HEALTH-BASED GUIDELINES FOR BLOOD LEAD LEVELS IN ADULTS

These guidelines are for the care of adults aged 18 and older and adolescents exposed to lead at work. The mean blood lead level (BLL) for U.S. adults is less than 1 µg/dL, and the 97.5 percentile for BLL is 3.5 µg/dL (CDC, CSTE 2021[1]); thus, CDPH recommends clinical action and follow-up for adult BLLs 3.5 µg/dL and greater. Chronic adverse health effects have no threshold, so clinicians should monitor patients with elevated BLL until below 3.5 µg/dL. For occupational lead exposure, these CDPH guidelines are more stringent and health protective than the current Cal/OSHA or federal OSHA lead standards.

Identification and removal from lead exposure is the primary treatment of elevated BLL and most cases of symptomatic lead toxicity. Chelation therapy is reserved for patients with severe symptoms of toxicity, which typically occur at BLL greater than 80 µg/dL, or in any patient with an extremely high BLL (e.g. > 100 µg/dL). Consult with a specialist experienced in treating lead toxicity for symptomatic patients.

<table>
<tr><th>Blood Lead Level</th><th>Action Needed</th><th>Timing of recheck BLL</th><th>CLINICAL EVALUATION</th></tr>
<tr><td>3.5–9 µg/dL</td><td>Obtain history on lead exposure and minimize contact.</td><td>Repeat BLL every 3 months until < 3.5 µg/dL.</td><td rowspan="2">Obtain history on potential sources of lead exposure at work and home at all BLLs ≥ 3.5 µg/dL and minimize lead contact.
A venous blood lead sample should be used for diagnosis and monitoring. Testing of hair, urine, or capillary blood and provocation testing are not recommended.
Laboratory tests (CBC, BUN/Cr, and urinalysis) should be obtained within two weeks of a BLL result > 30 µg/dL and urgently if > 80 µg/dL. Consider labs at BLL ≥ 10 µg/dL if no baseline results are available from the past 12 months.
Monitor blood pressure at least annually for lead-exposed adults.</td></tr>
<tr><td>10–19 µg/dL</td><td>Check baseline labs if none in past 12 months.</td><td>Repeat BLL every 2 months until < 10 µg/dL.</td></tr>
<tr><td>20–29 µg/dL</td><td>Conduct physical exam and labs if not done in prior 12 months.</td><td>Repeat BLL monthly until < 10 µg/dL.</td><td>IF OCCUPATIONAL EXPOSURE
Remove from work or reassign to job duties that do not involve lead if the last two BLLs are ≥ 20 µg/dL or if the average of all BLLs in the last 6 months is ≥ 20 µg/dL.</td></tr>
<tr><td>30+ µg/dL</td><td>Conduct physical exam and labs within 2 weeks of BLL result.</td><td>Repeat BLL monthly until < 10 µg/dL.</td><td>Remove from work or reassign to job duties that do not involve lead if one BLL is ≥ 30 µg/dL.</td></tr>
<tr><td>80+ µg/dL</td><td colspan="3">Prompt physical exam, labs, and consultation with an occupational medicine specialist or toxicologist.</td></tr>
<tr><td colspan="4">In pregnancy, BLL should be as low as possible to protect the fetus. Identify and stop lead exposure, remove from work at BLL ≥ 3.5 µg/dL, and repeat BLL at least every 4 weeks until < 3.5 µg/dL. Refer to the American College of Obstetricians and Gynecologists guidelines and CDC guidelines on lead in pregnancy and lactation for additional recommendations.</td></tr>
</table>

Consider returning patients to work who have been removed due to occupational lead exposure after two BLLs checked at least 30 days apart are < 15 µg/dL.

OSHA job protections apply when a physician performing occupational medical surveillance exams removes an employee from lead work at any BLL due to toxicity, pregnancy, or a comorbidity that increases health risk from lead. If removing from lead work at levels lower than required by Cal/OSHA, providers may wish to review the standards and discuss with patients how removal may impact their employment.

Submit a Doctor's First Report to the employer's Workers' Compensation insurance carrier within 5 days of evaluating a patient for work-related lead toxicity that requires medical care beyond routine medical surveillance.

CLINICIANS:
For questions call (510) 620-5714 or
e-mail adultlead@cdph.ca.gov

OCCUPATIONAL LEAD POISONING PREVENTION PROGRAM: www.cdph.ca.gov/olppp

To obtain a copy of this document in an alternate format, please contact (510) 620-5757 and allow at least ten (10) working days to coordinate alternate format services.

[1] NHANES 2015-2018 data, weighted percentile per methodology used in children (Ruckart PZ, et al. MMWR 2021;70:1509-1512), adopted by the Council of State and Territorial Epidemiologists Dec. 2021.