

How Are Adults Exposed to Lead?

Lead exposure occurs when lead dust or fumes are inhaled, or when lead is ingested via contaminated hands, food, water, cigarettes or clothing.

Lead entering the respiratory and digestive systems is released to the blood and distributed throughout the body.

More than 90% of the total body burden of lead is accumulated in the bones, where it is stored. Lead in bones may be released into the blood, re-exposing organ systems long after the original exposure.

What are the Adverse Health Effects that Lead Exposure Can Have on Adults?

The toxic nature of lead is well documented. Lead affects all organs and functions of the body to varying degrees. The frequency and severity of symptoms among exposed individuals depends upon the amount of exposure. The list below shows many of the key lead-induced health effects.

- Neurological Effects
 - Peripheral neuropathy= nerve weakness in legs and arms
 - Fatigue / Irritability
 - Impaired concentration
 - Hearing loss
 - Wrist / Foot drop
 - Seizures
 - Encephalopathy= thinking difficulty, personality changes
- Gastrointestinal Effects
 - Nausea
 - Dyspepsia= heart burn and regurgitation
 - Constipation
 - Colic= abdominal pain, gas, cramping
 - Lead line on gingival tissue= characteristic line on gums
- Reproductive Effects
 - Miscarriages/Stillbirths
 - Reduced sperm count & motility
 - Abnormal sperm
- Blood Synthesis
 - Anemia
 - Erythrocyte protoporphyrin elevation= early sign of anemia
- Kidney Effects
 - Chronic nephropathy with proximal tubular damage = kidney failure
 - Hypertension= High blood pressure -> strokes and heart attacks
- Other = joint and muscle pain

What Are Some Sources of Lead Exposure?

- Occupational
 - Firing range instructors and cleaners
 - Construction workers
 - Steel welders
 - Bridge reconstruction workers
 - Painters
 - Remodelers and refinishers
 - Foundry workers
 - Scrap metal recyclers
 - Auto repairers
 - Cable splicers
- Hobbies
 - Target shooting at firing ranges
 - Casting bullets or fishing sinkers
 - Home remodeling
 - Lead soldering
 - Auto repair
 - Stained glass making
 - Glazed pottery making
- Substance Use
 - Some folk remedies
 - Some "Health Foods"
 - Moonshine whiskey
 - Ceramicware

What Lead Levels are Considered Elevated in Adults?

- At levels **above 80 µg/dL**, serious, permanent health damage may occur (extremely dangerous).
- **Between 40 and 80 µg/dL**, serious health damage may be occurring, even if there are no symptoms (seriously elevated).
- **Between 25 and 40 µg/dL**, regular exposure is occurring. There is some evidence of potential physiologic problems (elevated).
- **Between 10 and 25 µg/dL**, lead is building up in the body and some exposure is occurring.

The typical level for U.S. adults is less than 10 µg/dL (mean = 3 µg/dL).

- If lead exposure is suspected, the patient's medical evaluation should include:
 - An occupational and environmental history with attention to possible lead exposure. **There are certain jobs, hobbies, foods and folk medicines that are more likely to be associated with lead. These should alert the Health Care Provider to the possibility of lead exposure.**
 - Laboratory testing for blood lead and ZPP levels
 - If the laboratory tests are elevated, then a comprehensive physical exam that includes laboratory testing for:
 - hemoglobin, hematocrit, red blood cell indices
 - examination of peripheral smear morphology, BUN and serum creatinine
 - routine urinalysis with microscopic examination
 - pregnancy or male fertility, if requested by employee
- Ongoing Biological Monitoring for Exposure

Blood lead levels can rise quickly. With frequent monitoring of blood lead levels, dangerous exposures can be quickly identified and corrected, workers can be protected, and the need for OSHA mandated medical removal of workers can be avoided. A blood lead level over 25 µg/dL shows that substantial exposure to lead is occurring. **There is also increasing evidence that health effects may occur at this blood lead level.**

How Can You Reduce Exposure to Lead?

- **Use outdoor firing ranges or those that have very good ventilation**
- **Use 'leadless' ammo, TMJ or EMJ type ammo.**
- **Wash** their hands and face before they eat, drink or smoke.
- **DO NOT EAT, DRINK OR SMOKE while at the range. Wear a hat!**
- **Change** into different clothes and shoes before engaging in work with lead. Keep their street clothes and shoes in a clean place.
- **Shower** after working with lead before they go home.
- **Launder** their clothes separately from other family members' clothes.