



Drinking Water Facts: Lead



Key Points

- Lead in drinking water comes from lead soldering, lead pipes, and leaded brass faucets.
- Too much lead in the human body can damage the nervous system, brain, and kidneys. Young children and fetuses are at greatest risk of toxic effects of lead.
- To lower exposure to lead in drinking water: Flush your cold water faucet about 30 seconds if water has been sitting for several hours. Never drink, cook, or prepare beverages from the hot water faucet.

What is lead?

Lead is a soft gray metal. Until it was banned by federal law in 1986 and by New Jersey law in 1987, lead was used in the solder that connects copper pipes, in pipes used in household plumbing, and in service lines that connect houses to the public water mains in the street. Some of these lead pipes may still be found in parts of New Jersey where housing is more than 50 years old. Lead in drinking water has no taste, scent, or color.

The primary source of exposure to children is lead-based paints used inside or on houses built before 1978. Lead is still used in fishing sinkers, and in car wheel weights and batteries, as well as in some imported glazed ceramic ware, crystal, and food cans. Some imported cosmetics, cultural remedies, and candies have been found to be contaminated with lead.

It is estimated that 20% or more of human exposure to lead may come from lead in drinking water, while formula-fed infants can receive 40-60% of their lead exposure from drinking water containing lead.

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

- **Type of plumbing materials:** Lead solder used for connecting pipes contains about 50% lead. Sloppy soldering can increase the amount of lead dissolved into the water. Houses built after the 1987 ban on the use of lead soldering are less likely to have lead in drinking water. Brass fixtures and faucets can contain up to 8% lead and are also a significant source of lead in drinking water.
- **Length of time water stands in pipes:** The longer the time water stands in the plumbing the more likely it is that lead will build up in drinking water.

Continued...What factors affect how much lead can get into drinking water?

- **Corrosiveness of water:** Corrosive water – caused by high acidity, low mineral content, or high chloride – can increase the amount of lead that can get into drinking water. Acidic water tends to dissolve lead from pipes or solder into the water, and high chloride can make lead water soluble. Typically, minerals tend to form a protective barrier around lead solder and decrease the amount of lead that could be dissolved. Water that has a low mineral content can dissolve lead from solder into the water. One indication of corrosion in copper pipes is a blue-green stain around a drain of a white enamel sink. The absence of such a stain does not mean that corrosion is not occurring.
- **Grounding of electrical wires to water pipes:** The grounding of electrical wiring and telephone lines 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 or from a nearby industrial waste facility or municipal landfill.

How do I know if I have lead in my drinking water?

In order to prevent or reduce the chances of health effects due to lead in drinking water “Action Levels” have been established by the EPA and the NJDEP as enforceable trigger points at which corrective action should be undertaken by the public water company. **The Action Level for lead = 15ppb (µg/L).**

If you are a private well owner, you should test your drinking water for lead using a New Jersey-certified laboratory. A list of PWTA New Jersey certified labs in your area can be obtained from <http://www.nj.gov/dep/oqa/certlabs.htm>.



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Is lead harmful to my health?

Lead can cause a variety of harmful health effects. The type and severity of these health effects depend upon how much lead has built up in the body over time. When water or food found to contain lead is swallowed, some of it is absorbed through the digestive tract. Once absorbed, lead is distributed to all parts of the body through the blood and builds up mostly in the bone. A certain amount of lead remains in the blood.

Children and fetuses are the most sensitive to the harmful effects of lead since they absorb more lead into their bodies than adults and are more susceptible to its effects on brain development. Even low levels of lead in blood may affect the ability to pay attention, academic achievement, and behavioral problems. Most children with elevated blood lead levels do not exhibit any symptoms, however effects may appear later in age. Other health effects may include kidney damage, anemia, and reductions in birth weight. Symptoms of severely elevated blood lead levels (lead poisoning) may include stomach aches, vomiting, poor appetite, or nausea.

It is the buildup of lead from all sources over time that determines whether harmful health effects will occur. 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.

Is there a medical test to measure the level of lead in the body?

Children can be given a blood test to measure the level of lead in their blood. The Centers for Disease Control and Prevention (CDC) consider the level of blood lead of concern as levels in the top 2.5% of children ages 1-5 years in the U.S. Currently, a blood lead level equal to or greater than 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) is reportable. However, there is no safe level of lead.

NJ law requires that children be screened at both 1 and 2 years of age. Children 3 to 5 years of age should also be screened if they have not been screened before. Consult your health care provider or local health department if you have a reason to believe a member of your family has been exposed to lead.

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

1. If water from the cold water faucet has been sitting for several hours, you should let it run for 15 to 30 seconds until you feel the temperature of the water become and stay colder. You should flush your water before using it for drinking, cooking, or preparing beverages.
2. Lead is likely to be highest in hot water faucets so never drink, cook, or prepare beverages from the hot water faucet.
3. Boiling does not remove lead from drinking water, and excessive boiling of water for food preparation, drinking, or preparing beverages increase the lead concentration in the water by evaporation.

What should I do if my lead levels are elevated?

Washing clothes and dishes and showering and bathing are considered safe uses of water containing lead.

If contaminants are found in your well water above the action level, you should retest your well water to make sure that the first sample was collected and analyzed properly. If lead is found in the second sample take steps to reduce the levels in your well water. Contact your lab, local health department, or NJDOH, for help in understanding your test results and for advice on steps you can take to reduce contaminants in your well water.

What can I do to remove lead from my private well water?

Point-of use (POU) devices can remove lead at your tap, and **point-of-entry (POE) devices** can reduce corrosivity at the point where the water enters your home. NSF International is a non-profit organization which tests and certifies (POU/POE) drinking water treatment standards. More information about certified drinking water treatment devices can be found at: [<http://info.nsf.org/Certified/DWTU/>]

Water softeners and reverse osmosis units will remove lead from water, but can also make the water more corrosive to lead solder and plumbing by removing certain minerals. The installation of softeners or reverse osmosis units at the point of entry on older homes that may have lead plumbing should only be done under supervision of a qualified water treatment professional.