such adverse health effects include high blood pressure, heart disease, decreased kidney function, lower birth weight, reproductive and neurological effects. These harmful effects can occur at levels well below those currently allowed by the regulations. The proposed amendments to the regulations are designed to mitigate more recently recognized adverse health effects from lower levels of exposure to lead.

The Board's proposed changes, including the reductions in the PEL and AL, are based in part on recommendations from the CDPH to Cal/OSHA. The CDPH OLPPP reviewed the scientific information, including a review from the NTP (2012) and a report issued by the US EPA (2013), and concluded that there is convincing evidence that chronic, low-level exposure to lead can cause harmful health effects.

CDPH concluded that the BLL of employees should not exceed 5-10 micrograms per deciliter (µg/dl) over a working lifetime.

This proposal is designed to maintain employee BLLs below 10 µg/dl, whereas existing regulations were designed to maintain employee BLLs below 40 µg/dl, a level four times higher. There are many employee BLLs greater than 10 µg/dl in the OLPPP ABLES data. Furthermore, many employees are not being tested for BLLs so OLPPP's data set is incomplete and may not be representative of actual employee BLLs.

To achieve the goal of maintaining employee BLLs below 10 µg/dl, the proposed amendments would (1) reduce exposure to airborne lead; (2) reduce exposure to lead through the oral route of exposure; and (3) expand requirements for blood lead testing of employees who work with lead, independent of measured levels of airborne lead. Reductions in both the proposed PEL and AL are central to achieving this goal.

Existing title 8 regulations establish a PEL for lead of 50 µg/m^3, as an 8-hour TWA concentration. CDPH submitted health-based recommendations to Cal/OSHA for revising its Construction and General Industry lead standards (2013). The recommendations were based on a PBPK model developed by OEHHA (2013). This model correlates exposure levels to airborne lead with resulting BLLs. In its recommendations, CDPH stated that in order to prevent chronic BLLs at or above 5-10 µg/dl, air lead levels in the workplace must not exceed an 8-hour TWA concentration of 0.5-2.1 µg/m^3. At a PEL of 2.1 µg/m^3, 95% of employees would have a BLL less than 10 µg/dl over their working lifetime. Cal/OSHA concluded that lowering the PEL to this low level was not a feasible regulatory option. However, a PEL of 10 µg/m^3, along with the suite of additional revisions, would have the same effect of reducing BLLs to 10 µg/dl for nearly all employees with occupational exposure to lead. With regard to the proposed AL, please see the response to comment 37.4.

With respect to the costs and benefits of the proposed revision of the lead standard, the Board notes that the following was part of the SRIA submitted in support of the proposal: These proposed regulatory changes, if adopted, are expected to have important and far-reaching impacts on the California economy. While they would give rise to compliance costs for industries where employees are currently exposed to lead, reforming decades-old exposure safety standards will confer health benefits on current and future California employees and their families that far exceed these costs. Compliance costs reflect the need to update 40+ year-old exposure and health intervention standards, providing employees with enhanced protective measures to reduce exposure (e.g. engineering controls, respiratory protection, hygiene and personal protective equipment), while strengthening employee training, air testing, medical surveillance and medical intervention requirements. These costs are expected to accrue to the sectors whose employees are exposed to lead, and ultimately would be passed along to consumers of products and services in these industries. The benefits of the proposed regulation include reductions in morbidity and mortality associated with lower levels of lifetime air and oral exposure of employees to lead, a material whose toxicity occurs at much lower levels than had long been indicated. Employees in a large swath of California industries would experience health benefits from reduced exposure to lead. In addition, take-home lead exposures to family and household members of employees would be reduced, resulting in additional health benefits.

Comment 60.3

The commenter states that the research is flawed and ignores work that does not find the connections to symptoms that some research has shown. The commenter states that NIOSH cannot replicate the studies that others have done. The commenter further states that there is no direct evidence or chemical explanation linking lead to the illnesses described.

Response to Comment 60.3

Please see response to comment 60.2.

Comment 60.4

The commenter states that the proposed regulation does not recognize that lead is ubiquitous in air and soil, does not provide a bottom limit on lead content, and sets limits at or below background levels. The result is:

- Almost every enterprise in the state will be affected.
- The PEL and AL are "perilously close to background levels."
- Trigger tasks have been expanded creating vague limits leading to hundreds of thousands of pointless physical examinations.
- Hundreds of thousands of pointless invasive BLLs tests will be required.

Response to Comment 60.4

Please see responses to comments 12.1 and 48.8.

Comment 60.5

The commenter states that the science that the levels are based on *[commenter does not include what levels they are referring to]* is flawed because they are not in diverse communities and the conclusions are not supported by worldwide exposures.

Response to Comment 60.5

The Board notes that the proposed changes, including the reductions in the PEL and AL, are based in part on recommendations from the CDPH to Cal/OSHA. The CDPH OLPPP reviewed the scientific information, including a review from the NTP (2012) and a report issued by the US EPA (2013), and concluded that there is convincing evidence that chronic, low-level exposure to lead can cause harmful health effects. While there may be some limitations to the data, the scientific literature on the toxicological effects of lead is extensive and well established.

Comment 60.6

The commenter states that the listed illnesses are caused by many factors for which we have direct causal evidence while there is no direct evidence to explain how lead causes these illnesses.

Response to Comment 60.6

Please see response to comment 60.5.

Comment 60.7

The commenter states that the lead standards are cited infrequently and there are no significant numbers of injured workers under the current standards. The commenter states that the proposed standard is a solution seeking a problem.

Response to Comment 60.7

Please see response to comment 60.2.

Comment 60.8

The commenter states that the regulation does not define the qualifications for the professionals needed to evaluate exposure or prescribe personal protective equipment or other control measures. That missing regulation will allow significant risk to the employees and employers. The commenter states that identifying professionals who have the training and would have the liability to protect the employees and employers should be in the regulation.

Response to Comment 60.8

Please see response to comment 4.1.

Comment 60.9

The commenter states that the revised lead standard is apparently driven by a legal mandate to revise the standard. The commenter states that anything short of a revision based on supportable scientific information, with direct cause identified, will result in cost, overreaching and ineffective public benefit.

Response to Comment 60.9

Please see response to comment 60.2.

Comment 60.10

The commenter states that the additions of multiple trigger tasks are not based on scientific demonstrated fact, are capricious, and are not supported by significant exposure assessments.

Response to Comment 60.10

The Board notes that the proposed construction standard adds no new 'trigger tasks' to the current standard. The proposal merely introduces the term 'trigger task' to designate the existing concept within the current standard. Existing 'trigger tasks' have in some cases been moved up a level due to the proposed decrease in the PEL.

Comment 60.11

The commenter states that limiting the work hours for abrasive blasting is inappropriate. The commenter has worked with contractors doing abrasive blasting on high lead content paint in confined spaces for a full eight-hour shift. BLLs were not above 10, and air-monitoring levels were from detection to 400 $\mu g/m^3$.

Response to Comment 60.11

The Board notes that subsection 1532.1(d)(2)(E) places time limits on abrasive blasting work only as an interim protection until exposure monitoring is conducted. This is to control employee exposures during the period in which the effectiveness of the controls is untested. It also allows the contractor to measure employee exposures during the shortened shift without risking over-exposing employees. Based on the results of the shortened shift exposure monitoring, the contractor can assess the effectiveness of the engineering and work practice controls, and the adequacy of the respiratory protection. Based on the results, the contractor can assess whether employees will likely be exposed under the PEL (25 µg/m^3 for the first five years of the standard, 10 µg/m^3 thereafter) when working a full shift. The full shift exposure must then be confirmed by full-shift sampling.

Comment 60.12

The commenter states that requiring physicians to review physical exam results with workers is burdensome, because the gap between drawing blood and the analysis would require two doctor visits per physical.

Response to Comment 60.12

The Board disagrees with the commenter's point. The Board notes that the PLHCP's explanation of the results of an employee's medical evaluation can be done by telemedicine, telephone or in writing, instead of in person. Thus, two medical visits per physical exam would not be required under the proposed standards.

Comment 60.13

The commenter states that this proposed regulation is ill conceived, overreaching and not scientifically supportable. The commenter states that as written, the proposed regulation will have significant costs for the State and the economy and very little or no benefit for either the State or the economy.

Response to Comment 60.13

Please see response to comment 60.2.

The Board thanks the commenter for their input and participation in the rulemaking process.

61. Cam Mackey (via Dan Glucksman), President & CEO, on behalf of International Safety Equipment Association, by written comments dated April 20, 2023.

Comment 61.1

The commenter states that Cal/OSHA's proposed amendments to the lead standards are, in general, a positive step in helping to ensure that California workers are protected from workplace lead exposure. The commenter states that the proposed amendments note the importance of the hierarchy of controls to reduce inhalation exposure as well as ingestion exposure due to surface contamination. The commenter states that engineering controls followed by use of appropriate NIOSH-approved respiratory

protection within complete respiratory protection programs, would be even more important if the proposed lower PELs are enacted.

Response to Comment 61.1

The Board thanks the commenter for their input and support of the proposed amendments.

Comment 61.2

The commenter recommends abandoning the proposed amendment prohibiting the use of filtering facepiece respirators since:

- It is not supported by evidence or data and would limit access by workers and employers to a key instrument in exposure reduction.
- The statement in the ISOR that filtering facepiece respirators are unlikely to provide adequate protection to employees due to the difficulty in achieving and maintaining a satisfactory face seal is not supported by scientific evidence and contradicts a longstanding, well-researched federal OSHA rule on respirator assigned protection factors.
- Filtering facepiece respirators have been successfully used by millions of workers over a half-century, in diverse work environments, to help reduce workers' exposures to airborne particulate hazards.
- Workers' ability to achieve and maintain a satisfactory seal with any tight-fitting respirator is supported by training and fit testing as part of a Respiratory Protection Program.
- The blanket ban would restrict health and safety professionals from selecting a scientifically effective respirator option that may be deemed optimally protective of workers' health, per site-specific hazard evaluations, because of their disposable design.
- Keeping respirator requirements science-based and consistent for all workers may result in greater compliance, proper use of respirators and help ensure effective respiratory protection for all workers.

Response to Comment 61.2

Please see response to comment 38.12.

Comment 61.3

The commenter states that workers must be provided with disposable or reusable coveralls to minimize take-home contamination. The commenter states that the proposed lead amendments should include language for protective clothing similar to OSHA's beryllium standard (subsection 1910.1024(h)(2)(i)), which would be more protective for workers, their families and those who collect and launder contaminated garments.

Response to Comment 61.3

The Board is not persuaded by this comment. The federal beryllium standard in subsection 1910.1024(h)(2)(i), requires the removal of contaminated work clothing at the end of the shift, at the completion of tasks involving beryllium, and when it becomes visibly contaminated. The same language is found in the California beryllium standard in subsection 1535.1(h)(2)(A). Existing language in the

California lead standards, in subsections 1532.1(g)(2)(D) and 5198(g)(2)(D), requires the removal of protective work clothing at the completion of the work shift. The Board notes that, unlike inorganic lead, beryllium is toxic through dermal contact and that this justifies the stricter language in the beryllium standard. In addition, requiring the removal of visibly contaminated clothing in the lead standards would be impractical given the dusty construction trades which disturb lead-containing materials, e.g., abrasive blasting.

Comment 61.4

The commenter states that multiple studies show that disposable paper towels are the most hygienic option in workplace handwashing requirements:

- Air dryers have been shown to disperse dusts and aerosols into ambient air.
- Reusable towels have been shown to retain toxic chemicals even after commercial laundering.
- Disposable paper towels control the risk of putting pathogenic bioaerosols into the ambient air.
- Disposable paper towels negate the risk of dermal exposure from previous use, which has been found with reusable towels.

Response to Comment 61.4

The Board believes that the manner in which employees dry their hands should be left to the discretion of the employer.

Comment 61.5

The commenter states that manufacturers of PAPRs say there is no delay in providing PAPRs to customers in contrast to statement made by another commenter at the April 20, 2023, public hearing.

Response to Comment 61.5

The Board thanks the commenter for the information provided.

The Board thanks the commenter for their input and participation in the rulemaking process.

62. Pamela Murcell, MS, CIH, President, on behalf of California Industrial Hygiene Council, by written comments dated April 20, 2023.

Comment 62.1

The commenter states that CIHC recommends that Cal/OSHA require that air sampling is conducted under the supervision of a CIH and sample analysis is done by an accredited laboratory. Competent exposure assessment and monitoring are critical because they are the basis for all other elements of compliance including medical. The commenter states that the intent to emphasize IH competence is currently contained in subsection 5155(e)(3). The commenter proposes specific language to be added.

Response to Comment 62.1

Please see responses to comments 4.1 and 4.3.

Comment 62.2

The commenter recommends that Cal/OSHA require that laboratories used for the analysis of samples collected for exposure assessments be ELLAP accredited for quality assurance.

Response to Comment 62.2

Please see response to comment 4.3.

Comment 62.3

The commenter's recommendations that exposure assessment be conducted by or under the supervision of a CIH and that labs be ELLAP accredited, should also apply to surface sampling.

Response to Comment 62.3

Please see responses to comments 4.1 and 4.2.

Comment 62.4

The commenter states that Cal/OSHA should incorporate a requirement for quantitative assessment of surface cleanliness, not just a qualitative approach, and establish a numerical value for cleanliness.

Response to Comment 62.4

Please see response to comment 4.2.

Comment 62.5

The commenter states that Cal/OSHA should establish an AL of 5 $\mu g/m^3$. Half the PEL is a widely accepted/utilized approach to setting an AL. In addition, the commenter states that it would address concerns about the ability to accurately assess a level of 2 $\mu g/m^3$ due to the detection limits of current standard methods for sampling and analysis.

Response to Comment 62.5

Please see responses to comments 37.4 and 37.17.

Comment 62.6

The commenter recommends that Cal/OSHA replace the language in subsection (f) of sections 1532.1 and 5198 with language used in more recently adopted substance-specific standards, such as silica (title 8 CCR subsection 5204(g)).

Response to Comment 62.6

Please see response to comment 38.13.

Comment 62.7

The commenter requests the removal of the exclusion of filtering facepiece respirators for exposures up to 10 times the PEL.

Response to Comment 62.7

Please see response to comment 38.12.

Comment 62.8

The commenter recommends that requirements based on the results of exposure evaluation be presented in a table format because the proposed text "with excessive verbiage is confusing and difficult to follow."

Response to Comment 62.8

The Board believes that these kinds of explanatory aids are best presented as part of educational materials put forward by Cal/OSHA.

Comment 62.9

The commenter recommends that criteria that trigger medical evaluation be presented in a table format because the commenter states that the proposed text of these requirements contains excessive verbiage that is confusing and difficult to follow.

Response to Comment 62.9

The Board declines to reformat the proposed text of these requirements in the body of the standard itself; however, it directs the commenter to Appendix C (Medical Surveillance Requirements) to the proposed revisions of sections 1532.1 and 5198. In particular, in Section I, Table 1, medical surveillance requirements are shown in a table format.

Comment 62.10

The commenter recommends that MRP requirements be presented in a table format because the commenter states that the proposed text of these requirements contains excessive verbiage that is confusing and difficult to follow.

Response to Comment 62.10

The Board declines to reformat the proposed text of these requirements in the body of the standard itself; however, it directs the commenter to Appendix C (Medical Surveillance Requirements) of the proposed revisions of sections 1532.1 and 5198. In particular, in Section I, Table 2, minimum requirements during the MRP period are shown in a table format.

Comment 62.11

The commenter is concerned that Cal/OSHA is taking a "one size fits all" approach, which will not work in the varied lead industries. The commenter recommends that Cal/OSHA reconvene the advisory committee given the extensive modifications between the 2016 and the current proposal and the broad application of changes.

Response to Comment 62.11

Please see response to comment 66.11.

The Board thanks the commenter for their input and participation in the rulemaking process.

63. Greg Kramer (via Stephanie Salmon), Technical Director, on behalf of American Foundry Society, by written comments dated April 20, 2023.

Comment 63.1

The commenter states that the existing AL and PEL continue to be protective of worker health. The commenter recognizes that the most current data indicate that a lowering of the removal from work and return to work BLLs may be justified, but many of the other proposed changes to the Cal/OSHA orders are not. The Michigan Occupational Safety and Health Administration (MIOSHA) Lead in General Industry Standard was updated in 2018 to protect workers from occupational exposure to lead based on current science but MIOSHA did not lower the Action Limit of 30 µg/m^3 and the PEL of 50 µg/m^3. The commenter agrees with MIOSHA's pragmatic approach that aimed to ensure that the lead standard is protective of worker health while minimizing impact on business.

Response to Comment 63.1

The Board notes that the goal of California's proposed general industry lead standard is to reduce and maintain all employees' BLLs to below 10 µg/dl, well below the proposed medical removal level. The control of airborne lead levels is essential to the effort to reduce BLLs not only because it reduces the inhalation of lead particulate, but also because the distribution and settling of airborne lead is the primary source of workplace contamination, which then necessitates diligent hygiene and housekeeping. The control of airborne lead levels supports the other exposure controls.

Comment 63.2

The commenter states that existing sampling and analytical methods do not provide the accuracy and consistency necessary to support the proposed AL and PEL. OSHA Method ID-125G, last revised in 2002, establishes the qualitative detection limit for lead is 2.1 µg and the quantitative detection limit is 7.0 µg. The commenter states that this method is not suitable to confidently measure employee exposures below 2 µg/m^3. Establishing an AL of 2 µg/m^3 is not appropriate nor justified and would unnecessarily pull all foundries into the proposed lead standard.

Response to Comment 63.2

Please see responses to comments 37.17 and 37.4.

Comment 63.3

The commenter states that the proposed AL and PEL will unnecessarily increase the financial burden on foundries and other small businesses while not improving employee protection. A lowered PEL and AL will expand the number of foundries and employees affected by the lead standard, including potentially a significant number of ferrous (iron and steel) foundries that have never dealt with the lead standard. While ferrous foundries do not use lead as an alloying ingredient, they encounter lead as a contaminant in the scrap metal that is melted to create castings. Ferrous foundries limit this contamination by

controlling scrap quality but even with good scrap control measures, lead cannot always be pre-identified or avoided. Smelters and pourers in ferrous foundries will have to comply with the new standard since their exposures will likely exceed the new AL and possibly the PEL. Other jobs such as maintenance, housekeeping and scrap handling are potentially impacted. While the number of employees in these jobs in any one foundry may not be high, these foundries will now have to institute a comprehensive lead program.

Response to Comment 63.3

The Board is unsure how to respond to this comment as no airborne exposure data is provided to evaluate the statements made. The Board notes that if, as the commenter suggests, exposures are indeed above the proposed AL, or even the proposed PEL, there is a strong argument to be made that this industry should be focusing resources on protecting employee health and on preventing take-home lead contamination.

Comment 63.4

The commenter states that non-ferrous foundries will need to expand their lead programs to cover far more employees under the proposed rule. Based on data collected at nonferrous foundries, there are jobs that have not historically exceeded the current PEL or AL but would exceed the new proposed PEL and AL and would have to be included in the lead program under the proposed rule. For example, non-foundry operations such as machining and deburring on lead-containing castings have rarely exceeded the new PEL but are over the new AL. In addition, most have exposures below the reporting limit of the method, which is very close to the proposed AL, in many cases. This does not provide much confidence that the AL is met or exceeded. It seems any sample below the reporting limit would have to be assumed to be over the new AL, greatly expanding the number of employees that would have to be in a lead program.

Response to Comment 63.4

Please see response to comment 63.3. On the sampling and analytical issues, please see the response to comment 37.17.

Comment 63.5

The commenter states that non-ferrous foundries processing lead-containing alloys, even low lead alloys, will likely have to implement engineering and work practice controls throughout the entire foundry operation to comply with the new PEL, as a much larger proportion of the operations will exceed the new PEL. Operational changes will require extensive engineering work, regulatory review, permitting, procurement of equipment and materials, system construction/modification, and performance testing. Job rotation is not likely to be an option due to the lack of jobs with “low” lead exposure in the facility.

Response to Comment 63.5

Please see response to comment 63.4.

Comment 63.6

The commenter states that many nonferrous foundries indicated that they do not have the shower, change room and lunchroom capacity for the additional workers who will now need to be covered under the proposed rule – thus, they will need time built into the rulemaking to make facility modifications to add additional washing facilities, showers, change rooms and lunchrooms. The commenter states that staggering shifts may not work for all facilities to facilitate this.

Response to Comment 63.6

The Board has taken comments about the need for a phase-in period under consideration. As a result, the Board is proposing a six-month delay of the effective date for the entirety of the revised regulations. Also, the Board is proposing an additional one-year delay in the implementation dates for requirements to provide change rooms, showers and lunchrooms in the general industry regulation. The Board notes that where an employer is required to provide a shower, change room or lunchroom, they may install a temporary facility while awaiting completion of permanent structures.

Comment 63.7

The commenter believes respiratory protection should continue to be an acceptable employee protection measure to comply with lead exposures. The commenter states that respiratory protection has proven to be effective and an important part of the hierarchy of controls. The commenter further states that it should not be the sole control method but remains important when used in conjunction with feasible engineering and administrative control methods.

Response to Comment 63.7

The Board notes that the existing language (see subsections 1532.1(e)(1)(A) and 5198(e)(1)(B)), which is unchanged in the proposals, makes it clear that the application of feasible engineering and work practice controls, when not sufficient, can be supplemented using respiratory protection.

Comment 63.8

The commenter supports keeping the 30-day exclusion trigger that is in the current lead standard. Some foundries do not process lead-containing castings every day. The commenter states that many of the jobs that have short duration but potentially high lead exposures, such as maintenance related tasks, are difficult to sample because of the unpredictability and timing of such work. Thirty-day exclusion limits are included in OSHA's Hexavalent Chromium and Respirable Crystalline Silica standards. Employees doing such work should still be protected with appropriate PPE and use proper work practices and follow good hygiene practices.

Response to Comment 63.8

The Board interprets this comment to be a reference to the 30-day exclusion trigger in subsection 5198(j)(1)(A)1. The Board declines to keep the 30-day exclusion to medical surveillance in the proposed lead standard. However, the Board notes that where work with lead is infrequent, some relief from the medical surveillance requirements is warranted. Therefore, two exceptions have been added to the proposed text in subsection 5198(j)(1)(A)1.:

EXCEPTION 1: Medical surveillance is not required for an employee who is not exposed to lead at or above the action level for 30 or more days in any 12 consecutive months, and who is not exposed on any day above 10 µg/m^3 as an 8-hour TWA, without regard to respirator use.

EXCEPTION 2: Medical surveillance is not required for an employee who is not exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use.

Comment 63.9

The commenter states that a strict interpretation of the MRP language requires employers to provide MRP benefits to any employee whose BLL exceeds the proposed MRP levels regardless of whether the elevated BLL is due to workplace or non-occupational exposure. This places an unjustified burden on the employers and employees assigned to cover the removed worker's job. Cal-OSHA should include additional language clarifying that medical removal benefits are required when: 1) workplace exposures are determined to exceed relevant ALs and 2) a medical examination by a qualified physician concludes that those exposures are the primary cause of the employees' elevated BLL.

Response to Comment 63.9

Please see response to comment 48.20.

Comment 63.10

The commenter states that the term "presumed hazardous lead work (PHLW) in section 5198 should be removed and replaced with "trigger amount of lead work" from the 2016 draft language. The commenter states that PHLW triggers pre-emptive mitigation measures prior to an assessment of whether they are needed, and nothing in the rulemaking record shows that the described work tasks are hazardous. The commenter further states that PHLW terminology leaves employers "at the mercy of inspectors" as to whether they are in compliance and exposes them to litigation by third parties exploiting the subjectivity of the PHLW language.

Response to Comment 63.10

Please see response to comment 48.11.

Comment 63.11

The commenter states that the drastically lower proposed exposure limits unintentionally create more hazardous conditions for workers in enclosed and confined spaces. Where the limits cannot be achieved, workers will need to wear Tyvek suits and respirators putting them at higher risk for heat illness, especially during the summer. Historically, maintaining lower BLLs in workers has been achieved through hygiene. The minimal gains in health protection expected from the five-fold reduction in the PEL are not justified when weighed against the greater potential for harm from increased heat exposure.

Response to Comment 63.11

The Board notes that lead-specific PPE need not be an added source of heat stress relative to appropriate industrial work clothing. The proposed regulations do not specify non-permeable, high heat-stress inducing garments. They merely specify that the protective work clothing prevent contamination of the skin or employee's garments. This does not mean that the employee must wear a full second layer of protective clothing. The proposed regulations list appropriate protective work clothing and equipment that prevents contamination of the employee and the employee's garments including, but not limited to: coveralls or similar full-body work clothing; hats or other head coverings, and shoes or disposable shoe coverlets; and where needed, gloves, face shields, vented goggles, or other appropriate protective equipment.

Comment 63.12

The commenter recommends that Cal/OSHA reinstate language from the 2016 draft that allowed properly designed hydration stations in high-heat work environments. This exception is critical for workers in unavoidably high heat environments, such as confined or unconditioned spaces or near high temperature equipment or processes. Quick access to water is the single most important factor preventing heat illness. Removal of this language conflicts with Cal/OSHA's outdoor heat standard and the newly proposed indoor heat standard. Hydration stations can be designed to prevent lead exposure.

Response to Comment 63.12

Please see response to comment 48.30.

Comment 63.13

The commenter estimates that pre-assignment BLL testing would "create a surge of more than 800,000" BLL tests in the first six months of implementation. Cal/OSHA has not demonstrated there is adequate laboratory capacity for this testing. "Absent evidence that suppliers and service providers are taking immediate steps to expand capacity" that are sufficient to meet the demand, the commenter states that a more gradual phase-in is needed for employers to comply with BLL testing requirements.

Response to Comment 63.13

Please see response to comment 57.4.

Comment 63.14

The commenter appreciates the phase-in for the step down in MRP level but notes that the balance of the proposed changes would take effect immediately upon filing of the final orders with the Secretary of State. The commenter states that Cal/OSHA's approach does not account for the "practical realities" of meeting much more stringent standards including: availability of phlebotomists or nurses and laboratory capacity for an "exponential increase" in BLL testing; availability of qualified medical professionals to manage BLL testing and elevated response plans (particularly challenging in rural areas); time and expertise to evaluate and select engineering and work practice controls; obtaining changes to air permits and other permitting requirements; and shortage of contractors/materials/equipment and lead time to make major facility modifications.

Response to Comment 63.14

Please see response to comment 48.2.

Comment 63.15

The commenter states that individual employers may be eligible for a variance, but Cal/OSHA is likely to be inundated with requests (proposed orders likely to apply to 227,000 employees) and unable to process them in time to avoid enforcement actions for circumstances beyond employers' control. The commenter states that Cal/OSHA's failure to incorporate compliance schedule revisions is likely to result in immediate and widespread non-compliance with the revised orders.

Response to Comment 63.15

Please see response to comment 57.2.

Comment 63.16

The commenter recommends that Cal/OSHA amend the orders to incorporate the compliance schedule recommendations in their November 14, 2022, letter. In their November 14, 2022, letter they request that Cal/OSHA use a phased implementation schedule as was done in the original standard and reference the 1978 federal standard. If that approach is not feasible, they ask that Cal/OSHA include cross references to the Compliance Program provisions in subsection 5198(e)(2). They offer language to be added to subsections 5198(e)(1)(A) and (B) – … to the extent that the employer is implementing such controls in accordance with the employer's Compliance Program as required by subsection 5198(e)(2)(A) or can demonstrate that controls are not feasible.

Response to Comment 63.16

Please see response to comment 57.3.

The Board thanks the commenter for their input and participation in the rulemaking process.

64. Sharon Hilke, Executive Director, on behalf of Painting & Decorating Contractors of California, Inc., by written comments dated April 20, 2023.

Comment 64.1

The commenter states that standard portable showering units may not be used if there is any possibility of lead contamination. The commenter states that while not specified in the proposed regulation, compliance would mandate the use of "Portable Decontamination Showering Facilities." These facilities have HEPA filters for air and water and separate dirty and clean stations. The commenter states that the facilities are not available for rent and must be purchased (price range $78,200 to $94,240.). The commenter estimates that the cost for a small painting contractor to purchase sufficient units would be $180,000 - $360,000. The overall cost if only painting, roofing and general contractors purchased just one unit, would be $11,094,000,000. The commenter states that it appears that Cal/OSHA gave no consideration to the need for decontamination units. The commenter states that this regulation will destroy construction business in California. "… the proposed showering standard is unattainable."

Response to Comment 64.1

The Board is not persuaded by the commenter's argument. Please see response to comment 19.16.

The Board thanks the commenter for their input and participation in the rulemaking process.

65. Scott R. Myers, CIH, CSP, CAC, LIC I/A, President, on behalf of Southern California Local Section of the American Industrial Hygiene Association, by written comments dated April 20, 2023.

Comment 65.1

The commenter expresses support for the written comments and recommendations presented in the letter submitted by Mr. Howard B. Spielman, dated March 17, 2023.

Response to Comment 65.1

The Board has reviewed and considered all submissions timely made during the comment period.

The Board thanks the commenter for their input and participation in the rulemaking process.

66. Maureen Gorsen (via Caleb J. Bowers), Partner, on behalf of Electronic Recyclers International, Inc., by written comments dated April 20, 2023.

Comment 66.1

The commenter states that Cal/OSHA's recent revisions would have extreme impacts on numerous types of small businesses and would eviscerate certain businesses in California. The commenter states that businesses that perform vital services such as e-waste recycling cannot reasonably comply with the standards as proposed. The commenter urges Cal/OSHA "in the strongest possible terms" to withdraw the proposed amendments. The commenter asks at the very least to provide additional stakeholders, including small businesses who are now impacted and do not monitor this type of development, with the opportunity to receive adequate notice of the changes and submit their comments. The commenter states that many stakeholders do not have the resources to quickly identify and assess rulemakings such as this one and need more than 45 days to evaluate the changes and provide comments.

Response to Comment 66.1

Regarding the impact of the revisions on small business, the Board notes that the majority of the requirements in the proposed regulations only apply to employees who have potentially harmful lead exposure levels and are necessary to protect the health of employees by supporting the goal of maintaining employee BLLs below 10 µg/dl.

Regarding the commenter's request to withdraw the proposed amendments, the Board declines this request and refers the commenter to the response to comment 66.10.

Regarding the commenter's request to extend the comment period, please see the response to comment 24.1.

Comment 66.2

The commenter states that the proposal fails to account for the impacts on mobile workforces, which is evident in the requirement to provide showers. The commenter states that this requirement is highly impractical and virtually impossible in many scenarios for mobile worksites. The commenter states that the removal of the phrase "where feasible" virtually guarantees the inability to comply in many scenarios.

Response to Comment 66.2

Please see response to comment 19.16.

Comment 66.3

The commenter states that the proposed standard provides a five-year exemption for compliance with the revised PEL of 10 µg/dl for abrasive blasting due to technological limitations for implementation. However, this is problematic as there is no consensus on whether complying with a PEL of 10 is feasible now or would be in five years. The commenter states that similar consideration of technological feasibility in other scenarios must be given to other impacted industries and businesses.

Response to Comment 66.3

The Board notes that the standards include the existing language in both subsections 1532.1(e)(1)(A) and 5198(e)(1)(A), which addresses feasibility, including technological feasibility. The provisions require the use of engineering and work practice controls to maintain employee exposure below the PEL "to the extent that such controls are feasible. Wherever all feasible engineering and work practices controls that can be instituted are not sufficient to reduce employee exposure to or below the PEL prescribed in subsection (c) of sections 1532.1 and 5198, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them by using respiratory protection that complies with the requirements of subsection (f) [of sections 1532.1 and 5198]." The Board believes this language addresses the limits on feasibility that the commenter raises.

Comment 66.4

The commenter states that Cal/OSHA's quantification of the health benefits is questionable and needs further examination.

Response to Comment 66.4

The Board disagrees with this comment. The SRIA relies on numerous health studies and utilizes a standard methodology to quantify and monetize benefits to the extent possible. The SRIA acknowledges that there may be additional benefits beyond those quantified and includes a qualitative discussion of those additional benefits.

Comment 66.5

The commenter states that the new definition "altering or disturbing" will dramatically increase the number of employers subject to the rule. The commenter states that employers not typically required to follow the lead standards will have to consider a "myriad of tasks" because there is a potential for lead

exposure. The commenter states that 45 days is not enough time for businesses to evaluate the very broad impacts of the proposed standard.

Response to Comment 66.5

The Board notes that the proposed definition "Altering and Disturbing" is employed on two occasions in the proposed text of section 5198. It is used as part of the definition of "Presumed Hazardous Lead Work" (now "Presumed Significant Lead Work") which is employed in proposed language in subsection 5198(d)(2) to require certain interim protections until the employer performs an exposure assessment. This proposed requirement does not expand the scope of the standard to employers not already covered by the standard and does not supplant the determination of protections based on exposure assessment. "Altering and disturbing" is also used in proposed new language in subsection 5198(k)(1). Here it is used to strengthen the criteria governing the removal of an employee from lead exposure when they are on medical removal protection. This proposed requirement does not expand the scope of the standard to employers not already covered by the standard. In addition, regarding the request for an extension of the comment period, please see response to comment 24.1.

Comment 66.6

The commenter states that many of the proposed changes take effect immediately. The commenter states that immediate implementation fails to account for the practicalities of implementation such as the exponential increase in BLL testing, laboratory services, and medical monitoring programs and the lead times needed to modify existing facilities and worksites to comply with the standard (e.g., contractors, materials). The commenter also states that small businesses need more than 45 days to review and analyze the impacts of the proposed standards on their businesses.

Response to Comment 66.6

Regarding the commenter's statements about the practicalities of implementation, please see responses to comments 11.4 and 48.2.

Regarding the insufficiency of the 45-day review [comment] period, please see response to comment 24.1.

Comment 66.7

The commenter states that the massive revision to the standards is provided without sufficient notice. The commenter states that Cal/OSHA has more than tripled the page count of the revisions and made the proposed standards significantly more stringent. The commenter further states that not all the documents relied upon are available on the webpage and require filing a public records request with the Board. The commenter states that Cal/OSHA has provided the statutory minimum 45-day comment period, but this is not adequate for impacted parties to receive notice of the amendments.

Response to Comment 66.7

Please see response to comment 24.1.

Comment 66.8

The commenter states that Cal/OSHA has not provided adequate notice to stakeholders impacted by the changes made between the 2016 version and the most recent version. The commenter states that the current broader proposal would impact many other businesses that have not participated in advisory meetings (e.g., jewelry making/repair, cosmetics sellers/specialists, pottery/ceramics, automotive brakes and home heating repair/maintenance, welders and cutting operations). The commenter states that these stakeholders must be provided with adequate notice and an opportunity to comment on the rule.

Response to Comment 66.8

Please see response to comment 24.1.

Comment 66.9

The commenter states that the proposed amendments have implicated additional relevant stakeholders who are entitled to adequate notice of prohibited conduct in compliance with the due process protections under California and US Constitutions. The commenter further states that the lack of sufficient notice infringes on these stakeholders' constitutional right to receive due process.

Response to Comment 66.9

The Board has complied with all legal and regulatory notice requirements for a regular APA rulemaking.

Comment 66.10

The commenter states that a new advisory committee should be convened because the last meeting was over seven years ago, the Cal/OSHA Board staff have changed since then, the relevant stakeholders have changed, and the proposal has changed significantly. The commenter states that all of this happened without Cal/OSHA reconvening the advisory committee.

Response to Comment 66.10

The Board has engaged in lengthy and continued efforts to obtain stakeholder input and address concerns during the pre-rulemaking phase and formal rulemaking process. Significant advisory committee efforts have been undertaken in relation to this rulemaking. From February 23, 2011, through November 10, 2015, six advisory committee meetings were held to determine what amendments should be proposed for sections 1532.1, 5198 and 5155. The meetings were open to the public. Representatives from industry, labor, occupational medicine, advocacy groups and government agencies participated. These meetings, held outside of the formal rulemaking process, provided an opportunity for stakeholder comments and for solicitation of alternatives to the proposed regulation. At the advisory committee meetings, Cal/OSHA presented multiple discussion drafts and received input from stakeholders. In addition, a symposium, co-sponsored by CDPH and UC Berkeley, was held on November 13, 2013, to present the science behind CDPH's recommended revisions to the lead standards. Attendees included representatives from industry, labor, occupational medicine, advocacy groups and government agencies.

Given the extensive discussions that have already taken place, the Board declined to reconvene an additional advisory committee meeting after the rulemaking was noticed. However, stakeholder

concerns continued to be considered and addressed during the regular rulemaking process. To the extent that stakeholders wished to share new or additional input regarding the current text of proposed amendments, avenues remained available for them to do so via written comments as well as oral comments at the public hearing that was held by the Board in April 2023. All comments were considered for the purposes of further amendments to the proposal and, in fact, further amendments were made in response to same, as reflected in the first and second 15-day notices of modifications issued. Stakeholders had further opportunity for comment during the comment period following each of those notices.

Comment 66.11

The commenter states that Cal/OSHA's failure to comply with legal requirements invalidates the proposal. Specifically,

- The economic impact analysis is flawed in its calculation of impacts on businesses and individuals and Cal/OSHA did not pick the least costly alternative.
- Cal/OSHA has not complied with APA requirements for "clarity" (regulation is written or displayed so that its meaning is easily understood by persons directly affected). The proposed revisions turn the lead regulations into a dense text that commenters have already expressed difficulty understanding.
- Cal/OSHA has not complied with APA requirements to "involve parties who would be subject to the proposed regulations in public discussions regarding those proposed regulations."

Response to Comment 66.11

Regarding the commenter's statements about the economic impact analysis, please see response to comment 19.14. The Board notes that the less stringent regulatory alternative, which was considered in the Notice, issued on March 3, 2023, (rather than the ISOR, as the commenter stated), would reduce the BLL test requirement from every month to every other month for construction employees exposed above 500 µg/m^3. The Board notes that in the months in which no BLL test is administered, any change in BLL would be undetected as there was no test administered to detect it. This creates a risk that the employee's cumulative blood lead index increases over what it would have been had the BLL been monitored monthly (and appropriate corrective action been taken monthly). This has two consequences. First, there is an increased risk that the employee's BLL increases beyond the point necessitating an MRP, whereas monthly monitoring provides the employer an opportunity to intervene before the MRP is triggered. Second, at higher cumulative blood lead indexes, the employee has a higher risk of illness, thus eroding the proposal's benefits of reduced illness. Therefore, this less stringent alternative is not equally effective compared to the proposed standard and was rejected.

The Board drafts all rulemakings in compliance with the APA, and disagrees with the commenter's assertion that the rulemaking lacks clarity.

The commenter states that the proposal does not meet the APA standard of clarity, but other than a general statement that the text is difficult to understand, provides no reasoning for this comment. The Board acknowledges that the standard is complex, but does not believe it conflicts with the clarity

standard and, without more detail from the commenter, is unable to provide further consideration or response to this comment.

Regarding public discussions of the proposed amendments, please see response to comment 66.10.

Comment 66.12

The commenter states that the proposal is subject to environmental review as required by the California Environmental Quality Act (CEQA). The commenter states that Cal/OSHA has not satisfied CEQA requirements. Therefore, the commenter states that the issuance of the proposed amendments would violate CEQA.

Response to Comment 66.12

The Board notes that the current proposal is exempt from CEQA requirements pursuant to the title 14 CCR section 15324 exemption for regulations of working conditions.

The Board thanks the commenter for their input and participation in the rulemaking process.

67. Meredith Williams (via Gabby Nepomuceno), PH.D., Director, on behalf of the Department of Toxic Substances Control (DTSC), by written comments dated April 20, 2023.

Comment 67.1

The commenter expresses support for the proposed changes to the standards stating it has been challenging to ensure contractors and subcontractors comply with applicable requirements. The commenter encourages close coordination with other occupational safety oversight agencies to ensure all employees, contractors and subcontractors are held to the same standards.

Response to Comment 67.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

68. Joshua Clauss, CEO/President, on behalf of Clauss Construction, by written comments dated April 19, 2023.

Comment 68.1

The commenter states that lead can easily be found over the proposed AL in simple settings (e.g., soil); the proposed standard creates more burdens on a non-existent problem rather than helping employees.

Response to Comment 68.1

Please see response to comment 12.1.

Comment 68.2

The commenter states that federal EPA does not list lead in soils as a hazard at levels less than 400 ppm; yet the proposed regulation does not have any definition of a base or level where the lead standard should not be implemented imposing a burden already listed as of no concern.

Response to Comment 68.2

Please see response to comment 12.2.

Comment 68.3

The commenter points out that the current standard already requires PPE, training and exposure control. The proposed standard places an extra financial burden on small businesses that could be spent on protecting employees.

Response to Comment 68.3

Please see response to comment 12.3.

Comment 68.4

The commenter states that the proposed standards require additional medical assessments and physical examinations for companies, but they do not define the qualifications needed for persons evaluating exposure, prescribing PPE or other control measures. Identifying professionals who have the training and would have the liability to protect employers and employees should be added. However, a better use of resources would be to remove these requirements and focus on employee training.

Response to Comment 68.4

Please see response to comment 12.4.

The Board thanks the commenter for their input and participation in the rulemaking process.

69. Barbara Burgel, Former OSHSB Board Member, by written comments dated April 20, 2023.

Comment 69.1

The commenter supports the trigger tasks in the construction lead standard, and the focus in both standards on exposure assessment. The commenter believes this, in addition to substitution, engineering/ventilation and administrative controls, personal protective equipment, housekeeping/hygiene and training are critically important primary prevention measures.

Response to Comment 69.1

The Board thanks the commenter for their support of these portions of the proposed amendments.

Comment 69.2

The commenter fully supports a CIH be included in supervising the exposure assessment processes.

Response to Comment 69.2

Please see response to comment 4.1.

Comment 69.3

The commenter supports the hygiene emphasis in these standards, and believes that there will be less worker exposure, and less work-to-home exposure.

Response to Comment 69.3

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 69.4

The commenter supports the need for periodic training in multiple languages and for various educational backgrounds. Appendix B of sections 1532.1 and 5198, which is 17 pages long, is too complex to be used in any training.

Response to Comment 69.4

The Board thanks the commenter for their support for this portion of the proposed amendments. Appendix B of sections 1532.1 and 5198, which is a summary of the standard, is necessarily complex as the standard itself is long and complex. Further, the Board notes that employers are not required to use the appendix itself as a training material. Instead, while employers must train covered employees on the information contained in the appendix, in addition to other required topics, it is up to the employer to tailor its training materials to the educational level, literacy level and language of the employees being trained.

Comment 69.5

The commenter states that the standard update needs to use the language *"Physicians or other licensed health care professionals.*" The commenter states that the words "physician," "licensed physician," "licensed health care provider" and "health care provider" are used in both lead standards but are not defined. The commenter states that in the rationale section of the OSHSB April Board meeting packet, the Cal/OSHA Silica standard section 5204 is referenced regarding physicians who ordered the test notifying employees of BLL results. The commenter notes that the PLHCP language is in the Cal/OSHA section 5204 silica standard and anticipates that the federal OSHA lead rulemaking will also be using the PLHCP language.

Response to Comment 69.5

Please see response to comment 45.1.

Comment 69.6

The commenter states that the proposed standards focus too much on the role of a medical provider, which is secondary and tertiary prevention. The commenter states that the word "physician" was mentioned 57 times in the actual construction standard alone, twice in section 1532.1 Appendix A, 27 times in section 1532.1 Appendix B, and 32 times in section 1532.1 Appendix A. In contrast, ventilation was mentioned 2-3 times. The commenter states that the focus and depth of the medical examination

was not a topic discussed in the advisory committees, except for the ZPP test and a comment regarding measuring blood pressure.

Response to Comment 69.6

The Board believes that medical examinations are an important tool to protect the health of employees who work with lead, hence the numerous references to PLHCPs in the regulations and their appendices. The Board agrees that preventative controls such as ventilation are important as well. The Board notes that the medical surveillance requirements in the proposal are more prescriptive than for example those for engineering and work practice controls. However, the number of subsections devoted to various requirements is not intended to signify greater importance of one over the other.

Comment 69.7

The commenter recommends that employees medically removed due to an elevated BLL be entered into the workers' compensation system—second medical opinions can be easily done using the existing independent medical examiner/qualified medical examiner process. In addition, the commenter "conclude[s] these sections can be simplified by using an appendix, to include a brief questionnaire and the required components of a physical examination/lab work."

Response to Comment 69.7

The Board acknowledges the commenter's suggestion regarding the worker's compensation system; however, this suggestion is beyond the scope of this rulemaking and the Board's jurisdiction.

The Board thanks the commenter for their suggestion about simplifying the regulations by putting medical and MRP requirements in an appendix. The Board notes that early in the pre-rulemaking process, it was decided to essentially adopt the structure of the existing California lead standards and to propose improvements to these standards that would better protect worker health. Other approaches to the regulatory structure could conceivably have been chosen, and the commenter outlines one of them here. But the choices that were then made, guided by advisory committee meetings over a few years, have been fundamental to what has become a multi-year rulemaking effort. The requested change would amount to a wholesale revision of part or all of the existing regulatory framework, which the Board declines to do at this juncture in the rulemaking process.

Comment 69.8

The commenter is glad that the revised standards include a requirement for an "employer written elevated blood level response plan" whenever an employee has a BLL of 10 or higher; however, no details are provided on what is required. "This is a corrective action plan (CAP) process." Occupational health nurses managing medical surveillance programs in industry work collaboratively with a physician consultant on abnormal findings. They also work with on-site safety/IH colleagues (if present) to complete the CAP process. If there is an increase in an employee BLL, the test is repeated. Coworker test results are also examined to see if there are any elevations in test results. The CAP process includes an investigation into any changes in the work process, any PPE breaches and whether there is a need for more air monitoring or surface testing. It also includes a walkthrough with the stationary engineer to

check ventilation. There is always retraining of the employees, with an assessment into any new home exposures. "This CAP process looks not only at the individual employee, but their work group—this aggregate focus is critical in protecting workers from further exposure."

Response to Comment 69.8

The Board appreciates the commenter's support for this aspect of the proposed regulations. However, the Board does not believe that more prescriptive requirements are necessary for the written elevated BLL response plan. The proposed regulations are performance standards and thus it is left to the individual employer to design appropriate means of compliance with the requirements.

Comment 69.9

The commenter supports that lead abatement workers be certified like asbestos abatement workers.

Response to Comment 69.9

The Board notes that section 1529, which applies to asbestos abatement workers, requires these workers, if exposed above the PEL, to be trained and certified on certain topics relevant to asbestos work and asbestos exposure. The Board further notes that while certification of lead abatement workers is not required, training on specific topics related to lead is required for all employees who may be exposed to lead at or above the AL on any day, who are exposed to lead that may cause skin or eye irritation or as interim protection for employees who perform trigger tasks. Therefore, the Board declines to institute a certification requirement for lead abatement workers.

The Board thanks the commenter for their input and participation in the rulemaking process.

70. Kevin Riley, Director, on behalf of UCLA Labor Occupational Safety and Health Program, by written comments dated April 20, 2023.

Comment 70.1

The commenter summarizes the changes to the PEL, AL, MRP level, and the BLL when a worker is eligible for a medical exam. The commenter includes a discussion of the sources that support these changes (NTP Monograph on Lead, OEHHA pharmacokinetic modeling, and Kosnett, et al. (2007)).

Response to Comment 70.1

The Board thanks the commenter for their input and support for this portion of the proposed amendments.

Comment 70.2

The commenter states that under the Lead in Construction Standard (section 1532.1), minimum engineering and work practice controls should be defined and required unless the employer can demonstrate that such controls are not feasible. Certain high-risk work practices should not be allowed.

Response to Comment 70.2

The Board notes that early in the pre-rulemaking process, it was decided to essentially adopt the structure of the existing California lead standards and to propose improvements to these standards that would better protect worker health. Other approaches to the regulatory structure could conceivably have been chosen, and the commenter outlines one of them here. But the choices that were then made, guided by advisory committee meetings over a few years, have been fundamental to what has become a multi-year rulemaking effort. The requested change would amount to a wholesale revision of part or all of the existing regulatory framework, which the Board declines to do at this juncture in the rulemaking process.

Comment 70.3

The commenter states that employers are required to regularly test surfaces in lunchroom facilities, as defined in the standard, and to clean more frequently when lead is found. The commenter states that a quantitative limit on surface contamination that should never be exceeded in these facilities is recommended and that acceptable sample collection and analysis methods are specified.

Response to Comment 70.3

The Board declines to include this recommendation in the proposal. For this assessment to be meaningful, it would have to be conducted regularly, and would have to include a specified minimum number of surface samples, depending on the size of the lunchroom area. In general industry, but particularly in construction, this requirement would face the fact that many employees do not congregate in a designated lunchroom but disperse to their vehicles and other locations during their breaks. For these reasons, there is concern that mandating rigorous assessment of surface contamination in lunchrooms would be a significant, ongoing regulatory burden on employers, one that would not result in significant additional protection for employees.

Alternately, the proposed language deals with the problem of lunchroom contamination by requiring that the employer establish, implement and maintain effective written methods and schedules to maintain the cleanliness of lunchrooms, and eating areas.

Comment 70.4

The commenter states that employee training should be repeated quarterly with training topics to include chronic health risk of low exposure levels to lead, risks of carrying lead home especially to young children and pregnant women, and showing recommendations upon returning home from work.

Response to Comment 70.4

The Board declines to change this requirement in the proposal, as it believes that a training program provided at least annually is adequate.

The Board notes that training program requirements in both standards include the topic of chronic health risk of low exposure levels to lead.

With respect to the increased emphasis on take-home contamination prevention in the proposed standards, the Board notes that basic hygiene requirements are now proposed for all occupational

exposure to lead (see subsections 1532.1(i)(1) and 5198(i)(1)). Also proposed subsections 1532.1(*l*)(2)(J) and 5198(*l*)(1)(E)(10) now require training for employees exposed at or above the AL on the prevention of take-home contamination.

Comment 70.5

The commenter states that training should be provided in a format that is accessible to employees. Specifically, training should be in a language understandable to workers and the methods used should be appropriate for employees with no or low literacy skills. The commenter states that training should maximize the use of participatory and hands-on methods.

Response to Comment 70.5

The Board notes that effective training appropriate to the educational level, literacy level and language of employees is required in the proposed regulations. The Board declines to add additional training requirements to the proposed regulations as suggested by the commenter.

Comment 70.6

The commenter states that employers should be required to post a warning sign in areas where lead is present. The sign should be in a language understandable to workers.

Response to Comment 70.6

The Board notes that requirements for warning signs in proposed subsections 1532.1(m) and 5198(m) have been made more stringent: warning signs would be required to be posted in areas where exposures are at or above the AL, and as interim protection where trigger tasks or PSLW is performed. The Board believes that warning signs should be required in areas where there may be significant exposure to lead and therefore declines to require warning signs in all areas where lead is present. In addition, the Board has added an amendment to each of the proposed regulations that would require signs to be in a language understandable to employees.

Comment 70.7

The commenter states that employers should be required to provide protective work clothing and shoes to all employees exposed to lead at or above the AL.

Response to Comment 70.7

The Board, while agreeing with the intent of this comment, is concerned with the wider effect of taking this step. Requiring protective work clothing and shoes for employees exposed at or above the proposed AL should mean that change rooms and showers would be required as well. The Board is concerned about the practicality and regulatory burden of taking such a step, and therefore declines to amend the proposal as suggested by the commenter.

Comment 70.8

The commenter states that, "Under the Lead in Construction Standard (section 1532.1), employers should be required to provide protective work clothing and shoes to all employees performing level 1, 2, or 3 trigger tasks *or exposed to lead, regardless of airborne lead measurements.*"

Response to Comment 70.8

The Board notes that subsection 1532.1(d)(2)(E)(2) makes it clear that protective clothing in accordance with subsection 1532.1(g) is required as an interim protection for all employees conducting 'trigger tasks.' In addition, please see response to comment 70.7.

Comment 70.9

The commenter states that Cal/OSHA's SRIA for these proposed amendments found that "reforming decades-old exposure safety standards will confer health benefits on current and future California employees and their families that far exceed these costs." The commenter particularly appreciate[s] the recognition of the impact of these updates on not only workers but also family members, including young children, whose secondary exposures are often not acknowledged. The commenter states that these are important benefits associated with the proposed amendments that will have a notable impact on community health.

Response to Comment 70.9

The Board thanks the commenter for their input and support for this portion of the proposed amendments.

Comment 70.10

The commenter states that the proposed standard represents the potential for an effective public health approach to reduce the exposure of California workers and their families to lead – and it establishes an important model for other states to follow. The commenter applauds the Standards Board for advancing these important amendments to the current standards. The commenter thanks the Standards Board for this work.

Response to Comment 70.10

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

71. Robert Moutrie, Policy Advocate, on behalf of California Chamber of Commerce, Associated General Contractors, California, California Attractions and Parks Association, California Manufacturers & Technology Association, California Retailers Association, Construction Employers' Association, and Family Business Association of California by written comments dated April 20, 2023.

Comment 71.1

The commenter states that recent proposals differ considerably from the most recently published text. The commenter asks for additional time to provide appropriate comments due to the difficulty of analyzing the proposal without relevant comparisons between the previous draft and the current

proposal and the complexity of the regulation itself. The commenter also asks that a guide or redline comparison between the previous draft and the current proposal be provided to stakeholders as part of the 45-day notice. The commenter also included a list and summary of relevant changes.

Response to Comment 71.1

Regarding commenter's request for additional time for comments, please see response to comment 24.1.

Regarding commenter's request for a redline comparison, the Board notes that both the previous drafts and the current proposal are electronically available on the Board's website for comparison by stakeholders. The Board also notes that the commenter provided a summary of the relevant changes. Prior iterations of the text of the proposed amendments are outside the scope of this rulemaking.

Comment 71.2

The commenter states that the proposed drastic changes in triggering thresholds (AL, PEL, MRP, expanded hygiene, increased BLL testing and exams) will require significant efforts for industries previously covered, as well as newly included industries. The commenter estimates that it would take two to three years, on an aggressive timeline, for a general industry employer to implement engineering controls required due to the PEL reduction. The commenter states that it expects similar obstacles in construction. The commenter states that because there is no phase-in period, employers will be out of compliance as soon as the standards are approved. The commenter proposes a three-year delay in enforcement for the general industry and construction standards to ensure that entities making good faith efforts to come into compliance are not punished, so long as the employer can demonstrate that they are in the process of implementing necessary engineering controls for compliance. The commenter states that they are not asking for a blanket delay, but a delay based on measurable progress in areas where compliance cannot be quick.

Response to Comment 71.2

Please see responses to comments 11.4 and 48.2.

Comment 71.3

The commenter states that the current MRP levels are relatively high and outside lead exposures are unlikely to bring a worker's BLL to the removal threshold. The commenter states that because the proposed AL and PEL are so much lower, exposures outside the workplace are much more likely to trigger removal. The commenter states that the lead standards should exempt at-home exposure from triggering MRP benefits since the employer has no causal role in that exposure.

Response to Comment 71.3

The Board notes that the lower AL and PEL in the proposal will result in fewer employees with BLLs elevated such that MRP will be required. The Board is not persuaded by the commenter's argument and therefore declines to propose amendments to the text as suggested by the commenter. In addition, please see response to comment 48.20.

Comment 71.4

The commenter states that mobile workplaces are not well considered under the construction standard.

- It is infeasible to transport shower facilities to natural areas but the "when feasible" language has been removed.
- Jobs are so brief (<15 minutes) that they are over before an accurate sample can be done.
- "Interim protections" make no sense for jobs less than an hour long, as testing will only be conducted well after the job is done.

The commenter states that the failure to consider these situations potentially forces companies to complete nonsensical requirements, such as staying at a job source/exposure area longer than the job takes in order to complete air testing accuracy requirements.

Response to Comment 71.4

Regarding the commenter's statement about shower facilities, please see response to comment 19.16.

The Board notes that change areas, eating facilities and regulated areas are only required for employees whose airborne exposure to lead, without regard to the use of respirators, is above the PEL. Further, proposed subsection 1532.1(i)(6) [Regulated areas] includes a provision for feasibility. The Board believes that when employees are exposed above the PEL, change areas, showers, eating facilities and regulated areas are necessary to prevent additional exposure to lead and protect the health of those employees. Therefore, the Board declines to amend the requirements of subsections 1532.1(i)(2), (i)(4) and (i)(6).

In addition, the Board is not persuaded by the commenter's argument that interim protections make no sense for jobs lasting less than one hour. With respect to the comment on short sampling duration, the Board notes that the need to characterize infrequent, short-term exposures is part of the existing standard, and can be accomplished with sufficient technical knowledge and planning. The exposure limits (AL and PEL) that even short-term exposure sample results must be compared to are 8-hour, time-weighted average values, which fall well within the quantitation range of existing sampling and analytical methods. The analytical result of a short-term sample, which captures the employee's entire exposure, must be mathematically transformed into the 8-hour TWA value in order to assess the measured exposure against the AL. This transformation is based on a finding of no additional exposure for the remaining duration of the shift. When this result is mathematically transformed to an 8-hour TWA value it may or may not be greater than or equal to the AL.

Also, with respect to the comment on 'interim protections' and short-term exposures, the Board notes that 'interim protections' only apply when there has not been prior exposure assessment of the task. When there has been a prior exposure assessment of the task, then 'interim protections' do not apply—the required protections are determined by the results of the exposure monitoring.

The Board thanks the commenter for their input and participation in the rulemaking process.

72. Matthew Kuzemchak, CIH, Area Director, on behalf of U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) by written comments dated April 18, 2023.

Comment 72.1

The commenter states that the proposed standard section 5198 does not appear to be at least as effective as the relevant federal standard, 1910.1025(o)(2)(ii)(A)-(C). Specifically, subsection 5198(o) "Observation of Monitoring" does not entitle observers to (1) Observe all steps related to the monitoring of lead performed at the place of exposure and (2) Record the results obtained or receive copies of the results when returned by the laboratory. The commenter states that these provisions are contained in the Construction Safety Orders section 1532.1. The commenter states that the remainder of the standards appear to be as effective as or more effective than, the federal standard.

Response to Comment 72.1

The Board agrees with this comment and has amended the text of subsection 5198(o) proposed in the Notice of July 7, 2023.

The Board thanks the commenter for their input and participation in the rulemaking process.

II. Oral Comments

Oral comments received at the April 20, 2023, Public Hearing in Sacramento, California.

73. Bruce Wick, on behalf of Housing Contractors of California.

Comment 73.1

The commenter states that we have done much work publicly and occupationally to reduce the amount of lead. There is a generation of workers who have never inhaled fumes from leaded gasoline or had to deal with the use of lead paint. Many products today have less, or no, lead in them. The commenter states that it is hard to understand why a 93% reduction in the AL and an 80% reduction in the PEL is needed. The commenter states that occupational safety and health experts disagree with the information that has been presented. The commenter further states that we need a meeting of occupational safety and health people so that we can understand what the real issues are, what is proven to be caused by serious exposure to lead, and then what is the commensurate reduction, if needed, in the PEL or the AL. The commenter states that these dramatic reductions are not understood.

Response to Comment 73.1

Please see responses to comments 19.4 and 37.4.

Comment 73.2

The commenter states that stakeholders were given a 45-day notice for a very significant regulation that changed a lot from the previous draft. The commenter states that it would have been very helpful for them to get a side by side of the previous draft, the new draft and the federal regulation. The commenter states that employers sent $1.5 billion to DIR this year above their Workers' Compensation payments. The commenter states that you think one person at DIR would have been able to do a side-by-side for them so that they would be able to work through the regulation. The commenter states that it has taken them 45 days just to figure out what is there and try to get some idea of the costs.

Response to Comment 73.2

The Board declined to provide the requested side by side as it pertains to information that is outside of the scope of the current rulemaking. The subject of this rulemaking is the current text of proposed amendments. The proposed text was sent to interested stakeholders with the notice of rulemaking and is also available on the Board's website.

Prior iterations of the proposed amendments and the text of current federal OSHA lead regulations are not at issue in this rulemaking. To the extent stakeholders wish to compare the current proposed regulatory text to such documents, they are all publicly available in electronic form for review and comparison.

Comment 73.3

The commenter states that we know the costs of the regulations are in the billions, but do not know if it is 2 or 5 billion a year. The commenter states that in the notice in the Informative Digest, the answer was "none" to the question of whether the regulation would have any substantial cost to housing. The commenter states that they know this will have a substantial cost to new housing construction as well as to the cost to keep and maintain housing with all the work that must be done. The commenter hopes that the Board will require that someone provide the stakeholders with the true budget cost numbers of this regulation as proposed.

Response to Comment 73.3

The Board determined that there would be no significant impact on housing costs. The SRIA states that costs are expected to be passed on to consumers in the affected industries. The costs in the SRIA have been revised to account for inflation and increased wages, and are shown in the final Form 399. If the $120 million cost to the private sector of the construction industry is entirely passed on to the 114,800 residential units authorized by permits projected in 2024, the cost per unit would be $1048 (which is 0.1 percent of the August 2023 median home price of $859,800).[16] If the compliance costs in the construction industry are spread between new homes, existing homes and nonresidential construction, the impact per housing unit would be even less than 0.1 percent of the median home price.

With regard to the comment on the true budget cost numbers of the regulation as proposed, the Board notes that the SRIA and Form 399 provide cost estimates reflecting the *changes* to the existing lead standard under the proposal, and do not include cost estimates for existing requirements. These are the cost estimates required by the Department of Finance.

In addition, please see response to comment 19.18.

Comment 73.4

[16] DOF (California Department of Finance). 2023 May Revision Forecast. 2023. (https://dof.ca.gov/forecasting/economics/economic-forecasts-u-s-and-california/); California Association of Realtors. 2024 California Economic & Housing Market Forecast. 2023, p. 42. https://content.car.org/Public%20Products/Housing%20Market%20Forecast/Housing%20Market%20Forecast.pdf

The commenter states that it would be best to start the process over and have an advisory committee. The commenter states that a lot of people have retired and moved on since the last committee eight years ago. The commenter states that there are a lot of new people that need to engage in this. The commenter requests an extension in the public comment period.

Response to Comment 73.4

Regarding the commenter's request for an advisory committee, please see response to comment 66.10.

Regarding the commenter's request for an extension of the comment period, please see response to comment 24.1.

Comment 73.5

The commenter states that companies do competitive bidding in construction. The commenter states that the underground economy gets more competitive with any unnecessary part of a regulation in public works. The commenter states that when the costs go up, projects are scaled back, delayed or possibly eliminated altogether if the costs go too high. The commenter states that these are substantial costs. The commenter hopes that the Board demands the information construction contractors need to work their way through the regulation and extend the public comment period.

Response to Comment 73.5

The Board acknowledges the commenter's statements about competition and the underground economy; however, they are outside the scope of either this rulemaking or the Board's jurisdiction.

Regarding extension of the public comment period, please see response to comment 24.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

74. Brian Miller, Safety Director, on behalf of Rudolph & Sletten.

Comment 74.1

The commenter states that they wanted to talk about the AL and said it is going to be tough. The commenter further states that the standard is going to inspire people not to follow the standard because it is so confusing. The commenter demonstrated with a gram packet of Sweet-n-Low, saying that the contents of the packet would have to be cut in half 20 times to get down to 2 µg/m^3, and said he could not do it.

Response to Comment 74.1

Please see response to comment 52.1.

Comment 74.2

The commenter states that lead is very dirty and when just touching a lead brick your gloves are instantly covered in lead dust. The commenter states it is challenging. The commenter tells their employees not to touch their face because it is going to transfer, but if you have an itch while working you have to leave containment, wash up, fix your itch and then go back into containment.

Response to Comment 74.2

The Board agrees that handling lead can lead to lead dust on employees' hands, faces and clothing. This supports the need for the greater emphasis that the proposal places on hygiene.

Comment 74.3

The commenter's company installs a lot of lead shielding in labs and healthcare. The commenter states that lead is very affordable, malleable and durable. The commenter is not sure how their company will be able to do the work and asks the Board to reconsider putting an advisory committee back together and work to come to a happy medium between what CDPH wants and what the people who do the work want.

Response to Comment 74.3

Please see response to comment 66.10. In addition, the Board notes that in its recommendations to Cal/OSHA, CDPH stated that in order to prevent chronic BLLs at or above 5-10 µg/dl, the PEL for lead should be set at 0.5-2.1 µg/m^3. However, the Board has set the proposed PEL at 10 µg/m^3. This, along with the suite of additional revisions, would have the same effect of reducing BLLs to 10 µg/dl for nearly all employees with occupational exposure to lead.

The Board thanks the commenter for their input and participation in the rulemaking process.

75. Marc Connerly, Executive Director, on behalf of Roofing Contractors Association of California.

Comment 75.1

The commenter notes that the underground economy, which does not pay taxes or follow laws or regulations leave the law abiding, legitimate entities at a competitive disadvantage. They further state that some companies will never follow regulations, some will always follow regulations and some will decide whether to follow a standard based on an assessment of how reasonable, feasible, costly and what the perceived benefits of a regulation are. The commenter asks whether the Board would rather implement a standard or implement an effective standard where more companies feel there is a benefit and are an ally in the process. The commenter states that the construction coalition letter entities want to protect employees and be allies and request the Board "slow this freight train down" and consider flaws pointed out by other entities, so that they can create a standard that will protect more employees, because more entities will be willing to comply.

Response to Comment 75.1

The Board acknowledges commenter's statements regarding the underground economy and decisions by certain companies not to follow regulations; however, these issues are beyond the scope of this rulemaking and the Board's jurisdiction.

Regarding the commenter's request for collaboration and dialogue, please see response to comment 19.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

76. Steve Johnson, on behalf of Associated Roofing Contractors of the Bay Area Counties, Inc.

Comment 76.1

The commenter's organization, Associated Roofing Contractors of the Bay Area Counties, has signed on to the coalition letter. The commenter states that at least half of the organizations are union affiliated organizations that have signed on to the coalition letter. The commenter also recognized the Phylmar Regulatory Roundtable and Cal Chamber letters.

Response to Comment 76.1

The Board acknowledges the commenter's organization's participation in the coalition letter.

Comment 76.2

The commenter states that the SRIA was conducted in February of 2019, before COVID and the runaway inflation that we have in the economy today. And that is what the SRIA was based on.

Response to Comment 76.2

Please see response to comment 19.5.

Comment 76.3

The commenter states that the SRIA calls out a figure of $10,647 in year one for a construction company to comply with the lead standard. The commenter states that the figure underestimates the costs by many, many times.

Response to Comment 76.3

Please see response to comment 19.14.

Comment 76.4

The commenter expressed that the SRIA states that construction employers are not particularly susceptible to competition from outside of the state since their work must be performed in California and therefore all firms engaging in these activities are subject to the proposed regulations. The commenter states that that does not necessarily mean that the firms will follow the regulations. The commenter states that the SRIA does not acknowledge that there are out-of-state contractors that come into California that do not know or understand California regulations. The commenter states that they are essentially predatory contractors that come in, do the work and leave.

Response to Comment 76.4

Please see response to comment 19.15.

Comment 76.5

The commenter states that the SRIA assumes that everyone will comply just because the regulation is changed. The commenter states that Cal/OSHA does not have the enforcement capability to make all contractors comply. The commenter states that there is a substantial problem with enforcing the

regulation. The commenter states that the regulation has to be reasonable and enforceable. The commenter states that if the regulation is so complicated that it is not understandable or reasonable, it is also hard to enforce.

Response to Comment 76.5

The Board acknowledges the commenter's statements regarding the reach of Cal/OSHA's enforcement capabilities; however, they are outside the scope of either this rulemaking or the Board's jurisdiction.

Comment 76.6

The commenter states that in the SRIA Cal/OSHA made the simplifying assumption that in nearly all sectors considered in the analysis, businesses would comply with the proposed regulations by protecting workers from lead in the workplace. The commenter states that Cal/OSHA just assumes that businesses will comply by simply changing the regulation.

Response to Comment 76.6

Please see response to comment 19.15.

Comment 76.7

The commenter states that the SRIA states that the new demand for labor and materials created by each compliance action could create an opportunity for new businesses to develop in the state. The commenter states that any compliance action by Cal/OSHA should not put contractors who are currently doing business and employing union employees out of business simply because there is an opportunity for new businesses to come in. The commenter states that that just does not make any sense.

Response to Comment 76.7

The Board wishes to clarify that the SRIA does not state or assume that existing contractors will go out of business. The statement that, "The new demand for labor and materials created by each compliance action could create an opportunity for new businesses to develop in the state" indicates that there could be new businesses established in response to the new demand. The SRIA does not assume that new businesses would necessarily be created, nor does it assume that any new business growth would cause existing businesses to close. Assuming business closures would be inconsistent with fulfilling the new demand for labor and materials.

Comment 76.8

The commenter states that one of the things that Cal/OSHA stated, for example, more stringent air monitoring requirements, will increase demand for industrial hygienists. The commenter states that the advanced hygiene requirements will increase demand for portable showers and washrooms. The commenter states that one of the issues that other speakers are going to address is that right now portable showers are not available on a large basis for rent. The commenter further states that shower companies that do rent portable showers, will not allow any lead work. The commenter states that there is a big problem with just mandating some of these requirements.

Response to Comment 76.8

The Board notes that it is possible that there will be an increased demand for industrial hygienists as the result of the proposal. However, the proposed revisions to the regulations do not require hiring an industrial hygienist to conduct air monitoring. In addition, please see response to comment 19.16.

Comment 76.9

The commenter states that they hope that there is more stakeholder engagement as we go along, because they do not believe that has happened.

Response to Comment 76.9

Please see response to comment 19.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

77. Amy Boas, on behalf of NELCO Worldwide.

Comment 77.1

The commenter says that NELCO manufactures and installs radiation-shielding systems for various healthcare and industrial operations. The commenter states that they fall under the general industry safety orders for their manufacturing facility and the construction safety orders for installation activities. The commenter states that they already keep employee BLLs below what would be required under the proposed regulation with the existing PEL of 50 µg/m^3. The commenter states that these proposed regulations have the potential to drive NELCO out of California. The commenter is asking that consideration be given to NELCO, and to others in their sector of the marketplace, to have SECALs or other exemptions established to allow them to continue protecting their employees and the environment while continuing to do their important work.

Response to Comment 77.1

The Board reviewed and considered information provided by the commenter on the need for SECALs for particular processes in the manufacturing and installation of radiation-shielding systems. Based on the information provided, the Board concluded that SECALS were not necessary for any radiation shielding processes.

The Board thanks the commenter for their input and participation in the rulemaking process.

78. Ariana Makau, on behalf of Nzilani Glass Conservation.

Comment 78.1

The commenter supports “any regulations that empower both workers to require a safe working spaces and employers to have guidelines to which they should adhere.” However, the commenter believes that their company is disadvantaged when bidding against most other companies who are less stringent with safety than theirs. The commenter suspects that they are the “only stained-glass company that adheres to the current rigorous lead and safety training, plus regulatory requirements for PPE while working on

leaded art glass." The commenter states that they have been in business for 30 years but have never experienced local enforcement nor have they heard of it happening to their competitors. The commenter states that without enforcement there is no reason for competitors to adhere to current or future laws that will have a negative financial impact. The commenter states that those employers who have done the work to comply are adversely affected by their efforts.

Response to Comment 78.1

The Board acknowledges the commenter's statements regarding bidding competition and regulatory enforcement; however, these issues are outside the scope of either this rulemaking or the Board's jurisdiction.

Comment 78.2

The commenter states that it costs an average of three thousand per employee to pay for outside safety classes to onboard a new employee and those trainers need training themselves. Based on written comments, the Board believes what the commenter means is that they are only trained in general lead safety (most often geared towards mitigation of lead-based paint). The commenter states that the current state mandated curriculum is not tailored to their needs. The commenter states that there is a disconnect between what stained glass workers need to know, and what is currently required.

Response to Comment 78.2

Please see response to comment 30.2.

The Board thanks the commenter for their input and participation in the rulemaking process.

79. Richard Lawson, on behalf of The Lawson Roofing Co. Inc.

Comment 79.1

The commenter states that their roofing business deals with lead from time to time because it is a component of many different types of roofing systems. Using the cost to remove and replace the roof on a typical three-bedroom home as an example, the commenter states that the current cost of $30,000 to $35,000 (done with proper permits, workers compensation insurance, and typical contractor insurances) will increase to $45,000 to $50,000 to comply with the revised regulation. The commenter also notes that the revised regulation will add portable showers, which typically are not available, and if available, do not allow hazardous materials to be washed down. The commenter states that the cost to comply at each jobsite can be $15,000 to $20,000 or even exponentially more. The commenter described a scenario in which the neighbor down the street will say "I got this guy… he'll put your roof on for $20,000." The commenter concluded that it is going to create a very noncompetitive environment and make it much more difficult for contractors to obey the law, secure work at a reasonable cost and still treat employees fairly.

Response to Comment 79.1

Please see response to comment 19.16.

The Board thanks the commenter for their input and participation in the rulemaking process.

80. Dave Fehr, on behalf of AT&T

Comment 80.1

The commenter states that the telecommunications industry presents special circumstances that warrant amendments. The commenter states that in 2022, the average worker exposure to lead in their industry was eight hours for the year and the maximum exposure was 72 hours. The commenter states that the proposed standard covers more activities than necessary.

Response to Comment 80.1

Please see response to comment 49.3.

Comment 80.2

The commenter states that despite short duration of work, many employees work with lead more than the 10-day per year threshold that triggers medical surveillance. The commenter suggests that the 10-day threshold be substituted with 80 hours.

Response to Comment 80.2

Please see response to comment 49.4.

Comment 80.3

The commenter states that telecommunications work requires mobile dispatch and employees may not know disturbance of lead is necessary until they arrive at the site. The commenter states that locations change constantly and often there is not a lot of room at the site, making compliance with many proposed requirements difficult. The commenter states that unique work warrants an exception for repair and maintenance work where disturbing lead sheathed cable is incidental to maintaining essential services. The commenter further states that the nature of the work coupled with administrative controls will ensure BLLs below 10 µg/dl. The commenter states that suggested language for an exception was submitted in their written comment.

Response to Comment 80.3

Please see response to comment 37.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

81. Robert Marshall, on behalf of Eberhard Roofing, Waterproofing, and Sheet Metal.

Comment 81.1

The commenter believes that the new regulations being proposed have more negative effects than positive. The commenter states that added costs for new regulations are estimated to now include hazardous waste disposal, tool rooms, shower rooms, clean rooms, tents to enclose the shower and changing room, propane heaters to warm the tent enclosures and BLL medical testing. There are other

unknowns currently. The commenter states that using a typical repair project of gutter downspout and edge metal removal and reinstallation in a school district, the cost for the job is about $128,000. The commenter states that the cost estimates based on the proposed OSHA regulations are about $166,000. Without a solid basis of benefit to workers based fully on science, the added costs help no one and in fact hurt workers as the additional costs will take away from more work getting done. The commenter states that this is a small example of the impact the new regulation will have on construction projects, but it is definitely accurate. The commenter states that they have experienced zero cases "involving a claim of exposure to lead whereby increased blood lead levels were identified as a cause based on other injury or illness."

Response to Comment 81.1

Please see responses to comments 19.16 and 60.2.

Comment 81.2

The commenter states, "Our personal history in the roofing industry, having dealt with the asbestos issue, going back almost three decades, proved that all asbestos is not created equal. Early on asbestos was considered friable and hazardous." The commenter states that through great expense and industry involvement in 1994, the National Roofing Contractor Association was able to put together a book of objective data that is still applicable today. The commenter states that what it proved is the worker can, at the same time, reduce the cost for abatement adding that opportunity for the worker will be getting additional hours. The commenter believes the same course of action should be taken for lead abatement prior to any new regulation being introduced.

Response to Comment 81.2

The Board believes that objective data has been compiled which supports the proposed changes. Please see responses to comments 19.4 and 37.4.

Comment 81.3

The commenter states that the more regulations increase, the harder it gets for legitimate contractors to compete. The commenter states that competition is already great in the construction market, adding more regulation further drives already marginal contractors to cheat even more (e.g., ignoring abatement and proper disposal requirements, failing to provide proper worker training for the type of work being done, working without permits, disposal at inappropriate landfills for the product in question, or flat-out illegal dumping).

Response to Comment 81.3

The Board acknowledges this comment regarding competition in the construction market; however, it is outside the scope of this rulemaking and the Board's jurisdiction.

Comment 81.4

The commenter states that there are out-of-state contractors who know little of our state codes and regulations competing in the market, but they still maintain a California contractor's license. The

commenter states that, "they could cherry pick our work in our state."

Response to Comment 81.4

The Board acknowledges this comment regarding out-of-state competition; however, it is outside the scope of this rulemaking and the Board's jurisdiction.

Comment 81.5

The commenter states that asking an employee to submit to numerous blood samples per year will prove to be a very difficult task, as evidenced during the COVID pandemic. "We believe the ones who will be hurt the most are the ones we all care about protecting the most, our employees."

Response to Comment 81.5

Please see response to comment 88.4.

The Board thanks the commenter for their input and participation in the rulemaking process.

82. Don Schinske, on behalf of the Western Occupational and Environmental Medical Association (WOEMA).

Comment 82.1

The commenter expresses strong support for the proposed changes to the standards noting WOEMA's long support of more protective standards consistent with recent medical findings.

Response to Comment 82.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 82.2

The commenter urges the Board to add a specific definition of "physician" to clarify that the standards' mandated medical surveillance programs must be overseen by MDs or DOs, citing a federal OSHA Letter of Interpretation. The commenter states that employers have used providers (e.g., paramedics) who lack the training, knowledge and experience to evaluate health effects.

Response to Comment 82.2

Please see response to comment 18.2.

Comment 82.3

Citing recent guidance from CDPH, the commenter recommends that the proposed text in Appendix C of section 5198 be revised to state that BLLs of employees who intend to parent in the near future should be maintained below .35 micrograms[17] in order to minimize adverse reproductive health effects to the

[17] The Board believes the commenter meant to say 3.5 µg/dl instead of .35 micrograms as this is the reference for the guidance from CDPH.

mother and developing fetus.

Response to Comment 82.3

The Board agrees with this comment and has amended the text of Appendix C in both sections 1532.1 and 5198 proposed in the Notice of July 7, 2023.

The Board thanks the commenter for their input and participation in the rulemaking process.

83. Renee Guerrero Deleon, on behalf of Southern California Coalition for Occupational Safety and Health (SoCal COSH).

Comment 83.1

The commenter states that SoCal COSH supports the comment letters submitted by WorkSafe and other organizations that urge the Board to adopt the proposed amendments to title 8 CCR section 1532.1 of the Construction Safety Orders and sections 5155 and 5198 of the General Industry Safety Orders. The commenter states that California workers who have occupational exposure to lead deserve to have the protections that acknowledge the scientific evidence that links low-level lead exposure to work related illnesses.

Response to Comment 83.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

84. Pamela Murcell, on behalf of California Industrial Hygiene Council (CIHC).

Comment 84.1

The commenter states that CIHC recommends that Cal/OSHA require that air sampling and surface sampling are conducted under the supervision of a CIH, and sample analysis is done by an accredited laboratory.

Response to Comment 84.1

Please see responses to comments 4.1 and 4.3.

Comment 84.2

The commenter states that Cal/OSHA should incorporate a requirement for quantitative assessment of surface cleanliness, not just a qualitative approach, and establish a numerical value for cleanliness.

Response to Comment 84.2

Please see response to comment 4.2.

Comment 84.3

The commenter states that Cal/OSHA should establish an AL of 5 $\mu g/m^3$. The commenter states that half

the PEL is a widely accepted/utilized approach to setting an AL. In addition, the commenter states that it would address concerns about the ability to accurately assess a level of 2 μg/m^3 due to the detection limits of current standard methods for sampling and analysis.

Response to Comment 84.3

Please see responses to comments 37.4 and 37.17.

Comment 84.4

The commenter states that CIHC recommends that Cal/OSHA replace the language in subsection (f) of both sections 1532.1 and 5198 with language used in more recently adopted substance-specific standards, such as the silica standard.

Response to Comment 84.4

Please see response to comment 38.13.

Comment 84.5

The commenter states that CIHC recommends that requirements based on the results of exposure evaluation be presented in a table format.

Response to Comment 84.5

The Board believes that these kinds of explanatory aids are best presented as part of educational materials put forward by Cal/OSHA.

Comment 84.6

The commenter states that CIHC recommends that criteria that trigger medical evaluation be presented in a table format because the proposed text of these requirements "with excessive verbiage is confusing and difficult to follow."

Response to Comment 84.6

The Board declines to reformat the proposed text of these requirements in the body of the standard itself; however, it directs the commenter to Appendix C (Medical Surveillance Requirements) to the proposed revisions of both sections 1532.1 and 5198. In particular, in Section I, Table 1, medical surveillance requirements are shown in a table format.

Comment 84.7

The commenter states that CIHC recommends that MRP requirements be presented in a table format because the proposed text of these requirements "with excessive verbiage is confusing and difficult to follow."

Response to Comment 84.7

Please see response to comment 62.10.

The Board thanks the commenter for their input and participation in the rulemaking process.

85. Christopher Lee, on behalf of United Contractors, Northern CA, Wall and Ceiling Alliance, Northern California Allied Trades and the Painting and Decorating Contractors of California.

Comment 85.1

The commenter states that Cal/OSHA must provide an appropriate and truly scientific analysis of the suggestion that lead can do harm to workers at lower exposures than previously understood.

Response to Comment 85.1

Please see response to comment 60.2.

Comment 85.2

The commenter states that the 2019 SRIA must be revised significantly, as it does not fully consider the impact of competition from out-of-state contractors who do not fully comply with Cal/OSHA regulations, if at all; substantially underestimates the cost of compliance; burdens employers with unnecessary requirements; and does not demonstrate the need for extensive BLL testing.

Response to Comment 85.2

Please see response to comment 19.15. Further, the Board believes the requirements proposed in the revisions to the standards are necessary to protect the health of employees who work with lead by supporting the goal of maintaining employee BLLs below 10 µg/dl. The Board notes that the necessity for more frequent blood lead testing is given in the ISOR, rather than the SRIA. The Board believes that the proposed BLL testing frequency requirements support the goal of maintaining employee BLLs below 10 µg/dl.

Comment 85.3

The commenter states that the organizations they are representing advocate the scheduling of an advisory committee meeting and extending the comment period. However, the commenter states that if the revision is approved, they recommend that implementation be delayed for three years to allow tens of thousands of employers to understand, prepare for and implement the changes.

Response to Comment 85.3

Regarding the scheduling of an advisory committee meeting and extending the comment period, please see responses to comments 66.10 and 24.1, respectively.

Regarding a three-year implementation delay, please see response to comment 11.4.

Comment 85.4

The commenter states that if this proposal is approved, they strongly recommend that the following actions be implemented to assist employers: develop a summary table that clearly defines tasks and respiratory protection levels, like Table 1 in the respirable crystalline silica standard; provide a simplified plain language guide of what is required; develop e-tools, frequently asked questions; and possibly a

pocket guide to lead in construction.

Response to Comment 85.4

The Board notes that guidance provided by Cal/OSHA is outside the scope of this proposal and the Board's jurisdiction.

Comment 85.5

The commenter recommends that Cal/OSHA prepare the Consultation Service to undertake an extensive education and outreach program to assist employers. The commenter states that there likely will be a significant demand for assistance. The commenter makes a recommendation to Chief Killip to fill management and consultant positions in this regard.

Response to Comment 85.5

The Board notes that Cal/OSHA's hiring efforts and its education and outreach efforts via its Consultation Service is outside the scope of this proposal and the Board's jurisdiction.

The Board thanks the commenter for their input and participation in the rulemaking process.

86. Roger Miksad, on behalf of Battery Council International (BCI).

Comment 86.1

The commenter states that proposals in the rulemaking related to air lead levels are misguided and are not based on real world sound data from industry. The commenter states that industry experience shows BLLs being sought by regulation are achieved without changes to air lead levels. The commenter states that worker blood leads levels do not correlate with air lead levels in the workplace, there are other factors at play. The commenter states that rules address the wrong route of exposure.

Response to Comment 86.1

The Board notes that the proposal adds requirements designed to minimize employee exposure to lead through the oral route of exposure. These include general hygiene requirements. In addition, please see response to comment 100.2.

Regarding the commenter's statement that there is no correlation between blood lead and air lead levels and that the rules address the wrong route of exposure, please see response to comment 53.1.1a.

Comment 86.2

The commenter states that the design, construction and permitting process needed to change air lead levels in a facility cannot happen in less than 30 months, in the best-case scenario. The commenter states that if the PEL is changed, industry must be given a period of time to come into compliance with those changed rules.

Response to Comment 86.2

Please see response to comment 11.4.

Regarding the commenter's point that the length of a phase-in period should be based on the anticipated time it will take to install and implement required engineering controls, the Board disagrees that this is necessary. The Board notes that both standards already contain compliance and feasibility provisions relevant to these concerns. The proposed standards anticipate that implementation of certain controls may not occur immediately and requires employers to establish and implement written compliance programs, including a "detailed schedule for implementation of the program" to reduce exposures to or below the PEL. Further, the proposed standards require the use of engineering and work practice controls to maintain employee exposure to below the PEL, *except to the extent that such controls are not feasible*. During the reasonable time period necessary to install or implement engineering controls, an employer may be able to demonstrate that such controls are not feasible. Where the implementation of engineering and work practice controls is not sufficient to reduce exposures to or below the PEL, the standards provide that respiratory protection can be used to supplement employee protection.

As such, the Board believes that the proposed delays in the effective date and implementation dates are sufficient and need not be extended further.

Comment 86.3

The commenter states that certain requirements are triggered by exposure above the PEL, but exposure is not defined. Because exposure is not defined, the commenter states that it could mean the physical presence of lead at work, which could arguably include every retail establishment that sells ammunition, lead batteries, electronics with lead in them, etc. and subject them to medical surveillance.

Response to Comment 86.3

The Board believes that this comment is based on a mistaken understanding of the proposed standards. The exposure at which medical surveillance is required is defined. As in the existing standards, the proposed standards require medical surveillance only for employees exposed to lead at levels at or above the AL (proposed to be 2 $\mu g/m^3$) for more than a specified number of days during a 12-month period, and as interim protection for employee who perform PSLW.

Comment 86.4

The commenter states that data show non-occupational exposure, such as recreational firing ranges, can lead to blood leads above the levels being proposed for removal. The commenter states that the Board needs to consider that in the revisions too.

Response to Comment 86.4

Please see response to comment 48.20.

The Board thanks the commenter for their input and participation in the rulemaking process.

87. Carl Raycroft, on behalf of Ecobat Lead Acid Battery Recycling aka Quemetco, Inc.

Comment 87.1

The commenter is convinced that their employees' average BLLs are among the lowest in the industry. Through years of experience and evaluation of data, they have determined that managing BLLs requires much more than controlling the lead and air levels. The commenter asks that the standard remain focused on the employee BLLs and less on air lead levels. The commenter states that after completing an extensive investigation into the data, the state of Michigan determined that the best approach for protecting workers is to maintain the existing PEL at 50 µg/dl and allow industry expertise to determine the best methods for managing employee BLLs. The commenter would like to maintain the existing PEL and AL consistent with what the state of Michigan has adopted in their new regulations.

Response to Comment 87.1

Please see response to comment 63.1.

Comment 87.2

At a minimum, the commenter encourages the proposed standard to allow SECALs for specific tasks within the battery recycling industry. The commenter states that the proposed standard has established SECALs for specific processes in the battery manufacturing industry. Similar consideration should be given to the battery recycling industry that has an even higher burden of controlling lead and air for specific operations.

Response to Comment 87.2

Please see response to comment 48.6.

Comment 87.3

The commenter is asking for a three-year implementation period for the new regulations. The commenter states that the proposed standard will require a focus on possibly different engineering controls and respiratory protection that was not deemed necessary under the existing standard. The commenter states that adding additional ventilation controls will require analysis, permitting and equipment delivery that will take time in today's challenged supply chain and regulatory permitting environment. In addition, the commenter further states that they are seeing a six-month/one-year lead-time for powered air purifying respirators and supporting equipment for operating those respirators.

Response to Comment 87.3

Please see responses to comments 59.6 and 61.5.

The Board thanks the commenter for their input and participation in the rulemaking process.

88. Zachary Cox, on behalf of U.S. Battery Manufacturing Company.

Comment 88.1

The commenter states that all 130 employees in their medical surveillance program are under the proposed limits for BLLs at the current PEL and AL for lead. The commenter states that in their experience, there is a weak correlation between lead and air and BLLs. The commenter states that their investigations of elevated BLLs have found that the root cause of the vast majority of elevated BLLs is

hygiene practices or work practices. The commenter agrees with lowering the BLL standard but the PELs and the AL should remain as they are.

Response to Comment 88.1

The commenter argues that because all their employees' BLLs are below the proposed medical removal level of 30 µg/dl, the proposed lowered PEL and AL are not necessary. The Board notes that the goal of the proposed general industry lead standard (including the lowered proposed PEL and AL) is to reduce and maintain all employees' BLLs to below 10 µg/dl, well below the proposed medical removal level.

The attention given to training, procedures, work practices and hygiene are important to protecting employees from elevated BLLs. However, the control of airborne lead levels is essential to the effort to reduce BLLs not only because it reduces the inhalation of lead particulate, but also because the distribution and settling of airborne lead is the primary source of workplace contamination, which then necessitates diligent hygiene and housekeeping. The control of airborne lead levels supports the other exposure controls.

Comment 88.2

The commenter says that if there are further reductions in the PEL and AL there should be a phase-in period to address the long permitting and construction and design process to install air-handling equipment, and associated controls.

Response to Comment 88.2

Please see response to comment 86.2.

Comment 88.3

The commenter states that the standard does not account for non-occupational lead exposure. For example, an employee who is an avid shooter, or motor sports or an aviation connoisseur, has lead exposure outside work that that could impact BLLs.

Response to Comment 88.3

Please see response to comment 48.20.

Comment 88.4

The commenter states that they operate in a pretty tight labor market already. The commenter states that the frequency of blood draws for new employees and employees with BLLs over 10 would increase to either monthly or every two months. The commenter states that it is a significant ask of new employees or current employees to get their blood drawn that frequently.

Response to Comment 88.4

The Board believes this requirement is necessary to ensure that rising BLLs are detected early, and supports the overall goal of maintaining employee BLLs below 10 µg/dl. The Board notes that an

employer is only required to provide a BLL test when testing is required in the regulations; an employee is not required by the regulations to have the BLL test.

The Board thanks the commenter for their input and participation in the rulemaking process.

89. Mark Ames, on behalf of AIHA.

Comment 89.1

The commenter says that AIHA recommends that Cal/OSHA require that exposure assessments and monitoring are performed by or under the supervision of a CIH and proposes specific language to be added.

Response to Comment 89.1

Please see response to comment 4.1.

Comment 89.2

The commenter recommends that Cal/OSHA require that laboratories used for the analysis of samples collected for exposure assessments be ELLAP accredited for quality assurance.

Response to Comment 89.2

Please see response to comment 4.3.

Comment 89.3

The commenter believes that the best way to determine body lead burdens is by periodically measuring BLLs in workers wherever lead may be present during workplace activities.

Response to Comment 89.3

The Board appreciates the commenter's support for the blood lead testing requirements of the proposed regulations.

Comment 89.4

The commenter states that the rule should address ingestion exposure by specifying when showers should be provided and when workers need to wash their hands and face before eating, drinking or smoking. The commenter states that the rule should also contain requirements for leaving contaminated clothing in the workplace for proper cleaning without exposure to persons who launder the contaminated clothing.

Response to Comment 89.4

Please see response to comment 38.5.1.

The Board thanks the commenter for their input and participation in the rulemaking process.

90. Jacqueline Chan, on behalf of the Occupational Lead Poisoning Prevention Program (OLPPP),

California Department of Public Health (CDPH).

Comment 90.1

The commenter states that the OLPPP, CDPH, strongly supports the proposed amendments to the occupational lead standards. The commenter states that over 2,000 workers per year experience occupational lead poisoning in California. The commenter states that this is likely a significant underestimate as not all employers provide the required testing for blood lead. In the nearly half century since the federal OSHA lead standards were established, the commenter states that scientific research has clearly demonstrated that even low BLLs over long term exposures can cause high blood pressure, kidney disease, brain injury, fetal harm and other conditions.

Response to Comment 90.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 90.2

The commenter states that OLPPP has found that many employers with lead poisoning in their workers have not performed required air testing for lead. The commenter states that the proposed amendments make important changes, including increasing the use of blood lead testing in workers, requiring medical removal at lower BLLs and ensuring that workers at risk are offered protections even before air monitoring is done.

Response to Comment 90.2

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 90.3

The commenter says that children, pregnant women and other household members who are more vulnerable to the damaging effects of lead will be more protected by the proposed requirements that improve training on how to stop bringing lead home.

Response to Comment 90.3

The Board thanks the commenter for their support for this portion of the proposed amendments.

Comment 90.4

The commenter says that these are the most important changes to the lead standards in almost 50 years and are based on sound science and principles of public health.

Response to Comment 90.4

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

91. Sharon Hilke, on behalf of Licensed Painting Contractors of California.

Comment 91.1

The commenter says that standard portable showering units may not be used if there is any possibility of lead contamination. While not specified in the proposed regulation, the commenter states that compliance would mandate the use of "Portable Decontamination Showering Facilities." The commenter states that these facilities have HEPA filters for air and water and separate dirty and clean stations. The commenter states that they are not available for rent and must be purchased (price range $78,200 to $94,240). The commenter states that PDCA estimates that the cost for a small painting contractor to purchase sufficient units would be $172,000 - $344,000. The commenter further states that the stations would require encroachment permits and there would also be a loss of working hours due to showering time during shifts. The commenter states that the overall cost if only painting, roofing and general contractors purchased just one unit, would be $11,094,000,000. The commenter states that it appears that Cal/OSHA gave no consideration to the need for decontamination units - "This regulation is basically going to destroy construction building." "… the showering standard is unattainable." The commenter says that the showering requirement should be stricken from the proposed regulation in its entirety.

Response to Comment 91.1

Please see response to comment 19.16.

The Board thanks the commenter for their input and participation in the rulemaking process.

92. Ross Gardiner, on behalf of Interspace Battery & Concorde Battery.

Comment 92.1

The commenter supports the reduced BLLs that are in the new rule but asks that the PEL and the AL remain at the current levels. The commenter states that all their current employees are under the proposed reduced BLLs at the current PEL of 50 µg/m^3 and an AL of 40 µg/m^3. Based on their experience the most common cause of elevated employee BLLs is either hygiene practices or work practices. The commenter states that they commonly see two employees in a similar job position with identical air leads who have much different BLLs. The commenter states that when they coach that employee, they find that the BLLs come down through improved hygiene and work practices.

Response to Comment 92.1

Please see response to comment 88.1.

Comment 92.2

The commenter states that if the air lead levels continue at the proposed levels, a three-year phase-in period is needed. The commenter states that installation of new air filtering equipment takes up to three years or longer and requires a lot of permitting. The commenter further states that there is also additional time to put in shower facilities for certain manufacturers. The commenter states that they do not believe that the lower PEL or AL is necessary as proven by their ability to meet the lower BLLs with the current PEL and AL.

Response to Comment 92.2

Regarding the need for a phase-in period, please see responses to comments 11.4 and 48.2.

Regarding the necessity of the lower PEL or AL, please see response to comment 60.2.

Comment 92.3

The commenter asked that subsection 5198(f)(3) be revised to allow for filtering facepiece respirators, and subsection 5198(f)(3)(D) be amended to add N95, R95 and P95 type filtering facepiece respirators. These respirators are important for a couple of reasons. The commenter states that in hot work areas they are much more comfortable, lead to lower heat and are, therefore, important for avoiding heat stress and heat illness. The commenter further states that, in addition, filtering facepiece respirators allow for easier communication, especially when that communication is integral to safety.

Response to Comment 92.3

Please see response to comment 38.12.

Comment 92.4

The commenter asked for reinstatement of the language in the 2016 draft that allowed for properly designed hydration stations near employee workstations. The commenter states that in Cal/OSHA's recent outdoor heat standard, there is a requirement to provide hydration stations as close as practicable to the work area. The commenter states that it is important to allow employees to hydrate as often as possible to fend off heat illness.

Response to Comment 92.4

Please see response to comment 48.30.

The Board thanks the commenter for their input and participation in the rulemaking process.

93. Joseph Richard, on behalf of C&D Trojan Battery.

Comment 93.1

The commenter states that they like the blood lead part of the standard but ask Cal/OSHA not to reduce PEL and the AL. The commenter states that the relationship between air concentrations and blood leads is highly uncertain, variable, and not constant over time. The commenter states that they have brought their BLLs below the proposed standard (under 8 µg/dl on average) and focused on hygiene methods and behaviors. The commenter states that they find that that is one of the better ways to reduce BLLs.

Response to Comment 93.1

The commenter argues that because their average employee BLL is below 8 µg/dl, the proposed lowered PEL and AL are not necessary.

The attention given to training, procedures, work practices and hygiene are important to protecting employees from elevated BLLs. However, the control of airborne lead levels, including a lowered AL and PEL, is essential to the effort to reduce BLLs not only because it reduces the inhalation of lead particulate, but also because the distribution and settling of airborne lead is the primary source of

workplace contamination, which then necessitates diligent hygiene and housekeeping. The control of airborne lead levels supports the other exposure controls.

Comment 93.2

The commenter is very supportive of the SECALs. The commenter states that they are reasonable and give them a little time to reduce. The commenter further states that they also improve some of the protection for their employees. The commenter states that they have already done a lot of that with PAPRs, full-face respirators, lead testing etc.

Response to Comment 93.2

The Board appreciates the commenter's support for these amendments.

Comment 93.3

The commenter would like filtering facepiece respirators back in the standard. The commenter states that they have staff that travel through their plants that have very minor potential exposures, but it is nice to have the filtering facepiece for protection. The commenter states that they will not have to put them into a respirator program when they are only going to be out on the floor for a few minutes. The commenter uses a filtering facepiece respirator when visiting plants and has a BLL below detection.

Response to Comment 93.3

Please see response to comment 38.12.

The Board thanks the commenter for their input and participation in the rulemaking process.

94. Jeremy Malson, CIH, CSP, Independent Consultant.

Comment 94.1

The commenter states that subsection 1529(r) of the Asbestos standard requires that contractors be licensed to work with asbestos. In the commenter's opinion, one of the biggest failures with the current lead rule and the proposed rule is there is no similar license for lead-related work. The commenter stated that if you want compliance, then owners need to know who are the lead-licensed individuals or firms that they can hire. The commenter recommends that a requirement like the asbestos standard be looked at.

Response to Comment 94.1

The Board notes that contractor licensing is outside the scope of this rulemaking and the Board's jurisdiction. The Contractor's State Licensing Board (CSLB) has jurisdiction over licensing as suggested by the commenter.

Comment 94.2

In reference to addressing the ingestion route of exposure in the standard, commenter states that CDPH has at least four or five different standards for dust and or soils (10 micrograms per square foot floors, 100 for other horizontal surfaces like desktops, 400 micrograms per square foot for exterior horizontal

surfaces). Under a federal OSHA compliance directive, federal OSHA uses a value of 200 micrograms per square foot as free as practicable from lead contamination. The commenter says, "Something needs to be injected into 1532.1 and even 5198 if we're really going to tackle the hygiene."

Response to Comment 94.2

Please see response to comment 4.2.

Comment 94.3

The commenter states that the asbestos industry routinely uses showers. The commenter states that they are available but difficult to use. The commenter states that the difficulties include hot water heaters, wastewater, and they are small so you have throughput with a lot of employees that need to use it. The commenter states that it does not take a truck-mounted rig to use it and they do set up three stage decontamination chambers.

Response to Comment 94.3

Please see response to comment 19.16. In addition, the Board notes that to efficiently move a crew through decontamination showers, where they are required, the employer must determine how many showers are needed and how to stagger their use. These are issues that many contractors have had to grapple with under the existing standards.

Comment 94.4

The commenter concurs with AIHA and CIHC about the CIH and exposure assessments. In the commenter's experience, safety is done more effectively and better than industrial hygiene on construction sites. The commenter states that hard hats, safety nets, backup alarms, fall protection, is readily viewable when you audit a job site. What is not is periodic exposure assessments and periodic exposure regimes. The commenter states that it would be better to have some sort of increase in requiring additional help with exposure assessments.

Response to Comment 94.4

Please see response to comment 4.1.

Comment 94.5

The commenter states that there should be a "delicate balance with turning workers into pin cushions." Every month, going to the doctor to draw blood. "We need to think about what that means for workers having to routinely go get needles poked into them."

Response to Comment 94.5

Please see response to comment 88.4.

Comment 94.6

Regarding the limitation on abrasive blasting "to two hours a work week" the commenter forecasts that 10 years out an abrasive blaster in the gig economy will move between multiple contractors doing two

hours of blasting at each site because they need to fill the eight-hour workday. And because they are specialized in what they do, they will not be able to do a non-lead task for the other eight hours or six hours on the job site. The commenter states that the abrasive blasting industry is concerned about this.

Response to Comment 94.6

Please see response to comment 60.11.

Comment 94.7

The commenter states that abrasive blasters are forced into containment. They are forced to have higher exposures for other environmental concerns. The commenter states that that is concerning when looking at SECALs and the abrasive blasting industry.

Response to Comment 94.7

The Board notes that in recognition of the exceptional circumstances under which abrasive blasting takes place, the proposed construction standard does provide for a five-year phase-in of the proposed PEL for this industry—for the first five years of the standard the PEL for abrasive blasting is set at 25 µg/m^3.

The Board thanks the commenter for their input and participation in the rulemaking process.

95. Perry Gottesfeld, on behalf of OK International.

Comment 95.1

The commenter states that the proposed standard simply codifies the status quo in lead battery manufacturing and recycling facilities in the United States. Ecobat, formerly known as RSR, Eurobat, and BCI previously supported a biologic limit value of 15 micrograms per deciliter. The commenter also expresses support for inclusion of separate engineering control air limits, or SECALs.

Response to Comment 95.1

The Boards thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

96. Cris Williams, on behalf of International Lead Association (ILA).

Comment 96.1

The commenter states that there is a new study in a modern lead handling facility that showed no relationship between air lead concentrations and blood lead concentrations in workers. The PBPK model developed by the OEHHA, which is being used as the basis for the proposed rule's PEL and AL in no way resembled the relationship demonstrated by real world data from the modern lead handling facility. The commenter states that it is inappropriate to use the OEHHA model as the basis for establishing the PEL and the AL in the proposed rule.

Response to Comment 96.1

Please see responses to comments 53.1.1a, 53.1.1b and 53.1.1c.

The Board thanks the commenter for their input and participation in the rulemaking process.

97. AnaStacia Nicol Wright, on behalf of WorkSafe, California Rural Legal Assistance Foundation (CRLAF).

Comment 97.1

The commenter expresses strong support for the proposed changes to the standards, noting that written comment was also submitted on behalf of a coalition of worker-based organizations.

Response to Comment 97.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

98. Mitch Steiger, on behalf of the California Labor Federation.

Comment 98.1

The commenter urges the Board to adopt the lead standards.

Response to Comment 98.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 98.2

The commenter states the public testimony has been light on a discussion of the effect of lead on the human body. The commenter states that lead causes all sorts of problems in the brain. Those of us born in the era of leaded gasoline go through life with reduced brain function, with three to six fewer IQ points than we would have had we not been exposed to that toxin at a young age. It means reduced impulse control, greater likelihood of learning disabilities and greater likelihood of mental illness. As all the evidence shows, lead affects every part of the body. Because of exposure to lead, we all have a higher risk of heart disease, our circulatory systems and kidneys do not work as well. The commenter states that everywhere in the body that can be harmed by lead has been harmed and we cannot recover from that.

Response to Comment 98.2

The Board thanks the commenter for their support of the proposed amendments.

Comment 98.3

The commenter states that during testimony several people made the argument that there is no relationship between lead in the air and lead in our bodies. The commenter states that this must be news to the people who research this topic and especially those who have found links between lead in gasoline and lead in the body. Or people who live downwind from a small airport that still uses leaded gasoline and lead in the blood of the children and the families who live there. There are all sorts of clearly demonstrated links between lead in the air, and lead in the body. The commenter states that that

is one of the pieces that is driving this standard and why it is so important.

Response to Comment 98.3

The Board thanks the commenter for their support of the proposed amendments.

Comment 98.4

The commenter states their hope that the reaction of most people who look into the effects of lead on humans is, how on earth has it taken this long? How have we been talking about this for so many decades? We have been looking at this specific standard since 2010. The commenter states that the response from the industry has been, let's take longer, let's slow down, let's have more advisory committees, let's walk it back, let's criticize the data that those who are not involved in the industry seem to agree on. The commenter further states that there seems to be a relationship between that perspective and an unwillingness to discuss what lead does to a human being. The commenter states that most people who learn more about what lead does to a person conclude that we need to do something about this right now, we need to pass these regulations right now, and we need to get going. That is the perspective of the labor movement. The commenter hopes that is the perspective of the Board.

Response to Comment 98.4

The Board acknowledges and appreciates the commenter's statements regarding the effects that lead has on the body and the urgent need for the proposed amendments to protect against those effects.

The Board thanks the commenter for their input and participation in the rulemaking process.

99. Helen Cleary, on behalf of Phylmar Regulatory Roundtable (PRR) Occupational Safety and Health Forum.

Comment 99.1

The commenter supports the overall objective to reduce blood lead burden on workers and agrees that a lower PEL and AL is warranted. However, the commenter has concerns with the proposed text.

Response to Comment 99.1

The Board thanks the commenter for their input and support of the proposed amendments. The Board's response to commenter's concerns are addressed separately below.

Comment 99.2

The commenter states that the primary issue with the general industry rule is the complexity and potential impact it will have on employers in industries not currently subject to the lead standard.

Response to Comment 99.2

Please see response to comment 37.10.

Comment 99.3

In addition to complexity, the commenter expressed the concern that the construction standard does not consider frequency or duration of exposure, especially for unknown exposures and short tasks at low levels.

Response to Comment 99.3

Please see response to comment 37.1. The Board also notes that, following current language in the construction standard, industries with low-level lead exposures, irrespective of frequency or duration, need to conduct an initial determination of these tasks in accordance with subsection 1532.1(d)(3) to determine whether any of these tasks can expose employees at or above the AL. This language is unchanged in the proposed regulation.

Comment 99.4

The commenter does not believe the proposal appropriately considers workers who may come into contact with lead-containing material that is incidental and infrequent to their primary duties. The commenter states that the regulation requires a significant amount of work be done prior to potential exposures that include very low exposures. The commenter states that many of these low exposures will be intermittent and infrequent. This adds to the complexity and limits the employer's opportunity to determine the actual employee exposures as required. The commenter states that it is highly unlikely that the employer in construction and general industry will be able to determine and test the concentrations of airborne exposures for these types of tasks. The commenter states that if these assessments cannot be completed prior to exposure, interim protections may be required and they are significant - respiratory protection, PPE change areas, shower facilities and medical surveillance that includes BLL testing. The commenter states that once the pre-exposure tests are complete there are some exemptions, and the follow-up monitoring and response is easier to manage. The commenter states that it is the upfront heavy burden in the beginning to get you there that is unreasonable.

Response to Comment 99.4

The Board believes that the commenter is mistaken in that low-exposure tasks that are incidental and infrequent to employees' primary duties are not likely to require interim protections as currently proposed in either standard. In the proposed construction standard, the listed 'trigger tasks' (which mandate interim protections) are unchanged from the current standard: if the specified task was not a 'trigger task' under the existing construction regulation, it is not included as one under the proposed language.

General industry tends to have fewer incidental and infrequent tasks -- tasks that are not a routine part of an employee's regular work. In the proposed general industry standard interim protection is required for "Presumed Hazardous Lead Work (PHLW)," now re-named as "Presumed Significant Lead Work (PSLW)." PSLW is altering or disturbing material known to (or reasonably anticipated to) contain lead at or above 0.5%. An exception is made for an employee altering or disturbing these materials for less than eight hours in any 30-day period. The Board believes that this exception effectively exempts incidental and infrequent tasks in general industry.

Please also see responses to comments 37.7 and 37.9.

Comment 99.5

The commenter states that a major concern is the possibility that lead-containing soil from the use of leaded gasoline could trigger requirements for roadside construction or any digging in areas with lead containing soil. The commenter states that many California utilities and communication companies must perform routine replacement and emergency maintenance on utility lines (water, gas, power, cable). The commenter states that negative exposure assessments would not be applicable given the transitory nature of utility repair and short duration of the task. And during emergency operations there just will not be time. The commenter states that the result would be interim procedures for utility crews on the streets, full face (indiscernible) respirators or even PAPRs, full body protective clothing, gloves, hat, shoes, face shields, as required. And that is because the exposure is unknown, not because it is necessarily high. The commenter states that this could raise public concern. And a heat hazard would be created by wearing these types of protections in August on the road. The commenter does not believe this is an appropriate solution or response.

Response to Comment 99.5

The Board notes that the disturbance of lead-contaminated soil is not listed as a 'trigger task' in the proposed construction lead standard. Because of this the employer will be able to make use of the 'objective data' provision of the standard in subsection 1532.1(d)(3)(D) which allows the employer to collect a body of exposure data demonstrating that, for the disturbance of lead-contaminated soil, employee exposures will not be at or above the AL. This 'objective data' can be used instead of implementing initial monitoring as otherwise would be required. One commenter has submitted such a body of data—showing that the disturbance of lead-contaminated soils uniformly results in employee exposures below the proposed AL.

Comment 99.6

The commenter strongly recommends that the Board rejects this draft and asks Cal/OSHA to continue working with stakeholders to draft simplified amendments that will protect workers and address industry's concerns. The commenter states that such a low PEL requires a different strategy than what is in place now and frequency needs to be considered for exposure assessments in the construction standard. The commenter states that there are other approaches that will reduce the burden on employers and honor and protect workers at the same time.

Response to Comment 99.6

Please see response to comment 37.3.

Comment 99.7

The commenter asked for a phase-in period. In addition to building out potential changes to facilities, buildings and structures, the commenter states that they will need time to do the necessary upfront data analysis.

Response to Comment 99.7

Please see response to comment 11.4.

Comment 99.8

The commenter states that workers will not be left unprotected while we figure this out. California's lead standards do provide a level of protection. The commenter states that despite the PEL and AL being out of alignment with the current understanding, these regulations have resulted in effective lead management programs that directly reduce occupational exposures to lead. According to a report CDPH issued, BLLs are trending down in California. CDPH stated in its report released in 2021, *Lead Levels in California Workers*, "While lead poisoning remains a significant concern for California workers exposed to lead, blood lead test results reported to the Occupational Blood Lead Registry in the years 2015 to 2018 suggest that there may be a trend in exposed workers having lower BLLs. This conclusion is based on an increase in reported OLPPP results less than 5 micrograms per deciliter, with missing information concerning employer and exposure sources not sought by OLPPP occupational exposure sources most likely." The commenter also notes that federal OSHA is actively working on amendments to the lead blood standard as well.

Response to Comment 99.8

Please see response to comment 37.3.

Comment 99.9

The commenter realizes that this rule has been in the works for many years, and that DIR, Cal/OSHA, CDPH and the Board are eager to finalize it. However, there are significant concerns, which the industry has highlighted since 2015 and that Board staff has acknowledged that need to be addressed. The commenter hopes that the comments are heard and responded to despite the rule being in the works for too many years. And because the SRIA was not based on the most recent draft. The commenter believes, and hopes the Board agrees, it is more important to get it right than just to get it done.

Response to Comment 99.9

Please see response to comment 66.10.

The Board thanks the commenter for their input and participation in the rulemaking process.

100. Robert Moutrie, on behalf of the California Chamber of Commerce (CalChamber).

Comment 100.1

The commenter requests red line version of drafts.

Response to Comment 100.1

Please see response to comment 71.1.

Comment 100.2

The commenter states that the PEL and the BLL are not necessarily correlated. The commenter further states that blood lead is where the harm is.

Response to Comment 100.2

The Board disagrees with this comment. The control of airborne lead levels is essential to the effort to reduce BLLs not only because it reduces the inhalation of lead particulate, but also because the distribution and settling of airborne lead is the primary source of workplace contamination, which then necessitates diligent hygiene and housekeeping. The control of airborne lead levels supports the other exposure controls.

Comment 100.3

The commenter believes that the regulatory timeline is infeasible, even for those who start before the vote. The commenter says that installations would take 30-months or a three-year timeline, so they could not comply by the time this goes into effect. The commenter requests consideration of a 15-day change to address many of the industry-specific concerns here and allow a timeline to get into compliance, with ability to demonstrate they are moving toward compliance, especially for the PEL element. The commenter states that the problem for industry is "how," not "what" - not fighting about the "what" but we do have to figure out the "how."

Response to Comment 100.3

Please see responses to comments 11.4 and 48.2.

The Board thanks the commenter for their input and participation in the rulemaking process.

101. Chris Walker, on behalf of the California Association of Sheet Metal & Air Conditioning Contractors.

Comment 101.1

The commenter is not asking that we do not act, but that we get this right. The commenter is asking along with their partners (labor partners, sheet metal, air, rail and transit workers) for a year delay in adoption of the rule to allow for the building trades and the workers that are affected to be involved, to talk about the issues brought up today where there are different sides. The commenter states that the costs and consequences are huge. The commenter further states that a lot of issues out there need to be addressed.

Response to Comment 101.1

Please see response to comment 11.4.

Comment 101.2

The commenter would like to see "the continued lead standards adopted and fulfilled and complied with." Unfortunately, out in the field they see a lack of enforcement even of the current standard.

Response to Comment 101.2

The Board thanks the commenter for their support of the proposed amendments. The Board notes that enforcement of the standards is outside of the scope of the Board's jurisdiction.

Comment 101.3

The commenter states that the underground economy is real. The permit pull rate in the residential sector is less than 12%; light commercial is slightly better; commercial is okay; public works are almost perfect. They have been working very hard to implement title 24 building standards throughout California but have a huge task in front of them. Not to mention the decarbonization of existing building structures between now and 2035. The commenter states that any job that they go into, that is going to be held up with additional requirements, additional costs, better be done right. The commenter is asking for the time to do it right.

Response to Comment 101.3

The Board acknowledges the commenter's statements about competition and the underground economy; however, they are outside the scope of either this rulemaking or the Board's jurisdiction. Please also see response to comment 66.10.

Comment 101.4

The commenter states that CDPH testified earlier that sound science is in the interest of public health. "We too are concerned about the impacts of lead on brain, heart, blood pressure, organs, kidneys...." But looking at science objectively, the commenter thinks that CDPH would agree the presence and ingestion in the workplace of high fat foods and sugary drinks is a higher threat to all three metrics of health. "The Occupational Safety and Health Standards Board would not adopt something like that because you have to adopt things that are reasonable and enforceable."

Response to Comment 101.4

The Board acknowledges commenter's statement that the presence and ingestion in the workplace of high fat foods and sugary drinks is a higher threat to health than lead; however, this is outside the scope of this rulemaking and the Board's jurisdiction.

Comment 101.5

The commenter states that they are looking for a "reasonable, enforceable filter, as applied to the changes, radical changes that have been made to the standard." The commenter states that people have been talking about 12 years, but they were not talking about what was released. The commenter believes that they need a year before adoption to sit back and go through all the changes that have been forwarded as a proposal and get this right.

Response to Comment 101.5

Please see response to comment 11.4.

The Board thanks the commenter for their input and participation in the rulemaking process.

102. Abraham Parra, Environmental Contractor.

Comment 102.1

From the commenter's experience as safety manager with a very large environmental contractor, the current PEL, AL and BLLs are pretty high. The commenter states that this regulation is long due. There are a lot of workers that are excited that they are going to bring down the levels. "Because we kind of noticed that in the work that we do it is very difficult to even get to the current AL in the PEL. And that is currently with the practices that we engage to lower it." The commenter states that if their company can do it, other companies can do it. At the end of the day, this is to protect workers and their families because these employees are also taking lead dust home and contaminating their homes and their children. The commenter fully supports "your guys decision."

Response to Comment 102.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

103. Denise Kniter, on behalf of Los Angeles County Business Federation (BizFed).

Comment 103.1

The commenter states that the Business Federation in Los Angeles County, and specifically those in construction, health care, utilities and communications, telecom, have significant concerns that they have outlined in their written comment as well. The commenter echoed the concerns about having an imperfect standard passed that could have effects that last unintentionally in making it more difficult to build housing and more difficult to provide protection to health care workers who need protection from X-rays.

The commenter states that they also have significant concerns about utilities and telecommunications being able to provide emergency repairs. The commenter states that many times the lead exposure is not known until workers arrive at the site.

Response to Comment 103.1

The Board disagrees with the commenter's first point. The Board notes that while new building materials and paints may contain trace amounts of lead, the standard is not meant to include employees with minute exposures to lead. In addition, the Board notes that health care workers can continue to be protected from the hazard of x-rays. Workers who fabricate or install lead shielding for healthcare facilities will be more adequately protected from the hazards of lead exposure under the proposal.

Also, please see response to comment 37.9.

Comment 103.2

The commenter agrees that it is important to update these standards but wants to make sure that we are not creating an imperfect standard that has to be indefinitely altered, amended, or have more exemptions created. The commenter believes it is more important to pass the correct standard that reflects the concerns of the people who have to actually implement it, as well as the workers.

Response to Comment 103.2

The Board appreciates the commenter's support for updating the regulations and agrees with the commenter about the importance of input from employers and employees. Please also see response to comment 19.1.

Comment 103.3

The commenter hopes that the Board has taken into consideration the many comments that say, "we've implemented higher standards and some of what's outlined in this process doesn't actually lead to lower blood levels or air contamination …."

Response to Comment 103.3

The Board has considered all written and oral comments timely submitted during the comment period.

The Board thanks the commenter for their input and participation in the rulemaking process.

Oral Comments by Members of the Occupational Safety and Health Standards Board:

134. Chris Laszcz-Davis, Member, Occupational Safety and Health Standards Board.

Comment 134.1

At the Public Hearing on April 20, 2023, Board Member Chris Laszcz-Davis expressed the opinion that the role of the Standards Board is to develop a consensus standard that is reasonable, enforceable and effective in mitigating risk. Board Member Laszcz-Davis states that there is an existing lead standard, so it is not as if California has been ignoring the issue. Board Member Laszcz-Davis further states that there have been reports by CDPH and others that the standard has been effective. While the standard probably is not effective enough, it is important to make sure that as we take the next quantum level in terms of mitigating risks, we get it right.

Response to Comment 134.1

The Board believes that the Lead standard should be based on the best available science. The Board agrees that the Lead standards should be reasonable, enforceable and effective in mitigating risk. What is considered "reasonable" may be different for various groups, be they employers, employees or medical professionals. The Board believes that the proposed standards are reasonable, enforceable and will be effective in mitigating risk. The Board does not believe that the current Cal/OSHA Lead standards are adequately effective to mitigate risk to the health of employees who work with lead. In addition, please see response to comment 19.4.

Comment 134.2

At the Public Hearing on April 20, 2023, Board Member Chris Laszcz-Davis agreed that the air lead levels should likely be lowered but states that it does not appear that the scientists are aligned as to what air levels and blood levels are reasonable and effective. Board Member Laszcz-Davis referenced the testimony of Dr. Cris Williams questioning the OEHHA mathematical model. Board Member Laszcz-Davis asked whether there is an issue with the science that Cal/OSHA is relying upon to determine the levels that are in the proposed regulations.

Response to Comment 134.2

Please see responses to comments 59.1.1, 59.1.1a, 59.1.1b, 59.1.1c and 59.1.1d.

Comment 134.3

At the Public Hearing on April 20, 2023, Board Member Chris Laszcz-Davis noted that the applicability of the standards has expanded to include the utilities and constructions, mobile workforces, maintenance and others and states that the expansion warrants a more robust review that extends beyond the 45 days that has been allowed. Board Member Laszcz-Davis stated that in the ideal world there would be an advisory committee to look at it because it is a whole new standard and does not just build on what we had before. Board Member Laszcz-Davis suggested that there be a phase-in period.

Response to Comment 134.3

The Board notes that proposed amendments have not changed the scope of employers covered by the regulations at issue. The language of subsection (a) in both sections 1532.1 and 5198 is unchanged, existing text. While certain employers may now be subject to additional requirements due to the amendments, they would not be newly subject to the standards themselves.

Further, regarding covered employers that may be subject to new or additional requirements based on the proposed amendments, the Board notes those employers have had the opportunity to submit comments during the 45-day comment period as well as the first and second 15-day comment periods. The Board has carefully reviewed and considered all comments timely received and has also proposed a number of modifications, the vast majority of which were in response to comments received.

The Board also notes that it is proposing delays in both the effective date of the standard and the implementation dates for certain requirements, to allow time for employers to prepare for and implement the amended regulations.

Regarding the need for a longer review period beyond 45 days, please see response to comment 24.1.

Regarding the need for an advisory committee, please see response to comment 66.10.

Regarding the need for a phase-in period, please see response to comment 11.4.

Comment 134.4

At the Public Hearing on April 20, 2023, Board Member Chris Laszcz-Davis stated that the regulations need to be feasible, enforceable, practical and effective and that lowering levels alone does not result in risk mitigation. Board Member Laszcz-Davis believes that the levels must have companion operating practices and procedures that are easily interpreted by the stakeholders. The final standard must be understandable, effective, enforceable and the Board Member is hearing that that is a struggle.

Response to Comment 134.4

The Board believes the proposed lead regulations are feasible, enforceable, practical and will be effective. Please see response to comment 134.1.

Further, regarding companion procedures that are easily interpreted by the stakeholders, to the extent this is in reference to procedures in the standards themselves, the Board notes that in addition to the lowered PEL and AL, the proposed standards also include amendments to a number of other existing requirements, the combination of which are designed to increase the effectiveness of the standards and maintain clear requirements for employers to follow. To the extent it is reference to companion materials outside of the standards, the Board believes that these kinds of explanatory aids are best presented as part of educational materials put forward by Cal/OSHA.

Comment 134.5

At the Public Hearing on April 20, 2023, Board Member Chris Laszcz-Davis questioned whether the costs of implementation that were cited several years ago are still appropriate today and believes the costs need to be revisited.

Response to Comment 134.5

Please see responses to comments 19.5 and 19.14.

Comment 134.6

At the Public Hearing on April 20, 2023, Board Member Chris Laszcz-Davis expressed concern about the 45-day timeline for review and noted that there are no more advisory committees planned. Board Member Laszcz-Davis believes that things have changed enough that the rulemaking process should not be allowed to hinder the ability to develop what the California workers really need, which is a reasonable, enforceable, understandable regulation. Board Member Laszcz-Davis expressed the opinion that there should be one or a combination of the following: 1) an extension of that 45-day comment period because there are a whole host of new stakeholders and a deadline in April doesn't make sense when people cannot understand what is presently proposed; 2) another 15-day comment period.

Response to Comment 134.6

The Board agrees that the regulations should be reasonable, enforceable and understandable. Please see response to comment 134.1.

Regarding an extension of the 45-day comment period, please see response to comment 24.1.

Regarding the suggestion that there be a 15-Day Proposed Modifications, the Board notes that it has issued notices of two 15-Day Proposed Modifications. The Board further notes that in these two 15-Day Proposed Modifications, numerous modifications were made to the requirements of the standards in response to comments submitted by stakeholders.

The Board also notes that it is proposing delays in both the effective date of the standard and the implementation dates for certain requirements, to allow time for employers to prepare for and implement the amended regulations. Please see response to comment 11.4.

135. David Harrison, Member, Occupational Safety and Health Standards Board.

Comment 135.1

At the Public Hearing on April 20, 2023, Board Member David Harrison stated that the rulemaking has been going on for 13 years and he does not think he could support a three-year implementation delay as suggested by some. He expressed the opinion that one year of delayed implementation once a final rule was approved would be appropriate.

Response to Comment 135.1

Please see response to comment 11.4.

Comment 135.2

At the Public Hearing on April 20, 2023, Board Member David Harrison stated support for specific CSLB licensing for lead contractors similar to asbestos contractors as suggested by an earlier speaker.

Response to Comment 135.2

Please see response to comment 94.1.

136. Barbara Burgel, Former Member, Occupational Safety and Health Standards Board.

Comment 136.1

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed support for lowering the PEL and the action level and for the lowered BLLs in the medical removal program as proposed in the new drafts. Board Member Burgel further expressed support for the trigger tasks in the construction lead standard and the focus in both standards on exposure assessments. The Member believes that, in addition to substitution, engineering, ventilation and administrative controls, personal protective equipment, housekeeping, hygiene and training are critically important primary prevention measures.

Response to Comment 136.1

The Board appreciates Board Member Burgel's support for these aspects of the proposed regulation.

Comment 136.2

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed full support for including a certified industrial hygienist in supervising the exposure assessment processes, because that is in the primary prevention side of the equation.

Response to Comment 136.2

Please see response to comment 4.1.

Comment 136.3

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed support for the hygiene emphasis in the standards and believes that there will be less worker exposure and less work-to-home exposure. Board Member Burgel shared her experience caring for a lead-exposed worker whose 18-month-old child had a seriously elevated BLL, noting that work-to-home exposure is critically important and a very important public health problem.

Response to Comment 136.3

The Board appreciates Board Member Burgel's support for these aspects of the proposed regulation.

Comment 136.4

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed the opinion that periodic training is needed in multiple languages at educational levels appropriate to the target population. Board Member Burgel also expressed displeasure with Appendix B, which the Board Member believes cannot be used for training given its length and very high educational level.

Response to Comment 136.4

The Board appreciates Board Member Burgel's support for these aspects of the proposed regulation. Please see response to comment 69.4.

Comment 136.5

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed surprise that the words physician, licensed physicians, licensed health care provider and health care provider are used in the two standards liberally. Board Member Burgel noted that "PLHCP," which is the physician or other licensed health care professionals, is in the Cal/OSHA section 5204 Silica Standard. Board Member Burgel believes that the language should be updated to the current language that is in most standards now: "physicians or other licensed health care professionals."

Response to Comment 136.5

Please see response to comment 45.1.

Comment 136.6

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed the opinion that the standards as written focus too much on the role of the medical provider. The advisory committees did not spend much time addressing the medical evaluations needed for people who have elevated BLLs and in the federal standards, it has not been updated. The word "physician" is mentioned many more times throughout the standard than ventilation or engineering controls. Board Member Burgel would rather place the emphasis on prevention measures such as ventilation and engineering controls.

Response to Comment 136.6

Please see response to comment 69.6.

Comment 136.7

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed the opinion that anyone who is in the medical removal program for an elevated BLL should be entered into the Workers' Compensation system. The Workers' Compensation systems have independent, qualified medical examiners and a process of protecting patient privacy information. It is a system that employers have already set up and they pay for in their premium. Board Member Burgel believes that it would be

appropriate to shift individuals who are medically removed into the Workers' Compensation system and thereby simplify the medical emphasis in the standard.

Response to Comment 136.7

The Board acknowledges and appreciates Board Member Burgel's suggestion regarding the Worker's Compensation system; however, this suggestion is beyond the scope of this rulemaking and the Board's jurisdiction.

Comment 136.8

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed support for the employer-written elevated blood level response plan although the board member pointed out that no details are provided regarding what is required in this response plan. Board Member Burgel described the CAP she is familiar with from her experience as an occupational health nurse, which includes consulting with occupational health physician colleagues and onsite industrial hygienist and safety consultants, if available, repeat BLL tests, looking at the use of PPE, ventilation, etc. Board Member Burgel feels that this aggregate perspective is missing in the standard. Board Member Burgel believes that there are steps in responding to an elevated BLL that could be further delineated.

Response to Comment 136.8

Please see response to comment 69.8.

Comment 136.9

At the Public Hearing on April 20, 2023, Board Member Barbara Burgel expressed support for a certification of lead abatement workers in all steps of that process and believes it would be a good enhancement. Currently, there is a lead abatement and there is a lead certification that is used for people who inspect, but it is not used uniformly through all the steps of lead abatement.

Response to Comment 136.9

Please see response to comment 69.9.

137. David Thomas, Member, Occupational Safety and Health Standards Board.

Comment 137.1

At the Public Hearing on April 20, 2023, Board Member David Thomas noted that there are certain industries that probably will not be ready and is unsure what to do about that. However, the rulemaking has been going on for 13 years and they should have been getting ready for it. (Eric Berg, Deputy Chief, Health and Research and Standards interjected that the standard requires the use of respiratory protection if engineering controls are not available while engineering controls are being implemented.) Board Member Thomas acknowledged that respirators provided a workaround in the interim so that there did not need to be a one to three-year delay in protecting workers.

Response to Comment 137.1

Please see response to comment 11.4.

Further, regarding the time it may take for employers to implement required engineering controls, the Board notes that both standards already contain compliance and feasibility provisions relevant to this concern. The proposed standards anticipate that implementation of certain controls may not occur immediately and requires employers to establish and implement written compliance programs, including a "detailed schedule for implementation of the program" to reduce exposures to or below the PEL. Further, the proposed standards require the use of engineering and work practice controls to maintain employee exposure to below the PEL, *except to the extent that such controls are not feasible*. During the reasonable time period necessary to install or implement engineering controls, an employer may be able to demonstrate that such controls are not feasible. Where the implementation of engineering and work practice controls is not sufficient to reduce exposures to or below the PEL, the standards provide that respiratory protection may be used to supplement employee protection.

138. Nola J. Kennedy, Member, Occupational Safety and Health Standards Board.

Comment 138.1

At the Public Hearing on April 20, 2023, Board Member Nola Kennedy expressed support for updating the lead standard stating that it is way overdue. However, she would like to see a presentation on how the AL of 2 µg/m^3 was derived, specifically how the OEHHA model was used in determining the AL. Board Member Kennedy agrees with other comments that it is a little unusual to have an action level lower than half of the PEL. Board Member Kennedy would also like the presentation to address some of the comments that have been made about the applicability of the OEHHA model, its flaws, and whether they need to reconsider that or not.

Response to Comment 138.1:

The Board appreciates Board Member Kennedy's support for the proposed amendments.

With regard to the requested presentation, the Board notes that the requested information was presented by Cal/OSHA's Deputy Chief, Health and Research and Standards, Eric Berg, at the Board Meeting held on January 18, 2024.

Regarding information on how the AL of 2 µg/m^3 was derived, specifically how the OEHHA model was used in determining the AL, please also see response to comments 19.4 and 37.4.

Regarding the accuracy and applicability of the OEHHA model, please see response to comment 48.5.1.

MODIFICATIONS RESULTING FROM THE FIRST 15-DAY NOTICE OF PROPOSED MODIFICATIONS (July 7, 2023 – July 24, 2023)

Following the first 15-Day Notice of Proposed Modifications from July 7, 2023, to July 24, 2023, the proposed amendments to sections 1532.1 and 5198 were further modified as follows, as the result of public comments and/or Board staff evaluation.

Section 1532.1 of the Construction Safety Orders

Subsection 1532.1(b) Definitions.

In the definition of Chief, "(Cal/OSHA)" was added to indicate that it is the abbreviation for the Division of Occupational Safety and Health. Further, references to "Division" or "the Division" were replaced with "Cal/OSHA" throughout the regulatory text. These modifications were necessary to clarify that "Cal/OSHA" is used synonymously with the Division of Occupational Safety and Health and to ensure that all references to the program are consistent throughout the amended regulatory text.

Subsection 1532.1(f) Respiratory protection.

Subsection (f)(3)(A) was amended to remove the prohibition on the use of filtering facepiece respirators for protection against lead and to add the requirement that if filtering facepiece respirators are used for protection against lead, they must be N100, R100, or P100. The Board received a number of comments that filtering facepiece respirators have been given an assigned protection factor by federal OSHA and their use should not be prohibited if properly worn under conditions for which they are rated. The modification was necessary to permit the use of filtering facepiece respirators but also ensure that, when used, they are of the most protective type.

Subsection 1532.1(g) Protective work clothing and equipment.

The phrase "in accordance with GISO Article 10" was moved from subsection (g)(1) to subsection (g)(1)(C) for the reasons set forth below.

In subsection (g)(1), the phrase "such as" was replaced with "including." This modification was needed to clarify that employers must provide employees with the PPE listed in subsection (g)(1) when the PEL is exceeded, as an interim protection during trigger tasks, or when there is exposure to lead compounds that can cause skin or eye irritation. The provision of the listed PPE is critical for preventing contamination of the employee and the employee's garments, which reduces the risk of ingestion exposure.

Subsection (g)(1)(b) was modified to remove "gloves" and to add "other head coverings" to this category of required protective clothing. The first modification was needed because the term "gloves" was moved to the subsection (g)(1)(c) list of non-mandatory PPE, for the reasons set forth below. The second change was needed to acknowledge that articles other than hats can be effective in preventing contamination of employees' heads and hair.

Subsection (g)(1)(c) was amended to clarify that the protective clothing and equipment listed in this subsection is not mandatory but instead must be provided "where needed," in accordance with the requirements of GISO Article 10. This modification was needed to clarify that protective equipment other than that listed in subsections (g)(1)(A) and (g)(1)(B) must be provided only when the employer determines that the equipment is necessary to protect employees and that such determination is subject to the considerations set forth in GISO Article 10. The word "appropriate" was removed from this subsection to avoid redundancy with GISO Article 10. "Gloves" was added to this category of equipment because, due to other safety considerations, including entanglement hazards, it is not appropriate that their use be mandatory.

Subsection 1532.1(i) Hygiene facilities, practices and regulated areas.

Subsection (i)(2)(C) was modified to require that protective clothing or equipment not only must not leave the workplace, but also must not be brought into an employee's personal vehicle. This modification was necessary to prevent contaminated clothing from contaminating employee vehicles and to provide additional protection to children and other household members from lead brought home from the workplace on contaminated clothing or protective equipment. The word "wearing" was replaced with the word "with," to indicate that these requirements apply whether the protective clothing is on the employee or not. This modification was necessary because contaminated clothing or equipment in contact with vehicle surfaces can transfer lead without regard to whether the clothing or equipment is being worn at the time.

Subsection (i)(3)(A) was modified to require the provision of shower facilities for employees whose airborne exposure to lead is above 50 µg/m^3, rather than above the PEL. The Board determined that requiring the provision of showers for all exposures above the proposed PEL may not be economically feasible for a significant portion of the construction industry. This modification was necessary to revert to the existing regulatory requirement.

Subsection 1532.1(j) Medical surveillance.

"Exception 2" was added to subsection (j)(1)(A)'s initial blood testing requirement, to provide an exception to the requirement when an employee is not, and is not reasonably expected to be, exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use. This modification was necessary to provide employers relief from initial BLL testing requirements in situations where exposures are not likely to lead to elevated BLLs. At Cal/OSHA's request, OEHHA modeled 14 days of exposure at 20 µg/m^3 and confirmed that employee BLLs would not exceed 10 µg/dl under these parameters. The previous Exception 2 was renumbered as Exception 3 to accommodate the addition of the new exception.

"Exception 2," was added to subsection (j)(1)(B)1.'s medical surveillance requirement, to provide an exception to the requirement when an employee is not exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use. This modification was necessary to provide employers relief from medical surveillance requirements in situations where exposures are unlikely to lead to elevated BLLs. At Cal/OSHA's request, OEHHA modeled 14 days of exposure at 20 µg/m^3 and concluded that employee BLLs would not exceed 10 µg/dl under these parameters. The existing exception to subsection (j)(1)(B)1. was renumbered as "Exception 1." to accommodate the addition of "Exception 2."

Subsection (j)(1)(E) was amended to specify that employee identification information must also be provided by the employer to a PLHCP when services covered by subsection (j)(1) are rendered. This modification was needed to ensure that employee information is provided to the PLHCP in all situations where they are providing required medical services to employees.

Subsection (j)(2)(E)'s elevated blood lead level response plan requirements were amended to add an exception to the requirement when an employee's BLL at or above 10 µg/dl is detected only in an

employee's initial blood lead testing. The purpose of the written elevated BLL response plan is to describe the specific means the employer will use to reduce the employee's elevated BLL. However, an employee's initial elevated BLL would not reflect exposure at the current workplace but rather would reflect past exposures, either occupational or non-occupational. This modification was necessary to relieve employers from elevated blood lead level response plan requirements where it is clear that the lead exposures occurred exclusively prior to employment with the current employer.

Subsection 1532.1(*l*) Communication of hazards.

The reference to "housekeeping" was removed from subsection (*l*)(2)(c). This modification was necessary as the contents of subsections (i)(2) through (i)(4), which are required to be trained on, pertain to hygiene, not housekeeping.

Subsection 1532.1(m) Signs.

New subsection (m)(1)(E) was added to specify that required warning signs be in a language understandable to employees. This addition was necessary because required training must be provided in a language understandable to employees (subsection(*l*)(1)(C)), so it follows that other required communication with employees about the hazards of lead, such as signs, must also be provided in a language understandable to them.

Appendices

There are three appendices to amended section 1532.1: A, B and C. Per subsection 1532.1(q) Appendices: "The information contained in the appendices to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation."

The proposed amendments to these purely informational appendices were modified as follows:

The language of all three appendices was amended to use gender-neutral terms where reference to a particular sex or gender was not necessary. These changes were needed for the consistent use of gender-neutral language throughout the amended standard. The language was also amended to replace gender-specific nouns with terms identifying biological sex. These modifications were needed to increase the clarity and accuracy of the statements.

Appendix A

Appendix A – Substance Data Sheet for Occupational Exposure to Lead was modified to reflect the amendments to the regulatory text of amended section 1532.1, described in detail above, and to reflect current scientific understanding of lead's effects on health. These modifications were necessary to maintain consistency with the requirements of the amended regulatory text and the accuracy of the statements in the Appendix.

Additionally, the Appendix was amended to remove unnecessary toxicological and medical details and simplify its language, to emphasize the points being made. The purpose of Appendix A is to provide information to employees about the potential effects that lead exposure can have on their health. It is

not expected that employees have a medical or toxicology background and the appendix is intended to be written accordingly. The removal of unnecessary information was necessary to streamline its contents and provide increased clarity for its intended audience, employees.

Appendix B

The language in amended Appendix B –Employee Standard Summary was modified to reflect the amendments to the regulatory text of amended section 1532.1 described in detail above. These amendments to the Appendix were necessary to maintain consistency with the requirements of the amended regulatory text and the accuracy of the statements in the Appendix.

Appendix C

The language in amended Appendix C – Medical Surveillance Requirements was modified to reflect the amendments to the regulatory text of amended section 1532.1 described in detail above, and to reflect current scientific understanding of lead's effects on health. These amendments to the Appendix were necessary to maintain consistency with the requirements of the amended regulatory text and the accuracy of the statements in the Appendix.

Section 5198 of the General Industry Safety Orders

Subsection 5198(b) Definitions.

In the definition of Chief, "(Cal/OSHA)" was added to indicate that it is the abbreviation for the Division of Occupational Safety and Health. Further, references to "Division" or "the Division" were replaced with "Cal/OSHA" throughout the regulatory text. These modifications were necessary to clarify that Cal/OSHA is used synonymously with the Division of Occupational Safety and Health and to ensure that all references to the program are consistent throughout the amended regulatory text.

A definition of Separate Engineering Control Air Limit (SECAL) was added. This modification was necessary to clarify the meaning of the acronym "SECAL," which is used throughout the regulation.

Subsection 5198(d) Exposure Monitoring.

Subsection (d)(2)(A) was amended to remove the prohibition of the selection or use of filtering facepiece respirators. The Board received a number of comments that filtering facepiece respirators have been given an assigned protection factor by federal OSHA and their use should not be prohibited if properly worn under conditions for which they are rated. The modification was necessary to permit the use of filtering facepiece respirators but also ensure that, when used, they are of the most protective type.

Subsection 5198(e) Compliance.

The phrase "Except as specified in subsection (e)(1)(B)" was deleted from subsection (e)(1)(A) because it was no longer applicable.

Subsection (e)(1)(B) was revised to specify that, where the use of engineering and work practice controls required by subsection (e)(1)(A) are not sufficient to reduce and maintain employee exposure to lead at

or below the PEL, the employer must implement such controls to reduce exposure to the lowest level feasible and then also supplement the controls with respiratory protection to control employee exposure to or below the PEL. This modification was needed to clarify that it is the employer's responsibility to first implement engineering and work practice controls to reduce exposure as much as possible and then to use respiratory protection to control exposure to or below the PEL.

Current subsection (e)(1)(B) was renumbered (e)(1)(C), and renumbered subsection (e)(1)(C) was modified to specify that in addition to the use of engineering and work practice controls to reduce exposure to at or below the SECAL, an employer must also supplement these controls with respiratory protection to ensure that employee exposure is maintained at or below the PEL. These modifications were needed to clarify that even in situations where the employer is complying with a SECAL, the employer must still ensure that no employee is exposed above the PEL.

Table 1 -- Separate Engineering Control Airborne Limits (SECALs) for Selected Processes; Implementation Schedule was amended to add SECAL details for the lead acid battery recycling industry. Based on the information received, the Board determined that a SECAL was appropriate to this industry. These modifications were necessary to clearly identify the selected processes in the lead acid battery recycling industry covered by the SECAL.

Subsection (e)(2)(A) was amended to include a reference to new subsection (e)(1)(B). This modification was needed to ensure that the required written compliance program includes the new subsection (e)(1)(B).

Subsection 5198(f) Respiratory Protection.

Subsection (f)(3)(A) was amended to remove the prohibition on the use of filtering facepiece respirators for protection against lead and to add the requirement that if filtering facepiece respirators are used for protection against lead, they must be N100, R100 or P100. The Board received a number of comments that filtering facepiece respirators have been given an assigned protection factor by federal OSHA and their use should not be prohibited if properly worn under conditions for which they are rated. The modification was necessary to permit the use of filtering facepiece respirators but also ensure that, when used, they are of the most protective type.

Subsection 5198(g) Protective Work Clothing and Equipment.

The requirement that employers must provide protective work clothing and equipment at no cost to the employee and ensure its use was moved from subsection (g)(1)(B) to subsection (g)(1)(A). This modification was needed to clarify that the requirement pertained to all clothing and equipment specified in subsection (g). Subsection (g)(1)(C) was renumbered as subsection (g)(1)(B) because the entire content of subsection (g)(1)(B) was moved to subsection (g)(1)(A) to accommodate the deletion of subsection (g)(1)(B).

The reference to Article 10 in subsection (g)(1)(A) was moved to renumbered subsection (g)(1)(B)3. for the reasons specified below.

Renumbered subsection (g)(1)(B)2. was modified to remove "gloves" and add "or other head coverings" to this category of required protective clothing. The first modification was needed because the term "gloves" was moved to the subsection (g)(1)(B)3. list of non-mandatory PPE, for the reasons set forth below. The second change was needed to acknowledge that articles other than hats can be effective in preventing contamination of employees' heads and hair.

Subsection (g)(1)(B)3. was amended to clarify that the protective clothing and equipment listed in this subsection is not mandatory but instead must be provided "where needed," in accordance with the requirements of GISO Article 10. It is proposed that "gloves" be added to this category of equipment because, due to other safety considerations, it is not appropriate that their use be mandatory. Further, the word "appropriate" is proposed to be deleted to avoid redundancy with GISO Article 10 requirements. These modifications are needed to clarify that protective equipment other than that listed in subsection (g)(1)(B)1. and (g)(1)(B)2. must be provided only when the employer determines that the equipment is necessary to protect employees and that such determination is subject to the considerations set forth in GISO Article 10. For example, gloves must be provided where needed, unless the wearing of gloves would present a safety hazard.

<u>Subsection 5198(i) Hygiene Facilities and Practices.</u>

The exception to subsection (i)(1)(A) was amended to specify that the employer must demonstrate that the employee is not exposed to lead above the PEL "in accordance with subsection (c)(2)," which sets forth the PEL. The addition of the reference to subsection (c)(2) was necessary to clarify that the exposures of employees following the employer's safe hydration procedures are measured as an 8-hour time-weighted average (TWA).

In subsections (i)(2)(A), (i)(3)(A) and (i)(4)(A) the term "greater than the PEL" was replaced with "above the PEL." This modification was necessary to maintain the use of consistent terminology in the standard. Further, the phrase "is effective" was replaced with "shall become effective," to maintain clarity and consistency with language used in other health and safety standards.

A new subsection (i)(2)(C) was added, which requires that employers ensure that employees do not enter personal vehicles or leave the workplace with any protective clothing or equipment that is required to be worn during the work shift. This modification was necessary to prevent contaminated clothing from contaminating employee vehicles and to provide additional protection to children and other household members from lead brought home from the workplace due to contaminated clothing or protective equipment. Contaminated clothing or protective equipment that is in contact with vehicle surfaces can transfer lead without regard to whether the clothing is being worn at the time. Further it is proposed to delete subsection (i)(3)(C), which contains similar requirements and is no longer necessary after the addition of subsection (i)(2)(C).

<u>Subsection 5198(j) Medical Surveillance.</u>

The exception to subsection (j)(1)(A)2. was deleted and added as Exception 1 to subsection (j)(1)(A)1. This modification was necessary to clarify that the exception applies to subsection (j)(1)(A)1., medical surveillance for employees who are or may be exposed above the AL. It does not apply to medical surveillance as interim protection for employees performing PSLW.

A second exception was added to subsection (j)(1)(A)1., such that medical surveillance is not required for an employee who is not exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use. This modification was necessary to provide employers relief from medical surveillance in situations where exposures are unlikely to lead to elevated BLLs. At Cal/OSHA's request, OEHHA modeled two scenarios, 29 days of exposure at 29 µg/m^3 and 14 days of exposure at 20 µg/m^3 and concluded that employee BLLs would not exceed 10 µg/dl under either of these scenarios.

Subsection (j)(1)(D) was amended to require that employee identification information must also be provided by the employer to a PLHCP when services covered by subsection (j)(1) are rendered. This modification was needed to ensure that employee information is provided to the PLHCP in all situations where they are providing required medical services to employees.

The word "initial" was removed from the exception to subsection (j)(2)(A)1. This modification was necessary so that the terminology used is consistent with the rest of subsection (j).

Subsection (j)(2)(E)'s elevated blood lead level response plan requirements was amended to provide an exception to the requirement where an employee's BLL at or above 10 µg/dl is detected only in an employee's initial blood lead testing. The purpose of the written elevated BLL response plan is to describe the specific means the employer will use to reduce the employee's elevated BLL. However, an employee's initial elevated BLL would not reflect exposure at the current workplace but rather would reflect past exposures, either occupational or non-occupational. This modification was necessary to relieve employers from elevated blood lead level response plan requirements where it is clear that the lead exposures occurred exclusively prior to employment with the current employer.

Two new exceptions were added to subsection (j)(3)(A)2.'s requirements for medical examinations prior to assignment. The first exception specifies that medical examinations and consultations are not required for an employee who is not exposed to lead at or above the action level for 30 or more days in any 12 consecutive months, and who is not exposed on any day above 10 µg/m^3 as an 8-hour TWA, without regard to respirator use. The second exception specifies that they are also not required for an employee who is not exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 as an 8-hour TWA, without regard to respirator use. These exceptions were necessary to provide employers relief from medical examinations prior to assignment in situations where exposures are unlikely to lead to elevated BLLs. At Cal/OSHA's request, OEHHA modeled two scenarios, 29 days of exposure at 29 µg/m^3 and 14 days of exposure at 20 µg/m^3, and concluded that employee BLLs would not exceed 10 µg/dl under either of these scenarios.

<u>Subsection 5198(*l*) Employee Information and Training.</u>

Subsection (*l*)(1)(F)3. was amended to remove the reference to "housekeeping," as the contents of subsections (i)(2) through (i)(4) which are required to be trained on, pertain to hygiene, not housekeeping.

<u>Subsection 5198(m) Communication of Hazards.</u>

A new subsection (m)(2)(F) was added to specify that required warning signs be in a language understandable to employees. This addition was necessary because required training must be provided in a language understandable to employees (subsection (*l*)(1)(C)) so it follows that other required communication with employees about the hazards of lead, such as signs, must also be provided in a language understandable to them.

Appendices

There are three appendices to amended section 5198: A, B and C. Per subsection 5198(p) Appendices: "The information contained in the appendices to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation."

The proposed amendments to these purely informational appendices were modified as follows:

The language of all three appendices was amended to use gender-neutral terms where reference to a particular sex or gender was not necessary. These changes were needed for the consistent use of gender-neutral language throughout the amended standard. The language was also amended to replace gender-specific nouns with terms identifying biological sex. These modifications were needed to increase the clarity and accuracy of the statements.

Appendix A

Appendix A – Substance Data Sheet for Occupational Exposure to Lead was modified to reflect the amendments to the regulatory text of amended section 5198, described in detail above, and to reflect current scientific understanding of lead's effects on health. These modifications were necessary to maintain consistency with the requirements of the amended regulatory text and the accuracy of the statements in the Appendix.

Additionally, the Appendix was amended to remove unnecessary toxicological and medical details and simplify its language, to emphasize the points being made. The purpose of Appendix A is to provide information to employees about the potential effects that lead exposure can have on their health. It is not expected that employees have a medical or toxicology background and the appendix is intended to be written accordingly. The removal of unnecessary information was necessary to streamline its contents and provide increased clarity for its intended audience, employees.

Appendix B

The language in amended Appendix B –Employee Standard Summary was modified to reflect the amendments to the regulatory text of amended section 5198 described in detail above. These amendments to the Appendix were necessary to maintain consistency with the requirements of the amended regulatory text and the accuracy of the statements in the Appendix.

Appendix C

The language in amended Appendix C – Medical Surveillance Requirements was modified to reflect the amendments to the regulatory text of amended section 5198, described in detail above, and to reflect current scientific understanding of lead's effects on health. These amendments to the Appendix were

necessary to maintain consistency with the requirements of the amended regulatory text and the accuracy of the statements in the Appendix.

SUMMARY AND RESPONSE TO WRITTEN COMMENTS RECEIVED DURING THE FIRST 15-DAY COMMENT PERIOD:

104. Rick LeBlanc, President & CEO, NELCO Worldwide, by written comments dated July 12, 2023.

Comment 104.1

The commenter states that their company's current medical removal BLL of 18 µg/dl, which is below the proposed limit, would trigger the proposed voluntary removal protection benefits. The commenter asks Cal/OSHA to clarify what is meant by, "due to effects of lead exposure on the employee's health-related condition." The commenter would like to know whether this means that the voluntary removal or restriction protections are only applicable if the employee has a health-related condition. In addition, the commenter would like to know how this language applies if a company has a voluntary policy to remove employees at lower levels whether or not the employee has a health-related condition. The commenter believes it is unfair for employers with pre-existing conservative policies to be held responsible for voluntary MRP benefits, or worse to be motivated to eliminate their more conservative policies.

Response to Comment 104.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 104.2

The commenter states that Assembly Bill 35 requires that any BLL test result of $\geq$ 20 µg/dl be reported to Cal/OSHA by the analyzing laboratory and further requires that Cal/OSHA conduct an investigation. The commenter believes that it is not fair for Cal/OSHA to make a regulation that is not protective enough to prevent triggering of a Cal/OSHA investigation. The commenter further states that employers cannot proactively remove employees from lead exposure to avoid triggering an AB 35 investigation because they would be required to provide voluntary MRP benefits to removed employees. The commenter states the AB 35 needs to be included or referenced in sections 5198 and 1532.1 so that it is evident to all employers, and the medical removal protection benefits need to be modified.

Response to Comment 104.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice. The Board also notes that Assembly Bill 35 requires that CDPH, not the analyzing laboratory, report BLL test results of $\geq$ 20 µg/dl to Cal/OSHA.

Comment 104.3

The commenter states that they have separately provided documentation to support their request for SECALs for the manufacture and installation of medical and industrial lead shielding and lead burning.

Response to Comment 104.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

105. Jasmine Gongora, by written comments dated July 13, 2023.

Comment 105.1

As a union contractor, the commenter strongly opposes the Standard's Board's proposed changes to the construction lead standard. The commenter states that they are committed to the safety of all workers and have demonstrated that commitment by providing rigorous worksite assessments, personal protective equipment, respiratory protection, good hygiene practices on job sites, good housekeeping and training for all employees on how to safely work with/around lead to reduce exposure.

Response to Comment 105.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 105.2

The commenter states that the proposed changes to the standard present significant costs to contractors for compliance and include medical requirements that are invasive and infringe on worker privacy, without any evidence that they are necessary to protect worker safety.

Response to Comment 105.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 105.3

The commenter states that the proposed revisions would dramatically increase costs for contractors of all sizes and would drive up construction costs. The commenter lists increased costs for BLL testing, the requirement that portable showers be provided on jobsites, record keeping mandates and other requirements. The commenter further states that many contractors will incur costs in the hundreds of thousands or even millions to comply. The commenter states that small contractors, including disadvantaged business enterprises (DBE), disabled veterans business enterprises (DVBE), and women-owned businesses would be most negatively impacted, putting many out of business.

Response to Comment 105.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 105.4

The commenter states that the proposed PEL and AL are so low that nearly all types of construction work will trigger compliance. The commenter believes that the new regulation will impact hundreds of thousands of construction workers, requiring workers to be BLL tested frequently. The commenter states that even infrequent tasks will require medical surveillance and pre-job BLL testing. The commenter believes that frequent BLL testing and the reporting and maintenance of this private health information by CDPH is extremely intrusive to workers lives and privacy.

Response to Comment 105.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 105.5

The commenter believes the proposed changes are unnecessary as Cal/OSHA has not shown that the current lead standards fail to protect workers and that there is a serious and immediate issue that warrants the drastic, costly, and invasive changes to the current standards. The commenter believes that more analysis is needed, including demonstrating that the extreme reduction in the PEL is necessary and backed by science.

Response to Comment 105.5

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

106. Guy Schembri, President, Weathertight Roofing, by written comments dated July 11, 2023.

Comment 106.1

The commenter opposes the proposed changes to the lead in construction standard. The commenter states that the proposed changes to the standard present significant costs to contractors for compliance and include medical requirements that are invasive and infringe on worker privacy, without any evidence that they are necessary to protect worker safety.

Response to Comment 106.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 106.2

The commenter states that the proposed revisions would dramatically increase costs for contractors of all sizes and would drive up construction costs. The commenter lists increased costs for BLL testing, the requirement that portable showers be provided on jobsites, record keeping mandates and other requirements. The commenter further states that many contractors will incur costs in the hundreds of thousands or even millions to comply. The commenter states that small contractors, including DBE, DVBE, and women-owned businesses would be most negatively impacted, putting many out of business.

Response to Comment 106.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 106.3

The commenter states that the proposed PEL and AL are so low that nearly all types of construction work will trigger compliance. The commenter believes that the new regulation will impact hundreds of thousands of construction workers, requiring workers to be BLL tested frequently. The commenter states that even infrequent tasks will require medical surveillance and pre-job BLL testing. The commenter believes that frequent BLL testing and the reporting and maintenance of this private health information by CDPH is extremely intrusive to workers lives and privacy.

Response to Comment 106.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 106.4

The commenter believes the proposed changes are unnecessary as Cal/OSHA has not shown that the current lead standards fail to protect workers and that there is a serious and immediate issue that warrants the drastic, costly, and invasive changes to the current standards. The commenter believes that more analysis is needed, including demonstrating that the extreme reduction in the PEL is necessary and backed by science.

Response to Comment 106.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

107. Stephanie Phelps, President, El Camino Real Association of Occupational Health Nurses, by written comments dated July 17, 2023.

Comment 107.1

The commenter would like to like to acknowledge the PLHCP language and urge the adoption of the updated Construction and GIS Lead standards at the upcoming meeting.

Response to Comment 107.1

The Board thanks the commenter for their support of this portion of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

108. Marc Connerly, Executive Director, Roofing Contractors Association of California, on behalf of American Subcontractors Association of California, Associated Roofing Contractors of the Bay Area

Counties, Building Owners and Managers Association of California, California Association of Sheet Metal and Air Conditioning Contractors, National Association, California Building Industry Association, California Business Properties Association, California Framing Contractors Association, Construction Employers' Association, Flasher Barricade Association, Housing Contractors of California, National Electrical Contractors Association, National Roofing Contractors Association, Northern California Allied Trades, Painting and Decorating Contractors of California, Roofing Contractors Association of California, Southern California Contractors Association, Southern California Glass Management Association, Union Roofing Contractors Association, United Contractors, Wall and Ceiling Alliance, Western Electrical Contractors Association, Western Wall & Ceiling Contractors Association, Western Painting & Coatings Contractors Association, Residential Contractors Association, Western Steel Council, by written comments dated July 19, 2023.

Comment 108.1

The commenter objects to the 15-Day Notice for the regulatory change being issued late in afternoon on a Friday. The commenter states that it takes considerable time to organize a meeting of employer groups to respond and this takes away three days of valuable collaboration time. The commenter states that notice on Monday to Thursday is appropriate for future notices.

Response to Comment 108.1

The Notice issued by the Board complied with all notice requirements for a regular APA rulemaking.

Comment 108.2

The commenter appreciates that consideration of feasibility of providing showers has been added back into the standard. The commenter also appreciates that some of the requirements for initial BLL testing have been removed. The commenter states that these were a deviation from the Federal language and should not have been changed in the first place.

Response to Comment 108.2

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 108.3

The commenter continues to take issue with the unprecedented reductions in the PEL and AL and states that Cal/OSHA has not demonstrated a compelling need for reductions to these unrealistic levels. The commenter further states that PELs and ALs must be set at reasonable and achievable levels.

Response to Comment 108.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 108.4

The commenter continues to take issue with the addition of unnecessary and confusing definitions for altering of lead and changing the definition for "competent person" and "supervisor." The commenter

states that changing the definition of supervisor imposes a significant training and cost burden on employers. The commenter states that there is no rationale for adding a 40-hour training requirement for supervisors.

Response to Comment 108.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 108.5

The commenter states that expanding the "presumed" exposure of trigger tasks regardless of frequency or duration to require "interim protection" is not a feasible approach for protecting employees. The commenter also states that there is no rationale for moving more trigger tasks into the "Level 3 Trigger Task" designation.

Response to Comment 108.5

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 108.6

The commenter believes that the requirement for all contactors with trigger task exposures beyond level 1 to have individual exposure assessments is unnecessary and burdensome. The commenter estimates that approximately 86,000 contractors in construction would have to hire a CIH to conduct air monitoring and there are not enough CIHs to meet this demand. The commenter believes that a 3-year implementation delay would be required to allow industry to catch up unless this exposure assessment requirement is changed.

Response to Comment 108.6

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 108.7

The commenter states that in the absence of recent and meaningful advisory committee meetings and a side-by-side comparison of the original construction proposal, stakeholders were not allowed the time and opportunity to present the real costs to employers. The commenter has compiled and presented cost projections over 10 years that they state are the "real world" costs of compliance with the revised regulation in contrast to the costs presented in the SRIA. The commenter projects that the total costs for 10 years are $145,224,878,000 compared the 10-year costs presented in the SRIA of $862,818,517.

Response to Comment 108.7

The Board disagrees with the commenter's statement that meaningful advisory committee meetings were not held. Please see response to comment 66.10.

With regard to the absence of a side-by-side, please see response to comment 73.2.

With regard to the commenter's statements about the SRIA, please see responses to comments 19.5 and 19.14.

Comment 108.8

The commenter states that Governor Newsom is taking an "all of government" approach to decarbonizing existing buildings so that the state can achieve carbon neutrality by 2045. The commenter states that the proposed AL and PEL add significant costs to the price tag for building decarbonization contractors and their customers. The commenter asks whether Cal/OSHA has considered that new and unnecessary costs created by this rule directly threaten California's ability to fund and, therefore achieve, the Administration's goal of carbon neutrality by 2045.

Response to Comment 108.8

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 108.9

The commenter requests that Cal/OSHA provide stakeholders with a rationale for the proposed changes so that a reasonable discussion can be held demonstrating the need for change.

Response to Comment 108.9

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023 and is therefore outside the scope of the 15-Day Notice.

Comment 108.10

The commenter states that the SRIA is based on outdated information and is woefully inadequate in its analysis and requests that it be revised. The commenter believes that Cal/OSHA, Board members, stakeholders and the regulated community deserve to know the real costs of the proposed revisions.

Response to Comment 108.10

Please see response to comments 19.5 and 19.14.

Comment 108.11

The commenter requests that Cal/OSHA issue a new 15-Day Notice between a Monday and a Thursday that includes:

- Adjusting the AL and PEL to reasonable levels clearly supported by the evidence.
- Removing the requirement that supervisors have "competent person" 40-hour lead training and replacing the word "supervisor" with "competent person."
- Aligning the trigger tasks in construction with the Federal Lead in construction standard.

- Allowing objective data to be used by employers in lieu of requiring each employer to conduct an initial exposure assessment.
- Providing a 3-year delay in implementation to allow employers sufficient time to comply with the numerous changes to the standard including training, exposure assessments, reductions in the AL and PEL, changes to the trigger tasks, medical surveillance and BLL testing, revised written programs, and lowered MRP levels.

Response to Comment 108.11

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023 and is therefore outside the scope of the 15-Day Notice.

Comment 108.12

The commenter offers these comments as an addendum to their April 17, 2023, comments. The commenter states that focus of their letter is the 15-Day Notice as requested by the Board. The commenter further states that the scope of the total changes to the lead standard is far reaching and imposes a significant burden on employers. The commenter hopes that their comments will shed additional light on the impact of the changes on the construction industry and requests an opportunity to discuss their continuing concerns with Cal/OSHA and the Board in a meaningful and productive way.

Response to Comment 108.12

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023 and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

109. Roger Miksad, President and Executive Director, Battery Council International, by written comments dated July 21, 2023.

Comment 109.1

The commenter supports the following changes to 5198:

- Replacing the term “presumed *hazardous* lead work” with “presumed *significant* lead work” (subsection (b)).
- Adding an exception to the general hygiene requirement to allow employers to provide employees with potable drinking water (subsection (i)(1)(A)).
- Expanding the exception from medical surveillance for employees who are not exposed to lead at or above the action level for 30 or more days (increased from 10) in any 12 consecutive months (subsection (j)(1)(B)(1)).
- Adding an exception from initial BLL testing for employees who have had a BLL test in the preceding two months (subsection (j)(1)(A)(1)).
- A new exception from employee medical removal if an employee’s last blood test indicates a BLL below 15µg/dl (subsection (k)(1)(C)).

The commenter believes that these changes are responsive to comments they submitted during the 45-day notice period and will improve the workability of the regulations, facilitating higher rates of employer compliance and improved protection for employees.

Response to Comment 109.1

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 109.2

The commenter states the proposed exception for employee access to potable drinking water requires additional annual employer training, written safe hydration procedures, and a demonstration by the employer that employees following these procedures are not exposed above the PEL and that water is consumed in a manner that prevents lead ingestion. The commenter states that these additional requirements are not defined. The commenter adds that, more importantly, employers would not be able to comply with the language as written because the explicit purpose of this exception is to allow carefully controlled use of hydration stations in areas where air lead levels exceed the PEL. Thus, employers would not be able to demonstrate that employees are not exposed above the PEL. The commenter states that the text should be removed for the final rule text. The commenter also requests clarification that the information previously submitted to Cal/OSHA describing current practices and procedures for providing safe drinking water in lead exposed areas at battery manufacturing facilities, coupled with the required training schedule will satisfy these additional requirements.

Response to Comment 109.2

The Board believes that it is not necessary to further define requirements for written safe hydration procedures, as the content of such procedures will vary from one workplace to another.

Further, the Board notes that in areas where the airborne levels of lead exceed the PEL, an employer can demonstrate that employees are not exposed to lead above the PEL by calculating 8-hour TWA exposures that take into account periods when employees wear respirators and periods when they remove their respirators to access the hydrations stations. The Board has amended the proposed text to clarify that employee exposure would be determined in accordance with subsection 5198(c)(2) of the standard.

Finally, the Board states that reviewing practices and procedures submitted to Cal/OSHA is beyond the scope of this rulemaking.

Comment 109.3

The commenter supports Cal/OSHA's proposal to allow a compliance period for change rooms, showers and lunchrooms when exposures exceed the proposed PEL. However, the commenter believes that a minimum 3-year timeframe will be necessary to meet these requirements because where such facilities are newly required, they will necessitate physical alterations and construction, a process that is lengthened considerably by the need for multiple reviews and approvals, including regulatory approvals. The commenter requests a 3-year compliance period for these requirements.

Response to Comment 109.3

Please see response to comments 11.4 and 48.2.

Comment 109.4

The commenter believes the revised language in the 15-Day Notice is not responsive to commenter's prior requests for reasonable compliance periods for requirements triggered by exposures above the proposed AL or the balance of requirements triggered by exposures above the proposed PEL, especially requirements for engineering controls. The commenter states that a reasonable compliance period responds to the need for a mechanism that protects employers who are actively working toward compliance from notices of violation, enforcement actions and penalties for delays they cannot control. The commenter believes that the compliance schedule requirement in subsection 5198(e)(2)(B)5. was intended for this purpose. The commenter proposes language to be added to subsection 5198(e)(1)(A) to establish a compliance schedule tailored to the needs of individual employers and facilities as an alternative to the one-size-fits-all default approach proposed in previous comments. *[See proposed language below in underline.]* The commenter believes their proposed language is consistent with the revised language in the 15-day notice and balances the desire to expedite compliance with the practical realities of achieving a PEL of 10 µg/m^3 in enclosed industrial settings.

> Subsection 5198(e)(1)(A): Except as specified in subsection 5198(e)(1)(B), where any employee is exposed to lead above the permissible exposure limit (PEL), the employer shall implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead at or below the PEL, except to the extent that the employer can demonstrate that such controls are not feasible. Where employee exposures are greater than the PEL, but not greater than 50 µg/m^3 without regard to the use of respirators, this requirement is effective [OAL insert one year from the effective date here] or by the date specified in the schedule for implementation of the compliance program required by subsection 5198(e)(2)(B)5., whichever is later.

Response to Comment 109.4

The Board does not agree that the addition of a compliance period in subsection 5198(e)(1)(A) is necessary.

The Board notes that the standard already contains compliance and feasibility provisions relevant to these concerns. The proposed standard anticipates that implementation of certain controls may not occur immediately and requires employers to establish and implement written compliance programs, including a "detailed schedule for implementation of the program" to reduce exposures to or below the PEL. Further, the proposed standard requires the use of engineering and work practice controls to maintain employee exposure to below the PEL, *except to the extent that such controls are not feasible*. During the reasonable time period necessary to install or implement engineering controls, an employer may be able to demonstrate that such controls are not feasible. Where the implementation of engineering and work practice controls is not sufficient to reduce exposures to or below the PEL, the standard provides that respiratory protection may be used to supplement employee protection.

As such, the Board believes that the proposed delays in the effective date and implementation dates (see response to comment 11.4) are sufficient.

Comment 109.5

The commenter requests a reconsideration of a one-year compliance schedule for requirements triggered by the proposed AL given the complexities of determining whether a given work area or work practice would result in exposure above the proposed AL, as well as the impact of an expected exponential increase in BLL testing on laboratory services and on qualified medical professionals to design and implement medical surveillance programs.

Response to Comment 109.5

The Board notes that it has requested a 6-month delay in the effective date of the regulations, which should give employers time to do needed exposure assessments. In addition, please see response to comment 48.2.

Comment 109.6

The commenter requests that Cal/OSHA reconsider the balance of the comments they submitted during the 45-day notices, with emphasis on the following:

- Reinstating de minimis applicability thresholds (e.g., exposure above the AL or PEL) for consuming food or beverages, using tobacco products or cosmetics, and for washing exposed skin prior to entering eating areas, eating, drinking, smoking, or applying cosmetics, or at the end of a shift. The commenter includes work involving articles or materials not covered in the definition of "presumed significant lead work" in their request.
- Differentiating BLLs attributable to non-occupational exposures for determining the applicability of requirements to provide MRP benefits.
- Removing the requirement for two consecutive BLLs before an employee may return to work and the requirement that BLL tests be taken at least 30 days apart. The commenter states that this change would be consistent with the proposed exception for MRP if an employee's last BLL indicates a BLL below 15 µg/dl.
- Allowing alternative work assignments for employees with elevated BLLs in areas where lead exposures are below the PEL.
- Revising the proposed AL and PEL to levels that reduce the compliance burden of employers consistent with evidence from employee BLL monitoring in the lead battery industry and other industries demonstrating the lack of a correlation between air lead concentrations and BLLs.

Response to Comment 109.6

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023 and is therefore outside the scope of the 15-Day Notice.

Comment 109.7

The commenter states that their proposed changes are intended to ensure consistent interpretation and facilitate compliance with the proposed regulations considering the practical realities of affected workplaces. The commenter further states that their proposed changes do not alter the requirement to achieve lower BLLs proposed in the revised standards and therefore do not compromise the public health protection benefits of the revised standards.

Response to Comment 109.7

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023 and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

110. Kenji Saito, President, on behalf of the American College of Occupational and Environmental Medicine (ACOEM), by written comments dated July 24, 2023.

Comment 110.1

The commenter would like to reiterate their strong support for the proposed amendments to the Cal/OSHA lead standards, as outlined in your rule-making announcement of March 3, 2023.

Response to Comment 110.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 110.2

The commenter urges the Board to consider further clarification of the new proposed regulatory language on "Physician or other licensed health care professional (PLHCP)." The commenter believes that mandated medical surveillance and BLL monitoring provisions present complex issues related to lead exposure and the pharmacokinetics of blood lead. Accordingly, they should be supervised by a physician (M.D. or D.O.) with experience and training in occupational lead medical surveillance with board certification in occupational medicine, medical toxicology, or another American Board of Medical Specialties (ABMS) discipline with experience in leading a lead surveillance program. The commenter is aware that in the past some employers have engaged other healthcare professionals, including paramedics or chiropractors, to oversee their mandated medical surveillance programs. Providers with these credentials lack the requisite training, knowledge and experience to evaluate the complex health effects of lead exposure on multiple organ systems.

Response to Comment 110.2

The Board is not persuaded by the commenter's arguments and declines to change the regulatory language. The Board notes that the definition of PLHCP requires the PLHCP to be 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. Thus, if a healthcare professional does not have the appropriate license, registration, or certification, they would not be permitted to independently provide or be delegated the responsibility to provide some or all of the health care services required by this section.

Further, the Board notes that in addition to M.D.s and D.O.s, some other health care professionals, e.g., some nurse practitioners, have experience and training in occupational lead medical surveillance.

Comment 110.3

The commenter asks the Board to consider any comments provided by the Western Occupational and Environmental Medical Association (WOEMA), which has actively participated in the Cal/OSHA Advisory Committee on the lead standards.

Response to Comment 110.3

The comment is outside the scope of the 15-Day Notice, as no comments were provided by WOEMA in response to this 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

111. Christy Christensen, Project Manager, Copper Development Association; Jack Monger, CEO, Industrial Environmental Association; Kerry Stackpole, FASAE CAE, CEO & Executive Director, Plumbing Manufacturers International ; Christopher E. Ochoa, Esq., Senior Counsel – Codes, Regulatory and Legislative Affairs, California Business Industry Association; James Simonelli, Executive Director, California Metals Coalition; Matthey Hargrove, President & Chief Executive Officer, California Business Properties Association; Roger Miksad, Executive Vice President and General Counsel, Battery Council International; Doug Kurkul, CEO, American Foundry Society; Mark DeLaquil, General Counsel, Association of Battery Recyclers; Benjamin Erwin, Deputy General Counsel, National Shooting Sports Foundation, Inc.; Lawrence Gayden, Policy Director, California Manufacturers and Technology Association; Andrea Abergel, Manager of Water Policy, California Municipal Utilities Association; Chris Williams, Ph.D., Senior Scientist, International Lead Association; Bryan Leiker, Executive Director, Metal Finishing Association of California; Eric Stuart, Vice President, Energy, Environment, and Infrastructure Policy, Steel Manufacturers Association; Rodney Pierini, President and CEO, CAWA – Representing the Automotive Parts Industry; Lisa Spooner Foshee, SVP, Government Affairs and General Counsel, Auto Care Association; Ryan Allain, Director, Government Affairs, California Retailers Association; by written comments dated July 24, 2023.

Comment 111.1

The commenters support Cal/OSHA's decision to change the term "presumed hazardous lead work" to "presumed significant lead work.

Response to Comment 111.1

The Board thanks the commenters for their support of this portion of the proposed amendments.

Comment 111.2

The commenters appreciate Cal/OSHA's proposal to provide a one-year compliance period for providing change rooms, showers and lunchrooms triggered by exposures above the proposed PEL. However, the commenters do not believe that one year is sufficient for construction due to the budgeting, planning and permitting that may be required. The commenters further state that these compliance periods do

not apply to engineering controls, which many employers will need to implement to achieve a PEL of 10 µg/m^3, especially in enclosed work areas. The commenters believe a 3-year compliance period is needed in many cases for employers to comply with PEL-related requirements.

Response to Comment 111.2

Please see response to comment 11.4.

Regarding the commenters' request to base the length of a phase-in period on the time it anticipates it will take to complete construction of hygiene facilities, the Board notes that where an employer is required to provide a shower, change room or lunchroom, they may install a temporary facility while awaiting completion of permanent structures.

Regarding the commenters' request to base the length of a phase-in period on the time it anticipates it will take to install and implement required engineering controls, the Board disagrees that this is necessary. The Board notes that both standards already contain compliance and feasibility provisions relevant to these concerns. The proposed standards anticipate that implementation of certain controls may not occur immediately and requires employers to establish and implement written compliance programs, including a "detailed schedule for implementation of the program" to reduce exposures to or below the PEL. Further, the proposed standards require the use of engineering and work practice controls to maintain employee exposure to below the PEL, *except to the extent that such controls are not feasible*. During the reasonable time period necessary to install or implement engineering controls, an employer may be able to demonstrate that such controls are not feasible. Where the implementation of engineering and work practice controls is not sufficient to reduce exposures to or below the PEL, the standards provide that respiratory protection can be used to supplement employee protection.

As such, the Board believes that the proposed delays in the effective date and implementation dates are sufficient and need not be extended further.

Comment 111.3

The commenters reiterate their prior comment that a reasonable compliance schedule is necessary to comply with other requirements triggered by exposures above the proposed AL and PEL. The commenters state that Cal/OSHA must include a mechanism that protects employers who are diligently working toward compliance from notices of violation, enforcement actions and penalties for delays they cannot control. The commenters continue to recommend that Cal/OSHA incorporate the compliance schedule proposed in their November 14, 2022, letter to Cal/OSHA.

Response to Comment 111.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 111.4

The commenters remain concerned that Cal/OSHA has not sufficiently demonstrated adequate laboratory capacity for the proposed BLL testing. The commenter further states that a reasonable

compliance schedule would allow for a more gradual increase in laboratory capacity, which would allow for, rather than impede, employer compliance.

Response to Comment 111.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 111.5

The commenters maintain that MRP benefits should be limited to occupational exposures. The commenters state that non-occupational and recreational exposures can lead to BLLs that exceed the proposed removal levels. The commenters request that Cal/OSHA reconsider commenter's prior recommendation to include language clarifying that MRP benefits are only required when workplace exposure exceeds relevant action levels and a medical examination by a qualified physician concludes that workplace exposures are the primary cause of the employee's elevated BLL.

Response to Comment 111.5

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 111.6

The commenters appreciate the exception from general hygiene requirements to allow employers to provide employee access to potable drinking water. The commenters ask Cal/OSHA to provide additional clarification on the requirement to "provide training on and ensure compliance with written safe hydration procedures." The commenters state that the requirement is not defined and is critical to both employer and employee compliance. The commenters also request deletion of the last sentence of the exception that requires an employer to demonstrate that employees following these procedures are not exposed above the PEL, given that the exception expressly applies to areas with air-lead levels above the PEL.

Response to Comment 111.6

Please see response to comment 109.2.

Comment 111.7

The commenters reiterate their prior comment that Cal/OSHA should reconsider the extent of the proposed reductions in airborne exposure limits. The commenters state that the limits would create more hazardous conditions for employees working in enclosed and confined spaces. The commenters further state that where the proposed limits are impossible to achieve, employees would need to wear Tyvek and respirators, placing them at greater risk of heat illness, particularly during the summer months. The commenters state that this type of work has been performed for decades under the previous regulation with little evidence of worker BLLs exceeding the proposed BLL targets. This success has been achieved through hygiene measures, not through lower air lead concentrations. The commenters believe that the minimal gains that can be expected from the five-fold reduction in the PEL

are not justified when weighed against the greater potential for harm to employees from increase heat exposure.

Response to Comment 111.7

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenters for their input and participation in the rulemaking process.

112. Daniel Glucksman, Senior Director for Policy, International Safety Equipment Association (ISEA), by written comments dated July 24, 2023.

Comment 112.1

The commenter states that Cal/OSHA's explanation for its potential prohibition of disposable respirator use is based on a belief that these devices cannot achieve a good seal to the worker's face. However, the commenter believes this is not the case as demonstrated in the research and analysis by federal OSHA as it developed the Assigned Protection Factors (APF) for respirators, and by decades-long recognized workplace practice by a vast number of workers. Specifically, commenter believes that filtering facepiece respirators would not have earned a federal OSHA APF of 10 without a consistent, tight seal to the worker's face. The scientific evidence considered by federal OSHA during the development of the APF of 10 for half facepiece respirators – including both elastomeric half facepiece respirators and filtering facepiece respirators – includes vast amounts of workplace protection factor (WPF) data. WPF studies are a key piece of evidence illustrating the level of protection a respirator can be expected to provide when used within a complete respiratory protection program, including fit testing and training. The commenter asks Cal/OSHA and the Board to consider the following factors, which suggest filtering facepiece respirators protect workers as they conduct lead abatement activities:

- The totality of the federal OSHA APF rulemaking.
- Filtering facepiece respirators are ideal because they are disposable.
- Reusable respirators must be cleaned to remove surface lead contamination and lead is difficult to remove from surfaces.
- Employers must have a cleaning facility, as water alone will not remove lead. Some workplaces where workers are exposed to lead may not have adequate cleaning facilities.
- Workers and their families could have higher lead exposures due to the complex process of effectively cleaning lead from respirators.
- Filtering facepiece respirators are an effective and affordable option. Thermoplastic half-mask respirators are an increased economic burden on small employers. The cost of a reusable respirator with two P 100 filters is $47 while the cost for an N-95 filtering facepiece respirator is $1-$2.

Response to Comment 112.1

Please see response to comment 38.12. The Board thanks the commenter for their input and participation in the rulemaking process.

113. Helen Cleary, Director, Phylmar Regulatory Roundtable, by written comments dated July 24, 2023.

Comment 113.1

The commenter appreciates that the Board and Cal/OSHA made modifications to the proposed amendments to the lead standards and supports many of the proposed changes. However, the commenter does not believe that the changes effectively address or mitigate the overall significant concerns of their members.

Response to Comment 113.1

The Board acknowledges commenter's continuing concerns and addresses them separately under the comment responses below.

Comment 113.2

The commenter is concerned that the new training elements added to subsections 5198(*l*)(1)(B) and (C) and 1532.1(*l*)(1)(B) and (C) have the potential to greatly expand the scope of training to nearly every employee in California that may have an unknown, infrequent, and low exposure to lead. The commenter further states that the language "occupationally exposed to lead" is a vague trigger that does not consider a threshold and implies that any exposure reaches a level of risk that would require employers to create, monitor, and manage ongoing training. The commenter believes that this is an unreasonable change that would create a significant administrative and financial burden on employers that was not considered in the SRIA. The commenter states the language of the new training requirement implies that anyone who can *possibly* be exposed to lead below the AL must also be trained, which could be argued, for example, to include an employee who works in an old building or along a roadside who may experience lead exposure and therefore would need to receive training despite their job duties having nothing to do with tasks known to have lead exposures. The commenter does not believe that this aligns with the intent of the proposal and recommends that exposures below the AL of 2 µg/m^3 not be considered "occupational exposure" that requires initial and annual training. The commenter further states that this will require significant cost and training hours for thousands of employees but, due to the short 15-day timeframe, the commenter is not able to estimate the number of workers affected but states that it will be significant. Finally, the commenter states that awareness training is not necessary because both the general industry and construction lead standards require that lead be addressed in hazard communication programs.

Response to Comment 113.2

To the extent that this comment is directed at subsections 5198(*l*)(1)(C) and 1532.1(*l*)(1)(C), none of the modifications noticed by the Board on July 7, 2023 pertained to the substantive requirements of that section and it is therefore outside the scope of the 15-Day Notice.

To the extent that this comment is directed at the new proposed training requirements of subsections 5198(*l*)(1)(B) and 1532.1(*l*)(1)(B), the Board notes that handling lead can lead to lead dust on employees' hands, faces and clothing, which can result in exposure to lead, regardless of airborne levels. This

supports the need for the greater emphasis that the proposal places on hygiene, and training all employees occupationally exposed to lead on housekeeping and basic hygiene and the employer's procedures for complying with the requirements.

The Board notes that the new training elements added to subsections 5198(*l*)(1)(B) and 1532.1(*l*)(1)(B) include straightforward requirements, such as vacuum use, hand washing, keeping food and beverages out of areas where employees are exposed to lead, and ensuring that hygiene facilities are kept clean. As noted by the commenter, employers' existing training programs may already cover some or all of the requirements. To the extent that they do not, the Board does not anticipate that training employees on a short list of basic hygiene and housekeeping practices would create significant administrative or financial burdens.

Finally, the Board disagrees with commenter's statement that awareness training is not necessary because it is addressed in hazard communication programs. Hazard communication training contains some but not all of the same requirements.

Comment 113.3

The commenter states that if the intent of the added language in subsections (*l*)(1)(B) and (C) of sections 5198 and 1532.1 is to train employees at risk of occupational lead exposure from ingestion, then this section needs to clearly reflect this and include an exposure threshold so that training can be targeted to proper employees. The commenter further states, however, that because the rule already sufficiently addresses training requirements in other subsections, they do not believe this is necessary. The commenter recommends that the newly proposed subsections (*l*)(B) and (C) in both standards be removed to ensure that all training requirements are tied to an actual exposure limit.

Response to Comment 113.3

To the extent that this comment is directed at subsections 5198(*l*)(1)(C) and 1532.1(*l*)(1)(C), none of the modifications noticed by the Board on July 7, 2023 pertained to the substantive requirements of that section and it is therefore outside the scope of the 15-Day Notice.

To the extent that this comment is directed at the new proposed training requirements of subsections 5198(*l*)(1)(B) and 1532.1(*l*)(1)(B), the Board notes that handling lead can lead to lead dust on employees' hands, faces and clothing, which can result in exposure to lead, regardless of airborne levels. Thus, it is not possible to include an exposure threshold to lead for the required training referred to by the commenter, because any employee with occupational exposure to lead may have lead exposure via ingestion.

The Board disagrees with commenter's statement that this subsection is unnecessary because the rule already "sufficiently addresses training requirements in other subsections." Training requirements in other subsections pertain to a narrower category of employees, as opposed to this subsection that requires the specified training for all employees occupationally exposed to lead.

Comment 113.4

The commenter is concerned with the use of "occupational lead exposure" to determine which workers the rule applies to and subsequent employer requirements. The commenter states that this, combined with the lowered AL, expands the scope beyond workplaces known to create lead exposures, making the proposed modifications unreasonable. The commenter believes that a definition of "occupational exposure" should be included in both standards for clarification and to ensure that the rules are necessary and target the employees at risk.

Response to Comment 113.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 113.5

The commenter does not believe changing "hazardous" to "significant" in the term "presumed hazardous lead work" is appropriate. The commenter states that this change highlights that the low thresholds that qualify work as PSLW are too low and seems to acknowledge that interim protections and complex exposure assessments are inappropriate for activities that can be reasonably anticipated to be below the AL. The commenter believes that this change is an example that subsequent requirements for low thresholds that do not consider duration and frequency are unreasonable. The commenter states that the rule should focus on objective hazards resulting from lead in the workplace not subjective "significant" lead work.

Response to Comment 113.5

The Board is not persuaded by the commenter's arguments and declines to change the regulatory language. The Board notes that the requirements of interim protection for an employee who performs PSLW only apply to work where an exposure assessment has not been completed. Further, the definition of PSLW does contain a duration element (≥8 hours during any 30-day period).

Comment 113.6

The commenter supports the exception regarding the use of potable drinking water in subsection 5198(i)(1)(A), stating that this will help employers remain in compliance with the lead standard while providing clean drinking water.

Response to Comment 113.6

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 113.7

The commenter appreciates the additional time of one year from the effective date to allow employers to comply with required changes to change rooms, showers and lunchrooms. The commenter believes this additional time will alleviate some of the concerns expressed regarding building modifications.

Response to Comment 113.7

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 113.8

The commenter is disappointed and confused that additional time to comply with requirements for building modifications was not included in the construction lead standard. The commenter is particularly disappointed because many of the stakeholders who expressed concern about this at the public hearing were from the construction industry.

Response to Comment 113.8

The Board notes that on a construction site, permanent building modifications, which would require drawings, permits, etc., are not required to create a change room, lunchroom or shower because of the temporary nature of the worksite itself. In addition, the Board notes that it has proposed a six-month delay in the implementation date for the entirety of the proposed regulations. Therefore, the Board declines to change the effective date for implementation of change rooms, lunchrooms and showers in the construction lead standard.

Comment 113.9

The commenter is disappointed that additional time was not included for the exposure assessments that will be required because of the expanded scope of the rule. The commenter states that several Board members acknowledged industry's request for more time to comply with the entire rule and voiced support for extending the effective date. The commenter again recommends that the Board consider expanding the one-year effective date in both rules.

Response to Comment 113.9

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

The Board notes that it has proposed a six-month delay in the implementation date for the entirety of the proposed regulations.

Comment 113.10

The commenter appreciates and supports the exception in subsection 1532.1(j)(1)(A) for initial BLL testing and modification to medical surveillance in subsections 5198(j)(A) and 1532.1(j)(1)(B). The commenter believes that the exception helps alleviate their primary concern regarding the requirement to provide BLL testing and medical surveillance for short duration and low exposures. The commenter believes that this will also help reduce the scope of workers inappropriately impacted by the lowered AL. The change from 10 to 30 days in the exception for BLL testing also helps address the original proposal's lack of consideration of duration and frequency when interim protections are triggered.

Response to Comment 113.10

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 113.11

The commenter believes that not requiring employees to submit to an initial BLL test if they have been tested or have had a medical exam in the preceding two months is a practical approach that supports the employer, employees and contractors. The commenter states that individuals should not be subjected to additional invasive BLL tests that are not medically necessary.

Response to Comment 113.11

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 113.12

The commenter believes that the 15-Day Notice changes to the medical surveillance subsections are *steps* in addressing the larger issue that the substantial reductions made to the AL and PEL, without adjusting subsequent requirements triggered by those levels, greatly expands the scope of the rule, and unnecessarily encompasses infrequent, unknown and random exposures. The commenter believes that these changes exhibit the Board's and Cal/OSHA's attempt to draft a rule that protects those at highest occupational risk without creating requirements that are unreasonable. The commenter further states that these modifications align with Cal/OSHA's previous acknowledgement during an advisory committee meeting in November 2015 that something needed to be done to address industry's concern about the expanded scope and impact of initial BLL testing and medical surveillance of an inappropriately large number of workers.

Response to Comment 113.12

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 113.13

The commenter very much appreciates the proposed exception that allows employers to consider feasibility when providing shower facilities. The commenter believes this change considers the operational experience of experts familiar with managing mobile workforces in the field. The commenter further states that the change is appropriate and will alleviate concerns expressed in the commenter's April 19, 2023 letter to the Board, and by stakeholders at the public hearing, about the unreasonableness and near impossibility of providing mobile shower facilities.

Response to Comment 113.13

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 113.14

The commenter continues to disagree with Cal/OSHA's comparison of providing showers in the lead standard to the requirements in the asbestos regulation, including comments that providing them would not be expensive. The commenter outlines what they believe are relevant differences between the two including:

- Asbestos workers are highly trained and there are specific exemptions and guidelines.
- Removing asbestos in a building is an extended project.

- Subsection 1529(j)(1) only requires the use of showers during Class 1 asbestos work where more than 25 square feet or 10 linear feet of asbestos-containing material is removed.
- There is no requirement for showers during asbestos operations and maintenance tasks.

The commenter believes that the need to consider feasibility when providing showers during mobile and critical infrastructure operations for workers who may be exposed to lead cannot accurately be compared to situations that expose workers to asbestos.

Response to Comment 113.14

The Board notes that in the construction lead regulation, it has proposed changing the airborne concentration of lead at which showers are required to be provided. In the proposal, showers would be required when employees are exposed to an airborne concentration of lead, without regard to the use of respirators, above 50 µg/m^3, unless the employer can demonstrate that shower facilities are not feasible. This is the same airborne concentration as in the current regulation.

Comment 113.15

The commenter appreciates the proposed amendment that employees whose last BLL test indicated a BLL below 15 µg/dl need not be removed from lead exposure. The commenter states that this modification aligns with workplace exposure models.

Response to Comment 113.15

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 113.16

The commenter states that despite Cal/OSHA's and the Board's attempt to create exemptions that reduce the scope of the requirements, the rule remains too complex and expansive due to the extremely low AL and PEL. The commenter believes that Cal/OSHA and the Board have not adequately addressed short duration and frequency of low exposures. The commenter states that while they support and understand the scientific reasoning behind the lowered AL and PEL, applying loose definitions of "occupational exposure to lead," without linking that definition to scientifically determined and measurable exposure thresholds, has resulted in an unreasonable regulation. The commenter believes that such low ALs require additional revisions so that the scope and application is appropriate and advocates that the Board not adopt this regulation as proposed.

Response to Comment 113.16

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

114. Robert Moutrie, Policy Advocate, California Chamber of Commerce (CalChamber), by written comments dated July 24, 2023.

Comment 114.1

The commenter appreciates changes made in the 15-Day Notice including reinstating the feasibility exception to the requirement to provide shower facilities, changes to the general hygiene requirements that ensure that drinking water is accessible, and adding an exception for workers with infrequent and brief exposure.

Response to Comment 114.1

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 114.2

The commenter states that the proposed standard requires considerable new engineering controls for general industry. The commenter further states that these improvements require time for contracting, permitting and installation and cannot be accomplished within one year. The contractor urges the Board to lengthen the implementation timeline to two years, if not the three years they requested in their April 20, 2023, letter. The commenter believes that including some form of verification of progress would be appropriate to allow for the two-year delay in implementation, similar to the suggestion made by the Battery Council in their April 20, 2023, comment letter.

Response to Comment 114.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Please also see response to comments 11.4 and 48.2.

Comment 114.3

The commenter expresses concern that the proposed lead standards do not include specific language making clear that at-home exposures do not trigger its provisions. The commenter states that they also expressed this concern in their April 20, 2023, letter to the Board. The commenter states that the current thresholds for exposure are relatively high and unlikely to be triggered outside the workplace. The commenter further states that the proposed AL and PEL will be much lower so that lead exposure outside the workplace is much more likely to bring an employee above the medical threshold and trigger employer obligations under the standards. The commenter expresses disappointment that this was not addressed in the 15-Day Notice change and urges reconsideration of the issue.

Response to Comment 114.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 114.4

The commenter appreciates the addition of Exceptions 1 and 2 in subsection 5198(j) related to medical surveillance. The commenter states that Exception 1 importantly recognizes the ongoing exposure is not the same as infrequent, short-term exposure in terms of its effect on BLL and should be treated

differently. However, the commenter believes that limiting the exception to workers who do not have exposure above 10 µg/m^3 as an 8-hour TWA, on any single day (down from 100 µg), undercuts the utility of this exception and appears to be unnecessarily protective.

Response to Comment 114.4

The Board thanks the commenter for their support of this portion of the proposed amendments. The Board notes that the goal of the standards is to maintain employee BLLs below 10 µg/dl. Exposure modeling showed that an exposure of 99 µg/m^3 as an 8-hour TWA for 10 days in any 12 consecutive months (which would be allowed under the exception as originally written) would result in an employee BLL greater than 10 µg/dl. Therefore, the parameters of the original exception were changed. In addition, in its proposal, the Board has added a second exception to the medical surveillance requirements in subsection 5198(j)(1)(A)1., such that medical surveillance will not be required for any employees who do not have exposure above 20 µg/m^3 as an 8-hour TWA on any single day when they are not exposed at or above the action level for 15 or more days in any 12 consecutive months. Exposure modeling showed that each of the two exceptions would result in an employee BLL below 10 µg/dl.

The Board thanks the commenter for their input and participation in the rulemaking process.

115. Michael Kosnett, MDk MPH FACMT, Colorado School of Public Health, by written comments dated July 24, 2023.

Comment 115.1

The commenter would like the wording in the Appendices that discuss the relationship between chronic lead exposure and the risk of death from cardiovascular disease to emphasize that the risk of death is not due entirely to hypertension. Workers without hypertension remain at risk of lead related cardiovascular morbidity and mortality. For example, on page 161 of 170 in the draft changes circulated on July 7, 2023, the narrative states: "Since hypertension is a significant risk factor for heart disease, stroke, and renal insufficiency, lead exposure may exert an important influence on cardiovascular, cerebrovascular, and renovascular mortality. Prospective cohort studies have demonstrated an approximate 50% increase in cardiovascular mortality associated with chronic BLLs of 10 µg/dl or greater." The mode of action of lead in increasing the risk of death from cardiovascular is not due entirely to hypertension, as the risk exists in models that include hypertension as a covariate. The commenter references *Menke et al. Circulation 2006*.

Response to Comment 115.1

In response to this comment, the Board has modified the proposed language in the appendices to reflect the point raised by the commenter.

The Board thanks the commenter for their input and participation in the rulemaking process.

116. Steve Johnson, on behalf of Associated Roofing Contractors of the Bay Area Counties, by written comments dated July 18, 2023.

Comment 116.1

The commenter objects to the 15-day notice for the regulatory change being issued late in afternoon on a Friday. The commenter states that it takes considerable time to organize a meeting of employer groups to respond and this takes away three days of valuable collaboration time. The commenter states that notice on Monday to Thursday is appropriate for future notices.

Response to Comment 116.1

The Notice issued by the Board complied with all notice requirements for a regular APA rulemaking.

Comment 116.2

The commenter appreciates that consideration of feasibility of providing showers has been added back into the standard. The commenter also appreciates that some of the requirements for initial BLL testing have been removed. The commenter states that these were a deviation from the Federal language and should not have been changed in the first place.

Response to Comment 116.2

The Board thanks the commenter for their support of this portion of the proposed amendments.

Comment 116.3

The commenter continues to take issue with the unprecedented reductions in the PEL and AL and states that Cal/OSHA has not demonstrated a compelling need for reductions to these unrealistic levels. The commenter further states that PELs and ALs must be set at reasonable and achievable levels.

Response to Comment 116.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.4

The commenter continues to take issue with the addition of unnecessary and confusing definitions for altering of lead and changing the definition for “competent person” and “supervisor.” The commenter states that changing the definition of supervisor imposes a significant training and cost burden on employers. The commenter states that there is no rationale for adding a 40-hour training requirement for supervisors.

Response to Comment 116.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.5

The commenter states that expanding the “presumed” exposure of trigger tasks regardless of frequency or duration to require “interim protection” is not a feasible approach for protecting employees. The commenter also states that there is no rationale for moving more trigger tasks into the “Level 3 Trigger Task” designation.

Response to Comment 116.5

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.6

The commenter believes that the requirement for all contactors with trigger task exposures beyond level 1 to have individual exposure assessments is unnecessary and burdensome. The commenter estimates that approximately 86,000 contractors in construction would have to hire a CIH to conduct air monitoring and there are not enough CIHs to meet this demand. The commenter believes that a 3-year implementation delay would be required to allow industry to catch up unless this exposure assessment requirement is changed.

Response to Comment 116.6

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.7

The commenter states that in the absence of recent and meaningful advisory committee meetings and a side-by-side comparison of the original construction proposal, stakeholders were not allowed the time and opportunity to present the real costs to employers. The commenter has compiled and presented cost projections over 10 years that they state are the "real world" costs of compliance with the revised regulation in contrast to the costs presented in the SRIA. The commenter projects that the total costs for 10 years are $145,224,878,000 compared to the 10-year costs presented in the SRIA of $862,818,517.

Response to Comment 116.7

Please see response to comment 108.7.

Comment 116.8

The commenter states that Governor Newsom is taking an "all of government" approach to decarbonizing existing buildings so that the state can achieve carbon neutrality by 2045. The commenter states that the proposed AL and PEL add significant costs to the price tag for building decarbonization contractors and their customers. The commenter asks whether Cal/OSHA has considered that new and unnecessary costs created by this rule directly threaten California's ability to fund and, therefore achieve, the Administration's goal of carbon neutrality by 2045.

Response to Comment 116.8

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.9

The commenter requests that Cal/OSHA provide stakeholders with a rationale for the proposed changes so that a reasonable discussion can be held demonstrating the need for change.

Response to Comment 116.9

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.10

The commenter states that the SRIA is based on outdated information and is woefully inadequate in its analysis and requests that it be revised. The commenter believes that Cal/OSHA, Board members, stakeholders and the regulated community deserve to know the real costs of the proposed revisions.

Response to Comment 116.10

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.11

The commenter requests that Cal/OSHA issue a new 15-day notice between a Monday and a Thursday that includes:

- Adjusting the AL and PEL to reasonable levels clearly supported by the evidence.
- Removing the requirement that supervisors have “competent person” 40-hour lead training and replacing the word “supervisor” with “competent person.”
- Aligning the trigger tasks in construction with the Federal Lead in construction standard.
- Allowing objective data to be used by employers in lieu of requiring each employer to conduct an initial exposure assessment.
- Providing a 3-year delay in implementation to allow employers sufficient time to comply with the numerous changes to the standard including training, exposure assessments, reductions in the AL and PEL, changes to the trigger tasks, medical surveillance and BLL testing, revised written programs, and lowered MRP levels.

Response to Comment 116.11

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

Comment 116.12

The commenter offers these comments as an addendum to their April 17, 2023, comments. The commenter states that focus of their letter is the 15-day notice as requested by the Board. The commenter further states that the scope of the total changes to the lead standard is far reaching and imposes a significant burden on employers. The commenter hopes that their comments will shed additional light on the impact of the changes on the construction industry and requests an opportunity to discuss their continuing concerns with Cal/OSHA and the Board in a meaningful and productive way.

Response to Comment 116.12

The comment is not specifically directed to any of the proposed modifications noticed by the Board on July 7, 2023, and is therefore outside the scope of the 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

MODIFICATIONS RESULTING FROM THE SECOND 15-DAY NOTICE OF PROPOSED MODIFICATIONS

(October 6, 2023 – October 25, 2023)

No further modifications are proposed as a result of the second 15-Day Notice of Proposed Modifications period from October 6, 2023 to October 25, 2023.

Following the second 15-Day Notice of Proposed Modifications period, from October 6, 2023 to October 25, 2023, the proposed amendments to sections 1532.1 and 5198 were modified, but all such modifications were non-substantial or solely grammatical.

SUMMARY AND RESPONSE TO WRITTEN COMMENTS RECEIVED DURING THE SECOND 15-DAY COMMENT PERIOD:

117. Yi Tian, CIH, CSP, Ramboll, by written comments dated October 6, 2023.

Comment 117.1

Regarding the frequency of required air monitoring in subsection 1532.1(d)(6), the commenter is questioning the rationale behind the requirement that air monitoring be done at least every 12 months if the initial or subsequent determination reveals exposure above the AL but below 30 $\mu g/m^3$. Specifically, the commenter is questioning the rationale behind the upper bound of 30, asking whether the PEL should be used instead. In addition, regarding the requirement that the employer continue monitoring at the required frequency until two measurements taken seven days apart are below the AL, the commenter asks whether the employer will take two consecutive measurements, seven days apart, during this annual monitoring if the employer is only required to perform monitoring every 12 months.

Response to Comment 117.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

118. Richard LeBlanc, President & CEO, NELCO Worldwide, by written comments dated October 16, 2023.

Comment 118.1

The commenter is requesting clarification on the Voluntary Removal or Restriction of An Employee found in subsection 5198(k)(6)(G) for General Industry and subsection 1532.1(k)(2)(F) for Construction. The commenter states that they are seeking this clarification because it is unfair for employers with pre-

existing conservative policies to be held responsible for voluntary medical removal protection benefits or, even worse, to be motivated to eliminate their more protective policies. The commenter would like clarification on the meaning of "health-related condition" and would like to know if this means that voluntary removal or restriction protection is only applicable if the employee has a health-related condition and that it is not applicable if the employee is removed as standard company policy. The commenter's company currently has a blood lead removal policy of > 18 µg/dl whether or not there is a health-related condition and would like to know whether that would trigger the proposed voluntary removal protection benefits if there is no health-related condition.

Response to Comment 118.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

119. Dan Gillespie, CSP, ASP, Executive Director of Health and Safety, Kinsbursky Brothers Int'l (KBI), by written comments dated October 20, 2023.

Comment 119.1

The commenter states that their company has reduced blood lead levels among their workforce to levels that align with general population averages, around 1.4 µg/dl on average, without significant alterations to the action level or permissible exposure limit. The commenter states that their company is not averse to an update to the lead standard and agrees that an update is long overdue. However, the commenter is concerned with the 93% reduction in the AL and the significant disparity between the new PEL and AL, stating the customary ratio between the PEL and AL is 2:1, not 5:1 as proposed in the drastic revisions to the standard.

Response to Comment 119.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 119.2

The commenter wholeheartedly endorses Dan Napier's recommendation to the Board at the OSHSB meeting on October 19, 2023, that the Board scrutinize the underlying science behind the proposed drastic changes and his perspective that adjustments should be incremental rather than sweeping, which aligns with the principles advocated by ISO Management Systems and is a fundamental concept in quality management. The commenter further states that during the October Board meeting and in the previous April public hearing, stakeholders have consistently called for a comprehensive rationale supporting the substantial reduction in permissible exposure limit and action level and that, to date, a satisfactory explanation has not been provided. The commenter believes that without a transparent exposition of the scientific basis for these proposed changes, the lead industry and the safety community are left to speculate about their purpose, rather than engaging collaboratively. The commenter feels that such ambiguity erodes industry cooperation, leading to resistance, and ultimately hampers the effective

implementation of an enhanced standard, adversely impacting employees. The commenter echoes the sentiments of several speakers from the April and October Public Hearings and requests a postponement of the new lead standard and advocates for the inclusion of expert voices and the resolution of these issues.

Response to Comment 119.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 119.3

The commenter aligns themselves with Board member Nola Kennedy's viewpoint concerning the need for certified professionals to conduct exposure monitoring. Drawing from decades of experience, the commenter understands that precise, accurate and repeatable personal air monitoring results demand substantial expertise in the industrial hygiene field, and fully supports incorporating that into the lead standard.

Response to Comment 119.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

120. Michael Geyer, PE, CIH, CSP, Project Director-President, KERNTEC Industries, by written comments dated October 23, 2023.

Comment 120.1

The commenter believes that the definition of Physician or other licensed health care professional (PLHCP) is overbroad and is occasionally abused. In the commenter's opinion, a narrower definition is warranted, e.g., one that specifically mentions health care professionals with occupational expertise. In the commenter's nearly 40-year career as an environmental engineer, they have experienced a number of wholly unqualified "health care professionals" dabbling in the environmental field, opining on occupational exposures to asbestos, lead, silica, molds, aerosols, etc., and getting it wrong. In addition, the commenter has testified against several "health care professionals" for what was considered professional negligence. The commenter notes that in Cal/OSHA's current draft for an emergency temporary standard (ETS) for respirable crystalline silica, the PLHCP definition is being modified to include pulmonologists and occupational physicians and states that it would be prudent to consider something similar for the sections concerning occupational exposure to lead. The commenter recommends that Cal/OSHA define a PLHCP as: Physician or other licensed health care professional with qualifying expertise in occupational medicine/exposures.

Response to Comment 120.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

121. Michael C. Sharp, Senior Safety Officer, Janus Corporation, by written comments dated October 24, 2023.

Comment 121.1

The commenter believes that the PEL should be 2 µg/m^3 and the AL should be 10 µg/m^3 and provides several supporting statements for their position:

- The proposed standard requires increased air sampling, BLL testing, and training at the AL, but would not require employers to protect workers properly from lead until the PEL is reached. Protection for workers (suits and masks) are not required until exposure exceeds the PEL.
- Workers should be protected at the lower levels and then tested to see if the protection is working, not test and protect only if the testing indicates a need after the exposure has happened.
- While scientists will claim there is no evidence that workers are exposed to unhealthy levels at the action level, the fact is, there is no evidence that these low levels are not health adverse either. The days of saying "the lack of a scientific study proves the lack of a hazard" are over and the Federal EPA recently lost a lawsuit that prohibits them from using this statement as justification for not acting against a potential hazard. Cal/OSHA should not wait to lose the same lawsuit before making this change.
- Waiting until air samples show exposures above 10 µg/m^3 can allow workers to be exposed to higher levels of lead for up to a year if initial exposure assessments show low level exposures, which is far too long.
- An airborne level of lead below 10 µg/m^3 does not mean there is not a significant amount of lead in the air that is not being captured by the air sampling equipment. Lead, unlike asbestos, is heavy and falls out of the air, often long before it has the potential to be captured by an air sampling exercise. This means that workers' clothing becomes a greater source of contamination than the air the workers are breathing in. Worse, low-level results lead to a false sense of security and increase the potential for workers to track lead out of the work area, into their break areas, into the building outside of the work areas, into their vehicles and home to their families.

Response to Comment 121.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 121.2

The commenter believes that protective clothing and showers should be required for activities that exceed the currently proposed action level of 2 µg/m^3 or whenever any trigger task is conducted until a negative determination has been established below 2 µg/m^3. Waiting until exposures exceed 50 µg/m^3 is not protective of workers. The PEL has been 50 µg/m^3 for decades, yet the most common way for a worker to be over exposed to lead is through hand to mouth activities, not airborne lead levels. Showers need to be required far sooner if the intent is to protect workers' health. When an employer determines

that showers are not "feasible," they should be required to produce documentation for why they are not feasible. The contractor should also be required to produce a decontamination process that explains how the contractor will prevent lead from being tracked out of the workplace whenever showers are declared not feasible.

Response to Comment 121.2

To the extent that this comment is directed at the air lead levels at which protective clothing should be required, the amendments noticed by the Board on October 6, 2023, did not modify the air lead trigger for protective clothing and thus this is outside the scope of the 15-day Notice.

With regard to the provision of showers, the Board determined that requiring showers at 10 µg/m^3 would prove to be prohibitively costly for a significant portion of affected construction industry employers to comply with and thus the subsection 1532.1(i)(3)(A) amendments were modified to require the provision of showers when employees are exposed to lead above 50 µg/m^3, without regard to the use of respirators, and as interim protection for employees performing level 3 trigger tasks listed in subsection (d)(2)(D). Given the foregoing, the Board declines to modify the requirement to require the provision of showers at 2 µg/m^3.

The Board notes that the exception to this requirement requires the employer to affirmatively demonstrate that shower facilities are not feasible at a particular worksite.

With regard to general industry employers, subsection 5198(i)(3)(A) requires the provision of showers when employees are exposed to lead above 10 µg/m^3 without regard to the use of respirators. This is significantly lower than the existing requirement.

The Board notes that the shower requirements in both sections 1532.1 and 5198 are supplemented by other protective measures, including the requirement that protective clothing and equipment be provided when employees are exposed to lead above 10 µg/m^3 without regard to the use of respirators and as interim protection for employees performing any trigger tasks (in construction) or PSLW (in general industry). This too, is much lower than existing requirements.

Finally, the Board notes that to prevent instances of employees tracking out lead from the workplace, a requirement has also been added to both standards such that the employer must ensure that employees do not enter personal vehicles or leave the workplace with any protective clothing or equipment that is required to be worn during the work shift.

The Board believes these provisions are adequately protective and sufficiently address the ingestion route of exposure that protective clothing and shower requirements are intended to prevent, and declines to change provisions of the proposal as requested by the commenter.

The Board thanks the commenter for their input and participation in the rulemaking process.

122. Barbara Berney, PhD, Emeritus Associate Professor, CUNY School of Public Health, by written comments dated October 25, 2023.

Comment 122.1

The commenter strongly supports the proposed amendments to title 8 CCR section 1532.1 of the CSO, and sections 5155 and 5198 of the GISO, which are needed to protect California employees who have occupational exposure to lead and urges the Board to adopt them in full. The commenter notes that the proposal follows the health-based recommendations made more than ten years ago by the CDPH and states that it is past time for action to be taken to protect worker health. The commenter states that research on lead over the past 50 years has demonstrated that there is no safe exposure to lead. The commenter states that the revisions are based on overwhelming scientific evidence that lead causes high blood pressure, kidney disease, reproductive harm and brain injury at low exposure levels and the amendments will safeguard the health of workers by substantially lowering the PEL and the blood lead levels requiring medical exams and temporary removal from exposure. The commenter further states that implementation of these amendments will reduce the number of employees exposed to harmful amounts of lead in a wide variety of work settings and have a positive effect on California's environment.

Response to Comment 122.1

The Board thanks the commenter for their support of the proposed amendments.

Comment 122.2

The commenter believes that there should be no exception for any amount of time for employees conducting abrasive blasting, as there is no reason why these employees should be exposed to excessive amounts of lead for an additional five years.

Response to Comment 122.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

123. Cris A. Williams, PhD, Senior Scientist – Health, on behalf of ILA, by written comments dated October 25, 2023.

Comment 123.1

Section 5198, Appendix A, Page 129, ¶ 2: "Lead that is absorbed into your body by inhalation (breathing) and ingestion (swallowing) gets into your bloodstream."

The commenter believes that this statement requires qualification as it may be interpreted to mean that all lead is absorbed into your body by inhalation (breathing) and ingestion (swallowing) and all lead gets into your bloodstream, and this is not the case. Lead absorption via inhalation and ingestion is dependent on many factors. Inorganic lead in submicron size particles can be almost completely absorbed through the respiratory tract, whereas larger particles may be moved after deposition in the respiratory tract by mucociliary clearance toward the oropharynx and swallowed. The fraction of ingested lead absorbed from the gastrointestinal tract depends on many factors, including age, diet, nutrition and physiological characteristics of lead in the medium ingested. Children can absorb 40% to 50% of an oral dose of water-soluble lead compared to 3% to 10% for adults.

Response to Comment 123.1

The Board declines to make further changes to section 5198 Appendix A. Appendix A is meant to serve as a source of basic information for employees, most of whom do not have a background in medicine or toxicology. The Board believes that the statements in proposed Appendix A are accurate and reflect the current science on the health effects of lead.

Comment 123.2

Section 5198, Appendix A, Page 129, ¶ 3: "Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead."

Referring to Cal/OSHA's statement (page 129, paragraph 3), the commenter states that here, and throughout Appendix A, qualitative statements like "lower doses" or "low- dose" or, similarly, "higher doses" or "high-dose" in reference to lead effects should be quantified.

Response to Comment 123.2

This is existing, substantively unchanged text in the standard and is outside the scope of this rulemaking.

Comment 123.3

Section 5198, Appendix A, Page 129, ¶ 4: "Sperm abnormalities may develop at relatively high blood lead levels (at or above 20 micrograms of lead per deciliter of whole blood (µg/dl))."

The commenter states that the available data indicate that sperm abnormalities occur at BLLs much higher than 20 µg/dl. Significant changes in semen quality that may adversely impact reproductive function of the individual require exposures of more than 50 µg/dl. In the range of 50 to 60 µg/dl lead in blood, alterations in semen quality are relatively mild, but could be significant for individuals who (for other reasons) are already of marginal fertility.

Response to Comment 123.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.4

Section 5198, Appendix A, Page 130, ¶ 1: "Exposure to lead may cause increased blood pressure, heart disease, and stroke."

The commenter would like Cal/OSHA to change this statement to, "Exposure to lead may cause increased blood pressure, heart disease, and stroke, but these conditions are dose-, or blood-lead-concentration dependent."

Response to Comment 123.4

The Board declines to make further changes to section 5198 Appendix A. Appendix A is meant to serve as a source of basic information for employees, most of whom do not have a background in medicine or

toxicology. The Board believes that the statements in proposed Appendix A are accurate and reflect the current science on the health effects of lead.

Comment 123.5

Section 5198, Appendix A, Page 130, ¶ 2: "Exposure to lead may cause declines in brain (cognitive) function, slowing of nerve conduction velocity, brain damage (encephalopathy), and nerve damage resulting in weakness or paralysis."

The commenter would like Cal/OSHA to change this statement to, "Exposure to lead may cause declines in brain (cognitive) function, slowing of nerve conduction velocity, brain damage (encephalopathy), and nerve damage resulting in weakness or paralysis, but these conditions are dose-, or blood-lead-concentration dependent."

Response to Comment 123.5

The Board declines to make further changes to section 5198 Appendix A. Appendix A is meant to serve as a source of basic information for employees, most of whom do not have a background in medicine or toxicology. The Board believes that the statements in proposed Appendix A are accurate and reflect the current science on the health effects of lead.

Comment 123.6

Section 5198, Appendix A, Page 130, ¶ 3: "Exposure to lead may cause declines in kidney function that can progress to kidney failure requiring dialysis and to death."

The commenter would like Cal/OSHA to change this statement to, "Exposure to lead may cause declines in kidney function that can progress to kidney failure requiring dialysis and to death, but these conditions are dose-, or blood-lead-concentration dependent."

Response to Comment 123.6

The Board declines to make further changes to section 5198 Appendix A. Appendix A is meant to serve as a source of basic information for employees, most of whom do not have a background in medicine or toxicology. The Board believes that the statements in proposed Appendix A are accurate and reflect the current science on the health effects of lead.

Comment 123.7

Section 5198, Appendix A, Page 130, ¶ 4: "Reduced birth weight of children exposed to lead during pregnancy has been documented."

The commenter would like Cal/OSHA to change this statement to, "Reduced birth weight of children exposed to lead during pregnancy has been documented, but these conditions are dose-, or blood-lead-concentration dependent."

Response to Comment 123.7

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.8

Section 5198, Appendix A, Page 130, ¶ 4: "Lead exposure also may result in decreased fertility and abnormal menstrual cycles in females."

The commenter believes that "lead exposure" is imprecise and in the context of the above statement may imply "any exposure." Effects upon female fertility likely occur at blood lead levels more than 50 µg/dl as probable side effects of more generalized systemic toxicity.

Response to Comment 123.8

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.9

Section 5198, Appendix A, Page 130, ¶ 5: "Exposure to lead may result in decreased sex drive, impotence, and sterility in males. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in females whose reproductive partners were exposed to lead or who were exposed to lead themselves."

The commenter believes that "exposure" is imprecise and may be interpreted to mean *any* exposure and thus is potentially misleading, unless by "exposure" the above statement implies blood lead concentrations more than 45 µg/dl. Significant changes in semen quality that may adversely impact reproductive function of the individual require exposures of more than 50 µg/dl. Further, the evidence of "miscarriage and stillbirth in females whose reproductive partners were exposed to lead or who were exposed to lead themselves" should be qualified – i.e., what evidence, at what blood lead level, etc.

Response to Comment 123.9

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.10

Section 5198, Appendix A, Page 131, ¶ 2: "Exposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia."

The commenter believes that "exposure" is imprecise and may be interpreted to mean any exposure and thus is potentially misleading. In addition, although ALAD (aminolevulinic acid dehydratase) conversion of ALA to porphobilinogen in hemoglobin synthesis is sensitive to inhibition by lead, inhibition appears to be freely reversible. Furthermore, ALAD inhibition does not affect overall levels of heme production and is thus not regarded as a clinically adverse effect.

Response to Comment 123.10

This is existing, substantively unchanged text in the standard and is outside the scope of this rulemaking.

Comment 123.11

Section 5198, Appendix A, Page 131, ¶ 3: "The BLLs of employees who intend to have children should be maintained below 3.5 µg/dl to minimize adverse reproductive health effects."

The commenter states that the dosimetry for fertility and endocrine effects in women cannot be estimated with precision, but effects do not appear to occur at exposure levels that characterize the upper limits of modern occupational exposure limits. In addition, the selection of a 3.5 µg/dl BLL is inappropriately low, as this is the BLL numerical equivalent to CDC's reference value, a BLL based not on any known or presumed health effect associated with lead exposure, but rather a statistically based BLL representing the 97.5th percentile BLL in children in the U.S.

Response to Comment 123.11

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.12

Section 5198, Appendix A, Page 131, ¶ 5: **"**Health damage has been found at chronic BLLs of 5 µg/dl and greater, including high blood pressure, reduced birth weight, and kidney dysfunction."

The commenter believes that characterizing all these conditions as being associated with a BLL of 5 µg/dl is misleading. The commenter included a summary of the conclusions of the NTP on effects of lead on kidney function. For example, although NTP (2012) stated that there is sufficient evidence that BLLs of 5 µg/dl are associated with adverse effects on kidney function in adults, it also stated that there is inadequate evidence to address the potential association between blood Pb levels <10 µg/dl in children <12 years of age and impaired kidney function, and limited evidence that BLLs <5 µg/dl are associated with adverse effects on kidney function in children ≥12 years of age. NTP's definition of "limited evidence" is "an association is observed between the exposure and health outcome in studies in which chance, bias, and confounding could not be ruled out with reasonable confidence."

Response to Comment 123.12

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.13

Section 5198, Appendix C, Page 168, ¶ 4: "The provisions of the lead standard are founded on two prime medical judgments: first, the prevention of adverse health effects from exposure to lead throughout a working lifetime requires that employee BLLs be maintained as low as possible; and second, the BLLs of employees, male or female, who are trying to conceive should be maintained below 3.5 µg/dl to minimize adverse reproductive health effects."

The commenter believes that the selection of a 3.5 µg/dl BLL is inappropriately low, as this is the BLL numerical equivalent to CDC's reference value, a BLL based not on any known or presumed health effect associated with lead exposure, but rather a statistically based BLL representing the 97.5th percentile BLL in children in the U.S.

Response to Comment 123.13

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.14

Section 5198, Appendix C, Page 169, ¶ 2: "Current evidence indicates a causal relationship between lead exposure and hypertension, and between lead exposure and coronary heart disease."

The commenter states that "current evidence" is non-specific and should be supported by citations in the scientific literature. In addition, as detailed in commenter's response to the Notice of Proposed Rulemaking on April 20, 2023, studies have failed to demonstrate a causal relationship between lead exposure and hypertension, and between lead exposure and coronary heart disease. Specifically, studies have repeatedly reported only marginal increases, or a lack of an increase, in blood pressure with lead exposure. The commenter further states that the idea that hypertension explains the association between total and cardiovascular mortality rests on three NHANES reports and the 2012 Global Burden of Disease review, and provides a critique of those reports.

Response to Comment 123.14

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.15

Section 5198, Appendix C, Page 169, ¶ 2: "Prospective cohort studies have demonstrated an approximate 50% increase in cardiovascular mortality associated with chronic BLLs of 10 µg/dl or greater. Increased cardiovascular mortality has also been associated with BLLs below 10 µg/dl. Nonetheless, lead exposure is associated with increased cardiovascular and stroke mortality even after accounting for the effects of hypertension."

The commenter states that as noted in commenter's response to the Notice of Proposed Rulemaking on April 20, 2023, Lanphear et.al. (2018) is the most likely source for the statement that prospective cohort studies have demonstrated an approximate 50% increase in cardiovascular mortality associated with chronic BLLs of 10 µg/dl or greater. The commenter questions the results of the study and identifies what the commenter describes as several fundamental study design flaws.

Response to Comment 123.15

The Board declines to make further changes to section 5198 Appendix C. The Board believes that the statements in proposed Appendix C are accurate and reflect the current science on the health effects of lead.

Comment 123.16

Section 5198, Appendix C, Page 169, ¶ 3: "The earliest hematologic effect of lead involves lead's ability to inhibit at least two enzymes of the heme synthesis pathway at very low blood lead BLLs. Inhibition of delta aminolevulinic acid dehydratase (ALA-D) which catalyzes the conversion of delta-aminolevulinic acid (ALA) to protoporphyrin is observed at a BLL as low as 10 µg/dl. At a BLL of 40 µg/dl, more than 20% of the population would have 70% inhibition of ALA-D. There is an exponential increase in ALA excretion at blood lead BLLs greater than 40 µg/dl."

The commenter states that although ALAD (aminolevulinic acid dehydratase) conversion of ALA to porphobilinogen in hemoglobin synthesis is sensitive to inhibition by lead, inhibition appears to be freely reversible and levels of ALAD activity appear to play little part in regulating the overall rate of heme biosynthesis. Furthermore, ALAD inhibition does not affect overall levels of heme production and is thus not regarded as a clinically adverse effect.

Response to Comment 123.16

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.17

Section 5198, Appendix C, Page 169, ¶ 4: **"**Inhibition of ferrochelatase leads to increased free erythrocyte protoporphyrin (FEP) in the blood which can then bind to zinc to yield zinc protoporphyrin (ZPP). At a BLL of 50 µg/dl or greater, nearly 100% of the population will have an increase in FEP. There is also an exponential relationship between BLLs greater than 40 µg/dl and the associated ZPP level, which has led to the development of the ZPP screening test for lead exposure."

Referring to Cal/OSHA's statement (page 169 paragraph 4), the commenter states that ZPP elevation occurs at BLLS between 25-30 µg/dl in males and 15-20 µg/dl in females. The commenter further states that since occupational exposures and BLLs are lower today, and there is poor association between ZPP and contemporary exposures, the ZPP test requirement should be, and is being, removed from the proposed revisions to the construction and general industry lead standards.

Response to Comment 123.17

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.18

Section 5198, Appendix C, Page 170, ¶ 5: "Lead exposure is associated with decrements in neurological function in adults. Effects at BLLs ≤10 µg/dl include decreased cognitive function, altered behavior and mood, and altered neuromotor and neurosensory function. At higher BLLs, a variety of decrements in cognitive function and behavior and nerve function can occur. These effects may be irreversible."

The commenter states that as noted in their comments in response to the Notice of Proposed Rulemaking on April 20, 2023, many neurological effects attributable to lead exposure are frequently

reversible following discontinued exposure, and when improvement does occur, it can be complete. Furthermore, although the quality of the studies is uneven, taken as a whole, they are consistent with the conclusion that effects upon neuropsychological function seen as blood lead levels rise above 40 µg/dl are largely subclinical in nature and appear to reverse upon cessation of lead exposure.

Response to Comment 123.18

The Board declines to make further changes to section 5198 Appendix C. The Board believes that the statements in proposed Appendix C are accurate and reflect the current science on the health effects of lead.

Comment 123.19

Section 5198, Appendix C, Page 170, ¶ 6: ". . . peripheral neuropathy can occur with varying degrees of severity. The earliest and mildest form which can be detected in employees with BLLs over 30 µg/dl is manifested by slowing of motor nerve conduction velocity often without clinical symptoms."

Referring to Cal/OSHA's statement (page 170, paragraph 6), the commenter states that studies suggest that elevated lead exposure for a duration of a least one year at levels more than 70 µg/dl is required to produce neuropathy. Furthermore, even at these exposure extremes, neuropathies were reported to be reversible although recovery was not always complete.

Response to Comment 123.19

The Board declines to make further changes to section 5198 Appendix C. The Board believes that the statements in proposed Appendix C are accurate and reflect the current science on the health effects of lead.

Comment 123.20

Section 5198, Appendix C, Page 171, ¶ 5: "Kidney dysfunction is thought to occur at chronic BLLs of 5-10 µg/dl or greater but also may arise after acute high-dose lead exposures."

Referring to Cal/OSHA's statement (page 171, paragraph 5), the commenter states that this is far below the threshold for known renal effects of lead in adults. The Commenter includes a discussion of studies that they believe support their position and states that the collective studies indicate a threshold for significant renal effects that is more than 60 µg/dl lead in blood and with a requirement for prolonged (five years or more) lead exposure.

Response to Comment 123.20

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.21

Section 5198, Appendix C, Page 171, ¶ 7: "Malformed sperm (teratospermia), decreased number of sperm (hypospermia), and sperm with decreased motility (asthenospermia) can all occur. These adverse effects may occur at BLLs of 20 µg/dl or greater. Furthermore, there appears to be a dose-response

relationship for teratospermia in lead-exposed employees."

Referencing Cal/OSHA's statement (Page 171 paragraph 7) about adverse effects on sperm at BLLs of 20 µg/dl or greater, the commenter states that the available data indicate that BLLs much greater than 20 are required to have marked adverse effects on semen quality. The commenter includes a discussion of studies they believe support their position.

Response to Comment 123.21

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.22

Section 5198, Appendix C, Page 172, ¶ 2: "Females exposed to lead may experience menstrual disturbances including dysmenorrhea, menorrhagia, and amenorrhea. Following exposure to lead, females have a higher frequency of sterility, premature births, spontaneous miscarriages, and stillbirths.

The commenter states the phrase "females exposed to lead" in the statement (Page 172 paragraph 2) about female reproductive effects, is imprecise and may imply any exposure. The commenter further states that effects on female fertility likely occur at BLLs more than 50 µg/dl as side effects of systemic toxicity. In addition, "following exposure to lead" is equally imprecise regarding the amount of lead exposure associated with sterility, premature births, spontaneous miscarriages and stillbirths.

Response to Comment 123.22

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.23

Section 5198, Appendix C, Page 172, ¶ 3: "Germ cells can be affected by lead and lead can cause genetic damage in the egg or sperm cells before conception and contribute to failure to implant, miscarriage, stillbirth, or birth defects."

The commenter states that the statement "lead can cause genetic damage in the egg" (Page 172 paragraph 3) is imprecise and may imply any exposure. The commenter further states that the statement implies that the effects on germ cells are directly responsible for the failure to implant, miscarriage, stillbirth or birth defects, when such effects may be caused by a multitude of other factors unrelated to lead exposure.

Response to Comment 123.23

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 123.24

Section 5198, Appendix C, Page 172, ¶ 4: "Maternal lead exposure during pregnancy is associated with

gestational hypertension, spontaneous abortion, low birth weight, and impaired neurodevelopment."

The commenter states that "maternal lead exposure" is imprecise and data relating prenatal blood levels to preterm delivery, gestational age and/or birth weight are mixed and provide uncertain results. The commenter further states that a weight-of-evidence evaluation indicates that effects do not occur at blood lead levels up to 30 µg/dl, but studies are not adequate to determine the extent of the higher exposure levels that would be required to produce effects.

Response to Comment 123.24

The Board declines to make further changes to section 5198 Appendix C. The Board believes that the statements in proposed Appendix C are accurate and reflect the current science on the health effects of lead.

Comment 123.25

Section 5198, Appendix C, Page 172, ¶ 8: "Debate and research continue on the effects of lead on the human body. Lead may impair the immune and endocrine systems, including thyroid function and the pituitary- adrenal axis, but these effects and the corresponding level of exposure have not been well defined. Also, although the epidemiologic data is limited and inconsistent, based on toxicologic data and animal studies, lead is considered a probable human carcinogen by several authoritative sources."

The commenter states that the phrase "lead may impair" in the statement (Page 172 paragraph 8) about the effects of lead on the immune and endocrine systems, is imprecise and may imply any amount of lead. The commenter further states that this is especially misleading given the wide array of health effects listed.

Response to Comment 123.25

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

124. Paul Moreno, President/Business Agent, Ironworkers Local 433, by written comments dated October 25, 2023.

Comment 124.1

The commenter strongly supports the proposed Cal/OSHA modifications to title 8 CCR sections 1532.1, 5155 and 5198 dealing with worker exposure to lead. The commenter applauds the Standards Board staff and Board Members for their hard work on this proposed standard and urges the Board to stand strong with workers and their families in the face of employer opposition and to support the proposed amendments. The commenter states that the proposed standards will remind employers that they have a critical role in worker health and safety, that they need to take that role seriously, and that when needed Cal/OSHA will be able to step in to remind employers that strong health and safety regulations exist and should be followed. The commenter provides the following supporting statements:

- The current standard protecting workers from exposure to lead has relied on epidemiological and medical data about lead toxicity that is over forty years old.
- As CDPH notes in their guidance documents, lead poisoning continues to be a major problem in the U.S and continues to be one of the most insidious workplace safety dangers despite decades of government and industry intervention to outlaw and prohibit its use.
- Most adults with harmful lead levels are exposed on the job. It can cause serious and permanent health problems and even low levels of exposure over years or decades can cause damage. Lead exposure can damage the brain, nerves, red blood cells, kidneys and reproductive systems of men and women and can harm the fetus. Lead can also cause high blood pressure, miscarriage and other serious health problems and increases the risk of death related to heart disease or stroke. Damage from lead exposure can be permanent.
- A person can be exposed to lead by breathing lead dust, mist or fumes and by swallowing lead if it gets on their hands, clothing or face and, most devastatingly, that worker can bring it home on their work clothes and expose their families, making them unwitting secondary exposure cases.
- Lead that is not removed by the kidneys into urine is stored in the body, mostly in the bones, and may stay there for years. Lead in bone is slowly released back into the bloodstream over time so that exposure to even small amounts of lead over a long period of time can be harmful.
- Lead use was widespread for decades before it was banned and is still prevalent in our society. The members of their union, especially those who are not specially trained to work in the lead removal and mitigation part of our industry, may not know that they are being exposed to lead and that they need to take measures to protect themselves.

Response to Comment 124.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

125. Marc Connerly, Executive Director, Roofing Contractors Association of California, on behalf of American Subcontractors Association of California; Associated Roofing Contractors of the Bay Area Counties; Building Owners and Managers Association; California Hispanic Chambers of Commerce; California Sheet Metal and Air Conditioning Contractors, National Association; California Building Industry Association; California Business Properties Association; California Framing Contractors Association; Construction Employers' Association; Flasher Barricade Association; Housing Contractors of California; National Electrical Contractors Association; National Roofing Contractors Association; Northern California Allied Trades; Orange County Hispanic Chamber of Commerce; Painting and Decorating Contractors of California; Residential Contractors Association; Roofing Contractors Association of California; Southern California Contractors Association; Southern California Glass Management Association; Union Roofing Contractors; United Contractors Association; Wall and Ceiling Alliance; Western Electrical Contractors; Western Painting & Coatings Contractors Association; Western Wall & Ceiling Contractors Association; Western Steel Council, by written comments dated October 25, 2023.

Comment 125.1

The commenter has reviewed the changes to section 1532.1 and states that the construction coalition appreciates that some of the unnecessary requirements in the last proposal have been reduced or eliminated in this revision but feels that there are still many more changes that need to be made before this proposal could become an effective regulation.

Response to Comment 125.1

The Board thanks the commenter for their support of portions of the proposed amendments and responds to the commenter's additional comments separately, below.

Comment 125.2

The commenter states that the SRIA costs are hugely understated. The employers who would have to implement and pay for these regulations have calculated the realistic costs of this regulation at $38 billion, while the SRIA states that the ten-year costs for construction are $862 million. The commenter believes that in the absence of recent and meaningful advisory committee meetings and a side-by-side comparison of the original Lead in Construction proposal, stakeholders were not allowed the time or opportunity to present the real costs to employers. The commenter further states the SRIA that was offered with the current proposed changes to the lead regulation is outdated and provides inaccurate cost estimates.

Response to Comment 125.2

Please see response to comment 108.7.

Comment 125.3

The commenter states that Cal/OSHA has not provided a justification for the unprecedented reductions in the PEL and AL, 80% and 93% respectively. The commenter further states that the AL and PEL must be set at reasonable and achievable levels and Cal/OSHA has not demonstrated any credible evidence for reducing the AL and PEL to these unrealistic levels.

Response to Comment 125.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 125.4

The commenter believes that the revised proposal is still overbroad and confusing. The commenter further states that with many more contractors (even those with minimal exposures) having to comply with the standard it must be made clearer and simpler.

Response to Comment 125.4

The Board drafts all rulemakings in compliance with the APA, and disagrees with the commenter's assertion that the rulemaking is "overbroad and confusing," or in other words, lacks clarity.

The commenter makes this general statement, but does not provide any specific examples. The Board acknowledges that the standard is complex, but does not believe it conflicts with the clarity standard and, without more detail from the commenter, is unable to provide further consideration or response to this comment.

Comment 125.5

The commenter believes that the expansion of "presumed" exposure for trigger tasks requiring interim protection, regardless of frequency and duration of the task, is not a feasible approach to protecting employees from lead exposure. The commenter further states that there is no rationale for moving more trigger tasks into the "Level 3 Trigger Task" designation and the trigger tasks must be moved to align with the federal lead regulation.

Response to Comment 125.5

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 125.6

The commenter states that the training requirements go far beyond any reasonable position. The commenter believes that the federal regulation has reasonable training requirements for housekeeping and hygiene. Furthermore, while the federal regulation requires training when workers are exposed to lead at or above an action level of 30 $\mu g/m^3$, this proposal requires "effective" training for an employee exposed at, or above, an action level of 2 $\mu g/m^3$. The commenter states that many employees could be exposed to 2 $\mu g/m^3$, even if they never work with lead. The commenter further states that the training must include all 38 pages of the regulation, plus the 24 pages of Appendices A and B. The commenter states that effective "training" as mandated by Cal/OSHA means that a Cal/OSHA inspector could expect a clear and precise answer from an employee to questions on any part of the 62 pages and if the employee failed to answer correctly, the employer would be cited.

Response to Comment 125.6

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 125.7

The commenter calculated costs based on 86,000 Class C licensees, 50,000 supervisors and 110,000 employees (for a total employee community of 160,000) and included all elements of compliance and implementation, which the commenter states the SRIA fails to do. The commenter calculated a cost of $46,000 annually per business, in contrast to Cal/OSHA's calculated compliance costs of $10,647 in year one and $8,514 in subsequent years for a large business, and $5,989 in year one and $4,837 in subsequent years for a small business (100 or fewer employees). The commenter states that the SRIA is incorrect by a factor of 400% for large businesses and 750% for small businesses. The commenter states that the cost of training alone is $259 million annually, which is four times the total annual SRIA for the entire Lead Standard. The commenter notes that the required Lead Construction Related Supervisor

Training (LRC) is a 40-hour course, at $770 per supervisor, plus exam fees, annual CDPH fee, biennial certification renewal, personnel hours, travel and per diem, and supervisor training of 110,00 employees on extensive and complex issues. The commenter also says that it is impossible to project additional costs for medical removal procedures and the impacts on employers and employees, workers' compensation implications, and unaddressed concerns about fertility issues due to many unanswered questions.

Response to Comment 125.7

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 125.8

The commenter believes that Cal/OSHA and the Standards Board need to take one of the following two options to properly amend the lead in construction regulations:

- Rescind the entire proposal, start over, engage in true stakeholder meetings focused on the construction regulations, separate from general industry, justify the necessity for changes and work together to develop an effective regulation.
- Require a three-year delay after approval by OAL during which Cal/OSHA would be required to conduct the above referenced stakeholder meetings to eliminate unnecessary requirements and develop a clear and workable regulation.

Response to Comment 125.8

The Board disagrees with this comment and declines to follow either of the two options proposed. Significant stakeholder involvement has already taken place – see response to comment 66.10. The Board declines to rescind the proposal or delay it for three years to allow for additional stakeholder meetings at this phase in the process.

Comment 125.9

The commenter asks whether Cal/OSHA has considered that any new and unnecessary costs created by this rule directly threaten our state's ability to fund and therefore achieve the Newsom Administration's goal of decarbonization of existing buildings to achieve carbon neutrality by 2045. The commenter states that Cal/OSHA's proposed AL and PEL will add a significant and new cost multiple to the price tag of building decarbonization for contractors and their customers. The commenter further states that access to the capital needed for these projects by public and private building owners is already strained to the limit.

Response to Comment 125.9

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 125.10

The commenter states that stakeholders have not been included in any meaningful dialogue with Cal/OSHA regarding the changes made to the Lead in Construction Standard. The commenter further states that Cal/OSHA has refused to find a workable compromise regarding an AL and PEL that is reasonable for employers and employees and continues its practice of simply informing employers of the changes made and expecting 100% compliance without question. The commenter states that the APA requires Cal/OSHA to demonstrate a compelling reason to change a regulation, which implies that Cal/OSHA must demonstrate where the current lead regulation falls short in achieving reduced BLLs in these workplaces with credible evidence that worker BLLs are indeed unsafe due to actual and identified activity exposures at the workplace. The commenter believes that this burden has not been met.

Response to Comment 125.10

The Board disagrees with the commenter's statements. Regarding dialogue with stakeholders, please see response to comment 66.10.

Further, the rulemaking has complied with all relevant requirements of the APA.

The Board thanks the commenter for their input and participation in the rulemaking process.

126. Sharon Hilke, Executive Director, Painting & Decorating Contractors of California, by written comments dated October 25, 2023.

Comment 126.1

The commenter states that the proposed standard is incomprehensible, noting that the attorney representing the California Chamber of Commerce testified to the Standards Board that it took him 10 hours to read through the proposed Lead Regulation. The commenter believes that Cal/OSHA has an obligation to promulgate regulations that are comprehensible to the regulated construction community and has failed to do so.

Response to Comment 126.1

The Board drafts all rulemakings in compliance with the APA, and disagrees with the commenter's assertion that the rulemaking is "incomprehensible," or in other words, lacks clarity.

The commenter states that the proposal is incomprehensible, but other than noting one individual's testimony about the length of time it took them to read the standard, provides no justification for this comment. The Board acknowledges that the proposal builds on an existing standard that is complex, but does not believe that it conflicts with the clarity standard of the APA and, without more detail from the commenter, is unable to provide further consideration or response to this comment.

Comment 126.2

The commenter states that while there was some stakeholder engagement ten years ago there was absolutely no stakeholder engagement in the current proposed Lead Standard, nor was there any engagement of experts in the fields of medicine or science. The commenter further states that the "scientific model" constantly cited by Cal/OSHA is based on a series of "articles" and not on a scientific

study of lead in construction. Missing from the study is the critical correlation between high lead exposure and subjects who did not follow PPE requirements.

Response to Comment 126.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 126.3

The commenter states that there are inadequate resources to ensure compliance and implementation of the proposed Lead Standard. The commenter states that a CIH is required for one or more of the compliance elements of the standard and there are fewer than 200 CIH's in the private sector who are available to provide the mandated testing and screening. Since it takes five years to attain a CIH certification it is not feasible that there are, or will be, enough CIH's to provide services to 86,000 construction contractors, as well as those in general industry.

Response to Comment 126.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 126.4

The commenter believes that the SRIA has failed to meet the requirements of the Code of Regulations to calculate all actual costs resulting in a SRIA that is significantly inadequate, incomplete, misleading and false. The commenter states that the most egregious problem is that the SRIA was written in 2019 and does not include all the mandates that are in the 2023 proposed Lead Standard; for example, the October 6, 2023, amendments added a new medical exam requirement that was not in the 2019 SRIA or even the March 2023 proposed regulations. The commenter states that additional failures of the SRIA include the significant underestimation of the number of businesses and employees, unrealistic costs of goods, services, logistics and personnel hours, and a fundamental lack of understanding of what is needed for compliance and implementation. The commenter states that the actual cost for each construction business is $46,000 annually. The SRIA is incorrect by a factor of 400% for large businesses and 750% for small businesses. The commenter further states that the actual costs for the construction industry in year one are $3.9 billion not $86 million as estimated by the SRIA; the actual 10-year costs are $38.5 billion not $862 million, and underestimation of 4400%.

As an example of the costs underestimated by the SRIA, the commenter calculated the costs for providing Lead Related Construction Supervisor Certification (LRC) training to the estimated 50,000 supervisors. The costs of the 40-hour training, not including any other associated training costs (such as travel, per diem, CDPH annual fee) are $38.5 million biennially. Further, the annual CDPH Certification fee is $7.95 million per year, almost twice the SRIA projection for the entire training requirement. The commenter concludes that just these two components of the training requirement cost $46 million and account for 50% of the SRIA projected cost of the entire lead regulation. The commenter believes that if these simple and straightforward costs can be underestimated by a factor of 800%, a reasonable person

could conclude that the other more complex and costly regulations are also significantly flawed and underestimated. The commenter would not be alarmed if the costs were an average of $4,900 a year. The commenter states that Cal/OSHA has suggested that contractors "pass the costs on to the consumer," however the commenter says that they cannot possibly pass on $3.8 billion annually to the clients of 86,000 construction contractors.

Response to Comment 126.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 126.5

The commenter states that the Lead Standard as written, with costs grossly underestimated, will put 80% of small construction contractors out of business and will put hundreds of thousands of employees out of work. The contractor further states that it will drive the underground economy where workers and their families, as well as consumers, will be less safe from lead, which is the opposite of what Cal/OSHA is trying to achieve. The commenter adds that contractors constantly hear that they do not care about the health and safety of their employees and families, which is untrue and is disrespectful to licensed contractors.

Response to Comment 126.5

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 126.6

The commenter asks the Standards Board to vote "no" on the proposed Lead Standard. The commenter believes that the Construction Lead Standard should start over beginning with a scientific study that specifically addresses lead in construction, does not include lead in General Industry, and reports on today's current lead levels established by science and facts. It should include correlations between high lead levels and employees who did not follow current PPE requirements. The process should engage stakeholders, as well as medical and scientific experts in the private sector, and the SRIA should be based on actual costs of all components of compliance and implementation.

Response to Comment 126.6

The Board disagrees with this comment. Reopening the standard setting process for the Lead in Construction standard is not justified. The Board believes that all employees, in both Construction and General Industry, should receive the protections afforded by the proposed regulations. The health effects of lead exposure and the levels at which they occur are the same whether exposure occurs in construction or general industry. The differences in exposure circumstances between construction and general industry were carefully considered by Cal/OSHA while developing the proposed standards and, where necessary, requirements were tailored to each sector. Any delay in implementing the protections afforded by the proposed regulations would result in continued harmful exposures to construction

workers. The Board notes that employers are responsible for ensuring that employees use appropriate protective work clothing and equipment in the current and proposed regulations.

Regarding engagement with stakeholders, please see response to comment 66.10.

Regarding the SRIA, the comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

127. Erin Smith, Project Manager, Copper Development Association; Jack Monger, CEO, Industrial Environmental Association; Kerry Stackpole, FASAE CAE, CEO & Executive Director, Plumbing Manufacturers International; Christopher E. Ochoa, Esq., Senior Counsel – Codes, Regulatory and Legislative Affairs, California Building Industry Association; James Simonelli, Executive Director, California Metals Coalition; Matthew Hargrove, President & Chief Executive Officer, California Business Properties Association; Roger Miksad, Executive Vice President and General Counsel, Battery Council International; Doug Kurkul, CEO, American Foundry Society; Mark DeLaquil, General Counsel, Association of Battery Recyclers; Benjamin Erwin, Deputy General Counsel, National Shooting Sports Foundation, Inc.; Lawrence Gayden, Policy Director, California Manufacturers and Technology Association; Andrea Abergel, Manager of Water Policy, California Municipal Utilities Association; Cris Williams, Ph.D., Senior Scientist, International Lead Association; Bryan Leiker, Executive Director, Metal Finishing Association of California; Eric Stuart, Vice President, Energy, Environment, and Infrastructure Policy, Steel Manufacturers Association; Rodney Pierini, President and CEO, CAWA – Representing the Automotive Parts Industry; Lisa Spooner Foshee, SVP, Government Affairs and General Counsel, Auto Care Association; Ryan Allain, Director, Government Affairs, California Retailers Association, via Christy Christensen, KP Public Affairs, by written comments dated October 25, 2023.

Comment 127.1

The commenters are pleased to see some changes in this second 15-day package that respond to their prior comments on the 45-day Notice and first 15-day Notice, including a recognition by Cal/OSHA that additional time is needed to achieve compliance with most of the proposed requirements. However, the commenter states that there are several problems remaining with the proposed standards, including the inadequacy of the six-month compliance period indicated in the notice, which would result either in a flood of variance requests - which Cal/OSHA is ill-equipped to manage - or widespread non-compliance or both.

Response to Comment 127.1

The Board thanks the commenters for their support of some of the proposed amendments.

Regarding the compliance period, the Board disagrees with this comment and believes that, in combination with the other implementation delays included in the proposed amendments, a six-month delay in the effective date is sufficient.

Comment 127.2

The commenters support Cal/OSHA's proposed clarification in the exception for employee access to potable drinking water (subsection 5198(i)(1)(A)), which will allow employees to temporarily remove respirators to drink water, provided employees are properly trained on safe hydration procedures and water is consumed in a manner that prevents ingestion of lead.

Response to Comment 127.2

The Board thanks the commenters for their support of this portion of the proposed amendments.

Comment 127.3

The commenters support the additional exception from medical surveillance for any employee not exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 (subsection 5198(j)(1)(A)1.). The commenters agree that employees who are infrequently exposed below the medical removal level are not at risk of elevated blood lead levels and should not be subject to medical surveillance requirements. The commenters recommend that Cal/OSHA expand the exception for single day exposures to include any employee (or contractor) who uses a respirator, provided the level of exposure is equivalent to or lower than the respirator protection factor.

Response to Comment 127.3

The Board thanks the commenters for their support of this portion of the proposed amendments. However, the Board declines to expand the exception for single day exposures to include any employee who uses a respirator, as suggested by the commenter. The Board notes that blood lead modeling shows that even a single day of exposure to lead at a high airborne exposure level may result in a significantly elevated BLL and therefore an exception from medical surveillance requirements cannot be justified. Further, respirators are an imperfect form of protection because the protection is dependent on the employee wearing a respirator properly to achieve the assigned protection factor.

Comment 127.4

The commenters support the proposed exception from a written elevated BLL response plan, training and instruction when the employee's BLL is at or above 10 µg/dl based on a test done prior to first assignment to covered work (subsection 5198(j)(2)(E)). The commenters refer to their prior comment that elevated BLLs can result from exposures occurring outside of the workplace, and in those cases employer interventions will have little if any impact on employee BLLs. For that reason, the commenters say that Cal/OSHA should clarify that medical removal benefits are required only when: (1) workplace exposures are determined to exceed relevant action levels; and (2) a medical examination by a qualified physician concludes that those workplace exposures are the primary cause of the employee's elevated blood lead level.

Response to Comment 127.4

The Board thanks the commenters for their support of this portion of the proposed amendments.

Regarding the commenters' request that Cal/OSHA make revisions to medical removal-related requirements, the comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 127.5

The commenters support the proposed exceptions from employee medical examinations and consultations, consistent with the exceptions from medical surveillance in subsections 5198(j)(1)(A)1. and 5198(j)(3)(A)2.

Response to Comment 127.5

The Board thanks the commenters for their support of this portion of the proposed amendments.

Comment 127.6

The commenters appreciate Cal/OSHA's recognition that employers will need additional time to comply with the proposed standards. However, the commenters believe that the proposed six-month compliance period falls well short of the time that will be needed to procure the resources and regulatory approvals necessary to meet the many new requirements in the proposed standards. The commenters further state that employees will not benefit from an implementation schedule that shifts employer focus from achieving compliance to seeking variances or responding to enforcement actions. The commenters ask that Cal/OSHA staff solicit input on reasonable compliance periods from medical professionals, blood testing laboratories, city planning departments and local air quality management districts, and incorporate these adjustments into the final standards.

Response to Comment 127.6

The Board disagrees with this comment and believes that, in combination with the other implementation delays included in the proposed amendments, a six-month delay in the effective date is sufficient.

With regard to the reasonableness of the compliance period as it relates to medical professionals, blood testing laboratories, city planning departments and local air quality management districts, please see responses to comments 11.4 and 48.2.

Comment 127.7

The commenters state that the proposed change requiring employers to "ensure" that employees do not enter personal vehicles with "any protective clothing or equipment that is required to be worn during the work shift." Subsection 5198(i)(2)(C) creates a new citable violation for employee actions that employers cannot reasonably control. The commenters recommend that Cal/OSHA either strike this new requirement or modify the language to limit the employer's obligation to employee education and training. The commenters say that, for example, the language could be revised to require the employer to "train all employees to remove and leave at the workplace all protective clothing and equipment that is required to be worn during the work shift before employees enter personal vehicles or leave the workplace."

Response to Comment 127.7

The Board disagrees with this comment. The use of the word "ensure" is pervasive throughout the regulatory framework of Title 8 and the reasonable meaning of the term is appropriate to this particular requirement as well. Employee conduct related to safe and healthful work practices at the employee's worksite, including but not limited to whether an employee takes work clothing into their vehicle or away from the worksite, is within the reasonable control of the employer. The Board declines to limit the employer's obligation to education and training, as other employer obligations, including but not limited to supervision, procedures and discipline, are relevant as well and the term "ensure" clearly and succinctly conveys the requirement. To the extent the commenters are concerned about rogue action by employees, the Board notes that there is an available Occupational Safety and Health Appeals Board-recognized affirmative defense, the independent employee action defense, when an employee acts against the best safety efforts of the employer in causing a violation.

Comment 127.8

The commenters note that there are several other provisions in addition to subsection 5198(i)(2)(C) in the proposed standards requiring employers to "ensure" certain employee actions are either taken or prevented. The commenters state that these provisions create the same compliance catch-22 for employers as the provision noted in Comment 127.7 and should either be qualified with supplemental language such as "the employer shall take reasonable steps to ensure" or replaced with language similar to the above-proposed alternative approach.

Response to Comment 127.8

To the extent that this comment is directed at provisions in either standard where the use of "ensure" is existing, unchanged text in the standard or was added in the amendments noticed in the March 3, 2023, Notice of Rulemaking or the proposed modifications noticed by the Board on July 7, 2023, the comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

To the extent that the comment is directed at the amendments noticed by the Board on October 6, 2023, please see response to comment 127.7.

Comment 127.9

The commenters ask Cal/OSHA to reconsider their prior comments regarding the potential adverse impacts of the proposed standards on employees working in enclosed or confined spaces at elevated temperatures. The commenters recommend that at a minimum, Cal/OSHA should consider an exception for these employees from air lead standards where medical surveillance demonstrates that employee blood lead levels are below medical removal limits. The commenters state that in these cases, employees are likely at greater risk from heat illness or injury resulting from use of respirators and full body suits than from exposure to small amounts of lead.

Response to Comment 127.9

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenters for their input and participation in the rulemaking process.

128. Brian Mello, Associate Vice President, Engagement Regulatory Affairs, Associated General Contractors of California, by written comments dated October 25, 2023.

Comment 128.1

The commenter appreciates several of the amendments in the second 15-Day Notice including the removal of social security numbers for employee identification (subsection 1532.1(n)(B)4.), the authorization of filtering facepiece respirators for protection against lead (subsection 1532.1(f)(3)(A)), exceptions for feasibility of showers (subsection 1532.1(i)(3)(A)), and the inclusion of additional exceptions to alleviate the burden on medical surveillance (subsection 1532.1(j)). However, the commenter still has remaining concerns about the current state of the proposed regulation.

Response to Comment 128.1

The Board thanks the commenter for their support of portions of the proposed amendments and responds to the commenter's additional comments separately, below.

Comment 128.2

The commenter states that they continue to be concerned about the feasibility and practicality of the proposed lower thresholds for the AL and PEL. The commenter further states that the potential impacts of these reductions on the entire construction industry in California are significant and it is crucial to ensure that any regulatory changes are well founded and supported by solid evidence. The commenter believes that despite their requests for information and clarification on the need for these substantial reductions, specifically the empirical evidence and practical experiences that substantiate the proposed changes, Cal/OSHA has not provided sufficient evidence indicating an increased risk of employee occupational exposure to lead in the construction industry. The commenter states that this lack of information has left stakeholders in the construction industry in a state of uncertainty and concern and the commenter urges the Board to provide a more detailed and evidence-based explanation regarding the extreme reduction in PEL and AL for lead exposure.

Response to Comment 128.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023 and is therefore outside the scope of the 15-Day Notice.

Comment 128.3

The commenter states that the need for a physician's opinion regarding a worker's health-related conditions and their ability to work safely in lead-exposed environments (subsection 1532.1(j)(3)(F)1.) places significant authority and responsibility on physicians to set limitations on workers' lead exposure (subsection 1532.1(k)(1)(B)1.). The commenter believes that this added liability for medical opinions may discourage many physicians from undertaking this work and therefore, obtaining required lead physical

examinations is likely to become more challenging due to reduced availability, and the costs associated with these tests are expected to increase. The exception that medical examinations are not required for employees who have had a lead-specific examination in the last two months, will have limited impact on reducing the number of workers subjected to medical examinations. Mandatory medical examinations are still required for individuals who are or may potentially be exposed to lead at or above the action level, and these examinations must be completed before work assignment (subsection 1532.1(j)(3)(A)2.). The commenter states that these exams necessitate a physician's evaluation of signs and symptoms commonly associated with lead intoxication, such as high blood pressure, anxiety, constipation and insomnia, which are prevalent among a significant portion of the workforce even without lead exposure. The commenter is concerned that workers could face work restrictions on lead-exposed projects, even if their current health issues are unrelated to prior lead exposure.

Response to Comment 128.3

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 128.4

The commenter states that the proposed MRP section introduces significant changes, including employer control over medical professionals, workers' compensation and full wage payment for up to 18 months. The commenter adds that while some may perceive this as a positive benefit, it is crucial to emphasize that 18 months of full pay for a union worker is not equivalent to 40 hours plus overtime. Workers could still suffer financial losses if disqualified due to 'symptoms commonly associated with lead toxicity.' The commenter further states that the dramatic shift in the threshold for MRP, 50µg/dl to 20µg/dl (subsection 1532.1(k)(1)(A)2.) is anticipated to significantly increase the number of workers who will be medically removed from their jobs, resulting in a surge in workers' compensation claims. Finally, the commenter states that the substantial reductions in trigger levels raise concerns about the ability to differentiate between workplace exposure and exposure occurring at home. Under the previous lead standard, trigger levels were set high enough to avoid being triggered by exposures outside of the workplace. However, the new MRP level could result in workers who are exposed to lead outside of work being medically removed and consequently preventing them from working in any job involving any level of lead exposure.

Response to Comment 128.4

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023 and is therefore outside the scope of the 15-Day Notice.

Comment 128.5

The commenter strongly urges the Standards Board to reconsider and thoroughly evaluate the proposed changes in collaboration with industry stakeholders. The commenter is committed to working together to develop safety standards that prioritize both the well-being of workers and the sustainability of the construction industry. Transparency, collaboration and a deep understanding of the practical implications are essential to ensure the best outcomes for all parties involved.

Response to Comment 128.5

Please see response to comment 66.10.

The Board thanks the commenter for their input and participation in the rulemaking process.

129. AnaStacia Nicol Wright, Policy Manager, on behalf of Worksafe, by written comments dated October 25, 2023.

Comment 129.1

The commenter strongly urges the Board to vote in favor of Cal/OSHA's revised final draft Lead Standard to protect California workers who have occupational exposure to lead. The commenter states that Cal/OSHA is proposing appropriate airborne concentration levels and exposure periods, required monitoring, and prescribed hygiene and equipment regimens, which are based on overwhelming scientific evidence that low levels of lead cause high blood pressure, kidney disease and brain injury. The commenter believes that these amendments will safeguard the health of workers, by substantially lowering blood lead levels requiring medical exams and temporary removal from exposure and lowering the permissible air exposure level fivefold. The commenter further states that employers and business groups are launching continued attacks on science and public health but notes that the proposal follows the health-based recommendations made more than 10 years ago by CDPH. The commenter states that it is past time for action to be taken to protect workers' health.

The commenter further states that consistent with the precautionary principle, the amendments give guidance to employers to protect workers based on tasks, rather than relying solely on air testing. The commenter believes that by approving these amendments, the Board will ensure that workers get medical testing for lead with qualified health care providers, as well as access to clean eating areas and showers. The commenter states that implementation of these amendments will reduce the number of employees exposed to harmful amounts of lead in a wide variety of work settings, and will also have a positive effect on California's environment. Finally, as noted in the SRIA analysis, reducing levels of lead exposure in the workplace, and increasing hygiene measures, would also reduce lead exposure to members of the community including infants, children and women of childbearing age, from lead dust transported into workers' homes.

Response to Comment 129.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

130. Chris Hannan, President, State Building and Construction Trades Council, by written comments dated October 23, 2023.

Comment 130.1

The commenter strongly supports the proposed Cal/OSHA modifications to title 8 CCR sections 1532.1, 5155 and 5198 dealing with worker exposure to lead. The commenter applauds the Standards Board staff and Board Members for their hard work on this proposed standard and urges the Board to stand

strong with workers and their families in the face of employer opposition and to support the proposed amendments. The commenter states that the proposed standards will remind employers that they have a critical role in worker health and safety, that they need to take that role seriously, and that when needed Cal/OSHA will be able to step in to remind employers that strong health and safety regulations exist and should be followed. The commenter provides the following supporting statements:

- The current standard protecting workers from exposure to lead has relied on epidemiological and medical data about lead toxicity that is over forty years old.
- As CDPH notes in their guidance documents, lead poisoning continues to be a major problem in the U.S and continues to be one of the most insidious workplace safety dangers despite decades of government and industry intervention to outlaw and prohibit its use.
- Most adults with harmful lead levels are exposed on the job. It can cause serious and permanent health problems and even low levels of exposure over years or decades can cause damage. Lead exposure can damage the brain, nerves, red blood cells, kidneys and reproductive systems of men and women and can harm the fetus. Lead can also cause high blood pressure, miscarriage and other serious health problems and increases the risk of death related to heart disease or stroke. Damage from lead exposure can be permanent.
- A person can be exposed to lead by breathing lead dust, mist or fumes and by swallowing lead if it gets on their hands, clothing or face and, most devastatingly, that worker can bring it home on their work clothes and expose their families, making them unwitting secondary exposure cases.
- Lead that is not removed by the kidneys into urine is stored in the body, mostly in the bones, and may stay there for years. Lead in bone is slowly released back into the bloodstream over time so that exposure to even small amounts of lead over a long period of time can be harmful.
- Lead use was widespread for decades before it was banned and is still prevalent in our society. The members of their union, especially those who are not specially trained to work in the lead removal and mitigation part of our industry, may not know that they are being exposed to lead and that they need to take measures to protect themselves.

Response to Comment 130.1

The Board thanks the commenter for their support of the proposed amendments.

The Board thanks the commenter for their input and participation in the rulemaking process.

131. Roger Miksad, President and Executive Director, Battery Council International and Mark DeLaquil, Counsel, Association of Battery Recyclers, by written comments dated October 25, 2023.

Comment 131.1

The commenters support Cal/OSHA's proposal to delete the prohibition on use of filtering facepiece respirators in subsection 5198(d)(2)(A) and the new language in subsection 5198(f)(3)(A) providing specifications for acceptable filtering facepiece respirators. However, the commenters state that Cal/OSHA should allow the use of N95, R95 or P95 as the use of those respirators with an assigned protection factor of 10 is appropriate under federal regulations (29 CFR 1910.134(d)(3)(i)(A)).

Response to Comment 131.1

The Board thanks the commenters for their support of this portion of the proposed amendments.

The Board declines to amend the standard as requested, as the specification of N100, R100 or P100 is necessary to ensure that only the most protective type of filtering facepieces are provided for protection against lead.

Comment 131.2

The commenters support the proposed Separate Engineering Control Airborne Limits (SECALs) for lead battery recycling section 5198 Table 1. The commenters note that the proposed levels are consistent with the previously proposed SECALs for grid production and small parts casting in battery manufacturing, and believes they adequately address the unique physical and operational constraints of facility-wide air lead control levels in the specified process areas without compromising health protection for employees working in those areas.

Response to Comment 131.2

The Board thanks the commenters for their support of this portion of the proposed amendments.

Comment 131.3

The commenters support the proposed cross reference to subsection 5198(c)(2) in the exception for employee access to potable drinking water and believes that it addresses potential confusion about exposures at a single point in time (when an employee temporarily removes their respirator to drink at a hydration station) relative to continuous exposure over an 8-hour shift. The commenters say they look forward to further explanation of Cal/OSHA's rationale for this proposed change in the Final Statement of Reasons.

Response to Comment 131.3

The Board thanks the commenters for their support of this portion of the proposed amendments.

Comment 131.4

In subsection 5198(j)(1)(A)1., the commenters support the companion exception (2) from medical surveillance for any employee not exposed to lead at or above the action level (AL) for 15 or more days (in any 12 consecutive months) and who is not exposed on any day above 20 $\mu g/m^3$. The commenters believe that this additional exception appropriately recognizes that exposures above the PEL which occur over a shorter duration (15 days vs. 30 days), do not materially increase health risks to employees, and therefore do not warrant medical surveillance. However, the commenters are concerned that the language for the one-day exposure limit is still too restrictive. The commenters state it is common in many industries for companies to provide access to employees and contractors on a very limited basis (e.g., one day) for both facility inspections and short-term projects such as maintenance or inventory reconciliation. The current proposed Exception 1 and Exception 2 both require such employees to be enrolled in medical surveillance based on exposure above a given level of lead in air "without regard to respirator use." The commenters believe that this requirement is

unnecessarily restrictive for employees who would otherwise only be exposed one day or less each year. The commenters recommend that Cal/OSHA modify the proposed exceptions as follows to allow one day facility access without exposure restrictions where the visiting employee uses respiratory protection meeting the requirements of the proposed standards. *Commenters' proposed revised language is as follows:*

EXCEPTION 1: Medical surveillance is not required for an employee who is not exposed to lead at or above the action level for 30 or more days in any 12 consecutive months, and who is not exposed on any day above 10 µg/m^3 as an 8-hour TWA ~~, without regard to respirator use~~ *if the employee does not use a respirator. If an employee uses a respirator, the exposure level may be considered to be equivalent to the level provided by the protection factor of the respirator for those periods when the respirator is worn.*

EXCEPTION 2: Medical surveillance is not required for an employee who is not exposed to lead at or above the action level for 15 or more days in any 12 consecutive months, and who is not exposed on any day above 20 µg/m^3 as an 8-hour TWA ~~, without regard to respirator use~~ *if the employee does not use a respirator. If an employee uses a respirator, the exposure levels are considered to be equivalent to the level provided by the protection factor of the respirator for those periods the respirator is worn.*

Response to Comment 131.4

Please see response to comment 127.3.

Comment 131.5

The commenters support the proposed exception in subsection 5198(j)(2)(E) from a written elevated BLL response plan, training and instruction when the employee's BLL is at or above 10 µg/dl based on a test done prior to first assignment to covered work. The commenters state that this new exception acknowledges that elevated BLLs can be driven by factors outside of the workplace, and in those cases, it is the responsibility of the employee, not the employer, to mitigate their exposure to lead. The commenters believe that this same rationale applies to the proposed requirements for medical removal and provision of medical removal benefits to employees. The commenters reiterate their prior requests that Cal/OSHA further revise the proposed standards to limit the employer's obligations related to medical removal and provision of medical removal benefits to instances where a qualified physician determines that the employee's elevated BLL is due to workplace exposures.

Response to Comment 131.5

Please see response to comment 127.4.

Comment 131.6

The commenters support the proposed exceptions in subsection 5198(j)(3)(A)2. from employee medical examinations and consultations, which appropriately mirror the exceptions from medical surveillance in subsection 5198(j)(1)(A)(1).

Response to Comment 131.6

The Board thanks the commenters for their support of this portion of the proposed amendments.

Comment 131.7

The commenters state that the proposed regulations continue to place liability on the employer for failing to "ensure" that employees either take, or refrain from taking, various actions. The commenters further state that Cal/OSHA's repeated use of the word "ensure" in this, and other contexts creates a very real compliance impasse for employers, as employers cannot physically restrain employees or physically force them to take specific actions. The commenters state that federal OSHA has recognized this reality for more than thirty-five years. For example, OSHA recognizes that employers cannot force an employee to consent to invasive medical procedures such as blood draws, and an employer cannot be held liable for an employee's refusal to cooperate with blood lead testing. The commenters believe that the same considerations apply to new language in subsection 5198(i)(2)(C) that requires employers to *"ensure"* that employees do not enter personal vehicles with *"any protective clothing or equipment that is required to be worn during the work shift."* The commenters state that for an employer to "ensure" that it is compliant with the regulations, the employer would be required to physically restrain any employee attempting to leave the facility while wearing employer-issued protective clothing or equipment. The commenters do not believe this is Cal/OSHA's intention. To address their concern, the commenters recommend that Cal/OSHA should replace the word "ensure" with the word "require" throughout the draft rule in any instance where the subject action is taken (or not taken) by an individual employee. The commenters have identified the below provisions as particularly problematic in the General Industry standard, and others likely exist in the proposed regulations:

- Subsection 5198(g)(1)(A) The employer shall provide at no cost to the employee and ~~ensure~~ *require* that the employee uses appropriate protective work clothing and equipment.
- Subsection 5198(g)(2)(D) The employer shall ~~ensure~~ *require* that all protective clothing is removed at the completion of a work shift and only in change rooms provided for that purpose as prescribed in subsection (i)(2).
- Subsection 5198(i)(1)(A) The employer shall ~~ensure~~ *require* that in areas where employees…
- Subsection 5198(i)(1)(A) (EXCEPTION) …. provide training on and ~~ensure~~ *require* compliance with written safe hydration procedures.
- Subsection 5198(i)(1)(D) The employer shall ~~ensure~~ *require* that employees exposed to lead wash their hands, exposed arms, and face prior to entering eating areas, eating, drinking, smoking or applying cosmetics, and at the end of their shift.
- Subsection 5198(i)(2)(C) The employer shall ~~ensure~~ *require* that employees do not enter personal vehicles or leave the workplace with any protective clothing or equipment that is required to be worn during the work shift.
- Subsection 5198(i)(3)(A) The employer shall ~~ensure~~ *require* that employees who work in areas where their exposure to airborne lead is above the PEL, without regard to the use of respirators, shower at the end of the work shift.
- Subsection 5198(i)(4)(C) The employer shall ~~ensure~~ *require* that employees do not enter lunchroom facilities with protective work clothing …

The commenters state that the word "ensure" could also be read to imply an obligation not just to require employee showering, but to be physically present to force a non-compliant worker to shower, which further implies that an employer would be out of compliance in a situation where the worker does in fact shower, but the employer was not present to observe and "ensure" the showering occurred. The commenter strongly recommends that Cal/OSHA review every use of the word "ensure" throughout the draft document and replace it with more appropriate terminology where necessary to avoid establishing compliance obligations that are impossible to legally implement. In the case that Cal/OSHA does not see fit to replace "ensure" with "require," commenters suggest Cal/OSHA revise certain employer-related obligations to require the employer to "take reasonable steps to ensure" or "reasonably ensure" to make clear that there are boundaries to the employer's obligation, including laws that preclude the employer from physically restraining an employee. This language is used elsewhere in the CA Labor Code (*See, e.g.*, Cal. Labor Code §226(b)).

Response to Comment 131.7

To the extent that this comment is directed at provisions in either standard where the use of "ensure" is existing, unchanged text in the standard or was added in the amendments noticed in the March 3, 2023, Notice of Rulemaking or the proposed modifications noticed by the Board on July 7, 2023, the comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

To the extent that the comment is directed at the amendments noticed by the Board on October 6, 2023, the Board disagrees with this comment. A reasonable interpretation of the term "ensure" as used in the standards does not involve the use of physical force/restraint. Further, please see response to comment 127.7.

Comment 131.8

The commenters note that various provisions require employers to "ensure" that the PLHCP conducts specific actions. The commenters state that the employer cannot physically control the actions taken by an independent licensed professional and should not be held liable for potential mistakes or failures by a licensed professional. The commenters further state that because the PLHCP is subject to professional licensing obligations, and is not an employee of the employer, it is not plausible for an employer to "ensure" or even "require" an independent PLHCP to take specific actions, and thus the employer should not be held liable for such failures. At most, an employer can merely instruct these independent health care providers on their regulatory obligations. As an example, the commenters recommend that subsection 5198(j)(4)(C) be amended to read, "PLHCP's Notification to the Employee. The employer shall ~~ensure that~~ instruct the PLHCP who orders the blood test to explain~~s~~ the findings of the blood lead test and notify the employee of the following[.]"

Response to Comment 131.8

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 131.9

The commenters state that while a six-month compliance period is a modest improvement over immediate compliance upon publication of the final standards, it will not be sufficient for the many reasons articulated in their comments on the July 7, 2023, 15-day notice and the March 3, 2023, Notice of Proposed Regulations. As the commenter detailed in those submissions, the many actions and regulatory approvals necessary to upgrade facility airflow and emissions controls to comply with the proposed PEL on a facility-wide basis will require a minimum of 30 months from the effective date of the regulation. The commenters believe that anything short of that timeframe virtually guarantees that industrial facilities will violate the standards and face enforcement actions and penalties, regardless of their diligence and the level of effort and resources they invest in compliance. The commenters ask that Cal/OSHA staff consult with city planning departments and with local air quality management districts to clarify the types of upgrades that will be necessary for affected facilities to comply with the proposed PEL on a facility-wide basis, and the approximate timeframes for permitting those upgrades given available agency resources and adjust the timeframe for PEL implementation accordingly.

Response to Comment 131.9

The Board disagrees with this comment and believes that, in combination with the other implementation delays included in the proposed amendments, a six-month delay in the effective date is sufficient.

With regard to the reasonableness of the compliance period as it relates to medical professionals, blood testing laboratories, city planning departments and local air quality management districts, please see responses to comments 11.4 and 48.2.

Comment 131.10

The commenters support the comments submitted by the International Lead Association (ILA) regarding the proposed changes to Appendix A and Appendix C and states that there are numerous statements in these appendices that require further clarification to avoid misinterpretation and conclusions that are not supported by the available scientific evidence, including but not limited to the following:

- Not all lead is absorbed by inhalation and ingestion, and not all lead is absorbed into the bloodstream.
- References to lower doses or higher doses should be quantified.
- Any statements about the potential health effects of lead exposure should be qualified with language specifying that such effects are dose or blood lead-concentration-dependent. Similarly, generic references to “lead exposure,” “exposure to lead,” “maternal lead exposure,” and “lead may impair” in conjunction with statements about adverse health effects inappropriately imply that such effects can result from *any* exposure to lead, which contradicts published literature cited in the ILA comments establishing thresholds for certain adverse effects.
- Statements about the probability of reproductive effects and “health damage” at specified concentrations (e.g., BLL > 3.5 µg/dl and BLL > 5 µg/dl) contradict the available literature specified in the ILA comments.

- References to "current evidence" are non-specific and should be supported by citations in the scientific literature.
- Cal/OSHA relies heavily on Lanphear et al. (2018) to support several claims despite the many limitations of this study, including the non-representativeness of the NHANES source data and fundamental study design flaws detailed in the ILA comments.
- Failure to acknowledge the reversibility of neurological effects in workers attributed to lead exposure.

Response to Comment 131.10

Please see responses to comments 123.1 through 123.25.

The Board thanks the commenters for their input and participation in the rulemaking process.

132. Helen Cleary, Director, Phylmar Regulatory Roundtable, PRR-OSH Forum, by written comments dated October 25, 2023.

Comment 132.1

The commenter supports many of the changes proposed in the second 15-day Notice including:

- Allowing employers to select filtering facepiece respirators, which is an effective option that will benefit the worker during hot weather.
- Added flexibility regarding the required use of "…gloves, face shields, vented goggles, or other protective equipment…," which supports the employer's ability to determine when specific protective work clothing is needed.
- Restoring the trigger of 50 µg/m^3 for showers in the construction industry, which is a reasonable threshold and provides clarity that was needed by industry.
- Added exceptions for initial blood lead testing, medical surveillance and medical exams and consultations that address infrequent and low levels of exposure. The commenter believes that this modification indicates that Cal/OSHA understands the industry's operational challenges.

Response to Comment 132.1

The Board thanks the commenter for their support of these portions of the proposed amendments.

Comment 132.2

The commenter states that the exception for a written elevated blood lead level response plan, training and instruction when an employee has a BLL at or above 10 µg/dl in an initial BLL test does not add value or flexibility to their members' Lead Management Programs as they have not experienced receiving blood lead testing results above 10 µg/m^3 from new employees.

Response to Comment 132.2

The Board acknowledges the commenter's statement that the proposed revision does not add value or flexibility to the PRR members' Lead Management Programs.

Comment 132.3

The commenter states the changes to Appendices A and B published in the second 15-Day Notice go beyond mirroring the proposed changes in the actual text. The commenter believes that making such a large number of changes would have been more appropriate in the original proposal that allowed stakeholders 45 days to review and submit comments. The commenter states that though some are minor with no technical impact, many are scientific explanations, including information in charts that are intended to clarify requirements and help manage lead programs. The commenter further states that ensuring accuracy and providing feedback on clarity are benefits of stakeholder review and allowing 15 days to review the sheer number of changes in the Appendices is not enough time.

Response to Comment 132.3

The changes in the appendices that go beyond mirroring changes in the second 15-day Notice were made in response to comments received during the noticed comment periods of this rulemaking. The Board has complied with all legal and regulatory notice requirements for a regular APA rulemaking.

Comment 132.4

The commenter states that while Cal/OSHA explained at the October 19, 2023, Board meeting that the Appendices are not intended to create additional obligations or be "mandatory," the employer is required to inform employees with occupational exposure to lead of the content of Appendices A and B of the regulation and include the content of the standard and its appendices as part of the required training program. Both standards also require the employer to ensure the training is effective and the training materials used are appropriate to the educational level, literacy level and language of employees. The content of the appendices includes a vast scope of medical, scientific and procedural elements. The requirement that employers include the content of the appendices as part of a training program seems to make this information mandatory for the employer. The commenter is highly disappointed that Cal/OHSA does not consider the content and length of the appendices a valid employer concern. The commenter further states that the responsibility to ensure that training materials, including the dense Appendices, meet the needs of employees of all education and literacy levels and languages is a tremendous responsibility and enormous administrative burden. The commenter adds that the lowered AL and PEL and the annual training requirement for all employees occupationally exposed to lead greatly expands the scope of workers impacted by the current lead standards. The commenter states that these are primary reasons stakeholders are concerned about the additional 50+ pages of complexity the Appendices add to each of the standards. The commenter urges Cal/OSHA to draft training materials in the education and literacy levels, and languages that will meet the compliance requirements prior to these changes becoming effective so that the appendices are not a burden on the employer.

Response to Comment 132.4

The appendices to sections 5198 and 1532.1 do not contain any independent regulatory requirements. As specified in subsections 5198(p) and 1532.1(q), the information contained in the appendices to both standards is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation. To the extent that the information in the appendices

must be incorporated into the employer's subsection 5198 and 1532.1(*l*)(2) training programs, that requirement is contained in the body of the regulations, not in the appendices themselves.

The requirement, in both sections 5198 and 1532.1, that an employer's training program include effective training on the contents of the appendices is existing, substantively unchanged text in the standard and is outside the scope of this rulemaking.

Further, to the extent the commenter's statements are directed at amendments to the section 5198 and 1532.1 appendices that were noticed in the March 3, 2023, Notice of Rulemaking or the proposed modifications noticed by the Board on July 7, 2023, the comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

With regard to the proposed modifications to the appendices of sections 5198 and 1532.1 that were noticed by the Board on October 6, 2023, the amendments to the appendices of both sections 5198 and 1532.1 shortened the contents of the appendices and also simplified the language of many of the health-related concepts contained in Appendix A to both sections. The Board declines to make further amendments.

With regard to the commenter's request for Cal/OSHA to draft training materials, the Board notes that Cal/OSHA's guidance and education efforts are outside the scope of this rulemaking and the Board's jurisdiction.

Comment 132.5

The commenter agrees that lead exposure is a complex issue and requires a level of expertise to effectively manage the hazard; however, the commenter believes that the drafted language and construction of the text, itself, is confusing and unnecessarily complicated. The commenter states that the 80% reduction of the AL and 93% reduction of the PEL expands the scope to include a significantly higher number of workers and employers in the State that do not have the expertise to manage such requirements, as illustrated by the current experts expressing concern and confusion at the Public Hearing and recent Board meetings. The commenter believes that the strategy to simply replace references to the PEL and AL in the rule without revising the structure and associated requirements these textual changes would impact was a flawed approach. The commenter states that the Board members have a diverse perspective and experience that is relied upon to pass effective occupational safety and health regulations that are clear and actionable and urges the Board to address the complexity of the proposed text. The commenter recommends that prior to signing off or adopting the proposed regulations, the Board members and involved staff should be confident that both industry experts and laypeople impacted by these changes will be able to understand and implement the elements as required in the proposed text.

Response to Comment 132.5

Regarding the commenter's statements relating to the reductions to the AL and PEL, the lack of expertise to manage such requirements, and the flawed approach to the structure of the standard itself, it is not

specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the 15-Day Notice.

To the extent the comment suggests that the rulemaking lacks clarity because the "*drafted language and construction of the text,* itself, is confusing and unnecessarily complicated," the Board disagrees with this assertion. The Board drafts all rulemakings in compliance with the APA.

The commenter states that the language and construction of the text is confusing and complicated, but other than this general statement, provides no specific detail. The Board acknowledges that the proposal builds on an existing standard that is complex, but does not believe it conflicts with the clarity standard of the APA and, without more detail from the commenter, is unable to provide further consideration or response to this comment.

Comment 132.6

The vague and broad use of "occupational exposure to lead" and subsequent employer requirements combined with the lowered AL unnecessarily expands the scope, making it nearly impossible to identify who is and is not covered and makes the amendments unreasonable. For example, without a definition of "occupational exposure" the implication is that *any* exposure, without consideration to duration or dose, reaches a level of risk necessary to require employers to create, monitor and manage ongoing training. In addition, it indirectly creates an additional exposure level (below the proposed AL of 2 $\mu m/m^3$) that employers will be required to manage. The commenter believes that this was an unjustified change in the first 15-Day Notice that creates significant administrative and financial burdens that were not considered in the SRIA. The commenter believes that exposures below the proposed AL of $2\mu g/m^3$ should not be considered "occupational exposure" and should not trigger initial and annual training. This is an unreasonable and unnecessary expectation. "Occupational exposure to lead" should be clearly defined in the regulation by a threshold.

Response to Comment 132.6

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.7

A duration and frequency threshold needs to be included in the CSO lead standard. Exemptions for interim protections and pre-exposure assessments should be based on frequency and duration of exposure and not just in response to a trigger task.

Response to Comment 132.7

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.8

In addition to the one-year time extension from the effective date for change rooms, showers and lunchrooms in the GISO, the commenter requests at least a one-year extension for the pre-exposure

assessments to be completed for employers subject to the CSO and GISO to allow employers to collect, perform and assess the necessary data required to comply with these amendments.

Response to Comment 132.8

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.9

The commenter requests that Cal/OSHA, prior to submitting a final draft for approval, specify which NIOSH analysis methods are acceptable and capable of detection below the required limit of 2 $\mu g/m^3$ and include these methods in the proposed text. Because these methods are not currently available, the commenter requests additional time (at least one year) from the time Cal/OSHA determines and shares the acceptable method with employers, to collect samples and perform assessments, using these new analysis methods.

Response to Comment 132.9

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.10

The commenter believes that the requirement for the employer to provide PAPRs whenever an employee chooses this type of respirator is unreasonable due to the cost and fact that a less expensive and equally effective alternative is available. The commenter believes that employer-provided PAPRs should only be required if an employee is medically unable to wear a tight-fitting air-purifying respirator (APR) but can safely use a PAPR. In addition, the commenter states that the statement in Appendix B, "the standard requires that your employer must provide you with a PAPR upon request" is misleading and implies employees can have a PAPR regardless of whether they are required to wear a respirator, as required in subsection (f) of the standards.

Response to Comment 132.10

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.11

The commenter recommends that Cal/OSHA allow employers to implement work-related methods to mitigate potential exposures from incidental exposure from altering and disturbing lead during low-risk activities in lieu of the entire suite of requirements. For example, environmental exposure from short duration work in California soil contaminated with aerially deposited lead needs to be considered in this proposal and should not require unreasonable interim protections and infeasible pre-exposure assessments.

Response to Comment 132.11

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.12

The commenter continues to be concerned with the annual training requirement for employees who fall under the broad definition of "occupationally exposed to lead," and the requirement to train on information in the Appendices. The commenter believes that these are unjustified burdens and expectations. In addition, annual training for all workers exposed below the AL (which would include de minimis, unquantifiable and undefined quantities of lead) will be extremely costly and was not considered in the SRIA. At a maximum, employers should be required to *provide information,* not training, to this population of workers once they are accurately identified.

Response to Comment 132.12

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.13

The commenter requests clarification and an exemption regarding the use of Portable Tabletop Fume Extractors for hand soldering from the compliance requirements in subsection 5198(e)(3)(B) for the following reasons:

- The technology for a control to "monitor the concentration of lead in the return air" does not exist. This fact applies to all portable and non-portable fume extractors as well as mechanical ventilation in general. Some units offer a Filter Replacement Notification Function, however, that is not equivalent to monitoring the concentration of lead. The EPA, in its *Air Monitoring for Hazardous Materials 165.4* document states: "For specific analysis of aerosols (e.g., lead) there are no direct reading instruments. A sample must be collected and then analyzed by a non-portable instrument." This usually takes a minimum of five days. An X-Ray Fluorescence Analyzer is the only technology available that provides a direct reading of lead and provides concentrations of lead in paint or other substrates; however, this is not a control, is extremely cost prohibitive, and not available or feasible for the application of hand soldering.
- The commenter is unable to identify a portable fume extractor on the market with a "back-up filter" as required by the text. However, a prefilter and a HEPA filter is not uncommon.
- Portable fume extractors have the capability to turn off and prevent the recirculation of exhaust air if the filter becomes saturated. Also, if they have surpassed their specified filter replacement schedule they will cease to operate.
- Members of the commenter's organization have monitoring data demonstrating *Portable (Tabletop) Fume Extractors* equipped with HEPA filters are efficient at ensuring employees are not over exposed to lead when performing lead soldering. Visual observations and sampling results of lead soldering operations find that engineering controls provide sufficient protection during soldering tasks and all personal sample results were below the detection limit.
- Not exempting bench top local exhaust equipment for hand soldering will have significant impact on

a considerable number of operations across the State and the cost to provide the required protection in the text was not considered in the SRIA.

Response to Comment 132.13

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 132.14

The commenter supports and appreciates the revisions proposed in the second 15-Day Notice; however, significant textual issues remain in both standards that need to be addressed before Cal/OSHA submits a final draft for approval. The commenter continues to support and understand the scientific reasoning behind lowering the AL and PEL, and the goal to reduce the blood lead burden on workers, however, as expressed at the October 19, 2023, Board meeting, the commenter would like to understand how Cal/OSHA determined such low triggers *combined with the suite of employer requirements* would meet the proposed blood lead burden. The commenter states that they are also interested in learning about the limitations and uncertainties in the scientific modeling.

Response to Comment 132.14

The Board disagrees with the commenter's statement that significant textual issues remain in both standards. To the extent the commenter is referring to textual issues raised earlier in their letter, please see responses to comments 132.1 through 132.13.

With regard to the commenter's requests for information about determinations made by Cal/OSHA relating to the lowered AL and PEL and limitations and uncertainties in the scientific modeling, the requests are not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and are therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

133. Steven Johnson, OHST, SMS, Safety Director Associated Roofing Contractors of the Bay Area Counties, by written comments dated October 19, 2023.

Comment 133.1

The commenter states that Cal/OSHA has not proven a need for revisions to the lead standard. The commenter quotes from a CDPH report on BLL test results for the years 2008 to 2012 that states that:

- For the vast majority of BLL Reports (80%) CDPH does not know the employer, which greatly hinders their ability to determine whether lead is work related and identify employers where lead is a problem. In the future, CDPH hopes to improve reporting regulations so that labs are required to report employer information to CDPH for all blood tests.
- Less than 1% of workers tested with reported results to CDPH/OLPPP for elevated BLL worked in construction.
- Half of the elevated BLL test results reported were "Unknown Industry."

The commenter asks, “This is the data relied upon for requiring a change?”

Response to Comment 133.1

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 133.2

The commenter states that the construction industry will be required to train employees in an already complicated regulation that will be made even more complex. For example, Cal/OSHA’s new language (subsection 1532.1(*l*) Communication of hazards), which was meant to clarify housekeeping and hygiene requirements, is instead a citation trap for employers. The commenter states that this new language was added without an advisory meeting. Furthermore, employers are required to provide "effective" training on 179 pages of regulatory language that is written like the IRS tax code. When employees do not understand what they have been trained on and what they are required to do, the employer will get a citation for "ineffective training.”

Response to Comment 133.2

The comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

Comment 133.3

The commenter believes that the revisions in the second 15-Day Notice do not help employers, and in fact, the very employers charged with compliance are being punished.

- Changes to the unrealistically lowered AL and PEL bring in new "trigger tasks - not listed" that require the employer to "presume" employee exposure above the PEL and conduct exposure assessments for lead work that is not defined in the regulation.
- "Interim protection" for infrequent trigger tasks under this new definition requires medical surveillance (employee physical exams) and pre-exposure BLL testing before the project begins.
- Until an exposure assessment can prove that the lead work is below the AL, employees will be subjected to four BLL tests in the first six months.
- Employees' personal information (home address and phone number) and medical data for medical surveillance and BLL testing will be reported to CDPH by the health care provider.

The commenter concludes that the above concerns make union employers less competitive to "low-bid" employers who will never comply with regulations. The commenter further states that regulation revisions strengthen the underground economy in California, weaken employers' ability to hire and maintain a trained and skilled workforce, put a burden on Cal/OSHA enforcement with a complicated regulation, and subject employees to unnecessary BLL testing and intrude on their personal lives.

Response to Comment 133.3

The Board notes that the commenter references revisions in the second 15-Day Notice but none of the bulleted items listed reflect modifications specified in that Notice. This comment is not specifically directed to any of the proposed modifications noticed by the Board on October 6, 2023, and is therefore outside the scope of the second 15-Day Notice.

The Board thanks the commenter for their input and participation in the rulemaking process.

ADDITIONAL DOCUMENTS RELIED UPON

Pursuant to Government Code section 11346.8(d), the Board gave notice of the opportunity to submit comments concerning additional documents relied upon. The additional documents were added to the rulemaking file on July 7, 2023, with modifications to the proposal and no comments on the documents were received during the 15-day comment period from July 7, 2023, to July 24, 2023.

- Vork, Kathleen L., Brown, Joseph P., Carlisle, James C. *Evaluation and updates to the Leggett model for pharmacokinetic modeling of exposure to lead in the workplace – Part II adjustments to the adult exposure model, confirmation of Leggett+, and modeling of workplace exposure*. Journal of Occupational and Environmental Hygiene, 2023; 20(2): 55-83. https://doi.org/10.1080/15459624.2022.2150767

Pursuant to Government Code sections 11346.8(d), 11346.9(a)(1), and 11347.1, the Board gave notice of the opportunity to submit comments concerning additional documents relied upon. The additional documents were added to the rulemaking file on October 6, 2023, with modifications to the proposal and no comments on the documents were received during the 15-day comment period from October 6, 2023, to October 25, 2023.

1. ACOG (The American College of Obstetricians and Gynecologists). Lead Screening During Pregnancy and Lactation. August 2012 (reaffirmed 2023). https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2012/08/lead-screening-during-pregnancy-and-lactation#:~:text=Adverse%20Health%20Effects%20of%20Prenatal%20Exposure,-Lead%20readily%20crosses&text=Elevated%20lead%20levels%20in%20

2. ATSDR (U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry). Toxicological Profile for Lead. August 2020. https://www.atsdr.cdc.gov/toxprofiles/tp13.pdf

3. Goldman, R. H., and Weissmann, L. (2019). A Diagnosis to Chew On. The New England Journal of Medicine. August 1, 2019. 381(5), 466–473. https://doi.org/10.1056/NEJMcps1900774

4. Kumar, S. Occupational and Environmental Exposure to Lead and Reproductive Health Impairment: An Overview. Indian Journal of Occupational & Environmental Medicine. September-December 2018. 22(3):128-137. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6309352/#:~:text=Lead%20exposure%20also%20affects%20female,its%20outcome%2C%20and%20so%20on.

5. Lanphear, B., et al. Low-level lead exposure and mortality in US adults: a population-based cohort study. The Lancet Public Health. March 12, 2018. 3: e177–84 https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(18)30025-2/fulltext

6. Lin, S., Hwang, S. A., Marshall, E. G., and Marion, D. Does Paternal Occupational Lead Exposure Increase the Risks of Low Birth Weight or Prematurity? American Journal of Epidemiology, July 15, 1998; 148(2), 173–181. https://pubmed.ncbi.nlm.nih.gov/9676699/

7. Menke, A., et al. Blood Lead Below 0.48 µmol/L (10 µg/dL) and Mortality Among US Adults. Circulation, September 18, 2006; 114(13):1388-1394. https://doi.org/10.1161/CIRCULATIONAHA.106.628321

8. Navas-Acien, A., et al. Lead Exposure and Cardiovascular Disease--A Systematic Review. Environmental Health Perspective. March 2007; 115(3):472-482. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1849948/

9. Schober, S. E., et al. Blood Lead Levels and Death from All Causes, Cardiovascular Disease, and Cancer: Results from the NHANES III Mortality Study. Environmental Health Perspectives. October 1, 2006. 114(10), 1538–1541. https://doi.org/10.1289/ehp.9123

10. Seppäläinen, A. M., et al. Early Neurotoxic Effects of Occupational Lead Exposure: A Prospective Study. Neurotoxicology. Summer 1983. 4(2), 181–192. https://pubmed.ncbi.nlm.nih.gov/6685259/

11. Vigeh, M., Smith, D.R., Hsu, P.C. How does lead induce male infertility? Iranian Journal of Reproductive Medicine. Winter 2011; 9(1):1-8. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4212138/

12. California Association of Realtors. 2024 California Economic & Housing Market Forecast. Accessed on September 26, 2023. https://content.car.org/Public%20Products/Housing%20Market%20Forecast/Housing%20Market%20Forecast.pdf

13. DIR (California Department of Industrial Relations). Consumer Price Index Calculator. Accessed on September 26, 2023. https://www.dir.ca.gov/oprl/CPI/CPICalculator/CpiCalculator.aspx

14. DOF (California Department of Finance). May 2023 Revision Forecast. California Economic Forecast – Annual & Quarterly. Accessed on September 26, 2023. https://dof.ca.gov/forecasting/economics/economic-forecasts-u-s-and-california/

15. European Chemicals Agency. Committee for Risk Assessment (RAC) Opinion on scientific evaluation of occupational exposure limits for Lead and its compounds. June 11, 2020. https://echa.europa.eu/documents/10162/ed7a37e4-1641-b147-aaac-fce4c3014037

16. Hodgkins, D. G., et al. A longitudinal study of the relation of lead in blood to lead in air concentrations among battery workers. British Journal of Industrial Medicine. April 1992. 49:241-248. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1012105/

17. Kromhout, H. et al. A Comprehensive Evaluation of Within- And Between-Worker Components Of Occupational Exposure to Chemical Agents. Annals of Occupational Hygiene. February 23, 1993. Vol. 37, No. 3, pp 253-270. https://quant667-spph.sites.olt.ubc.ca/files/2017/03/Kromhout1993.pdf

18. Leidel, N. A., Busch, K. A., and Crouse, W. E. Exposure Measurement Action Level and Occupational Environmental Variability. NIOSH (US National Institute for Occupational Safety and Health) Technical Information. December 1975. https://stacks.cdc.gov/view/cdc/11153

19. OEHHA (California Office of Environmental Health Hazard Assessment). The Leggett Pharmacokinetic Model Code, Air Files, Parts A and B. August 25, 2015. https://oehha.ca.gov/air/document-background/leggett-pharmacokinetic-model-code

20. Petito Boyce, C., Sax, S. N., and Cohen, J. M. Particle size distributions of lead measured in battery manufacturing and secondary smelter facilities and implications in setting workplace lead exposure limits. Journal of Occupational and Environmental Hygiene. August 14, 2017. 14:8, 594-608. https://doi.org/10.1080/15459624.2017.1309046

Copies of these documents are available for review BY APPOINTMENT Monday through Friday, from 8:00 a.m. to 4:30 p.m., at the Standards Board's office located at 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833. Appointments can be scheduled via email at oshsb@dir.ca.gov or by calling (916) 274-5721.

ADDITIONAL DOCUMENTS INCORPORATED BY REFERENCE

None.

REVISED ECONOMIC IMPACT ANALYSIS/ASSESSMENT

The creation or elimination of jobs in the state.

The estimated impact of the proposed regulation on job creation is uncertain but potentially up to 90 full-time equivalent (FTE) positions in the first year. Although there is a potential for new jobs to be supported by the increase in annual spending on compliance equipment and services, it is uncertain

whether the new demand is absorbable within existing jobs or if new jobs will be created. Based on the SRIA estimates, the employment effect is up to 90 FTE positions in the first year.[18]

The incentives for innovation in products, materials, or processes.

Although there is likely to be an increased demand for compliance equipment and services, it is uncertain whether the new demand will be absorbed within existing businesses. Due to the uncertainty, the best point estimate of new businesses created is zero.

STANDARDIZED REGULATORY IMPACT ASSESSMENT (SRIA)

A SRIA was prepared in 2019 and revised in 2020.[19] The primary assumptions and methodological approaches used in this assessment are described in the SRIA. The SRIA estimates have been updated here to account for inflation and wage growth between 2017 and 2022. Inflation adjustments use the statewide Consumer Price Index annual averages for 2017 and 2022 from the Department of Industrial Relations' "Consumer Price Index Calculator."[20] Wage adjustments are based on the growth between 2017 and 2022 of the average wage for each impacted six-digit NAICS code using the Quarterly Census of Employment and Wages.[21] The adjustments are applied to the data underlying the SRIA tables using the formula:

$$Adjusted\ Value = Original\ Value * Adjustment\ Factor$$

where the Adjustment Factor is equal to one plus the growth rate in CPI or Wages, as appropriate.

Additionally, the SRIA estimates have been updated to reflect the most current version of the proposed regulatory text including revisions to the text that postdate the SRIA. In addition, several elements were not included in the SRIA estimates. Cost estimates for the compliance program, elevated blood lead level response plans, and commercial build-out costs for eating areas in General Industry have been added. Also, the effective date of some requirements of the proposed standards has been amended; costs for year one and ongoing years have been adjusted accordingly.

Finally, some estimates in the SRIA were given for the combined costs of the proposed regulations to the public and private sectors. The cost figures described below are for the private sector only.

---

[18] See SRIA Table 19, https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Economics/Documents/SRIA_DIR_Lead_Safety_Standards_Revised200830.pdf.

[19] Berkeley Economic Advising and Research, LLC. (BEAR), "Standardized Regulatory Impact Assessment: Revisions to Occupational Lead Standards," August 2020, https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Economics/Documents/SRIA_DIR_Lead_Safety_Standards_Revised200830.pdf

[20] Department of Industrial Relations, "Consumer Price Index Calculator," https://www.dir.ca.gov/oprl/CPI/CPICalculator/CpiCalculator.aspx. Note that the Department of Finance CPI projections were not used because the inflation adjustments applied to the SRIA data use observed actuals rather projected future values of CPI.

[21] Bureau of Labor Statistics, "Quarterly Census of Employment and Wages," https://www.bls.gov/cew/downloadable-data-files.htm

Assessing and determining the benefits and costs of the proposed regulation, expressed in monetary terms to the extent feasible and appropriate.

Benefits: Monetary Value of Costs Avoided

It is estimated that the monetary benefits of the regulation, due to avoided cases of lead-related illness and premature death, and the costs associated with them, would be $37.9 million at the end of year one of the proposed regulation. This value would increase each year, with annual benefits reaching $1.7 billion per year at the end of year 45 of the proposed regulation. The monetary value of benefits increases each year, because the effects of lead exposure are cumulative, so the longer the proposed regulation is in place, the more cases of lead-related illness and premature deaths are avoided each year. Benefit categories quantified in the SRIA include all-cause mortality, hypertension, non-fatal heart attack and depression/anxiety.

The estimate of monetary benefits represents only a fraction of the total potential benefits, as many of the other health benefits likely to accrue from the proposed regulation have not been quantified. Thus, the magnitude of benefits is likely underestimated here.

Compliance Costs for Private Sector Employers

As is standard for an economic impact assessment, cost estimates reflect only the proposed changes to the existing standard and do not represent the full cost of complying with existing requirements. Most of the compliance actions are present under the existing standard, and the primary change under the proposal pertains to exposure levels. The proposed regulation reduces the PEL from 50 µg/m^3 lead to 10 µg/m^3 lead, and the compliance cost for requirements tied to the PEL is estimated only for those employees who are exposed to airborne exposure levels between 10 µg/m^3 and 50 µg/m^3. The proposed regulation also reduces the AL from 30 µg/m^3 to 2 µg/m^3, and the compliance cost for requirements tied to the AL is estimated only for those employees who are exposed to airborne exposure levels between 2 µg/m^3 and 30 µg/m^3. In addition to employee exposure levels, some compliance actions are triggered when the employee performs a trigger task (under the Construction regulation) or presumed significant lead work (under the General Industry standard), as defined in the proposed regulation. The cost of complying with existing requirements, including for those employees exposed at levels at or above the existing PEL and AL, is not represented in this analysis.

The total direct compliance costs of the proposal to the private sector is estimated at $233.4 million in the initial year and $231.9 million ongoing. Breaking this down further, in Construction, the compliance costs to the private sector are estimated to be $120.3 million in the initial year of the proposed regulations, and $96.0 million per year ongoing. In General Industry, the compliance costs to the private sector are estimated to be $113.0 million in the initial year of the proposed regulations, and $135.9 million per year ongoing.

In Construction, the compliance category with the highest cost is expected to be medical surveillance, estimated at $76.3 million in the initial year, and $54.6 million per year ongoing. The cost of basic hygiene requirements is estimated to be $13.9 million in the initial year, and $13.8 million per year ongoing. Other compliance costs for Construction include air monitoring ($4.6 million in the initial year; $2.4 million per year ongoing); engineering controls ($7.0 million in the initial year; $7.5 million per year

ongoing); respiratory protection ($3.5 million in the initial year; $3.5 million per year ongoing); personal protective equipment ($1.7 million in the initial year; $1.7 million per year ongoing); advanced hygiene ($6.2 million in the initial year; $6.1 million per year ongoing); comprehensive training ($5.1 million in the initial year; $5.1 million per year ongoing); training for employees exposed below the action level ($0.3 million in the initial year; $0.3 million per year ongoing); compliance program ($1.0 million in the initial year; $0.2 million per year ongoing); elevated BLL response plan ($0.8 million in the initial year; $0.8 million per year ongoing); and MRP ($0 in the initial year; $0 per year ongoing).

In General Industry, the compliance category with the highest cost is expected to be advanced hygiene, estimated at $0 in the initial year, and $52.9 million per year ongoing. The cost of engineering controls is estimated to be $31.2 million in the initial year, and $34.8 million per year ongoing. Other compliance costs for General Industry include medical surveillance ($17.3 million in the initial year; $5.1 million per year ongoing); MRP ($23.6 million in the initial year; $0 per year ongoing); basic hygiene ($23.7 million in the initial year; $23.7 million per year ongoing); air monitoring ($3.2 million in the initial year; $1.8 million per year ongoing); respiratory protection ($1.1 million in the initial year; $1.1 million per year ongoing); personal protective equipment ($6.2 million in the initial year; $6.2 million per year ongoing); comprehensive training ($4.4 million in the initial year; $4.4 million per year ongoing); training for employees exposed below the action level ($0 in the initial year; $0 per year ongoing); compliance program ($1.0 million in the initial year; $0.4 million per year ongoing); and elevated BLL response plan ($1.3 million in the initial year; $1.3 million per year ongoing).

REASONABLE ALTERNATIVES TO THE PROPOSAL AND REASONS FOR REJECTING THOSE ALTERNATIVES

Alternative 1: More Stringent Regulatory Alternative.

Lower levels set for PEL (2 µg/m^3) and AL (0.5 µg/m^3)

One alternative considered was more stringent than the proposal. In this alternative, the PEL would be set at 2 µg/m^3, while the AL would be set at 0.5 µg/m^3, rather than at the proposed levels of 10 µg/m^3 and 2 µg/m^3, respectively.

The total compliance costs under this alternative are higher than the compliance costs under the proposed regulation because most employees under both Construction and General Industry are exposed to less than 10 µg/m^3 lead, so a lower PEL and AL in the more stringent alternative would capture many additional employees and therefore increase costs. In Construction, costs increase from $128.9 million (year one) and $103.5 million (year two+) under the proposed regulation to $228.8 million (year one) and $178 million (year two+). In General Industry, costs increase from $129.9 million (year one) and $143.8 million (year two+) under the proposed regulation to $276.1 million (year one) and $264.6 million (year two+) under the more stringent alternative.

Reducing the permissible exposure limit to 2 µg/m^3 would generate all of the same benefits as reducing the permissible exposure limit to 10 µg/m^3, as well as further benefits from the additional reduction below 10 µg/m^3. The benefits of reduction below 10 µg/m^3 depend on the health risks of low-level lead exposure, and these remain unclear. While exposure to small amounts of lead was previously thought to present minimal health risk, recent evidence suggests that even low-level lead exposure may increase the risk of cardiovascular disease mortality. While this new finding suggests substantial benefits would

result from the additional reduction in exposure, most studies do not attempt to quantify the magnitude of health benefits from reductions in exposure at these levels.

The costs of this alternative are significantly higher than the proposal, while the amount of increase in benefits is not known. For these reasons, adopting this more stringent alternative is rejected.

Alternative 2: Less Stringent Regulatory Alternative.

Reduce frequency of blood lead level testing for Construction

A second alternative considered was less stringent than the proposal. In this alternative, Construction employers would be required to provide employees exposed at > 500 µg/m^3 with a BLL test every two months, after the first year of the regulation, rather than the proposed requirement of a BLL test every month.

The less stringent regulatory alternative would reduce the BLL testing requirements for Construction employees exposed at levels above 500 µg/m^3 from a BLL test every month, to a BLL test every two months, after the first year of the regulation.

As medical surveillance is the main source of costs of the proposed regulation to the Construction sector, reducing the testing interval would decrease compliance costs substantially for Construction. This alternative has no effect on General Industry costs, nor compliance costs for Construction in year one of the regulation. Overall compliance costs under the less stringent alternative for years two+ would be $223.8 million annually, compared with $247.3 million annually for the proposal.

This alternative would likely result in undetected BLL rises among the employees most highly exposed to lead. As such, it would be significantly less protective than the proposal. Undetected increases in employees' BLLs would likely result in additional cases of adverse health outcomes, including hypertension, cardiovascular disease, nervous system and neurobehavioral effects and impaired kidney function. As a result, the benefits generated in the form of avoided costs associated with these diseases would be reduced relative to the baseline. While it is not possible to quantify the magnitude of additional cases of adverse health outcomes and the resulting reduction in monetary benefits, it could be substantial. Therefore, adopting this less stringent alternative is rejected.

DETERMINATION OF MANDATE

The Board has determined that this regulatory action will result in a mandate that affects local agencies or school districts. However, the Board finds that these costs are not reimbursable. The local government expenditures required under these proposed regulations are not reimbursable by the State for reasons other than those listed in section 17556 of the Government Code. These regulations impose requirements that apply generally to all individuals and entities in the state; they do not impose any requirements unique to local governments. [*County of Los Angeles v. State of California* (1987) 43 Cal.3d 46, 56-58]. Therefore, this regulatory action does not impose a reimbursable mandate.

ALTERNATIVES DETERMINATION

The Board invited interested persons to present statements or arguments with respect to alternatives to the proposed standards. No alternative considered by the Board would be more effective in carrying out the purpose for which the action is proposed or would be as effective as and less burdensome to affected private persons than the adopted action, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law. Board staff were unable to come up with any alternatives or no alternatives were proposed by the public that would have the same desired regulatory effect.