

#### What is lead?

Lead is a naturally occurring metal found in the earth's crust. In the past, lead was widely used in products like gasoline, paints, batteries, metal products and ammunition. However, as people have learned more about the toxic health effects caused by lead, companies have stopped using lead to make many products.

#### What happens to lead in the environment?

Although lead occurs naturally in the environment, most elevated (very high) lead levels come from human activities and products. For example, certain industries that use lead to make their products can contaminate the nearby environment with lead.

Lead does not break down in the environment. Once lead is released into the environment, it sticks to soil and stays there for a long time. If the contaminated soil is uncovered and open to the air, or if it becomes disturbed, lead dust can enter the air. This dust can easily be breathed or swallowed. Some activities that can disturb soil include construction work and gardening.

Gardens grown in lead-contaminated soil can produce fruits, vegetables, and grains that have lead in them. Plants (especially root vegetables like beets, potatoes, and carrots) can absorb lead through their roots or be coated in lead dust.

In some older homes, lead can be found in paint and pipes.



Construction work can stir up lead dust from lead-contaminated soil.  
(Image source: Depositphoto)

#### How does lead get into my body?

People are mainly exposed to lead when they breathe in (inhale) lead dust or when they swallow (ingest) lead in food and water, or by accidentally eating soil or lead dust. Skin (dermal) contact with lead does not cause much of a concern since lead cannot easily enter your body through your skin.



Older homes can have peeling lead-based paint that may be tempting for young children to eat. (Image source: U.S. EPA)

#### What kind of health problems can lead cause?

Illness caused by lead in the body is called lead poisoning. The harmful effects of lead are the same whether you breathe it or swallow it. Lead can damage every organ system in the body, but its main target is the central nervous system, which includes the brain and the spinal cord.

Some signs and symptoms of lead poisoning can include kidney damage, stomach pain, a poor appetite, sleep disorders like insomnia, hearing problems, damage to the male reproductive system, and memory problems.

Children are more at risk (vulnerable) of lead poisoning than adults because they play outside more often, are closer to the ground, and tend to eat more dirt and paint chips than adults. Compared to adults, a bigger proportion of the lead that children swallow will enter their blood. Also, children's bodies aren't as good at getting rid of lead as adults' bodies are.

Children who are exposed to lead before they are born (in the womb) or in early childhood can have slow mental development and lower intelligence later in childhood. Lead can also cause children to be irritable (angry) and aggressive. Pregnant women who are exposed to high levels of lead can give birth to babies with low birth weight or can have miscarriages.

## **Is there a medical test that can show if I have been exposed to lead?**

Yes. The primary screening method is the measurement of total lead in the blood. This test can tell you if you have recently been exposed to lead.

Lead can also be measured in teeth and bones by using X-ray techniques. These tests can tell you about long-term exposure to lead, but they are not widely available.

## **How can I protect my family from lead in the environment?**

The most important way a family can lower their exposure to lead is to avoid sources of lead in and around the home. These can include:

- Lead-contaminated soil and dust.
- Lead-based paint chips.
- Water from lead-based pipes.
- Some lead-based plastic products made outside of the U.S.

You can help protect yourself and your family from lead around your home by following these steps:

- Make sure children regularly wash their hands and face, especially before meals and after playing outside. This removes lead dust from the skin.
- Regularly clean your home of dust and tracked-in soil. Door mats can help lower the amount of soil that is tracked inside. You can also remove your shoes before going inside your home.
- Cover areas of bare soil in your yard by planting grass and shrubs or by putting down ground cover such as gravel. This will protect children and pets that play outdoors and will keep lead dust down.
- Wash all produce grown in lead-contaminated soils before eating. Limit the amount of root vegetables (beets, carrots, potatoes, etc.) you eat that were grown in lead-contaminated soil.
- If you do yardwork, bag your work clothes before bringing them inside to be washed. Immediately wash your hands or shower when you come inside.
- Ensure that children have proper nutrition and are eating a balanced diet of foods that supply enough vitamins and minerals. Good nutrition lowers the amount of swallowed lead that passes into a child's bloodstream and can reduce some of the toxic effects of lead.

## **How does the federal government protect my health from lead in the environment?**

The Centers for Disease Control and Prevention (CDC) considers children to have an elevated level of lead if the amount of lead in their blood is at least 10 micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ).

The U.S. Environmental Protection Agency (U.S. EPA) requires that the concentration of lead in the air in public areas to be no higher than 1.5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) averaged over 3 months.

The Clean Air Act Amendments of 1990 banned the sale of leaded gasoline as of December 31, 1995.

The U.S. EPA also requires testing of public water systems for lead. If more than 10% of the samples at residences contain lead levels over 0.015 milligrams per liter (mg/L), actions must be taken to lower these levels.

The Lead Contamination Control Act of 1988 was created to help reduce lead in drinking water at schools and daycare centers through lead monitoring and reporting requirements. The LCCA is not federally enforceable. States have the option to voluntarily participate in the LCCA provisions or create their own.

The Food and Drug Administration (FDA) has banned the use of lead in food and food packaging.

The Department of Housing and Urban Development (HUD) requires that federally funded housing and renovations to be tested for lead-based paint hazards.

## **Resources**

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological profile for lead.

## **Where can I get more information?**

Ohio Department of Health  
Bureau of Environmental Health and Radiation Protection  
Health Assessment Section  
246 N. High Street  
Columbus, Ohio 43215  
Phone: (614) 728-9452

Ohio Department of Health  
Bureau of Environmental Health and Radiation Protection  
Ohio Healthy Homes and Lead Poisoning Prevention Program  
246 N. High Street  
Columbus, Ohio 43215  
Phone: 1-877-LEADSAFE (531-3723)