



Lead in Drinking Water

What is lead?

Lead is a soft gray metal that may be found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery, porcelain, pewter, and in drinking water. The use of lead in household plumbing and the solder that connects copper pipes, as well as in water service lines was banned by Congress through an amendment to the Safe Drinking Water Act (SDWA) in 1986. Lead is still used in fishing sinkers, car wheel weights and batteries, as well as some imported glazed ceramic ware, crystal, and food cans.

Sources of lead in drinking water.

Lead enters drinking water mostly because of the corrosion, or wearing away, of materials that contain lead in the water distribution system and plumbing. These materials include lead-based solder, brass, and chrome-plated faucets, and in some cases, pipes made of lead. Current regulations that took effect in January 2014 in the U.S. now require all plumbing systems to be lead free, i.e., contain less than 0.25% lead.

What factors affect how much lead can get (leach) into drinking water?

- **Type of plumbing materials:** Lead solder used to connect pipes contains about 50% lead. Poor soldering work practices can increase the amount of lead dissolved into the water. Brass fixtures and faucets manufactured before 2014 can contain up to 8% lead and are a significant source of lead in drinking water.
- **Length of time water stands in pipes:** The longer the time water sits still (or is in contact

with) the plumbing, the more likely it is that lead will accumulate in drinking water.

- **Corrosiveness of the water:** Corrosive water, caused by high acidity, low mineral, or high chloride content, can increase the amount of lead in drinking water. Typically, minerals in the water tend to collect and form a protective barrier around lead solder and decrease the amount of lead that can be dissolved. Water that has a low mineral content can allow lead to dissolve from solder into the water. Acidic water tends to dissolve lead from pipes or solder into the water, and high chloride can make lead water soluble.
- **Grounding of electrical wires to pipes:** The grounding of electrical and telephone wires to water pipes can increase the rate of corrosion.
- **If you have a private well:** Lead can get into your drinking water from well parts made of lead, nearby manufacturing sites, waste facilities or municipal landfills.



Image showing residential copper water lines and fittings

Is lead harmful to my health?

Lead is a toxic metal that is now known to be harmful to human health if inhaled or ingested. Once absorbed, lead is distributed to all parts of



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the body through the blood and builds up mostly in bones. A certain amount of lead may remain in the blood. The type and severity of the health effects depend upon how much lead has accumulated in the body over time.

According to the U.S. Environmental Protection Agency (EPA), children and fetuses are the most sensitive to the harmful effects of lead since they absorb more into their bodies than adults and are more susceptible to its effects on brain development. Even low levels of lead in blood may affect concentration, academic achievement, and lead to behavioral problems. Short-term health effects include interference with red blood cell chemistry, delays in normal physical and mental development in babies and young children, slight deficits in attention span, hearing and learning abilities of children and slight increases in blood pressure in some adults. Long-term health effects can include stroke, kidney disease and cancer. Symptoms of severely elevated blood lead levels (lead poisoning) may include stomach aches, vomiting, poor appetite or nausea.

Typically, drinking water alone has not been associated with elevated blood lead levels. Combined with other sources, however, the amount of lead from drinking water may be enough to increase the chances of harmful health effects in sensitive individuals, such as infants and children. It has been documented that lead can cause a wide range of adverse reproductive issues with both men and women. Pregnant women and children six years old and under are most at risk because this is when a child's brain is developing.

How much lead is too much?

The current EPA action level for lead is 15 parts per billion (ppb). An action level is an enforceable trigger point established by the EPA at which

action must be undertaken by the public water provider. The EPA's maximum contaminant level goal (MCLG) for lead is 0.00 ppm. The MCLG is the level of a contaminant in drinking water below which there is no known or expected risk to health. The MCLG is a non-enforceable public health goal.

Who is responsible for testing my water for lead?

On most Navy and Marine Corps installations, treated drinking water that is fit for human consumption is either produced at the installation or obtained from an approved local municipal public water system. However, whether an installation has its own water production, treatment, or source facility, or obtains its drinking water from the local municipal water system, the installation is required to conduct ongoing monitoring for lead and other contaminants in the drinking water to ensure compliance with the SDWA including the Federal Lead and Copper rule.

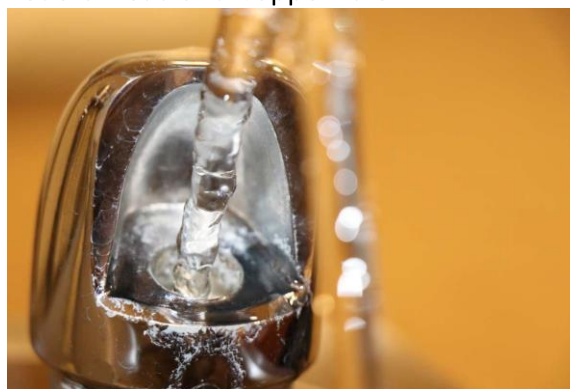


Photo from Indianaenvironmentalreporter.org

Navy Lead in Priority Areas Program

An exemplary program is the Department of the Navy's "Lead in Priority Areas" (LIPA) program, which aims at minimizing the risk of childhood lead exposure through consumption of drinking water. It prescribes a sampling and testing approach, sets an action level, and mandates appropriate response actions and coordination



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between the installation public works department and the supporting military treatment facility's preventive medicine personnel. The LIPA monitoring requirements are separate from and in addition to the EPA's Lead and Copper Rule (LCR) requirements. The priority areas include Primary and Secondary Schools, Child Development Centers and Youth Centers that are owned or managed by the Department of the Navy.

How can I reduce my exposure to lead in drinking water?

If the water from the cold-water faucet has been sitting for several hours, you should let it run for one to two minutes until you feel the water temperature become and stay colder. You should do this before using it for drinking, cooking, and preparing beverages (especially baby formula). Your local municipal water provider will inform you if longer faucet run times are needed to respond to local conditions.



Photo from earthjustice.org

Lead is likely to be highest in hot water faucets so never drink, cook, or prepare beverages (especially baby formula) from the hot water faucet.

Boiling does not remove lead from drinking water. Excessive boiling of water for food preparation, drinking or preparing beverages may increase the lead concentration in the water by evaporation.

When making repairs to copper pipes, do not use lead solder. Routinely inspect the aerator on the end of the faucet and remove any debris such as metal particles. Test the water after plumbing work is done in housing containing lead water lines or lead solder.

If you are concerned about lead in your drinking water, for homes with children or pregnant women, recommendations may include using bottled water or water from a filtration system that has been certified by an independent testing organization, such as the National Sanitation Foundation (NSF), to reduce or eliminate lead.

If you are served by a municipal water system, you can review the most recent Consumer Confidence Report issued by the water provider. You may also contact your provider and ask whether the supply system contains lead piping and whether your water is corrosive. If either answer is yes, ask what steps the supplier is taking to deal with the problem of lead contamination. Drinking water can be treated at the plant to make it less corrosive. Water mains containing lead pipes can be replaced.

For more information on Lead in Drinking Water:

Learn more: [Lead in Priority Area Sampling Program \(navy.mil\)](https://www.navy.mil/Lead/Pages/Lead-in-Priority-Area-Sampling-Program.aspx)

Learn more: [Basic Information about Lead in Drinking Water | Ground Water and Drinking Water | US EPA](#)

Learn more: [Lead in Drinking Water in Schools and Childcare Facilities | Drinking Water Requirements for States and Public Water Systems | US EPA](#)

Learn more: [Lead in Drinking Water | Sources of Lead | CDC](#)