

**Revised draft based on 2/23/11 AC discussion (further changes shown in bold)
Title 8 Construction Safety Orders**

Section 1532.1, Lead

(j) Medical surveillance.

(1) General.

(A) The employer shall make available initial medical surveillance to employees occupationally exposed on any day to lead at or above the action level. Initial medical surveillance consists of biological monitoring in the form of blood sampling and analysis for lead **and zinc protoporphyrin** levels.

(B) The employer shall institute a medical surveillance program in accordance with subsections (j)(2) and (j)(3) for all employees who are or may be exposed by the employer at or above the action level for more than **10** ~~30~~ days in any consecutive 12 months;

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

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

(2) Biological monitoring.

(A) Blood lead **and ZPP** level sampling and analysis. The employer shall make available biological monitoring in the form of blood sampling and analysis for lead **and zinc protoporphyrin** levels to each employee covered under subsections (j)(1)(A) and (B) on the following schedule:

1. For each employee covered under subsection (j)(1)(B), at least every month ~~2 months~~ for the first 3 ~~6~~ months and then every 6 months thereafter;

2. For each employee covered under subsections (j)(1)(A) or (B) whose last blood sampling and analysis indicated a blood lead level at or above 10 ~~40~~ $\mu\text{g}/\text{dl}$ but below 20 $\mu\text{g}/\text{dl}$ of whole blood, at least every three ~~two~~ months. This frequency shall continue until three ~~two~~ consecutive blood samples and analyses indicate a blood lead level below 10 ~~40~~ $\mu\text{g}/\text{dl}$; and

3. At least monthly ~~For each employee~~ whose last blood sampling and analysis indicated a blood lead level at or above 20 $\mu\text{g}/\text{dL}$ of whole blood and during the removal period of each employee who is removed from exposure to lead due to an elevated blood lead level at least monthly during the removal period. This frequency shall continue until three consecutive blood samples and analysis indicate a blood lead level below 10 $\mu\text{g}/\text{dL}$ of whole blood.

4. ZPP determinations shall be made available as soon as possible but no later than monthly for each employee with a blood lead level at or above 20 $\mu\text{g}/\text{dL}$.

(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)(A), 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.

(C) Accuracy of blood lead level sampling and analysis. Blood lead level sampling and analysis provided pursuant to this section shall have an accuracy (to a confidence level of 95 percent) within plus or minus 15 percent or ~~4~~ **6** $\mu\text{g}/\text{dl}$, whichever is greater, and shall be conducted by a laboratory approved by OSHA.

(D) Employee notification.

1. Within five working days after the receipt of biological monitoring results, the employer shall notify each employee in writing of his or her blood lead level; and
2. The employer shall notify each employee whose blood lead level exceeds ~~10~~ **40** $\mu\text{g}/\text{dl}$ that the standard requires temporary medical removal with Medical Removal Protection benefits when an employee's blood lead level exceeds the numerical criterion for medical removal under subsection (k)(1)(A).

(3) Medical examinations and consultations.

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

1. . **Within a month of being covered by subsection (j)(1)(B) and a**At least annually **thereafter** for each employee for whom a blood sampling test conducted at any time during the preceding 12 months indicated a blood lead level at or above ~~20~~ **40** $\mu\text{g}/\text{dL}$ ~~100~~ **g**; and
2. 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, that the employee is pregnant, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during use; and
3. As medically appropriate for each employee either removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise limited pursuant to a final medical determination.

(B) Content. The content of medical examinations made available pursuant to subsection (j)(3)(A)2. - 3. shall be determined by an examining physician and, if requested by an employee, shall include pregnancy testing or laboratory evaluation of male fertility. Medical examinations made available pursuant to subsection (j)(3)(A)1. 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;
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 employees with a blood lead level 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.

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(k) Medical removal protection.

(1) Temporary medical removal and return of an employee.

(A) Temporary removal due to elevated blood lead level. The employer shall remove an employee from work having an exposure to lead ~~at or above the action level~~ on each occasion that **either:**

1. A periodic and a follow-up blood sampling test conducted pursuant to this section indicate that the employee's blood lead level is at or above ~~30~~ 50-µg/dl **or**

2. The last two monthly tests and a follow-up blood sampling tests conducted pursuant to this section are at or above 20 µg/dl; and,

(B) Temporary removal due to a final medical determination.

1. The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that a final medical determination results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

2. For the purposes of this section, the phrase "final medical determination" means the written medical opinion on the employees' health status by the examining physician or, where relevant, the outcome of the multiple physician review mechanism or alternate medical determination mechanism used pursuant to the medical surveillance provisions of this section.

3. 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.

(C) Return of the employee to former job status.

1. The employer shall return an employee to his or her former job status:

a. For an employee removed ~~under the provisions of subsection (k)(1)(A) due to a blood lead level at or above 50µg/dl~~ when two consecutive **monthly** blood sampling tests indicate that the employee's blood lead level is at or below ~~15~~ 40µg/dl;

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Revised draft general industry section 5198 based on 2/23/11 AC meeting discussion

5198. Lead

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(j) Medical Surveillance.

(1) General.

(A) The employer shall institute a medical surveillance program for all employees who are or may be exposed at or above the action level for more than ~~30~~ **10** days 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.

(2) Biological Monitoring.

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

1. At least every month for the first 3 months of placement, or upon change in task to higher exposure, then every 6 months to each employee covered under subsection (j)(1)(A); and

2. At least every three ~~two~~ months for each employee whose last blood sampling and analysis indicated a blood lead level at or above 10 ~~40~~ $\mu\text{g}/\text{dL}$ ~~100 μg~~ but below 20 $\mu\text{g}/\text{dL}$ of whole blood. This frequency shall continue until three ~~two~~ consecutive three-month blood samples and analysis, indicate a blood lead level below 10 ~~40~~ $\mu\text{g}/\text{dL}$ ~~100 μg~~ of whole blood; and

3. At least monthly for each employee whose last blood sampling and analysis indicated a blood lead level at or above 20 $\mu\text{g}/\text{dL}$ of whole blood and during the removal period of each employee removed from exposure to lead due to an elevated blood lead. This frequency shall continue until three consecutive monthly blood samples and analysis indicate a blood lead level below 10 $\mu\text{g}/\text{dL}$ of whole blood; and

4. ZPP determinations shall be made available as soon as possible but no later than the first biological monitoring scheduled for an employee. monthly for each employee with a blood lead level at or above 20 $\mu\text{g}/\text{dL}$.

(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.

(C) Accuracy of Blood Lead Level Sampling and Analysis. Blood lead level sampling and analysis provided pursuant to this section shall have an accuracy (to a confidence level of 95 percent) within plus or minus 15 percent or ~~6~~ **4** $\mu\text{g}/\text{dL}$ ~~100 μg~~ , whichever is

greater, and shall be conducted by a laboratory ~~approved by OSHA 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.~~

(D) Employee Notification. Within five working days after the receipt of 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 temporary medical removal with Medical Removal Protection benefits when an employee's blood lead level 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 Section 5198(j)(1)(A) on the following schedule:

1. **Within a month of being covered under subsection (j)(1)(A) and a** ~~At least annually thereafter~~ for each employee for whom a blood sampling test conducted at any time during the preceding 12 months indicated a blood lead level at or above ~~20 40 µg/dL~~ 40 µg/dL ~~g;~~
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. 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
4. As medically appropriate for each employee removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise limited pursuant to a final medical determination.

(B) Content. Medical examinations made available pursuant to subsections (j)(3)(A)1-2 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;
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 employees with a blood lead level 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 which the examining physician deems necessary by sound medical practice.

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(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~~ on each occasion that **either:**

(A) The average of the last periodic and follow-up two ~~three~~ blood sampling 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~~ 30-50 ~~µg/dL/100-g~~ of whole blood; **or**

(B) The last two monthly tests and a follow-up blood sampling tests conducted pursuant to this section are at or above 20 µg/dL of whole blood. ~~; provided, however, that an employee need not be removed if the last blood sampling test indicates a blood lead level at or below 20-40 µg/dL/100-g 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 on each occasion that a final medical determination results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

Note: For the purposes of this section, the phrase "final medical determination" shall mean the outcome of the multiple physician review mechanism or alternate physician determination mechanism used pursuant to the medical surveillance provisions of this section.

(B) 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)(A) due to a blood lead level at or above 50 µg/100-g~~ when two consecutive **monthly** blood sampling tests indicate that the employee's blood lead level is at or below ~~15-40~~ 15-40 ~~µg/dL/100-g~~ of whole blood.; and

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