



## **Lead Plumbing Awareness Frequently Asked Questions**

### **GENERAL INFORMATION**

#### **Does Denver Water have lead in its water?**

No. Denver Water has very clean water. In fact, each year Denver Water collects more than 10,000 water samples and runs nearly 50,000 water quality tests, including tests for lead. We test our source water (rivers and reservoirs) and treated water when it leaves the treatment plant and as it flows through the distribution system of pipes in the street. We have never found lead at levels of concern in any part of our water system, but have detected lead in some consumer's homes.

#### **Why is Denver Water notifying everyone about lead?**

We want to inform people about the potential health impacts of lead in the environment. Even though we do not have lead in our water, Denver Water has conducted a testing program for lead in water inside homes with lead plumbing for 20 years because lead may be present in private service lines (the pipes that connect a home or building to the water mains in the street) and plumbing. In our experience, people who live in homes originally built in the mid-1950s or earlier have the highest potential for lead in their plumbing.

In our most recent testing, we analyzed water samples from 60 homes. Eight of those samples showed elevated lead levels above the EPA Action Level. All eight homes had lead service lines and were built before 1920. Samples from the remaining 52 homes (including 20 with lead service lines) did not show higher levels of lead. Because the number of homes with elevated lead levels exceeded the standard, federal regulations require Denver Water to notify all our customers and provide information about lead.

#### **Is Denver Water in violation of safe drinking water regulations?**

No. Exceeding the action level for lead is not a violation. Denver Water is in compliance with the Colorado Primary Drinking Water Regulations and taking required actions in cooperation with the Colorado Department of Public Health and Environment.

#### **What is lead?**

Lead is a naturally occurring toxic metal that is all around us. Lead was used for many years in paints and other products found in and around our homes. Lead-based paint and lead-contaminated dust are the main sources of exposure for lead in U.S. children. Lead-based paints were banned for use in housing in 1978. Most homes built before 1960 contain lead paint. Some homes built as recently as 1978 may also contain lead paint.

The most common source of lead is from paint in homes and buildings built before 1978. The U.S. Environmental Protection Agency (EPA) has determined that if present in drinking water, lead can also present a health concern.

**Where is lead found?**

The most common source of lead is from paint in homes and buildings built before 1978. Lead also can be emitted into the air from industrial sources and leaded aviation gasoline, and lead can enter drinking water through plumbing materials. It is also used in manufacturing batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years. The use of lead as an additive to automobile gasoline was banned in 1996 in the United States.

**HEALTH****Why is lead a concern today?**

Lead is a common metal found throughout the environment. Lead can cause a significant risk to your health if too much of it enters your body from drinking water or other sources. Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys.

**What is the relationship between the EPA action level for drinking water and lead levels in the blood?**

The EPA action level of 15 parts per billion (ppb) of lead in drinking water was established as the lowest level, given present technology and resources, to which water systems can reasonably be required to control this contaminant should it occur in drinking water at their customers home taps. It is the level that requires additional corrective and educational actions, but does not necessarily directly correlate to increased blood-lead levels. Blood-lead levels are reflective of a variety of factors, such as age; exposure to dusts, paint chips, or soil containing lead; and the amount of water consumed daily. For women, pregnancy can also affect blood-lead levels. Nationally, the biggest source of increased blood-lead levels in children is the ingestion of lead-based paint.

**What are lead's health effects?**

Lead is a toxic metal that is harmful to people if inhaled or swallowed. Lead exposure affects the nervous system and can cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death.

**Who is most at risk for exposure to lead?**

Children under the age of six and pregnant women are especially vulnerable to health problems from exposure to lead, including elevated lead in drinking water. Even low levels of lead can cause learning and behavior problems in children. At very high levels lead poisoning can be fatal. Lead poisoning can have long-term health effects, even into adulthood.

Infants who drink formula prepared with lead-contaminated water are at high risk because their brains are rapidly developing and because they consume large volumes of formula relative to their body size.

**What is the most common way children get lead poisoning?**

There are many sources that contain lead, but most children who get lead poisoning get it from lead-based paint or lead-contaminated dust. Deteriorating lead-based paint, improper

renovation/remodeling projects, and lead based paint on surfaces such as doors and windows – all can create lead-contaminated dust.

For general information about lead exposure in children also see:

- <http://www.coepht.dphe.state.co.us/>
- <http://www.colorado.gov/cs/Satellite?c=Page&childpagename=CDPHE-DCEED%2FCBONLayout&cid=1251610480109&pagename=CBONWrapper>

### **What are potential sources for lead exposure?**

Important sources of exposure are peeling lead-based paint and lead-contaminated dust. Additional sources of lead exposure include lead-contaminated soil and air, some toys, and imported consumer products such as cosmetics, spices and candies.

EPA estimates that 10 to 20 percent of a person’s potential exposure to lead may come from drinking water. Infants who consume mostly formula mixed with the lead-containing water can receive 40 to 60 percent of their exposure to lead from drinking water.

### **Does a high level of lead in tap water cause health effects?**

While lead in tap water is rarely the single cause of lead poisoning, it can increase a person’s total lead exposure, especially infants who drink baby formula or children under the age of six who drink concentrated juices mixed with water. High levels of lead in tap water can contribute to adverse health effects because the lead may enter the bloodstream and increase the blood lead level. Again, it is important to remember, Denver’s source water and public water system is free of lead, but lead can be introduced into a building through the plumbing fixtures.

### **Are high levels of lead in drinking water a concern?**

No safe level of lead exposure has been identified and all sources of lead exposure for children should be controlled or eliminated when possible. Lead concentrations in drinking water should be below the U.S. Environmental Protection Agency’s action level of 15 parts per billion (ppb). If tests show the level of lead in your household water is 15 ppb or higher, it is advisable, especially if there are young children or pregnant women in the home, to reduce the lead level in your tap water as much as possible.

### **Is there a medical test to measure lead exposure?**

Yes. Your family doctor or local health clinic can perform a simple blood test for lead and provide you with information about your child’s blood lead level and any preventive measures you should take.

### **Where do I get information about having my child tested?**

If you suspect you or your child may be exposed to lead, talk with your doctor or health care provider about a blood lead test and how to reduce your family’s exposure to lead. Some low-cost health clinics also provide lead testing.

### **What can be done to reduce exposure to lead?**

EPA recommends the following steps to reduce overall exposure to lead:

- Use only cold water to prepare food and drinks.
- Flush all water outlets used for drinking or food preparation
- Clean debris out of all outlet screens or aerators on faucets on a regular basis.

- Keep your home clean and dust-free.
- Wipe up any paint chips or visible dust with a wet sponge or rag. Clean dust around areas where there is friction and dust can be generated, such as doors, windows, and drawers.
- Wash children's hands, bottles, pacifiers and toys often.
- Teach children to wipe and remove their shoes and wash hands after playing outdoors.
- Ensure that your family members eat well-balanced meals. Lead interferes with some of the body's basic functions. Our bodies can't tell the difference between lead and calcium, which is a mineral that strengthens bones. Children with healthy diets absorb less lead.
- Make sure your construction contractor is Lead Safe Certified.

**If my water has high lead levels, is it safe to take a bath or shower?**

Yes, bathing and showering should be safe for you and your children, even if the water contains lead over EPA's action level. Human skin does not absorb lead in water at levels that cause a health concern.

**Is lead-contaminated water safe for my pet?**

Changes in pet behavior as a result of drinking lead-contaminated water are not likely to be noticeable. In general, pets are more likely to obtain lead as a result of eating an object containing much higher lead levels (lead paint chips). To be safe, check with your veterinarian and/or give your pet filtered water if elevated levels of lead are found in your drinking water.

**PLUMBING**

**If lead isn't in Denver Water's system, how does it get into drinking water?**

Since it is not present in Denver Water's public water system, the major source is corrosion in your home's internal plumbing system. Lead enters the water ("leaches") through contact with service lines, pipes, solder/flux, and plumbing fixtures. Lead is rarely found in source or treated water.

**Is my home at risk for lead plumbing?**

In Denver Water's experience, the homes and buildings constructed in the mid-1950s or earlier are most likely to have lead service lines connecting the building to the public water system. Congress restricted the use of lead in drinking water plumbing in 1987 and Colorado enacted the ban in 1988, so homes constructed before that time could have interior lead plumbing or copper pipes joined with lead-based solder.

EPA defines high-risk homes as single family homes:

- Served by lead service lines
- Contain copper pipe with lead solder built after 1982 and before 1988
- Contain lead pipes

**How can I tell the difference between lead and iron plumbing?**

Lead is a softer metal than iron and scratches easily. Try scratching the pipe with a key or screwdriver. Lead pipe will be dull gray in color, but the scratch marks will appear bright silver.

### **Why are there lead service lines in the Denver area?**

Lead was commonly used in building materials throughout the Denver area's history, not only in service lines, but also in plumbing, paint, caulking and ceramic products. Congress banned lead in paint in 1978 and passed legislation to restrict lead in drinking water plumbing in 1987, which Colorado enacted in 1988, so only buildings newer than those dates are likely to be free from lead.

### **Will Denver Water replace my lead service line?**

Lead services lines are the responsibility of the property owner because they are not part of the public water system. In general, when left undisturbed the naturally occurring minerals in Denver's source water coat the inside of the pipe and isolate the lead from contact with drinking water. If this coating is disturbed or the service line is cut, lead could enter the tap water.

Currently, Denver Water rules require the replacement of any lead service line impacted by construction activities such as laying new pipe or repairing leaks by any party, including Denver Water. However, we do not undertake the expense of replacing service lines upon request, only when we cause the service line to be disturbed.

Denver Water leaves notification for homeowners whose lead service lines were cut in the course of repairs or construction.

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

Lead is not found in Denver's source water or public water system, but if you live in a high-risk home, there are steps you can take to reduce your exposure to lead in drinking water.

- **Run your water to flush out lead.** If it hasn't been used for several hours, run the cold water tap until the temperature is noticeably colder. This flushes lead-containing water from the pipes. To conserve water, remember to catch the flushed tap water for plants or some other household use (e.g. cleaning).
- **Always use cold water for drinking, cooking, and preparing baby formula.** Never cook with or drink water from the hot water tap. Never use water from the hot water tap to make formula.
- **Do not boil water to remove lead. Boiling water will not reduce lead.**
- **Periodically remove and clean the faucet's strainer/aerator.** While removed, run the water to remove debris.
- **You may consider investing in a home water treatment device or alternative water source.** When purchasing a water treatment device, make sure it is certified under Standard 53 by NSF International to remove lead. Contact NSF at 1-800-NSF-8010, or visit [www.nsf.org](http://www.nsf.org).
- **Identify and replace plumbing fixtures containing lead.** Identify and replace plumbing fixtures containing lead. Brass faucets, fittings and valves, including those advertised as "lead-free," may leach lead into drinking water. The NSF website at [www.nsf.org](http://www.nsf.org) has more information on lead-containing plumbing fixtures. You should use only lead-certified contractors.
- **Have a licensed electrician check your wiring.** If grounding wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electric code to determine if your wiring can be grounded

elsewhere. ***DO NOT*** attempt to change the wiring yourself because improper grounding can cause electrical shock and fire hazards.

**Is lead in plumbing only an issue in the Denver area?**

No, cities across the country are dealing with lead plumbing issues. Lead was an acceptable building material for pipes and solder for years and still exists in older homes and buildings throughout the nation.

**I live in a home that was originally built before the 1950s, but was since rebuilt or renovated. Should I still be concerned?**

Yes — while a home may have been recently “scraped” or extensively renovated, if the original home was built before the mid-1950s, there is a good chance the home has lead service lines.

**FILTERS**

**Do water filters work to remove lead, and where can I get one?**

Yes. There are a variety of water filters on the market certified to remove lead. They come in a variety of shapes, sizes, technologies and prices. They range from units that filter all the water entering the house to units that attach to the faucet, to pitchers. When purchasing a filter, look for filters certified to remove lead by NSF International. Finally, be sure to maintain the filter as instructed by the manufacturer. Find a list of filters certified under the NSF International standard by calling NSF at 1-800-NSF-8010, or visiting [www.nsf.org](http://www.nsf.org).

**TESTING HOUSEHOLD WATER FOR LEAD**

**I’m concerned my home may have lead plumbing. How can I find out?**

If you’re concerned your home plumbing may contain lead, you may want to have your water tested by a state-certified laboratory. The Colorado Department of Public Health and Environment’s Laboratory Services Division maintains a list of state-certified labs and instructions on how to collect water samples, which can be found at: [www.coloradostatelab.us](http://www.coloradostatelab.us). Please contact labs directly for information about cost and sampling bottles.

**Does Denver Water test my water for lead inside homes?**

Denver Water tests for lead throughout our system, but not in all homes/buildings. You may want to have your water tested for lead. The Colorado Department of Public Health and Environment’s Laboratory Services Division certifies a number of labs that are qualified to test drinking water for the presence of lead. A complete list of these certified labs and instructions on how to collect the water samples can be found at: [www.coloradostatelab.us](http://www.coloradostatelab.us). Please contact labs directly for information about cost and sampling bottles. For more information, you can contact Denver Water at 303-893-2444.

**Where can I get my water tested?**

Many laboratories, including the Colorado Department of Public Health and Environment Laboratory Service Division, can test drinking water for the presence of lead. Instructions regarding ordering water sampling bottles, how to collect your water sample, and test pricing are found at: [www.coloradostatelab.us](http://www.coloradostatelab.us). Additionally, the Colorado Department of Public Health and Environment certifies a number of in-state and out-of-state labs which are qualified to test

drinking water for the presence of lead. A complete listing of these certified labs can be found at: [www.coloradostatelab.us](http://www.coloradostatelab.us). Contact them directly for information about their costs.

**How can I tell the difference between lead and iron plumbing?**

Lead is a softer metal than iron and scratches easily. Try scratching the pipe with a key or screwdriver. Lead pipe will be dull gray in color, but the scratch marks will appear bright silver.

**How do I get information about my drinking water?**

You can call Denver Water at 303-893-2444, or read our water quality reports at [www.denverwater.org/WaterQuality/QualityReports](http://www.denverwater.org/WaterQuality/QualityReports).

**If you are served by a different water system, then please contact that system.**

**OTHER INFORMATION**

The following information has been provided by the Colorado Department of Public Health and Environment.

**What does the Colorado Department of Public Health and Environment’s lead-based paint program cover?**

The program regulates lead abatement projects involving lead-based paint, lead contaminated dust and lead contaminated soil in target housing (constructed prior to 1978) and child occupied facilities such as day cares and elementary schools. The program also requires contractors working in target housing to give a pre-renovation education pamphlet to homeowners prior to renovation.

**Are there any other Lead Program Requirements that we should know about?**

EPA has a new (2010) regulation — the Renovation, Repair and Painting Rule — that requires renovation and other contractors that may disturb lead-based paint to be certified and trained. The “lead-free” definition for drinking water pipes and fixtures is changing from no more than 8 percent lead to more than 0.25 percent in 2014.

**Who regulates lead in my drinking water?**

The Colorado Department of Public Health and Environment – Safe Drinking Water Program is responsible for implementing the Lead and Copper Rule.

**Isn’t lead banned from use in drinking water materials?**

Congress restricted the use of lead in drinking water plumbing in 1987. Colorado adopted the regulation in 1988. “Lead-free” does not mean materials contain 0 percent lead. Legally installed “lead-free” pipes and fixtures may contain no more than 8 percent lead (this limit is being lowered to 0.25 percent in 2014), and solder/flux no more than 0.2 percent.

**What is the State of Colorado doing about lead in drinking water?**

In 1991 EPA implemented the Lead and Copper Rule. The general requirements for public water systems are generalized in EPA’s Guidance for Public Water Systems. The Colorado Safe Drinking Water Program assures compliance with this rule as well as several others. Public water systems are required to collect samples, submit samples to Colorado certified laboratories for testing, and submit lead and copper test results to the Colorado Safe Drinking Water Program.

**Are all public water systems required to test for lead in drinking water?**

All systems, except those that serve only a transient population, are required to test for both lead and copper. Transient, non-community water systems are not required to test because consumers only drink the water for a short period of time (e.g. drinking water at a rest stop is usually a one-time event).

**How do public water systems comply with the action level?**

High-risk homes are chosen and multiple households are tested for lead and copper. Systems are required to notify consumers of the lead results at households tested. If more than 10 percent of the households have test results above the action level then the public water system has an “Action Level Exceedance.”

**What happens if a public water system exceeds the lead action level?**

The system is not in violation of the Lead and Copper Rule, but must comply with several follow-up requirements. These include:

- Delivering lead public education materials to all customers
- Increased testing to every six months for lead and copper
- Water characteristic testing for corrosion control
- Source water testing for lead and copper
- Treatment recommendations for changing water characteristics to minimize corrosivity of the water

**What happens if a public water system fails to meet the requirements?**

Violations are issued to the public water system. Depending on the risk to public health, an escalated enforcement action can be taken.

**Definitions**

**Public Water System (PWS):** Provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year. PWSs are regulated by the Colorado Safe Drinking Water Program.

There are 3 types of PWSs:

- Community (e.g. cities, or towns)
- Non-Transient, Non-Community (e.g. schools, or factories)
- Transient, Non-Community (e.g. restaurants, rest stops, or parks)

**Service Line:** Pipe that connects the water main (located under the street) to your home’s internal plumbing.

**Drinking Water Lead Action Level:** 15 parts per billion (ppb or ug/L) = 0.015 parts per million (ppm or mg/L). Public water systems with more than 10 percent of the test results above the Action Level must comply with several follow-up requirements.

## **LEARN MORE**

### **How can I learn more about the health effects of lead?**

Visit these resources to learn more about the health effects of lead:

- EPA Safe Drinking Water Hotline: 1-800-426-4791  
<http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm>
- National Lead Information Center: [www.epa.gov/lead](http://www.epa.gov/lead)
- Centers for Disease Control and Prevention: [www.cdc.gov/nceh/lead](http://www.cdc.gov/nceh/lead)
- NSF International: [www.nsf.org](http://www.nsf.org)
- Denver Health: <http://denverhealth.org>

### **Additional information:**

For additional information about lead, see the Centers for Disease Control and Prevention's website at <http://www.cdc.gov/nceh/lead> and the Environmental Protection Agency's website at <http://water.epa.gov/lawsregs/rulesregs/sdwa/lcr/index.cfm#LongTermRevisions>. EPA plans to revise the lead and copper drinking water rule, and a proposed rule is under development. This is ongoing process.