

Household Water Quality

Frederick County 2011-2015

The Virginia Household Water Quality Program provides affordable water testing and education through local Extension offices to the 1.7 million Virginians who rely on wells, springs or cisterns for their household water supply.

Visit us online!



What's in your water?

Municipal water supplies are regulated under the Safe Drinking Water Act, which mandates routine testing and treatment. Maintenance and testing of private water supplies (wells, springs and cisterns) is the responsibility of the owner. Virginia Cooperative Extension offers water testing and education for private water supply users across the state

Drinking water clinics are held in county Extension offices each year. Here's how it works:

#1 Kickoff Meeting

Participation is voluntary and open to anyone with a well, spring or cistern. Participants pick up a sample kit and receive instructions about how to collect the samples from their household tap and where and when to drop off their samples.

#2 Sampling

Following directions carefully, participants collect their samples and complete a short questionnaire. Samples are dropped off locally, so shipping is unnecessary. We coordinate getting the samples to Virginia Tech's campus for analysis.

#3 Analysis

Samples are analyzed for total coliform and E. coli bacteria, nitrate, lead, copper, arsenic, fluoride, sodium, hardness, iron, manganese, total dissolved solids, pH, and sulfate. The cost for one sample kit in 2015 was \$49. Confidential results are prepared and returned to the Extension office.

#4 Results

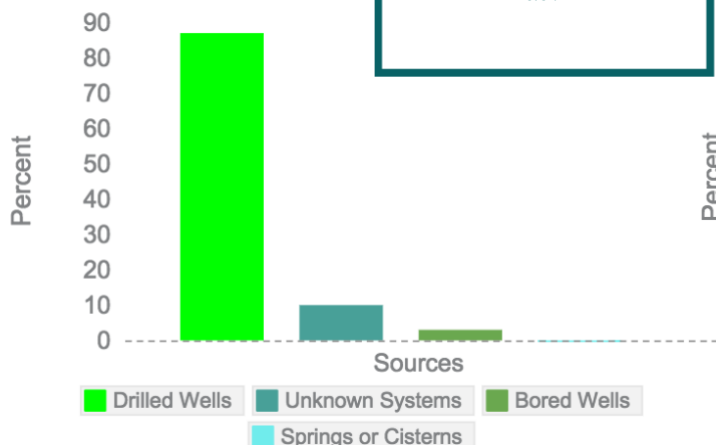
Results are returned to participants and explained at a local interpretation meeting. Information is provided about addressing water quality problems, routine care, and maintenance of private water supplies.

Water systems in Frederick County (2012 - 2015)

231 samples analyzed
Serving 530 people
Well depth: 40 to 1000 feet
Well age: 1-115 years

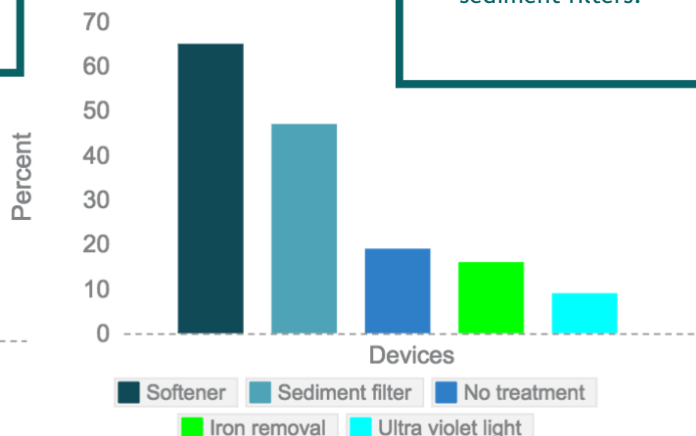
Systems

Drilled wells were most commonly reported. Ten percent of participants did not know what type of well they had.



Treatment

81% of participants reported having treatment installed. The most common devices: softeners and sediment filters.



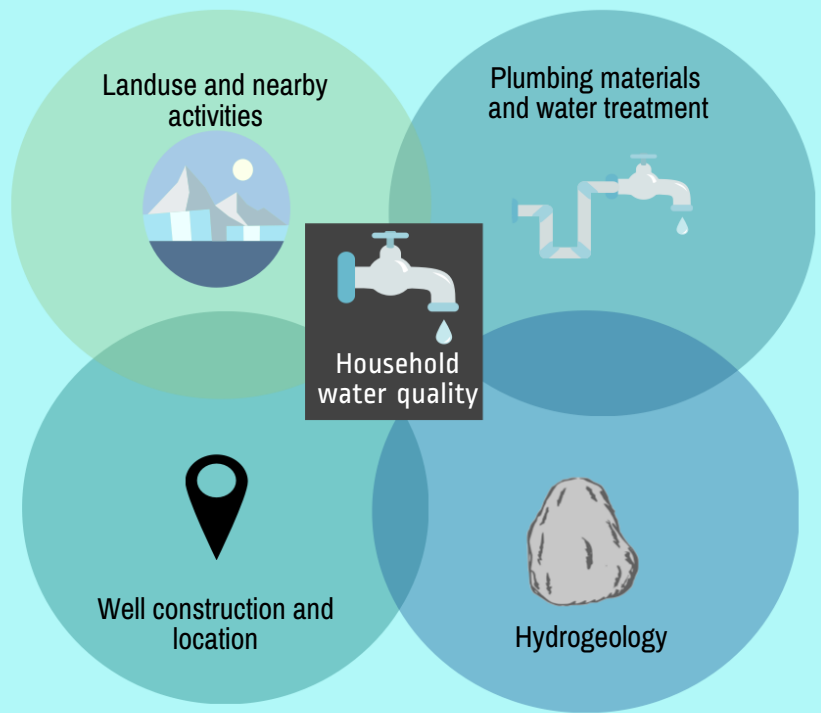
Where do contaminants come from?

Contaminants in water may be health-related (e.g., bacteria) or a nuisance (e.g., hardness causing scale) and can come from a variety of sources.

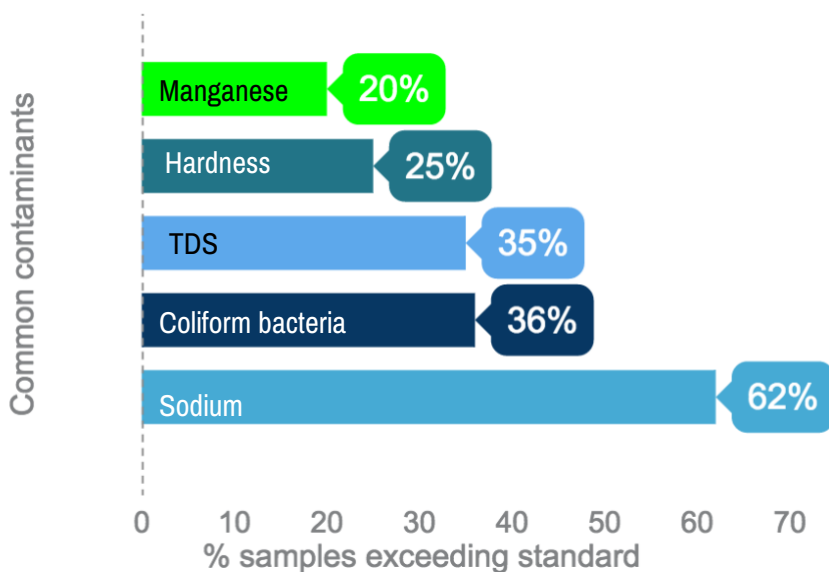
Some contaminants originate from geology, the sediment or rock where the water is stored. Others are a result of land usage or activities on the earth's surface, such as lawn fertilizer, animal waste, or chemical spills.

Proper construction of a well can protect household water quality by preventing surface water, which may carry many contaminants, from entering the groundwater supply. Wells should be constructed with proper casing, grout seal, and a sealed well cap. Contamination sources, such as livestock and septic systems should be at least 50 feet away from the well head.

Treatment devices and plumbing components can also influence water quality by adding contaminants or changing water chemistry.



Household water quality in Frederick County: Common Contaminants



The most common contaminants found in household water in Frederick County were sodium, total coliform bacteria, total dissolved solids (TDS), hardness and manganese.

Total coliform bacteria presence is an indication that surface water may be entering a well and other more harmful microorganisms may be present. *E. coli* were found in 12% of Frederick county samples and are a sign that human or animal waste is entering the water supply.

Hardness is composed of calcium and magnesium, which originates in bedrock such as limestone. Sodium is associated with water softeners, which are commonly used to remove hardness. Sodium can have negative health effects in excess levels.

Total dissolved solids, or TDS, is a measure of all dissolved impurities in water, and can be made up of sodium, nitrate, or other dissolved contaminants. It is a nuisance contaminant.

For information about other common contaminants, please visit our [Resources Page](#).

Special thanks to the residents of Clarke County who participated in the Virginia Household Water Quality Program drinking water clinics held in 2012, 2013 and 2015. Extension agents Mark Sutphin, Karen Poff, Corey Childs, Bobby Clark, and Rebecca Davis, among other partners were instrumental in the program's success.

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