

LEAD

Also known as: Lead flake, Orow (polish), Pb, CI pigment Metal 4
Chemical reference number (CAS): 7439-92-1

WHAT IS LEAD?

Lead is a naturally occurring toxic metal. It may be found in its pure form or in combination with other minerals. Lead has no nutritional value, but is very valuable in manufacturing. In industry, lead is used in the production of batteries, solder, paints, ammunition, sheet metal, and other metal alloys.

Lead is often found in paint sold before 1978. Since 1978, paint sold for residential use can contain no more than 600 parts per million lead. Most lead is now used to manufacture car batteries. Other lead sources include bullets, fishing weights, curtain weights, some glazed ceramics, and plumbing solders made before 1986. Less common sources include the solder on some imported canned goods, cosmetics (ceruse, surma or kohl), folk medicines (azarcon, Greta, Pay-loo-ah), and paints used on steel structures such as bridges or water towers.

HOW ARE PEOPLE EXPOSED TO LEAD?

Drinking/Eating: People can be exposed to lead when they ingest contaminated water or foods that are stored in lead-glazed ceramic dishware.

The most common route for lead exposure in children is by mouth. Young children like to put their fingers, toys and other objects in their mouths. They especially like to do this when they are teething. Dust or chips from lead-based paint can easily poison pre-school aged children.

Less common, but more dangerous exposures occur when children eat paint chips or soil containing lead. Lead tastes sweet, which makes it attractive to children, especially to hungry children.

People who work with lead products can expose their family to lead. Exposure may occur if they bring lead-covered work clothes home for laundering or wear their contaminated clothes around the home.

Lead can dissolve from the solder of water pipes, particularly if the water is heated or naturally soft. *Use cold water when cooking or when preparing infant formula. Hot water tends to dissolve lead from solder in pipes.*

Breathing: Lead in the air results from emissions from smelting operations or waste incinerators. Soil and dust may contain fine lead particles created by car exhaust (when burning leaded gasoline) or from sanding or grinding old lead paint. Soldering leaded glass, firing ceramic glazes that contain lead, melting lead or burning old lead paint can release hazardous metal fumes.

Touching: Lead is not readily absorbed through the skin.

DO STANDARDS EXIST FOR LEAD IN DRINKING WATER?

State and federal drinking water standards for lead are set at 15 parts per billion (ppb). We suggest you stop drinking water containing more than 15 parts per billion (ppb) of lead. If your plumbing system contains lead solder or lead pipes, running the cold water two to three minutes before using the water will usually lower the lead in the water to safe levels.

WHAT ARE THE SYMPTOMS OF LEAD POISONING?

The average person in the U.S. has less than 5 micrograms of lead per deciliter ($\mu\text{g}/\text{dL}$) of blood.

Lead is a tricky poison. At low or moderate levels of exposure, children often have no symptoms or they may have general symptoms like those of other common childhood illnesses. Health effects get more severe as blood lead levels increase. The following information describes the effects on human health at various levels of lead in blood.

Low Levels:

10-35 $\mu\text{g}/\text{dL}$ in Children or 10-40 $\mu\text{g}/\text{dL}$ in Adults

Usually there are no visible symptoms. These levels, if they persist, can cause subtle learning and behavior problems in children.

Moderate Levels:

35-50 $\mu\text{g}/\text{dL}$ in Children or 40-60 $\mu\text{g}/\text{dL}$ in Adults

There may be no symptoms. If symptoms are there, they may include general fatigue, irritability, difficulty concentrating, tremors, headaches, abdominal pain, anemia, vomiting, weight loss and/or constipation. These can be mistaken for other illnesses. Adults with elevated blood lead levels are also at risk for high blood pressure and kidney problems.

High Levels:

Over 50 $\mu\text{g}/\text{dL}$ in Children or over 60 $\mu\text{g}/\text{dL}$ in Adults

There may be no symptoms, or there may be symptoms as listed above under "Moderate." At very high levels, symptoms can include convulsions, paralysis, coma or death.

In general, chemicals affect the same organ systems in all people who are exposed. However, the seriousness of the effects may vary from person to person. It is also important to consider the length of exposure to the chemical; the amount of chemical exposure; and whether the chemical was inhaled, touched, or eaten.

The effects of lead on adults are generally reversible. The effects on children under six years of age can be more severe and probably cannot be reversed. Children absorb up to 50% of the lead they eat, while adults absorb only about 10%. The nervous systems of children are more sensitive to damage from lead. The general health and nutrition of the exposed person, including iron or calcium deficiency and sickle cell disease, can affect the severity of symptoms.

CAN A MEDICAL TEST DETERMINE EXPOSURE TO LEAD?

A blood test can measure recent exposure to lead.

Seek medical advice if you have any symptoms that you think may be related to chemical exposure.

Children with blood lead levels as low as 10 $\mu\text{g}/\text{dL}$ can experience subtle learning and behavior problems. They should be periodically re-tested to see if the levels are going down or up. Their families should find out ways to reduce childhood lead exposure.

Children with blood lead levels of 20 $\mu\text{g}/\text{dL}$ or higher should be evaluated by a physician and have their environments assessed for lead hazards.

Children with blood levels of 45 $\mu\text{g}/\text{dL}$ or higher should have chelation therapy to remove lead from their bodies.

Children with blood levels of 70 $\mu\text{g}/\text{dL}$ or higher can have serious health problems. They should be immediately admitted to a medical treatment facility.

This fact sheet summarizes information about this chemical and is not a complete listing of all possible effects. It does not refer to work exposure or emergency situations

FOR MORE INFORMATION

- Poison Control Center, 800-815-8855
- Your local public health agency
- Division of Public Health, BEOH, 1 West Wilson Street, Rm. 150, Madison, WI 53701-2659, (608) 266-1120 or Internet: www.dhs.state.wi.us/eh/index.htm



Prepared by the
Wisconsin Department of Health Services
Division of Public Health with funds from the
Agency for Toxic Substances and Disease Registry,
Public Health Service,
U.S. Department of Health and Human Services.

(POH 4603 Revised 04/2011)