

This is a draft of possible amendments to the existing regulation in the General Industry Safety Orders regarding exposure to lead. This draft is for discussion purposes only, and is not a rulemaking proposal.

§5198. Lead.

(a) Scope and Application.

- (1) This section applies to all occupational exposure to lead, except as provided in paragraph (a)(2).
- (2) This section does not apply to the construction industry or to agricultural operations.

(b) Definitions.

For purposes of this section, the definitions in section 5161 do not apply to the terms used throughout this section.

Action Level. Employee exposure, without regard to the use of respirators, to an airborne lead at an 8-hour time-weighted average concentration of 230 micrograms per cubic meter of air (230µg/M3) calculated as an 8-hour time-weighted average (TWA).

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

Blood lead level. The concentration of lead measured in whole blood, expressed as micrograms per deciliter (µg/dl) of whole blood.

Chief. The Chief of the Division of Occupational Safety and Health, P.O. Box 420603, San Francisco, California 94142.

Director. The Director, National Institute for Occupational Safety and Health (NIOSH), U. S. Department of Health and Human Services, or designee.

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

Threshold amount of lead work.

(1) Altering or disturbing material that:

(A) Is known to contain lead at a concentration equal to or greater than 0.5% by weight, as a result of material testing, or as content listed in a safety data sheet or similar specification sheet; or

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(B) Is reasonably anticipated to contain lead at a concentration equal to or greater than 0.5% by weight. Such materials include, but are not limited to, materials purchased as scrap lead, lead solder, lead bullet fragments and dust, lead sheeting, lead cable housing, and lead billets.

(2) Torch cutting any scrap metal.

Exceptions: Altering or disturbing material, as specified in this subsection, or torch cutting any scrap metal does not constitute a threshold amount of lead work if:

(1) the combined duration of altering, disturbing, and torch cutting is fewer than 8 hours during any 30-day period; or

(2) a hazard survey has been conducted which includes, but is not limited to, the following: a negative initial determination conducted in accordance with subsection (d); a determination that blood lead testing, made available as appropriate to fully assess employee lead exposures, indicates a record of employee blood lead levels maintained below 10 µg/dl; and any recommended lead exposure control methods deemed appropriate. The person supervising, directing, or evaluating the monitoring, and recommending any control methods, shall be competent in industrial hygiene practice, such as a Certified Industrial Hygienist as described in the Business and Professions Code, Section 20700.

(c) Permissible Exposure Limit (PEL).

(1) The employer shall assure that no employee is exposed to lead at an 8-hour time-weighted average concentration greater than ~~1050~~ micrograms per cubic meter of air (~~1050~~µg/M³).

(2) If an employee is exposed to lead for more than 8 hours in any work day, the permissible exposure limit for that day, as a time-weighted average concentration (TWA), shall be reduced according to the following formula:

Maximum permissible limit (in µg/M³) = ~~80400~~/ hours worked in the day.

(3) When respirators are used to supplement engineering and work practice controls to comply with the PEL, employee exposure, for the purpose of determining whether the employer has complied with the PEL, may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn. Those periods may be averaged with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

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(d) Exposure Monitoring.

(1) General.

(A) For the purposes of subsection (d), employee exposure is that exposure which would occur if the employee were not using a respirator.

(B) With the exception of monitoring under subsection (d)(3), the employer shall collect ~~full shift (for at least 7 continuous hours)~~ personal samples representative of a full shift including at least one sample for each shift for each job classification in each work area.

(C) Full shift personal samples shall be representative of the monitored employee's regular, daily exposure to lead.

(2) Initial Determination. Each employer who has a workplace or work operation covered by this standard shall determine if any employee may be exposed to lead at or above the action level.

(3) Basis of Initial Determination.

(A) The employer shall monitor employee exposures and shall base initial determinations on the employee exposure monitoring results and any of the following, relevant considerations:

1. Any information, observations, or calculations which would indicate employee exposure to lead;
2. Any previous measurements of airborne lead; and
3. Any employee complaints of symptoms which may be attributable to exposure to lead.

(B) Monitoring for the initial determination may be limited to a representative sample of the exposed employees who the employer reasonably believes are exposed to the greatest concentrations of airborne lead in the workplace.

~~(C) Measurements of airborne lead made in the preceding 12 months may be used to satisfy the requirement to monitor under subsection (d)(3)(A) if sampling and analytical methods used meet the accuracy and confidence levels of subsection (d)(9).~~

(4) Positive Initial Determination and Initial Monitoring.

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(A) Where a determination conducted under subsections (d)(2) and (d)(3) shows the possibility of any employee exposure at or above the action level, the employer shall conduct monitoring which is representative of the exposure for each employee in the workplace who is exposed to lead.

(B) Measurements of airborne lead made in the preceding 12 months may be used to satisfy this requirement if the sampling and analytical methods used meet the accuracy and confidence levels of subsection (d)(9).

(5) Negative Initial Determination. Where a determination conducted under subsections (d)(2) and (d)(3) is made that no employee is exposed to concentrations of airborne lead at or above the action level, the employer shall make a written record of such determination. The record shall include at least the information specified in subsection (d)(3) and shall also include the date of determination, location within the worksite, and the name and other unique identifier (such as date of birth, employee identification number, or social security number)- of each employee monitored.

(6) Frequency.

(A) If initial monitoring, or monitoring conducted in accordance with subsections (d)(6)(B) or (C), or (d)(7), reveals an employee's exposure to be above 50 $\mu\text{g}/\text{M}^3$ the permissible exposure limit, the employer shall repeat monitoring quarterly until at least two consecutive measurements, taken at least 7 days apart, are at or below 50 $\mu\text{g}/\text{M}^3$ the permissible exposure limit. Subsequent monitoring for that employee shall conform with the applicable provisions of subsections (d)(6)(B) or (C) or (D).

(B) If initial monitoring, or monitoring conducted in accordance with subsections (d)(6)(A) or (C), or (d)(7), reveals an employee's exposure to be at or above 30 $\mu\text{g}/\text{M}^3$ the action level but no greater than 50 $\mu\text{g}/\text{M}^3$ the permissible exposure limit, the employer shall repeat monitoring at least every 6 months. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below 30 $\mu\text{g}/\text{M}^3$ the action level at which time subsequent monitoring for that employee shall conform with the applicable provisions of (d)(6)(C) or (D) ~~the employer may discontinue monitoring for that employee except as otherwise provided by subsection (d)(7).~~

(C) If initial monitoring, or monitoring conducted in accordance with subsections (d)(6)(A) or (B), or (d)(7), reveals an employee's exposure to be at or above the action level (2 $\mu\text{g}/\text{M}^3$) but no greater than 30 $\mu\text{g}/\text{M}^3$, the employer shall repeat monitoring at least every 12 months. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days

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apart, are below the action level ($2 \mu\text{g}/\text{M}^3$) at which time the employer may discontinue monitoring for that employee except as otherwise provided by subsection (d)(7).

(DE) Whenever initial monitoring or monitoring conducted in accordance with subsections (d)(6) (A) or (d)(7), reveals an employee's exposure to be below action level, further measurements are not required except as otherwise provided by subsection (d)(7).

(7) Additional Monitoring. Whenever there has been a production, process, control or personnel change which may result in new or additional exposure to lead, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to lead, additional monitoring in accordance with this subsection shall be conducted.

(8) Employee Notification.

(A) Within 5 working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposure.

(B) Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

(9) Accuracy of Measurement. The employer shall use a method of monitoring and analysis which has an accuracy (to a confidence level of 95%) within plus or minus 20 percent at concentrations of airborne lead equal to or greater than $230 \mu\text{g}/\text{M}^3$.

(e) Compliance.

(1) Methods.

(A) Except as specified in subsections (e)(1)(B) wWhere any employee is exposed to lead above the permissible exposure limit, for more than 30 days per year, the employer shall implement engineering, and work practice controls, including, and administrative controls, to reduce and maintain employee exposure to lead at or below the permissible exposure limit except to the extent that the employer can demonstrate that such controls are not feasible. Where engineering, work practice, and administrative controls which can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit, they shall nonetheless be used by the employer to reduce exposures to the

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~~lowest feasible level. Small non-ferrous foundries (fewer than 20 employees), however, are only required to achieve $15-75 \mu\text{g}/\text{M}^3$ by such controls.~~

(B) Where a separate engineering control air limit (SECAL) has been specified for particular processes (See Table 1), the employer shall implement engineering and work practice controls to reduce and maintain employee exposure at or below the SECAL, except to the extent that the employer can demonstrate that such controls are not feasible.

TABLE 1

Implementation Schedule for Separate Engineering Control Airborne Limits (SECALs) for Selected Processes

<u>Industry</u>	<u>Process</u>	<u>SECAL and Implementation Dates</u>
<u>Lead Acid Battery Manufacturing*</u>	<u>Oxide production; Paste mixing; Grid pasting and parting; and Battery assembly.</u>	<u>$50 \mu\text{g}/\text{M}^3$ at the effective date, then $40 \mu\text{g}/\text{M}^3$ at five years from the effective date</u>
	<u>Grid production and small parts casting; and Plate formation</u>	<u>$50 \mu\text{g}/\text{M}^3$ at the effective date, then $30 \mu\text{g}/\text{M}^3$ at five years from the effective date</u>

* Processes in this industry that are not specified in this table must achieve the PEL as specified in (e)(1)(A).

~~(CB) Wherever engineering and work practice controls are required and where controls which can be instituted in accordance with subsection (e)(1)(A) are not sufficient to reduce and maintain employee exposure to or below the permissible exposure limit or, where applicable, the SECAL, the employer nonetheless shall implement such controls to reduce exposures to the lowest levels feasible. The employer shall supplement these controls with respiratory protection, in conformance with subsection (f), to control employee exposure within the permissible exposure limit.~~

~~(C) Where any employee is exposed to lead above the permissible exposure limit, but for 30 days or less per year, the employer shall implement feasible engineering controls to reduce exposure to $150 \mu\text{g}/\text{M}^3$, but thereafter may implement any combination of engineering, work practice, administrative and respiratory controls to reduce and maintain exposure to lead to or below the permissible exposure limit.~~

(2) Compliance Program.

(A) Where applicable, each employer shall establish and implement an effective written compliance program to reduce exposures to or below the permissible exposure limit or, where applicable, the

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~~SECALS, and interim levels solely by means of engineering and work practice controls in accordance, where applicable, with the SECAL implementation schedule in subsection (e)(1).~~

(B) Written plans for these compliance programs shall include at least the following:

1. A description of each operation in which lead is emitted; e.g. machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices;
2. A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to lead;
3. A report of the engineering and work practice controls considered but not implemented, and how they were determined to not be feasible~~technology considered in meeting the permissible exposure limit ;~~
4. Air monitoring data which documents the source of lead emissions;
5. A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;
6. A work practice program which includes items required under subsections (g), (h), and (i);
7. An administrative control schedule required by subsection (e)(5), if applicable; and
8. Other relevant information.

(C) Written programs shall be submitted upon request to the Chief and the Director, and shall be available at the worksite for examination and copying by the Chief, the Director, and any affected employee or authorized employee representatives.

(D) Written programs shall be revised and documented as updated at least every 6 months to reflect the current status of the program.

(E) Where applicable, each employer shall establish and implement an effective written elevated blood lead level response plan designed to reduce and maintain employee blood lead levels below 10 µg/dl.

~~(3) [Reserved.]~~

(34) Mechanical Ventilation.

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(A) When ventilation is used to control exposure, measurements which demonstrate the effectiveness of the system in controlling exposure, such as capture velocity, duct velocity, or static pressure shall be made at least every 3 months. Measurements of the system's effectiveness in controlling exposure shall be made within 5 days of any change in production, process, or control which might result in a change in employee exposure to lead.

(B) Recirculation of Air. If air from exhaust ventilation is recirculated into the workplace, the employer shall assure that:

1. The exhaust has a high efficiency filter with a reliable back-up filter; and
2. Controls are installed, operating, and maintained which monitor the concentration of lead in the return air and which, in case of failure, automatically prevent the recirculation of exhaust air.

(45) Administrative Controls. If administrative controls are used as a means of reducing employees' TWA exposure to lead, the employer shall establish and implement a job rotation schedule which includes:

(A) Name and other unique identifier (such as date of birth, employee or identification number, or social security number) of each affected employee;

(B) Duration and exposure levels at each job or work station where such affected employee is located; and

(C) Any other information which may be useful in assessing the reliability of administrative controls to reduce exposure to lead.

(f) Respiratory Protection.

(1) General. For employees who are required to use respirators by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(A) Work operations for which engineering and work practice controls are not sufficient to reduce exposures to or below the permissible exposure limit;

(B) Periods necessary to implement engineering or work practice controls.

(C) Periods when an employee requests a respirator.

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(2) Respirator program.

(A) The employer must implement a respiratory protection program in accordance with section 5144(~~be~~) (~~except (d)(1)(C))~~ through (m), (~~except (d)(1)(C))~~).

(B) If an employee exhibits breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination in accordance with subsection (j)(3)(A)3. to determine whether or not the employee can use a respirator while performing the required duty.

(3) Respirator Selection.

(A) The employer shall select, and provide to employees, the appropriate respirators specified in Section 5144(d)(3)(A)1.

(B) The employer shall provide a powered, air-purifying respirator in lieu of the respirator specified in subsection (f)(3)(A) whenever:

1. An employee chooses to use this type of respirator; and
2. This respirator will provide adequate protection to the employee.

(C) The employer shall provide employees with full facepiece respirators instead of half mask respirators for protection against lead aerosols that cause eye or skin irritation at the use concentrations.

(D) The employer shall provide HEPA filters for powered air-purifying respirators and N-100, R-100, or P-100 filters for non-powered air-purifying respirators.

(g) Protective Work Clothing and Equipment.

(1) ~~Required Personal Protective Equipment Provisions and Use.~~ If an employee is exposed to lead above the PEL, without regard to the use of respirators, or conducts a threshold amount of lead work or where the possibility of skin or eye irritation exists, the employer shall, in accordance with Article 10, provide at no cost to the employee, and assure that the employee uses, appropriate protective work clothing and equipment such as, but not limited to:

- (A) Coveralls or similar full-body work clothing;
- (B) Gloves, hats, and shoes or disposable shoe coverlets; and

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(C) Face shields, vented goggles, or other appropriate protective equipment ~~which complies with Article 10.~~

(2) Cleaning and Replacement.

(A) The employer shall provide the protective clothing required in subsection (g)(1), in a clean and dry condition at least weekly, and daily to employees whose exposure levels without regard to respirator use are over ~~30~~150 $\mu\text{g}/\text{M}^3$ of lead on an 8-hour time-weighted average basis.

(B) The employer shall provide for the cleaning, laundering, or disposal of protective clothing and equipment required by subsections (g)(1).

(C) The employer shall repair or replace required protective clothing and equipment as needed to maintain their effectiveness.

(D) The employer shall assure 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).

(E) The employer shall assure that contaminated protective clothing which is to be cleaned, laundered, or disposed of, is placed in a closed container in the change room which prevents dispersion of lead outside the container.

(F) The employer shall inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

(G) Labeling of contaminated protective clothing and equipment.

~~1-~~ The employer shall ensure that labels of bags or containers of contaminated protective clothing and equipment include the following information:

DANGER: CLOTHING AND EQUIPMENT CONTAMINATED WITH LEAD. MAY DAMAGE FERTILITY OR THE UNBORN CHILD. CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM. DO NOT EAT, DRINK OR SMOKE WHEN HANDLING. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.

~~2. Prior to June 1, 2015, employers may include the following information on bags or containers of contaminated protective clothing and equipment in lieu of the labeling requirements in subsections (g)(2)(G)1. of this section:~~

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~~CAUTION: CLOTHING CONTAMINATED WITH LEAD. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.~~

(H) The employer shall prohibit the removal of lead from protective clothing or equipment by blowing, shaking, or any other means which disperses lead into the air.

Note: A downdraft booth, "air shower," or other appropriate means for the removal of lead dust may be used provided employee exposure to airborne lead dust is prevented during such use.

(h) Housekeeping.

(1) Surfaces. All surfaces shall be maintained as free as practicable of accumulations of lead.

(2) Cleaning Methods~~Floors.~~

(A) Floors and other surfaces where lead accumulates may not be cleaned by the use of compressed air.

(B) Clean-up of floors and other surfaces where lead accumulates shall, wherever possible, be accomplished by HEPA vacuuming or other methods that minimize the likelihood of lead becoming airborne.

~~(B) Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective.~~

(3) Vacuuming. Where vacuuming methods are selected, the vacuums shall be used and emptied in a manner which minimizes the re-entry of lead into the workplace. Those vacuum systems which exhaust air into the workplace shall be equipped with air filters at least as effective as high efficiency particulate air (HEPA) filters. HEPAHigh efficiency particulate air filter means 99.97% efficient against 0.3 micrometer size particles.

(i) Hygiene Facilities and Practices.

(1) General. The employer shall assure that in areas where employees have occupational lead exposure~~are exposed to lead above the PEL, without regard to the use of respirators~~, food or beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, ~~except in change rooms, lunchrooms, and showers required under subsections (i)(2) (i)(4).~~

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(A) The employer shall provide an adequate number of washing facilities (lavatories), in compliance with the provisions of Section 3366.

(B) The employer shall ensure that employees who alter or disturb lead materials wash their hands and face prior to eating, drinking, smoking or applying cosmetics, and wash all exposed skin at the end of their shift.

Note: For the purposes of subsection(i)(1)(B), 'lead materials' is defined as used in the definition of 'Threshold amount of lead work' in (b).

(C) The employer shall make available, where necessary to effect removal, special cleansing compounds designed specifically for the removal of lead from skin surfaces.

Exception to subsection (i)(1): The employer may provide for drinking water if the employer ensures that drinking water is consumed in a manner which does not allow exposure to lead.

(2) Change Rooms.

(A) The employer shall provide clean change rooms for employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators.

(B) The employer shall assure that change rooms are equipped with separate storage facilities for protective work clothing and equipment and for street clothes which prevent cross contamination.

Exception: Separate storage facilities are not required where clean protective clothing and equipment are provided on a daily basis.

(3) Showers.

(A) The employer shall assure 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.

(B) The employer shall provide shower facilities in accordance with Section 3366(f).

(C) The employer shall assure that employees who are required to shower pursuant to subsection (i)(3)(A) do not leave the work place wearing any clothing or equipment worn during the work shift.

(4) Lunchrooms.

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(A) The employer shall provide readily accessible lunchroom facilities, in accordance with Section 3368, for employees who work in areas where their exposure to airborne lead is above the PEL, without regard to the use of respirators.

(B) Lunchroom facilities shall have a temperature controlled, positive pressure, filtered air supply except that such facilities need not be under positive pressure if workplace operations produce no contamination by airborne lead.

~~(Title 24, Part 2-1724(c)(1)(D)(2).)~~

~~(C) The employer shall assure that employees who work in areas where their exposure to airborne lead is above the PEL, without regard to respirator use, wash their hands and face prior to eating, drinking, smoking or applying cosmetics.~~

~~(C) The employer shall assure that employees do not enter lunchroom facilities with protective work clothing or equipment unless surface lead dust has been removed by HEPA vacuuming, downdraft booth, or other cleaning method.~~

(5) Cleaning of Hygiene Facilities. The employer shall determine, establish, and implement effective written methods and schedules to maintain the cleanliness of drinking and washing facilities, change rooms, showers, and lunchrooms required by this Section.

~~Lavatories. The employer shall provide an adequate number of lavatory facilities which comply with Section 3366.~~

(j) Medical Surveillance.

(1) General.

(A) The employer shall institute a medical surveillance program for the following all employees:

1. For employees who are or may be exposed at or above the action level for more than 30 days per year; and

2. For employees who conduct a threshold amount of lead work.

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Exception: The employer need not institute a medical surveillance program for an employee included in subsection (j)(1)(A)1. if the employee's exposure is at or above the action level for a total number of days fewer than 10 per year.

(B) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician.

(C) The employer shall provide the required medical surveillance including multiple physician review under subsection (j)(3)(C) without cost to employees and at a reasonable time and place.

(D)The employer shall provide complete employee demographic information to the licensed healthcare provider who performs any services covered under subsections (j)(2) and (j)(3). The employer shall instruct the healthcare provider ordering blood lead tests to provide the analyzing laboratory with the employee demographic information. Demographic information includes employer name, employer address and phone number, employee name and date of birth, employee address, and employee phone number.

(2) Blood Lead Testing ~~Biological Monitoring.~~

(A) Blood Lead Testing and Zinc Protoporphyrin Sampling and Analysis. The employer shall make available ~~biological monitoring in the form of blood lead testingsampling and analysis for lead and zinc protoporphyrin (ZPP) levels to each employee covered under subsection (j)(1)(A) on the following schedule:~~

1. ~~Blood lead testing~~ Prior to assignment to work known to be covered by (j)(1)(A) or, where applicable, as soon as possible when assigned work is first determined to be covered by (j)(1)(A). And then at At least every two months for the first 6 months after initial placement. In addition every two months for the first six months after a change in task resulting in, or likely to result in, higher lead exposure. Then continuing at least every 6 months to each employee covered under subsection (j)(1)(A); and

2. ~~Blood lead testing~~ At least every two months for each employee whose last blood sampling and analysis indicated a blood lead level was at or above 1040 µg/dl100 g but below 20 µg/dl of whole blood. This frequency shall continue until two consecutive blood lead levels samples and analysis, taken at least 30 days apart, are indicate a blood lead level below 1040 µg/dl100 g of whole blood; and

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3. At least monthly for each employee whose last blood lead level was at or above 20 µg/dL of whole blood, and during the removal period of each employee removed from exposure to lead due to an elevated blood lead level.

4. ZPP determinations shall be made ~~available as soon as possible but no later than the first biological monitoring scheduled for an employee.~~

~~(B) Follow-Up Blood Sampling Tests.~~ Whenever the results of a blood lead level test indicate that an employee's blood lead level exceeds the numerical criterion for medical removal under subsection (k)(1), the employer shall provide a second (follow-up) blood sampling test within two weeks after the employer receives the results of the first blood sampling test.

~~(B C) Accuracy of Blood Lead TestingLevel Sampling and Analysis.~~ Blood lead ~~testingsampling and analysis~~ provided pursuant to this subsection shall include analysis by a laboratory which meets Federal OSHA accuracy requirements in blood lead proficiency testing (PT) and is on the OSHA List of Laboratories Approved for Blood Lead Analysis. ~~have an accuracy (to a confidence level of 95 percent) within plus or minus 15 percent or 6-100ml, whichever is greater, and shall be conducted by a laboratory licensed by the Center for Disease Control (CDC), U.S. Department of Health and Human Services, or which has received a satisfactory grade in blood lead proficiency testing from CDC in the prior 12 months.~~

~~(C D) Employee Notification.~~ Within five working days after the receipt of blood lead test biological monitoring results, the employer shall notify in writing each employee ~~whose blood lead level exceeds 40 µg/100 g:~~

1. Of that employee's blood lead level; ~~and~~

2. That the standard requires the employer to make medical examinations and consultations available, as soon as possible, upon notification by an employee either that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employee desires medical advice concerning the effects of current or past exposure to lead on the employee's ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fit test or during use; and

~~32.~~ That the standard requires temporary medical removal with Medical Removal Protection benefits when an employee's blood lead level is at or above 30 µg/dl, when the last two monthly blood lead levels are at or above 20 µg/dl, and also when the average of the results of all blood

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~~lead tests conducted in the last 6 months is at or above 20µg/dl as provided in exceeds the numerical criterion for medical removal under subsection (k)(1).~~

(3) Medical Examinations and Consultations.

(A) Frequency. The employer shall make available medical examinations and consultations to each employee covered under ~~subsection 5198(j)(1)(A)~~ subsection (j)(1)(A) on the following schedule:

1. At least annually for each employee for whom a blood ~~lead sampling~~ test conducted at any time during the preceding 12 months indicated a blood lead level at or above ~~2040 µg/dl~~ 20 µg/dl;

2. Prior to assignment for each employee being assigned for the first time to an area in which 8-hour time-weighted concentrations of airborne lead are at or above the action level;

3. Prior to assignment, for each employee who for the first time conducts a threshold amount of lead work;

~~43.~~ As soon as possible, upon notification by an employee either that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employee desires medical advice concerning the effects of current or past exposure to lead on the employee's ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during use; and

~~54.~~ As soon as possible, and then as medically appropriate for each employee removed from exposure to lead due to elevated blood lead levels in compliance with the provisions of subsection (k)(1), a risk of sustaining material impairment to health, or otherwise limited pursuant to a final medical determination in compliance with the provisions of subsection (k)(2).

(B) Content. The content of medical examinations made available pursuant to subsections (j)(3)(A)4-5. shall be determined by an examining physician and, if requested by an employee, the exam shall include pregnancy testing or laboratory evaluation of male fertility. Medical examinations made available pursuant to subsections (j)(3)(A)1-3.2 shall include the following elements:

1. A detailed work history and a medical history, with particular attention to past lead exposure (occupational and non-occupational), personal habits (smoking, hygiene), and past gastrointestinal, hematologic, renal, cardiovascular, reproductive and neurological problems;

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2. A thorough physical examination, with particular attention to teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems. Pulmonary status should be evaluated if respiratory protection will be used;
3. A blood pressure measurement;
4. A blood sample and analysis which determines:
 - a. Blood lead level;
 - b. Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology;
 - c. Zinc protoporphyrin for each employee whose last blood lead level was at or above 20 µg/dl;
 - d. Blood urea nitrogen; and
 - e. Serum creatinine.
5. A routine urinalysis with microscopic examination; and
6. Any laboratory or other test relevant to lead exposure which the examining physician deems necessary by sound medical practice.

~~The content of medical examinations made available pursuant to subsections (j)(3)(A)3-4 shall be determined by an examining physician and, if requested by an employee, shall include pregnancy testing or laboratory evaluation of male fertility.~~

(C) Multiple Physician Review Mechanism.

1. If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee under this section, the employee may designate a second physician:
 - a. To review any findings, determinations or recommendations of the initial physician; and
 - b. To conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

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2. The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation pursuant to this section. The employer may condition participation in, and payment for, the multiple physician review mechanism ~~upon by requiring the employee doing the following~~ within fifteen (15) days after receipt from the date of the foregoing notification notice or receipt of the initial physician's written opinion, whichever is later;

a. ~~The employee informing to inform~~ the employer that the employee intends to seek a second medical opinion, and

b. ~~The employee initiating to initiate~~ steps to make an appointment with a second physician.

3. If the findings, determinations or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

4. If the two physicians are unable to resolve their disagreement quickly, the employer and employee through their respective physicians shall designate a third physician:

a. ~~To~~ review any findings, determinations, or recommendations of the prior physicians; and

b. ~~To~~ conduct such examinations, consultations, laboratory tests, and discussions with the prior physicians ~~as which~~ the third physician deems necessary to resolve the disagreement of the prior physicians.

5. The employer shall act consistent with the findings, determinations and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

(D) Alternate Physician Determination Mechanisms. The employer and an employee or authorized employee representative may agree upon the use of any expeditious alternate physician determination mechanism in lieu of the multiple physician review mechanism provided by this section so long as the alternate mechanism otherwise satisfies the requirements contained in this section.

(4) Information Provided to Examining and Consulting Physicians:

(A) The employer shall provide the following information to an initial physician conducting a medical examination or consultation under the provisions of this section:

1. A copy of this regulation and its appendices;

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2. A description of the affected employee's duties as they relate to the employee's exposure;
3. The employee's exposure level or anticipated exposure level to lead and to any other toxic substance (if applicable);
4. A description of any personal protective equipment used or to be used;
5. Prior blood lead test results~~determinations~~; and
6. All prior written medical opinions concerning the employee in the employer's possession or control.

(B) The employer shall provide the foregoing information to a second or third physician conducting a medical examination or consultation under this section upon request either by the second or third physician, or by the employee.

(5) Written Medical Opinions.

(A) The employer shall obtain and furnish the employee with a copy of a written medical report from each examining or consulting physician which contains the following information:

1. The physician's opinion as to whether the employee has any detected health-related medical condition which would place the employee's health, including the ability to procreate a healthy child, at increased risk of material impairment of the employee's health from exposure to lead.
2. Any recommended special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to lead.
3. Any recommended limitation upon the employee's use of respirators, including a determination of whether the employee can wear a powered air-purifying respirator if the physician determines that the employee cannot wear a negative pressure respirator; and
4. The results of the blood lead tests~~determinations~~.

(B) The employer shall instruct the examining physician to:

1. Not reveal either in the written opinion, or in any other means of communication with the employer, findings, including laboratory results, or diagnoses unrelated to the employee's occupational exposure to lead; and

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2. Advise the employee of any medical condition, occupational or non-occupational, which dictates further medical examination or treatment.

(6) Chelation.

(A) The employer shall assure that any person whom the employer ~~he~~ retains, employs, supervises, or controls does not engage in prophylactic chelation of any employee at any time.

(B) If therapeutic or diagnostic chelation is to be performed by any person in subsection (j)(6)(A), the employer shall assure that it be done under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring and that the employee is notified in writing prior to its occurrence.

(k) Medical Removal Protection.

(1) Temporary Removal Due to Elevated Blood Lead Levels.

The employer shall remove an employee from work having an exposure to lead at or above the action level, and from work altering or disturbing any material containing lead at a concentration equal to or greater than 0.5% by weight, on each occasion that either: the average of the last three

(A) The last blood lead testsampling tests conducted pursuant to this section (or the average of all blood sampling tests conducted over the previous six (6) months, whichever is longer) indicates that the employee's blood lead level is at or above 30 50 ug/dl100 g of whole blood; or provided, however, that an employee need not be removed if the last blood sampling test indicates a blood lead level below 40 ug/100 g of whole blood.

(B) The last two blood lead test results are at or above 20µg/dl of whole blood; or

(C) The average of the results of all blood lead tests conducted in the last 6 months is at or above 20µg/dl of whole blood.

(2) Temporary Removal Due to a Final Medical Determination.

(A) The employer shall remove an employee from work having an exposure to lead at or above the action level, and from work altering or disturbing any material containing lead at a concentration equal to or greater than 0.5% by weight, on each occasion that a final medical determination results in a medical finding, determination, or opinion that the employee has a detected

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health-related medical condition which places the employee's health, including the ability to procreate a healthy child, at increased risk of material impairment to health from exposure to lead.

(B) Note: For the purposes of this section, the phrase "final medical determination" shall mean the written medical opinion on the employee's health status by the examining physician or, where relevant, the outcome of the multiple physician review mechanism or alternate physician determination mechanism used pursuant to the medical surveillance provisions of this section.

(CB) Where a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to lead, the employer shall implement and act consistent with the recommendation.

(3) Return of the Employee to Former Job Status.

(A) The employer shall return an employee to his or her former job status:

1. For an employee removed under the provisions of subsection (k)(1) due to a blood lead level at or above 50 µg/100 g when two consecutive blood lead sampling tests, taken at least 30 days apart, both indicate that the employee's blood lead level is at or below 15 40 µg/dl 100 g of whole blood; and
2. For an employee removed due to a final medical determination, when a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected health-related medical condition which places the employee's health, including the ability to procreate a healthy child, at increased risk of material impairment to health from exposure to lead.

(B) For the purposes of this section, the requirement that an employer return an employee to his or her former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.

(4) Removal of Other Employee Special Protective Measures or Limitations.

The employer shall remove any limitations placed on an employee or end any special protective measures provided to an employee pursuant to a final medical determination when a subsequent final medical determination indicates that the limitations or special protective measures are no longer necessary.

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(5) Employer Options Pending a Final Medical Determination. Where the multiple physician review mechanism, or alternate ~~physician~~ ~~medical~~ determination mechanism used pursuant to the medical surveillance provisions of this section, has not yet resulted in a final medical determination with respect to an employee, the employer shall act as follows:

(A) Removal. The employer may remove the employee from exposure to lead, provide special protective measures to the employee, or place limitations upon the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status.

(B) Return. The employer may return the employee to his or her former job status, end any special protective measures provided to the employee, and remove any limitations placed upon the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status.

Exceptions:

1. If the initial removal, special protection, or limitation of the employee resulted from a final medical determination which differed from the findings, determinations, or recommendations of the initial physician.
2. If the employee has been on removal status for the preceding eighteen months due to an elevated blood lead level, the employer shall await a final medical determination.

(6) Medical Removal Protection Benefits.

(A) Provision of Medical Removal Protection Benefits. The employer shall provide to an employee up to eighteen (18) months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this section.

(B) Definition of Medical Removal Protection Benefits. For the purposes of this section, the requirement that an employer provide medical removal protection benefits means that the employer shall maintain the ~~total normal~~ earnings, seniority and other employment rights and benefits of an employee, ~~including the employee's right to his or her former job status~~ as though the employee had not been ~~medically~~ removed from ~~the employee's job normal exposure to lead~~ or otherwise ~~medically~~ limited.

(C) Follow-Up Medical Surveillance During the Period of Employee Removal or Limitation. During the period of time that an employee is ~~medically~~ removed from ~~the employee's job normal exposure to lead~~

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or otherwise medically limited, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to this section.

(D) Worker's' Compensation Claims. If a removed employee files a claim for worker's' compensation payments for a lead-related disability, then the employer shall continue to provide medical removal protection benefits pending disposition of the claim. To the extent that an award is made to the employee for earnings lost during the period of removal, the employer's medical removal protection obligation shall be reduced by such amount. The employer shall receive no credit for worker's' compensation payments received by the employee for treatment related expenses.

(E) Other Credits. The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program, or receives income from employment with another employer made possible by virtue of the employee's removal.

(F) Employees Whose Blood Lead Levels Do Not Adequately Decline Within 18 Months of Removal.

The employer shall take the following measures with respect to any employee removed from exposure to lead due to an elevated blood lead level whose blood lead level has not declined within the past eighteen (18) months of removal so that the employee has been returned to his or her former job status.

1. The employer shall make available to the employee a medical examination pursuant to this section to obtain a final medical determination with respect to the employee.
2. The employer shall assure that the final medical determination obtained indicates whether or not the employee may be returned to his or her former job status, and if not, what steps should be taken to protect the employee's health.
3. Where the final medical determination has not yet been obtained, or once obtained indicates that the employee may not yet be returned to his or her former job status, the employer shall continue to provide medical removal protection benefits to the employee until either the employee is returned to former job status, or a final medical determination is made that the employee is incapable of ever safely returning to his or her former job status.
4. Where the employer acts pursuant to a final medical determination which permits the return of the employee to his or her former job status despite what would otherwise be an unacceptable blood lead level, later questions concerning removing the employee again shall be decided by a final medical

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determination. The employer need not automatically remove such an employee pursuant to the blood lead level removal criteria provided by this section.

(G) Voluntary Removal or Restriction of an Employee. Where an employer, although not required by this section to do so, removes an employee from exposure to lead or otherwise places limitations on an employee due to the effects of lead exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by subsection (k)(65)(BA).

(I) Employee Information and Training.

(1) Training Program.

(A) Each employer who has a workplace which falls within the scope of this section ~~in which there is a potential exposure to airborne lead at any level shall~~ inform employees with occupational lead exposure of the content of Appendices A and B of this regulation.

(B) For the following employees, the employer shall institute a training program and ensure their participation:

1. Employees who are exposed to lead at or above the action level;
2. Employees for whom the possibility exists of skin or eye irritation from exposure to lead; and
3. Employees who conduct a threshold amount of lead work.

~~The employer shall institute a training program for and assure the participation of all employees who are subject to exposure to lead at or above the action level or for whom the possibility exists of skin or eye irritation from exposure to lead.~~

(C) The employer shall ensure that the training, and any training materials used, are appropriate to the educational level, literacy, and language of employees.

~~(C)(D) For each employee covered by subsection (I)(1)(B) t~~The employer shall provide initial training covering all content in subsection (I)(1)(E) prior to the time of initial job assignment for those employees subsequently covered by this paragraph; training as needed to correct employee work practices, or an elevated blood lead level in accordance with subsection (e)(2)(E); and as needed to ensure that all content in subsection (I)(1)(E) is covered at least annually.

~~(D) The training program shall be repeated at least annually for each employee covered by subsection (I)(1)(C).~~

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(E) The employer shall assure that effective training on the following topics is provided for each employee covered by subsection (I)(1)(BC) is informed of the following:

1. The content of this standard and its appendices;
2. The specific nature of the operations which could result in exposure to lead at or above the action level, or which constitute a threshold amount of lead work;
3. The importance of effective hygiene practices, including hand washing, and how to effectively remove lead contamination;
4. The purpose, proper selection, fitting, use, and limitations of respirators;
5. The purpose and a description of the medical surveillance program, and the medical removal protection program;
6. The including information concerning the adverse health effects of associated with excessive exposure to lead (with particular attention to cardiovascular effects), including low-level chronic exposure, and the routes of exposure;
7. The damage caused to both male and female reproductive health by low-level lead exposure, damage associated with blood lead levels under 5 ug/dl. And the employer's duty, as required by subsection (j)(3), to make available upon request medical examinations and consultations to each employee desiring medical advice concerning the employee's ability to procreate a healthy child.
8. The possibility that lead contamination brought into personal vehicles and into the home on clothes, shoes, and body will endanger the health of a worker's household members, especially young children and pregnant women;
9. That, when employees are exposed above the PEL, the employer must provide shower facilities and ensure that employees shower at the end of the work shift in accordance with subsection (i)(1). And that, irrespective of airborne exposure level, it is recommended that employees shower immediately upon returning home from work to minimize take-home lead exposure.
10. The engineering controls and work practices associated with the employee's job assignment;
11. The contents of any compliance plan in effect;

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~~127. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies, the body and should not be used at all except under the direction of a licensed physician; and.~~

13. The employee's right of access to their exposure and medical records under Section 3204.

(2) Access to Information and Training Materials.

(A) The employer shall make a copy of this standard and its appendices readily available to all affected employees including employees exposed below the action level.

(B) The employer shall provide, upon request, all materials relating to the employee information and training program to the Chief.

(m) Communication of Hazards.

(1) Hazard Communication - General.

(A) Chemical manufacturers, importers, distributors and employers shall comply with all requirements of the Hazard Communication Standard (HCS) (Section 5194) for lead.

(B) In classifying the hazards of lead at least the following hazards are to be addressed: Cardiovascular health effects; ~~r~~Reproductive/developmental toxicity; central nervous system effects; kidney effects; blood effects; and acute toxicity effects.

(C) Employers shall include lead in the hazard communication program established to comply with the HCS (Section 5194). Employers shall ensure that each employee has access to labels on containers of lead and to safety data sheets, and is trained in accordance with the requirements of HCS and subsection (l) of this section.

(2) Signs.

(A) The employer shall post the following warning signs in each work area where exposures are at or above the action level PEL is exceeded, and in each work area where a threshold amount of lead work is conducted:

DANGER
LEAD
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM

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DO NOT EAT, DRINK OR SMOKE IN THIS AREA

(B) The employer shall ensure that no statement appears on or near any sign required by this subsection (m)(2) which contradicts or detracts from the meaning of the required sign.

(C) The employer shall ensure that signs required by this subsection (m)(2) are illuminated and cleaned as necessary so that the legend is readily visible.

(D) The employer may use signs required by other statutes, regulations, or ordinances in addition to, or in combination with, signs required by this subsection (m)(2).

(E) Prior to June 1, 2016, employers may use the following legend in lieu of that specified in subsection (m)(2)(AB) of this section:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

(n) Recordkeeping.

(1) Exposure Monitoring.

(A) The employer shall establish and maintain an accurate record of all monitoring required in subsection (d).

(B) This record shall include:

1. The date(s), number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable;
2. A description of the sampling and analytical methods used and evidence of their accuracy;
3. The type of respiratory protective devices worn, if any;
4. Name, unique identifier (such as date of birth, employee identification number, or social security number), and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent; and

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5. The work operations conducted by the monitored individuals and the workplace conditions under which they were conducted, including the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the employer's operations~~environmental variables that could affect the measurement of employee exposure.~~

(C) The employer shall maintain these monitoring records for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

(2) Medical Surveillance.

(A) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by subsection (j).

(B) This record shall include:

1. The name, unique identifier (such as date of birth, employee identification number, or social security number), and description of the duties of the employee;
2. A copy of the physician's written opinions;
3. Results of any monitoring of exposure to airborne lead done for that employee and the representative exposure level supplied to the physician; and
4. Any employee medical complaints related to exposure to lead.

(C) The employer shall keep, or assure that the examining physician keeps, the following medical records:

1. A copy of the medical examination results including medical and work history required under subsection (j).
2. A description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information.
3. A copy of the results of blood lead testing~~biological monitoring~~.

(D) The employer shall maintain or assure that the physician maintains those medical records for at least 40 years, or for the duration of employment plus 20 years, whichever is longer.

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(3) Medical Removals.

(A) The employer shall establish and maintain an accurate record for each employee removed from current exposure to lead pursuant to subsection (k).

(B) Each record shall include:

1. The name and unique identifier (such as date of birth, employee identification number, or social security number) of the employee;
2. The date on each occasion that the employee was removed from current exposure to lead as well as the corresponding date on which the employee was returned to his or her former job status;
3. A brief explanation of how each removal was or is being accomplished; and
4. A statement with respect to each removal indicating whether or not the reason for the removal was an elevated blood lead level.

(C) The employer shall maintain each medical removal record for at least the duration of an employee's employment.

(4) Availability.

(A) The employer shall make available upon request all records required to be maintained by this subsection to the Chief and the Director for examination and copying.

(B) Environmental monitoring, medical removal, and medical records required by this section shall be provided upon request to employees, designated representatives, and authorized representatives of the Chief in accordance with Section 3204. Medical removal records shall be provided as prescribed by Section 3204 for monitoring records.

(5) Transfer of Records.

(A) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by subsection (n).

(B) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records required to be maintained by this section for the prescribed period, these records shall be transmitted to the Director.

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(C) At the expiration of the retention period for the records required to be maintained by this section, the employer shall notify the Director at least 3 months prior to the disposal of such records and shall transmit those records to the Director if requested within the period.

(D) The employer shall also comply with any additional requirements involving the transfer of records set forth in Section 3204.

(o) Observation of Monitoring.

During any observation of monitoring under subsection (d) by an affected employee or employees or their representative (pursuant to Section 340.1) in an area where the use of respirators, protective clothing or equipment is required, the employer shall provide the observer with, and assure the use of, such respirators, clothing and equipment and shall require the observer to comply with all other applicable safety and health procedures. Without interfering with the monitoring, the observer shall be entitled to receive an explanation of the measurement procedures used.

(p) Appendices.

The information contained in the appendices to this section is not intended to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation.

Note: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code; and Federal Register Volume 77, Number 58 (Monday, March 26, 2012) Pages 17574-17896.