

## Lead Sources

### Lead-based Paint

The most common source of lead exposure for young children is ingesting soil and dust contaminated by deteriorated lead-based paint, and industrial and vehicle emissions.

### Soil and House Dust

These may contain lead from deteriorated paint, some vinyl mini-blinds, leaded gasoline, and industrial sources. Children are exposed by touching contaminated soil and dust, and then putting their hands or contaminated toys into their mouths.

### Drinking Water

It may become contaminated from plumbing in homes with lead pipes or lead-soldered pipes. For more information about lead in water, contact the EPA safe drinking water hotline at (800) 426-4791.

### Food

Some imported canned products and dietary supplements, such as bone meal calcium, contain lead. Foods stored in leaded crystal or poorly fired ceramic dishes are also potential sources. Some ethnic populations use imported traditional pottery that contains lead and is not intended for use with food. It may be labeled, "Not for food use," or "For decorative purposes only."

### Occupations and Hobbies

Workers may take home lead dust on their clothing. Hobbies using lead-containing materials include stained glass, pottery, fishing casting weights, ammunition, and furniture refinishing, and furniture refinishing.

### Traditional Medicines

Greta, azarcon, and pay-loo-ah, and cosmetics such as surma and kohl contain lead.

For more information or assistance, contact your local public health department.

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# Look Out For Lead

## A Health Care Provider's Guide to Childhood Lead Poisoning



# The Health Effects of Lead

Lead is a metal that has no known value to the human body. Blood lead levels (BLL) as low as 10mcg/dL are associated with negative health effects. Based on NHANES (National Health and Nutrition Examination Survey) 1999-2000 survey, the Centers for Disease Control and Prevention estimated that 434,000 children aged 1-5 years in the U.S. have  $BLL \geq 10mcg/dL$ .

Adverse health effects of low-level lead exposure have been identified in children. Blood levels as low as 10mcg/dL have been associated with deficits in cognitive and behavioral development including impaired performance on formal development and intelligence testing. Other symptoms of lead exposure are growth impairment, reduced hearing acuity, increased iron-deficiency anemia, and altered vitamin D metabolism and bone formation. Very high levels of lead ( $>70mcg/dL$ ) are less common, but can cause seizures, coma and even death.

## Risk Factors for Lead Poisoning

### 1. Iron-deficiency Anemia

Iron-deficiency predisposes children to increased lead absorption and toxicity. Confirmed iron-deficiency anemia should be treated appropriately. Normal iron status also enhances the response to lead-chelation therapy.

### 2. Calcium Intake

Inadequate to marginal dietary calcium intake results in increased susceptibility to lead toxicity. Dietary calcium inhibits the absorption of lead through the intestinal mucosa. It is recommended that the child's diet meet the RDA for calcium.

### 3. Iron Intake

Lead absorption can be reduced by adequate intake of iron. It is recommended that the child's diet meet the RDA for iron.

### 4. Zinc Intake

Increasing dietary zinc reduces gastrointestinal absorption and tissue accumulation of lead. The child's diet should meet the RDA for zinc.

### 5. Age

Young children are at higher risk because of immature gastrointestinal systems and nervous systems, and frequent hand-to-mouth activity.

### 6. Low Socioeconomic Status

The Third National Health and Nutrition Examination Survey (NHANES III) data reveal children from low-income families are at eight times greater risk for lead poisoning than children from higher income families.

### 7. Housing

The highest risk for exposure is with housing built before 1950. There is an increased risk with housing built before 1978.

### 8. Race/Ethnicity

NHANES III data reveal 11.2 percent of non-Hispanic, black children compared to 2.3 percent of white children have blood lead levels  $>10mcg/dL$ .

## Pathways of Lead Absorption

### Gastrointestinal Tract

Most often lead is absorbed through the ingestion of lead-contaminated food, beverages, soil or dust. Frequent hand washing can help prevent ingestion.

### Respiratory System

Lead particles also can be inhaled into the respiratory tract. Smaller particles are more readily inhaled than larger particles.

### Fetal Uptake

Lead easily crosses the placenta and is absorbed by the fetus in utero. The majority of absorbed lead is stored in bones (similar to calcium). When calcium is mobilized from the

bone, lead may also be released into a pregnant woman's bloodstream and can be absorbed by the developing fetus.

## Requirements for Testing

As part of the Early and Periodic Screening, Diagnosis and Treatment (EPSDT) service, the Centers for Medicaid and Medicare Services (CMS) requires that all Medicaid enrolled children receive a screening blood lead test at 12 months and 24 months of age. In addition, children between 36 and 72 months must receive a screening for blood lead if they haven't been previously screened for lead poisoning. Any additional diagnostic and treatment services determined to be medically necessary must also be provided to a child diagnosed with an elevated BLL.

## Nutrition Makes A Difference

### Advise Parents or Caregivers to:

- Wash children's hands often before eating and after playing.
- Serve three meals and two or three healthy snacks every day.
  - Less lead is absorbed when a child's stomach is full.
  - Iron, Calcium, and Vitamin C are important.
- Use cold tap water for drinking and cooking.
  - Cold water can contain less lead than hot water
  - Let tap water run for two minutes before using.
  - Prepare infant formula with cold water.