



Lead in Drinking Water

Lead is the most common heavy metal. It is used in the production of lead acid storage batteries, pigments, plumbing fittings, solder, other alloys and cables. Pipes in distribution systems and plumbing installed before 1945 may be made from lead. Exposure to high levels of lead can cause adverse health effects.

People can be exposed to small amounts of lead in water, food, air, soil and consumer products. Significant reductions of lead in products such as gasoline and paints mean that food and drinking water are now the primary sources of lead exposure for average adult populations.

How does lead get into my water?

Although lead is very common in rocks and soils, natural sources do not contribute significantly to lead in drinking water. More of a concern are the corrosion of lead pipes, plumbing and solder as well as lead leaching from un-plasticized PVC pipes containing lead components. Lead levels increase in acidic water, when the water is soft, and when it has a long standing time. Lead can also enter water supplies when industrial and municipal wastewater and stormwater is discharged, as well as through landfill leaching.

How can lead affect my health?

Lead is absorbed by soft tissues such as the spleen, kidney, blood, and bone marrow, as well as in the skeleton. Symptoms of lead exposure include:

- Decreased red blood cell production leading to anemia;
- Kidney dysfunction;
- Joint pain and muscle weakness;
- Cardiovascular effects: increased blood pressure and risk of hypertension;
- Neurological effects: memory loss, poor attention span, delayed reaction time and speech difficulties, depressed mood and fatigue;
- Neurodevelopmental effects: decreased intelligence, attention and performance reported in infants and children exposed to lead early in life as well as *in utero*;
- Reproductive effects: delays in sexual maturation, increase in spontaneous abortions and preterm births, reduced birth weights as well as decreased sperm concentrations.

Drinking water with elevated lead levels over a lifetime may increase the risk of developing some cancers.

What is the Maximum Acceptable Concentration for lead in drinking water?

The *Guidelines for Canadian Drinking Water Quality* established by Health Canada has set the maximum acceptable concentration (MAC) of lead in drinking water at 0.005 milligrams per litre (mg/L), though every effort should be made to maintain lead levels in drinking water as low as reasonably achievable. The drinking water guideline of lead is based on the detection limit and potential health effects of long term exposure to high concentrations of lead.

How do I know if there is lead in my drinking water?

As lead is both tasteless and odourless, you won't be able to tell if it is in your drinking water. However, the primary source of lead in drinking water is due to lead components in the plumbing system (ex: water pipes, bronze and brass fixtures, or as a component of solder), and may be identified during inspection by a plumber. Private water supplies can be tested by an accredited laboratory to determine lead levels. All public water supplies are regularly tested for lead.

What there are high levels of lead in my drinking water?

Boiling water with elevated lead levels will not make the water safe. An alternate safe water source, or water treated with an appropriate treatment device must be used for drinking, cooking, making juice, drinks, ice or infant formula, brushing teeth or soaking dentures, washing fruits and vegetables, and making soup, tea or coffee. Water with elevated lead levels may still be used for handwashing, washing dishes, bathing, and laundry.

Because lead can cause neurodevelopmental effects and cancer, every effort should be made to keep lead levels in drinking water as low as possible. If high concentrations of lead are found in your drinking water:

- Look for an alternate water source with low lead concentrations. Where possible, connect to a public water distribution system.
- Any lead components within the plumbing system should be replaced.
- Install an in-home water treatment device that can reduce the level of lead. Look for treatment devices that have been certified by an accredited certification organization as meeting the appropriate NSF International (NSF)/American National Standards Institute (ANSI) drinking water treatment unit standards for removing lead.
 - Distillation systems (NSF/ANSI standard 62)
 - Cation exchange water softener (NSF/ANSI standard 44)
 - Reverse osmosis drinking water treatment systems (NSF/ANSI standard 58)
 - Residential water filters approved for lead removal (NSF/ANSI standard 53)

After the system is installed, have the treated water tested for lead at a private accredited lab to make sure your system is working properly. Monitor and maintain your water treatment equipment according to manufacturer instructions.

If you are concerned about health risks from the consumption of water containing lead, please contact your doctor.

For more information about lead in drinking water, contact your local Environmental Health Officer.

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