

Copper in Drinking Water

Copper is a metal that occurs naturally and is used to make many products, including parts for plumbing systems. Copper can get into your drinking water as the water passes through your household plumbing system. Your body needs some copper to stay healthy, but too much is harmful.

Health Effects

Eating or drinking too much copper can cause vomiting, diarrhea, stomach cramps, nausea, liver damage, and kidney disease. People with Wilson's disease and some infants (babies under one year old) are extra sensitive to copper. Their bodies are not able to get rid of extra copper easily.

How to Protect Yourself and Your Family

Drinking water with more than 1,300 micrograms of copper per liter of water ($\mu\text{g/L}$)* can be a health risk for everyone. Infants and people with Wilson's disease may need water with an even lower level of copper to stay safe.

Copper can get into your drinking water as it passes through your plumbing system. Over time, plumbing parts with copper in them usually build up a natural coating that prevents copper from being dissolved into the water. Plumbing systems with copper parts fewer than three years old usually have not had time to build up this protective coating. You can take the steps below to help keep your drinking water safe:

1. **Let the water run** for at least 30-60 seconds before using it for drinking or cooking if the water has not been turned on in over six hours.
2. **Use cold water** for drinking, making food, and making baby formula. Hot water releases more copper from pipes than cold water.
3. **Test your water.** In most cases, letting the water run and using cold water for drinking and cooking should keep copper levels low in your drinking water. If you are still concerned about copper, arrange with a laboratory to test your tap water. Testing your water is

important if an infant or someone with Wilson's disease drinks your tap water. Minnesota Department of Health (MDH) recommends using an accredited laboratory (see *Search for Accredited Laboratories*). Contact the laboratory to get sample containers and instructions, or ask your county environmental or public health services if they provide well water testing services.

4. If tests show you have levels of copper over 1,300 $\mu\text{g/L}$ in your drinking water after you let the water run 30-60 seconds, you may want to consider home water treatment (see *Home Water Treatment*).

* 1 microgram per liter ($\mu\text{g/L}$) = 1 part per billion (ppb)

If you own a private well

Copper is not usually found in the groundwater that feeds your well. Copper may enter your drinking water as it travels through your plumbing system. If your plumbing system has parts made with copper, follow the steps above to help keep your drinking water safe.

If you are on a public water system

The U.S. Environmental Protection Agency (EPA) has an action level of 1,300 $\mu\text{g/L}$ for public water systems serving places where people live, work, go to school, and receive childcare. These systems have to take actions to reduce the amount of copper in the water if more than 10 percent of the water samples they take from homes and sampling sites served by the system have copper levels over 1,300 $\mu\text{g/L}$.

You can find the level of copper detected in the system serving where you live (called a community water system) by reading the

system's water quality report (also known as a Consumer Confidence Report [CCR]). You can call your public water system to get a paper copy of your CCR, or you may be able to find it online (see *Search for your CCR webpage*).

Remember that your home may have higher levels of copper in drinking water than the homes your public water system tested. Follow the steps above to help keep your drinking water safe.

Noncommunity water systems serving schools, offices, factories, and childcare facilities test for copper; you can contact your noncommunity system to find the level of copper detected in the system. Noncommunity systems serving restaurants, resorts, and campgrounds are not required to test for copper.

Background Information

Copper can get into drinking water if the water moving through the plumbing system is corrosive. Corrosive water can dissolve copper in plumbing parts. Pinhole leaks, pitting in your pipes, or blue green stains on plumbing fixtures may be signs that you have corrosive water. If you see signs of corrosive water, lead may also be in your drinking water (see *Lead in Drinking Water*). Water with a lot of dissolved copper in it can make drinking water taste or smell bad or give it a blue color.

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Although the pH of groundwater in Minnesota is normally high enough to prevent water from dissolving copper, there are other water qualities that may contribute to corrosion. Public water systems monitor how corrosive water is to reduce the risk of lead and copper getting into drinking water. Learn more about copper and lead levels in Minnesota public water systems through *Drinking Water Protection Annual Reports*.

In 1999, Minnesota Pollution Control Agency found that none of the 954 wells they tested in

Minnesota had copper levels over the EPA action level (see *Copper, Chromium, Nickel, and Zinc in Minnesota's Ground Water*).

Resources

[Copper, Chromium, Nickel and Zinc in Minnesota's Ground Water \(PDF\)](https://www.pca.state.mn.us/sites/default/files/copper7.pdf) (<https://www.pca.state.mn.us/sites/default/files/copper7.pdf>)

[Drinking Water Protection Annual Reports](https://www.health.state.mn.us/communities/environment/water/dwar.html) (<https://www.health.state.mn.us/communities/environment/water/dwar.html>)

[Home Water Treatment](https://www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html) (<https://www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html>)

[Lead in Drinking Water](https://www.health.state.mn.us/communities/environment/water/contaminants/lead.html) (<https://www.health.state.mn.us/communities/environment/water/contaminants/lead.html>)

[Search for Accredited Laboratories](http://www.health.state.mn.us/labsearch) (www.health.state.mn.us/labsearch)

[Search for your CCR](https://mnccr.web.health.state.mn.us/index.faces) (<https://mnccr.web.health.state.mn.us/index.faces>)

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Lead in Drinking Water

Lead is a poisonous metal that can cause long-term health and behavioral problems. The main way to come in contact with lead in Minnesota is through lead-based paint in homes built before 1978. There are also many other ways to come in contact with lead, including through drinking water.

Health Effects

Coming in contact with lead can cause serious health problems for everyone. There is no safe level of lead. Babies, children under six years, and pregnant women are at the highest risk. Coming in contact with too much lead can damage the brain, kidneys, and nervous system. In children, lead can also slow development or cause learning, behavior, and hearing problems.

How to Protect Yourself and Your Family

You may be in contact with lead through paint, water, dust, soil, food, hobbies, or your job. Learn how to reduce your contact with lead from sources other than your drinking water at *Lead Poisoning Prevention: Common Sources*. Lead can get in your drinking water as it passes through your household plumbing system. Here are ways to protect yourself from lead in your drinking water.

1. **Let the water run** for at least 30-60 seconds before using it for drinking or cooking if the water has not been turned on in over six hours. If you have a lead service line, you may need to let the water run longer.
2. **Use cold water** for drinking, making food, and making baby formula. Hot water releases more lead from pipes than cold water.
3. **Test your water.** In most cases, letting the water run and using cold water for drinking and cooking should keep lead levels low in your drinking water. If you are still concerned about lead, arrange with a laboratory to test your tap water. Testing your water is important if young children or pregnant women drink your tap water. Minnesota Department of Health (MDH) recommends using an accredited laboratory (see *Search for Accredited Laboratories*). Contact the laboratory to get sample containers and instructions, or ask your county environmental or public health services if they provide well water testing services.
4. **Treat your water** if a test shows your water has high levels of lead after you let the water run (see *Home Water Treatment*).

If you have a private well

Lead is not usually found in your well water. Lead may enter your drinking water as it travels from your well through your plumbing system. Wells and plumbing systems built before 1995 may have parts that have lead in them. Learn more at *Lead in Well Water Systems*. Make sure you use cold water and let the water run before using it for drinking and cooking. You are responsible for keeping your well water safe and testing it as needed.

If you are on a public water system

All public water systems have to follow standards set by the U.S. Environmental Protection Agency (EPA) for testing for lead and copper. They also follow EPA standards to make sure water does not easily dissolve lead and copper while moving through pipes. You can find the levels of lead and copper detected in the system serving where you live by reading the system's water quality report (also known as a Consumer Confidence Report [CCR]). You can call your public water system to get a paper copy of your CCR, or you may be able to find it online (see *Search for your CCR* webpage). If you want to find the levels of lead and copper places beside your home, contact the water system serving that location.

Lead can get into your drinking water as it passes through your household plumbing system. If you live in a house built before 1986, you may have lead parts in your plumbing system. Make sure you use cold water and let the water run before using it for drinking and cooking. The only way to know how much lead is in your drinking water is to test your water.

Background Information

Lead occurs naturally and has been used in many products around the world. Researchers keep finding more ways that lead is toxic. Levels that were once considered safe are now dealt with as a medical emergency. The EPA continues to research lead to

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decide if more actions are needed. For public water systems, a law passed in 1986 restricts how much lead can be used in plumbing parts. In 2014, the 1986 law became stricter. Some plumbing parts still have very small amounts of lead in them. Other parts are now made of materials other than lead; one of those materials is copper. Like lead, copper can also dissolve into water, and too much copper can be bad for you (see *Copper in Drinking Water*).

The EPA has an action level of 15 parts of lead per billion parts of water (ppb) for public water systems. A public water system has to take actions to reduce the amount of lead in the water if more than 10 percent of the water samples have lead levels over 15 ppb. This is an action level; there is no safe level of lead in water.

Lead in Minnesota

The number of people with reported high levels of lead in Minnesota has been decreasing since at least the 1990s. The most common way for Minnesotans to come in contact with lead is through lead-based paint found in homes built before 1978.

In 2014, less than 0.1 percent of Minnesota's public water systems went over EPA's lead action level. There can still be lead in drinking water in Minnesota homes due to when homes were built. Homes built before 1940 may have lead service lines that connect them to public water. Plumbing systems built before 1986 may have lead parts. Learn more about lead levels in Minnesota at *Childhood Lead Exposure, Lead Poisoning Prevention, and Drinking Water Protection Annual Reports*.

What MDH is Doing

MDH enforces the Safe Drinking Water Act (which has a specific part about lead and copper) and provides guidance on how to reduce lead in drinking water at public schools and childcare services.

The MDH Lead and *Healthy Homes* programs work with state and local partners to find and get rid of lead hazards in homes, retail goods, and other areas.

MDH keeps track of blood lead levels in Minnesota (see *Annual elevated blood lead levels: facts & figures*). MDH also makes sure children and pregnant women who have high blood lead levels get help to reduce lead risks. Through outreach, MDH helps people learn

about the risk of lead and how to reduce contact with lead.

Resources

[Annual elevated blood lead levels: facts & figures](http://data.web.health.state.mn.us/lead_annual_level) (data.web.health.state.mn.us/lead_annual_level)

[Childhood Lead Exposure](http://data.web.health.state.mn.us/web/mndata/lead) (data.web.health.state.mn.us/web/mndata/lead)

[Common Sources of Lead](http://www.health.state.mn.us/communities/environment/lead/fs/common.html) (www.health.state.mn.us/communities/environment/lead/fs/common.html)

[Copper in Drinking Water](http://www.health.state.mn.us/communities/environment/water/contaminants/copper.html) (www.health.state.mn.us/communities/environment/water/contaminants/copper.html)

[Drinking Water Protection Annual Reports](http://www.health.state.mn.us/communities/environment/water/dwar.html) (www.health.state.mn.us/communities/environment/water/dwar.html)

[Healthy Homes Minnesota](http://www.health.state.mn.us/communities/environment/healthyhomes/index.html) (www.health.state.mn.us/communities/environment/healthyhomes/index.html)

[Home Water Treatment](http://www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html) (www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html)

[Lead Poisoning Prevention: Reports](http://www.health.state.mn.us/communities/environment/lead/reports.html) (www.health.state.mn.us/communities/environment/lead/reports.html)

[Lead in Well Water Systems](http://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/lead.pdf) (PDF) (www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/lead.pdf)

[Reducing Children's Exposure to Lead in Drinking Water](http://www.health.state.mn.us/communities/environment/water/docs/contaminants/lead.pdf) (PDF) (http://www.health.state.mn.us/communities/environment/water/docs/contaminants/lead.pdf)

[Reducing Lead in Drinking Water: A Technical Guidance and Model Plan for Minnesota's Public Schools](http://www.health.state.mn.us/communities/environment/water/docs/pbschoolguide.pdf) (PDF) (http://www.health.state.mn.us/communities/environment/water/docs/pbschoolguide.pdf)

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