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Lead poisoning

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Overview

Lead poisoning occurs when lead builds up in the body, often over months or years. Even small amounts of lead can cause serious health problems. Children younger than 6 years are especially vulnerable to lead poisoning, which can severely affect mental and physical development. At very high levels, lead poisoning can be fatal.

Lead-based paint and lead-contaminated dust in older buildings are common sources of lead poisoning in children. Other sources include contaminated air, water and soil. Adults who work with batteries, do home renovations or work in auto repair shops also might be exposed to lead.

There is treatment for lead poisoning, but taking some simple precautions can help protect you and your family from lead exposure before harm is done.

Symptoms

Initially, lead poisoning can be hard to detect — even people who seem healthy can have high blood levels of lead. Signs and symptoms usually don't appear until dangerous amounts have accumulated.

Lead poisoning symptoms in children

Signs and symptoms of lead poisoning in children include:

- Developmental delay
- Learning difficulties
- Irritability
- Loss of appetite
- Weight loss
- Sluggishness and fatigue
- Abdominal pain
- Vomiting
- Constipation
- Hearing loss
- Seizures
- Eating things, such as paint chips, that aren't food (pica)

Lead poisoning symptoms in newborns

Babies exposed to lead before birth might:

- Be born prematurely
- Have lower birth weight
- Have slowed growth

Lead poisoning symptoms in adults

Although children are primarily at risk, lead poisoning is also dangerous for adults. Signs and symptoms in adults might include:

- High blood pressure
- Joint and muscle pain
- Difficulties with memory or concentration
- Headache
- Abdominal pain
- Mood disorders
- Reduced sperm count and abnormal sperm
- Miscarriage, stillbirth or premature birth in pregnant women

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Causes

Lead is a metal that occurs naturally in the earth's crust, but human activity — mining, burning fossil fuels and manufacturing — has caused it to become more widespread. Lead was also once used in paint and gasoline and is still used in batteries, solder, pipes, pottery, roofing materials and some cosmetics.

Lead in paint

Lead-based paints for homes, children's toys and household furniture have been banned in the United States since 1978. But lead-based paint is still on walls and woodwork in many older homes and apartments. Most lead poisoning in children results from eating chips of deteriorating lead-based paint.

Water pipes and imported canned goods

Lead pipes, brass plumbing fixtures and copper pipes soldered with lead can release lead particles into tap water. Lead solder in food cans, banned in the United States, is still used in some countries.

Other sources of lead exposure

Lead sometimes can also be found in:

- **Soil.** Lead particles from leaded gasoline or paint settle on soil and can last years. Lead-contaminated soil is still a major problem around highways and in some urban settings. Some soil close to walls of older houses contains lead.
- **Household dust.** Household dust can contain lead from lead paint chips or from contaminated soil brought in from outside.
- **Pottery.** Glazes found on some ceramics, china and porcelain can contain lead that can leach into food served or stored in the pottery.

- **Toys.** Lead is sometimes found in toys and other products produced abroad.
 - **Cosmetics.** Tiro, an eye cosmetic from Nigeria, has been linked to lead poisoning. Kohl is another eye makeup that may contain lead.
 - **Herbal or folk remedies.** Lead poisoning has been linked to greta and azarcon, traditional Hispanic medicines, as well as some from India, China and other countries.
 - **Mexican candy.** Tamarind, an ingredient used in some candies made in Mexico, might contain lead.
 - **Lead bullets.** Time spent at firing ranges can lead to exposure.
 - **Occupations.** People are exposed to lead and can bring it home on their clothes when they work in auto repair, mining, pipe fitting, battery manufacturing, painting, construction and certain other fields.
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Risk factors

Factors that may increase your risk of lead poisoning include:

- **Age.** Infants and young children are more likely to be exposed to lead than are older children. They might chew paint that flakes off walls and woodwork, and their hands can be contaminated with lead dust. Young children also absorb lead more easily, and it's more harmful for them than it is for adults and older children.
- **Living in an older home.** Although the use of lead-based paints has been banned since the 1970s, older homes and buildings often retain remnants of this paint. People renovating an older home are at even higher risk.
- **Certain hobbies.** Making stained glass and some jewelry requires the use of lead solder. Refinishing old furniture might put you in contact with layers of lead paint.

- **Living in developing countries.** Developing countries often have less strict rules regarding exposure to lead than do developed countries. American families who adopt a child from another country might want to have the child's blood tested for lead poisoning. Immigrant and refugee children also should be tested.

Lead can harm an unborn child. If you're pregnant or planning a pregnancy, be especially careful to avoid exposure to lead.

Complications

Exposure to even low levels of lead can cause damage over time, especially in children. The greatest risk is to brain development, where irreversible damage can occur. Higher levels can damage the kidneys and nervous system in both children and adults. Very high lead levels may cause seizures, unconsciousness and death.

Prevention

Simple measures can help protect you and your family from lead poisoning:

- **Wash hands and toys.** To help reduce hand-to-mouth transfer of contaminated dust or soil, wash your children's hands after outdoor play, before eating and at bedtime. Wash their toys regularly.
- **Clean dusty surfaces.** Clean your floors with a wet mop and wipe furniture, windowsills and other dusty surfaces with a damp cloth.
- **Remove shoes before entering the house.** This will help keep lead-based soil outside.
- **Run cold water.** If you have older plumbing containing lead pipes or fittings, run your cold water for at least a minute before using. Don't use hot tap

water to make baby formula or for cooking.

- **Prevent children from playing on soil.** Provide them with a sandbox that's covered when not in use. Plant grass or cover bare soil with mulch.
- **Eat a healthy diet.** Regular meals and good nutrition might help lower lead absorption. Children especially need enough calcium, vitamin C and iron in their diets to help keep lead from being absorbed.
- **Keep your home well maintained.** If your home has lead-based paint, check regularly for peeling paint and fix problems promptly. Try not to sand, which generates dust particles that contain lead.

By Mayo Clinic Staff

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