

Barium & PRIVATE WELLS



What is barium?

Barium is a natural element found in rocks deep underground. In the environment, barium is found as barium compounds joined to other elements like sulfur, carbon, and oxygen.

Barium compounds are used in the oil and gas industry and in some medical practices. They can also be found in paint, bricks, ceramics, glass, and rubber.

How does barium get in my private well water?

Barium compounds can enter your private well water from erosion of rocks underground. Barium can also enter groundwater from industrial practices.

If a barium compound is very soluble or easily dissolves in water, it is more likely to be found in well water. Acidic water (with low pH) can make barium compounds more soluble.

How can barium affect my health?

Barium is not considered an essential element, meaning your body does not require it. You can't see, smell, or taste barium.

Drinking high levels of barium over short periods can lead to:

- Vomiting
- Stomach cramps
- Diarrhea
- Difficulties breathing
- Changes in blood pressure

- Numbness around the face
- Muscle weakness.

Higher levels of barium can cause changes in heart rhythm or paralysis and death. Drinking barium over long periods may lead to kidney damage, weight loss and death.

What level of barium should I be concerned about?

The **NC Department of Environmental Quality** developed a groundwater standard of **0.7 milligrams of barium per liter of water (mg/L)**. Ground water standards are developed to protect public health. This standard was developed in 2013.

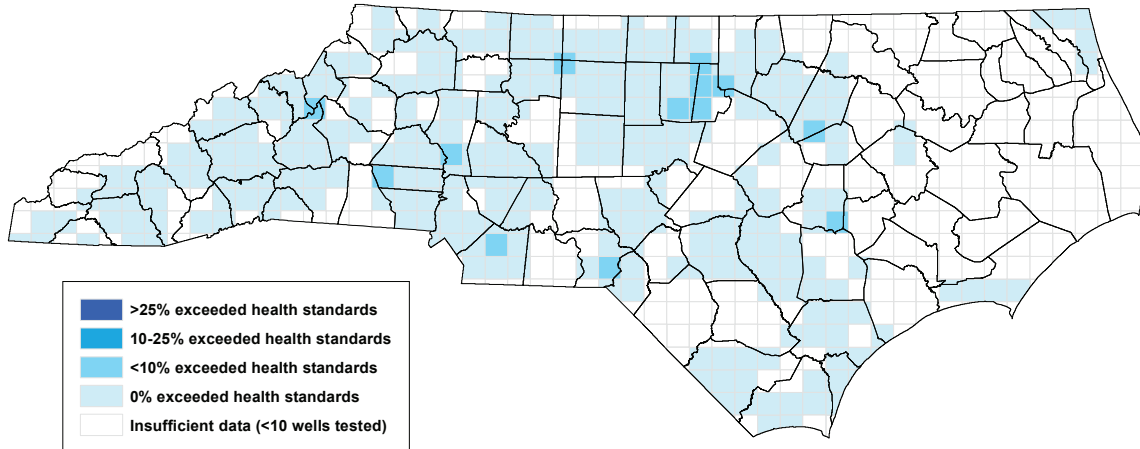
The **US Environmental Protection Agency** developed a public drinking water standard of **2 mg/L**. Public drinking water standards are based on public health protection and cost of treatment/testing at large utilities. This standard was developed in 1993 and validated in 2017.

What if my barium levels are high?

You can install a treatment system to reduce the levels of barium in your private well. Treatment systems that reduce the levels of barium in your well water include:

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

Percent of Private Wells Tested Exceeding State and/or Federal Standards for Barium, 2011-2013



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

How do I test for barium in my private well?

Use a certified lab to test your well water for barium 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.

Where is barium found in NC?

Barium is found at varying levels (0.1-2.1 mg/L) throughout NC. **Less than 1%** of wells sampled for barium in NC from 2011 to 2013 exceeded state and/or federal standards. Yet, there are several areas in NC with at least 10% of the wells exceeding state and/or federal standards. See map for areas with elevated barium.

Where can I find more information about barium 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
- Barium 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/tfacts24.pdf

World Health Organization: www.who.int/water_sanitation_health/dwq/chemicals/barium.pdf

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

