Vanadium & PRIVATE WELLS

What is vanadium?

Vanadium is a naturally occurring element in soil, water, and air. Vanadium is found in the earth's crust, rocks, iron ores and crude petroleum deposits. It is used in the production of automobile parts, ball bearings, and ceramics and is often combined with other metals to produce steel alloys.

How does vanadium get in my private well water?

Vanadium can enter your private well water from leaching and erosion of rocks underground. The amount of vanadium found in your private well water depends significantly on geographic location. Vanadium can also enter groundwater from industrial practices.

How can vanadium affect my health?

Vanadium is not considered an essential element, meaning your body does not need it. You cannot see or smell vanadium in well water but it may produce a metallic taste. It is not easily absorbed via the gastrointestinal tract.

Exposure to elevated levels of vanadium for a short period of time can lead to:

- Nausea
- Diarrhea
- Stomach cramps

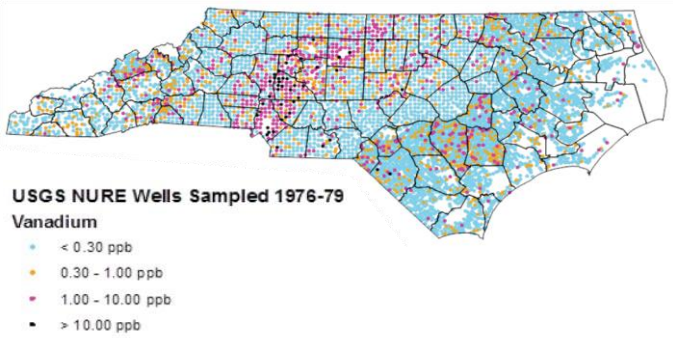
What standards exist for vanadium in drinking water?

The **U.S. Environmental Protection Agency** does not have a drinking water level established for vanadium. The North Carolina Department of Environmental Quality has established a groundwater standard of 7µg/L for vanadium.

Where is vanadium found in North Carolina?

Vanadium is naturally occurring in most geologic settings in North Carolina, especially in the rocks of the Piedmont area. As a result, groundwater with elevated concentrations of vanadium is common/prevalent in parts of the Charlotte Belt, Milton Belt, Murphy Belt, Raleigh Belt and the Triassic Basin.

USGS National Uranium Resource Evaluation Program
Groundwater Samples 1976-1979
Vanadium



Source: USGS National Uranium Resource Evaluation (NURE) program database, http://mrdata.usgs.gov/nure/water/. Accessed April 15, 2015.

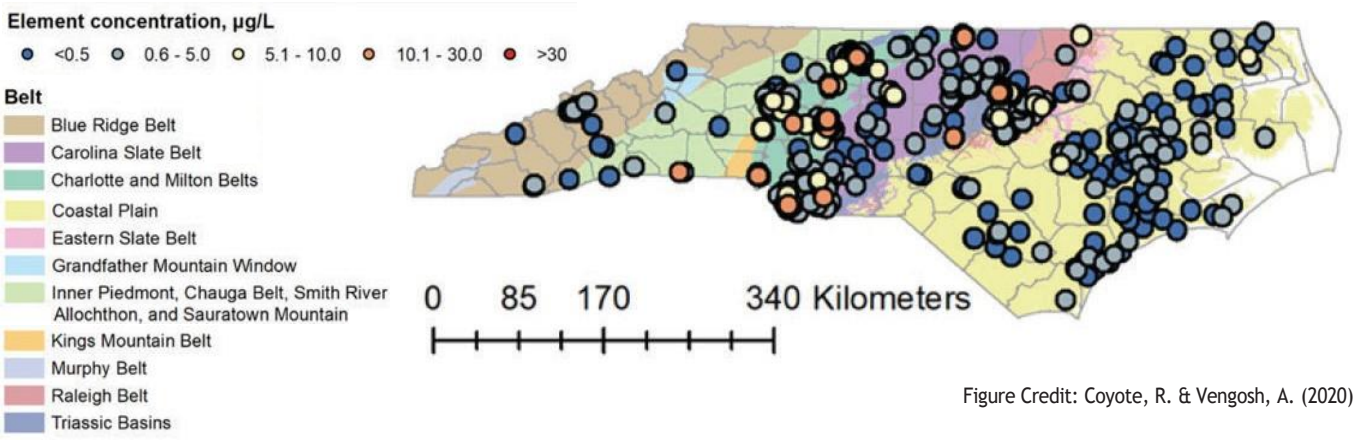


Figure Credit: Coyote, R. & Vengosh, A. (2020)

How do I test for vanadium in my private well?

Use a certified lab test on your well water for vanadium every 2 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 vanadium levels are high?

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

- Ion Exchange

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

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

You can visit the NC Division of Public Health's Private Well and Health Program website: http://epi.publichealth.nc.gov/oee/programs/wellwater.html.

There you can find:

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

You can also call the NC DPH's 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/tfacts58.pdf

N.C Department of Environmental Quality

https://files.nc.gov/ncdeq/document-library/07.28.15_Risk%20explanation%20FAQ.pdf

National Sanitation Foundation

www.nsf.org/consumer-resources/articles/contaminant-reduction-claims-guide

Scientific Literature

Coyote, R. & Vengosh, A. (2020). Factors controlling the risks of co-occurrence of the redox-sensitive elements of arsenic, chromium, vanadium, and uranium in groundwater from the eastern United States. *Environmental Science & Technology, 54*(7), 4367-4375. https://doi.org/10.1021/acs.est.9b06471