

Copper & PRIVATE WELLS



What is copper?

Copper is a natural element found in soil, water, air, and rocks deep underground.

Copper is used to make wire, pipes, fittings, coins, cooking utensils and sheet metal. Copper compounds are used to treat mildew on plants, in water treatment and preservatives for wood, leather and fabric. Copper is also used to produce brass and bronze materials.

How does copper get in my private well water?

Copper can enter your private well water from erosion of rocks underground and leaching from soil into groundwater. Copper can also enter groundwater from mining and manufacturing of copper products.

Acidic water (water with low pH) can cause copper to leach from pipes in the well components and home plumbing system.

How can copper affect my health?

Copper is an essential element, meaning your body needs it in small amounts. It helps with many protein functions like energy production, skin pigmentation, and connective tissue maintenance and repair. However, drinking high levels of copper may cause adverse health effects. You can't smell copper. Copper may have a detectable taste and look.

Drinking high levels of copper over short periods of time can lead to:

- Nausea
- Vomiting
- Stomach cramps
- Diarrhea
- Gastrointestinal illness

Long term exposure to high levels of copper can cause anemia, liver poisoning, and kidney failure.

What level of copper should I be concerned about?

The **US Environmental Protection Agency** developed a public drinking water standard of **1.3 milligrams of copper per liter of water (mg/L)**. Public drinking water standards are based on public health protection and cost of treatment/testing at large utilities. This standard was developed in 1991 and validated in 2007.

The **US Environmental Protection Agency** and **NC Department of Environmental Quality** developed an aesthetic standard of **1.0 mg/L**. This standard was developed to prevent a metallic taste and blue-green staining of water.

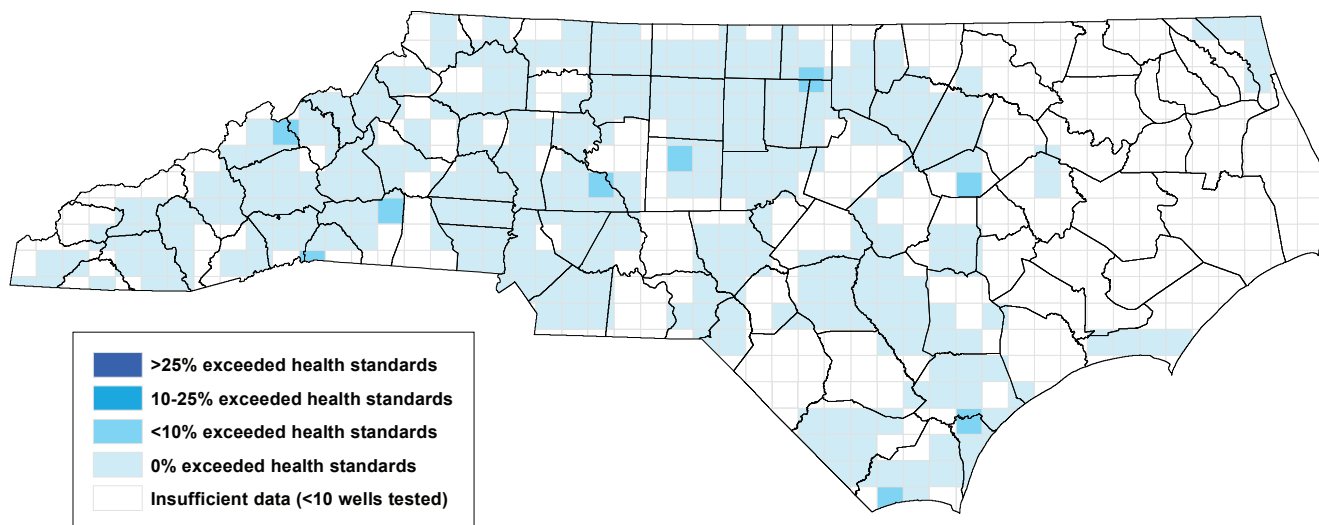
How do I test for copper in my private well?

Use a certified lab to test your well water for copper every two years, as part of the inorganic panel screen. Contact the private well program at your county health department to assist you with getting your water tested. Pricing of testing varies from county to county.

What if my copper levels are high?

You can install a treatment system to reduce the levels of copper in your private well.

Percent of Private Wells Tested Exceeding Federal Standards for Copper, 2011-2013



Treatment systems that reduce the levels of copper in your well water include:

- Activated Carbon Filtration
- Cation exchange, also known as a Water Softener
- Distillation
- Reverse osmosis

You can also reduce your exposure by using bottled water or connecting to public water supply, if possible.

Where is copper found in NC?

Copper is found at low levels (0.05-8.96 mg/L) throughout NC. **Less than 1%** of wells sampled for copper in NC from 2011 to 2013 exceeded the federal standard (1.3 mg/L). Yet, there are several areas in NC with at least 10% of wells exceeding the federal standard. See map for areas with elevated copper.

Where can I find more information about copper and my well?

Visit the NC Division of Public Health's Private Well and Health Program website: <http://epi.publichealth.nc.gov/oeep/programs/wellwater.html>.

There you can find:

- Contacts for your county private well program
- Copper in well water maps
- A guide for selecting a treatment system
- Other private well resources

You can also call the Private Well and Health Program at 919-707-5900.

Where did this information come from?

Agency for Toxic Substances & Disease Registry: www.atsdr.cdc.gov/toxfaqs/tfacts132.pdf

World Health Organization: www.who.int/water_sanitation_health/dwg/chemicals/copper.pdf

National Sanitation Foundation: www.nsf.org/consumer-resources/what-is-nsf-certification/water-filters-treatment-certification/contaminant-reduction-claims-guide

Water Quality Association: www.wqa.org/Portals/0/Technical/Technical%20Fact%20Sheets/2015_Copper.pdf

