

# It's **YOUR** Health!



## Private Well Testing

Maybe it's something about the taste. Maybe it just looks cloudy. Maybe you are wondering about that nearby gas station, onsite sewer treatment system, factory, or farm. There are many legitimate reasons to be concerned about your private well water quality. Luckily, there are answers.

Testing your well water provides you with information on the quality of your water supply. Testing is the best way to ensure that your drinking water supply is safe from harmful chemicals. In addition, water testing can determine whether nuisance impurities such as iron and manganese are present. The purpose of this fact sheet is to assist you as a private well owner in deciding how frequently to test your private well water and what to test for. It also provides homeowners with information about how to get their water tested, understanding their water test results and protecting their well from contamination.



Virginia's Private Well Regulations (12VAC5-630) requires testing of newly constructed wells for coliform organisms. This test does not cover all contaminants. After installation, subsequent testing is at the discretion of the well user. Water testing that is done in association with home purchases is not required by the VDH but may be required by the lender providing the mortgage.

This summarizes Virginia law and the lending industry. You are reading this, however, because you want to know more. This fact sheet provides general guidelines for private well water testing. In addition to these guidelines, we encourage you to check with your Local Health Department to find out whether there are water quality problems specific to your area. It is also a good idea to ask your neighbors whether they have ever had water quality problems.

# What Should You Test For, and How Often Should You Test?

Even if you do not suspect any well water problems, it is important to test your water to ensure that it is safe to drink. The following table lists the tests we recommend for all private wells even if you do not notice any problems with your water.

Recommended Tests for All Wells		
Test	How Often	Purpose
Basic Indicators (Potability) See below	Annually for three years for new wells. If no problems, once every 5 years thereafter	The basic indicators provide you with a general indication of water quality, and are useful to determine in additional tests are warranted.
Lead	At least one time. If your water is corrosive (pH <6), consider more frequent testing	Lead can leach from plumbing (pipes and faucets). Lead pipes may be in homes built before 1930. Lead-based solder may be in homes built before 1988. Brass is used in new plumbing and fixtures. All brass contains small amounts of lead. Corrosive water leaches more lead. Young children are more susceptible to harmful effects from lead exposure.
Arsenic, uranium, radon	At least one time	Arsenic, uranium and radon are naturally occurring in some groundwater in Virginia. Levels can fluctuate over time.
Volatile Organic Compounds (VOCs)	At least one time	This will identify effects of gasoline, oil, solvents, or industrial chemicals
Fluoride	Every 5 years when children under 5 are regular users	Fluoride can occur naturally in wells throughout Virginia. A child's permanent teeth can become discolored from excess fluoride. Too little fluoride can increase risk of tooth decay. Your child's dentist may ask you about the fluoride level in your well water.



Basic Indicators of Well Water Potability	
Test	What's Acceptable
Total Coliform Bacteria	None present
Nitrate-Nitrogen	10 mg/L
Nitrite-Nitrogen	1 mg/L
pH	6.4-8.5 standard units
Odor	< 2
Chloride	250 mg/L
Hardness	150 mg/L
Apparent Color	< 15 standard units
Sulfate	250 mg/L
Turbidity	< 5 standard units
Iron	0.3 mg/L
Manganese	0.05 mg/L (taste/odor) 0.5 mg/L (health)

Here is the U.S. EPA's list of reasons to test your private well water. It lists water quality issues you might encounter and what tests you should do if you have a particular issue with your water. Whenever you notice a change in the taste, color, odor, or clarity of your water, contact your Local Health Department for assistance.

<b>CONDITIONS OR NEARBY ACTIVITIES</b>	<b>TEST FOR:</b>
Recurring gastrointestinal illness	Coliform bacteria
Household plumbing contains lead	pH, lead, copper
Radon in indoor air or region is radon rich	Radon
Corrosion of pipes, plumbing	Corrosion, pH, lead
Nearby areas of intensive agriculture	Nitrate, pesticides, coliform bacteria
Coal or other mining operations nearby	Metals, pH, corrosion
Gas drilling operations nearby	Chloride, sodium, barium, strontium
Dump, junkyard, landfill, factory, gas station, or dry-cleaning operation nearby	Volatile organic compounds, total dissolved solids, pH, sulfate, chloride, metals
Odor of gasoline or fuel oil, and near gas station or buried fuel tanks	Volatile organic compounds
Objectionable taste or smell	Hydrogen sulfide, corrosion, metals
Stained plumbing fixtures, laundry	Iron, copper, manganese
Salty taste and seawater, or a heavily salted roadway nearby	Chloride, total dissolved solids, sodium
Scaly residues, soaps don't lather	Hardness
Rapid wear of water treatment equipment	pH, corrosion
Water softener needed to treat hardness	Manganese, iron
Water appears cloudy, frothy, or colored	Color, detergents

## Still Have questions? One more table!

Issues, Possible Causes, and Testing Recommendations		
Issue	Possible Cause(s)	Test for:
pH is <6.0	Naturally corrosive water, low hardness, low alkalinity	Hardness, alkalinity, sulfate, lead, copper, cadmium, zinc
Rotten egg odor, musty or swampy odor, tarnished copper and silverware, yellow or black stains on plumbing fixtures	Hydrogen sulfide gas, high sulfates, sulfur bacteria, iron/manganese bacteria, coliform bacteria	Odor, hydrogen sulfide, sulfate, coliform bacteria, iron, manganese
Blue or reddish stains on plumbing, fixtures or laundry. Plumbing leaks.	Corrosive (low pH) water	pH, hardness, alkalinity, sulfate, lead, copper, cadmium, zinc
Chemical, fuel, or fruity odor	Leaking petroleum storage tank, gas station fuel spill, industrial chemical spill, road runoff	Volatile Organic Compounds
Bitter, metallic taste	Corrosive (low pH) water	pH, lead, copper
Buildup of limescale (off-white chalky solids) on hot water plumbing, fixtures, kettles. Reduced soap lathering.	Hard water (hardness level exceeds 150 mg/L)	Hardness
Rust-colored water, foul odor, rust stains on clothing and plumbing fixtures, rust coating in toilet tank	Elevated iron or manganese, iron bacteria	Iron, manganese
Nitrates exceed 10 mg/L Nitrites exceed 1 mg/L	Fertilizer runoff, malfunctioning onsite septic system	Herbicides/pesticides, coliform bacteria
Radon in Air exceeds 4 picocuries per liter	Naturally occurring uranium in bedrock	Radon water test
Salty, brackish taste	Road salt runoff, nearby salt storage, well near salt water, improper setting on water softener	Chloride, sodium, total dissolved solids
Cloudy, turbid, muddy water	Silt, sediment, microorganisms	Turbidity and coliform bacteria
Well is located within one quarter mile of current or former orchard or farm	Agricultural and/or arsenic chemicals	Arsenic, nitrates, pesticides
House foundation within 50 feet was treated for termites prior to 1990	Termite pesticides	Dieldrin and chlordane



This is a good question; most people don't use laboratories in everyday life.

The Virginia Division of Consolidated Laboratory Services is responsible for the accreditation of commercial laboratories under the Virginia Environmental Laboratory Accreditation Program (VELAP). You can find a current listing of accredited laboratories [HERE](#). Most commercial

laboratories can provide you with everything you need for your well sampling event, including sample containers, preservatives, and detailed instructions on the procedure to collect the sample.

Another source is the [Virginia Household Water Quality Program](#) administered through the Virginia Cooperative Extension, which offers low cost annual water well testing/drinking water clinics at various locations throughout Virginia.

In most cases, you can collect a sample of your tap water yourself. In so doing, carefully follow the laboratory's instructions to obtain a good sample. The method of collecting a sample varies depending on the tests being done. For example, some contaminants such as lead and copper may require that water remains stagnant in the pipes for a minimum of 6 hours and is collected upon the first draw of water. Other contaminants require that the water be flushed or run for a minimum period of time before collecting the sample. Some contaminants require special sample bottles and procedures. Make sure that nothing but the water being sampled comes in contact with the opening of the bottle or the inside of the cap. Timeliness is important, too. Some contaminants deteriorate or change form with time. Most water samples need to be kept on ice when being taken to the lab. To assure accurate results, make certain the lab receives your water sample within the specified time directed on the instructions.

## *Understanding the results*



When you receive the laboratory's Certificate of Analysis, you might wonder what the results mean? It's one thing to find your results to be non-detectable, it's something else if a particular result is so many parts per billion or parts per million. Is it good or bad?

One way to understand your results is to ask the lab that did the testing. An alternative approach is to ask your Local Health Department (LDH).

A third option is to use an online tool that allows you to type your water test results into the tool to automatically get simple explanations about the potential health risks, treatment options and more. The Ohio State University

Extension, the Ohio Department of Health, and the Ohio EPA, for example, developed a service called [Water Test Interpretation Tool](#). With this tool, you can enter your test result to quickly obtain general information, recommendation regarding response, health effects, treatment options, and resource listings for further information.

## *Keep the records!*

Keep a record of all your water tests for reference. A change in the concentration of a contaminant may indicate that a water quality problem is developing. By comparing test results over time, you may find that a change in treatment is necessary or that a treatment device is not functioning properly.

## *What about the treatment system in my house?*

If you have water treatment equipment in your home, be aware that water treatment systems are designed for certain, specific contaminants and will not necessarily remove all contaminants. You can monitor whether the treatment system is doing its job by testing for the contaminant(s) that the system is treating. Consider periodically testing your water before and after treatment to be sure the system is continuing to work properly.

## *Protect your well!*

You can protect your private well by paying careful attention to what you do in and around your home as well as your neighbor's activities near your well. Consistent good practices to prevent contamination can help ensure that your well supplies you and your family with good quality drinking water. Here are some important ways you can protect your drinking water well.

- Use backflow prevention devices on outside faucets.
- Properly seal abandoned and unused wells.
- **NEVER** flush gasoline, motor oils, automotive chemicals, painting chemicals or solvents down the sink or toilet into a septic system.
- **NEVER** dispose of used oil by draining it to the ground
- Inspect and maintain your septic system.
- Keep livestock and pet waste away from well. Do not allow road, driveway or roof runoff to collect around your well.
- Do not mix or use pesticides, herbicides, fertilizers, fuels or other hazardous materials near your well. Use a lawnmower and/or a string trimmer to keep your well cap clear of weeds.
- Do not allow waste oils or gasoline to get into soil.
- **NEVER** do automotive maintenance or repair on exposed soils in your yard.
- Fence your well if you keep livestock in the vicinity.





**Arsenic** (hyperlink to: <http://wellowner.org/water-quality/arsenic/>)

**Boron** (hyperlink to: <https://www.epa.gov/dwstandardsregulations/chromium-drinking-water>)

**Chromium** (hyperlink to: <https://www.epa.gov/dwstandardsregulations/chromium-drinking-water>)

**Coliform Bacteria** (hyperlink to: <http://wellowner.org/water-quality/coliform-bacteria/>)

**Hydrogen sulfide** (hyperlink to: <http://wellowner.org/water-quality/hydrogen-sulfide/>)

**Lead** (hyperlink to: <http://wellowner.org/lead/>)

**MTBE** (hyperlink to: <http://wellowner.org/water-quality/mtbe/>)

**Nitrates** (hyperlink to: <http://wellowner.org/water-quality/nitrates/>)

**Radionuclides** (hyperlink to: <http://wellowner.org/water-quality/radionuclides/>)

**Radon** (hyperlink to: <http://wellowner.org/water-quality/radon/>)

**Trihalomethanes** (hyperlink to: <http://wellowner.org/water-quality/trihalomethanes/>)

**Uranium** (hyperlink to: <http://wellowner.org/water-quality/uranium-what-you-need-to-know/>)



Office of Environmental Health Services