

Spring into action! Test water and check your well

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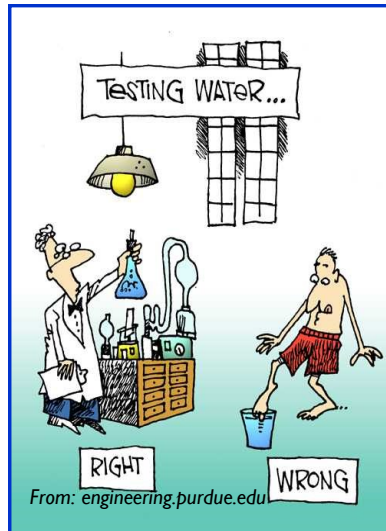
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If you rely on a private water supply, such as a well or spring, you are solely responsible for the safety and care of that supply. The spring months are a great time to take stock of your water system by running regular water tests and performing a basic check to see if any maintenance is required. It is always good practice to keep a detailed record of your well installation, maintenance, inspections, repairs and all water tests.

Water testing should always be done by a certified lab (list available here: <http://www.wellwater.bse.vt.edu/resources.php>) or consider participating in a VAHWQP drinking water clinic (<http://www.wellwater.bse.vt.edu/events.php>) Taking a water test is like taking a snapshot of your water — it gives you an idea of your water quality on a given day. Although many characteristics of your water stay relatively stable, you will only have an accurate idea of your water quality if you test regularly. These are the tests we recommend:

- Testing for **total coliform bacteria** is recommended annually, and if found in a water supply, is usually followed by testing for fecal coliform or *E. Coli* bacteria. Coliform bacteria, although harmless, are an indicator that other, more dangerous bacteria may be entering a water supply.

Tests for pH, nitrate, and total dissolved solids (TDS) are recommended every three years. These tests are good indicators of general water quality,



and may indicate the likelihood of other contaminants being present.

- **pH** is a measure of the acidity or alkalinity of water. Small changes in pH are significant, and pH lower than 6.5 can be a concern because of its potential to leach metals from the plumbing system.

- **Nitrate** dissolves and moves easily in water, and may be a serious concern for children under 6 months of age. Levels above 10 mg/L are associated with methemoglobinemia, which affects the ability of infants' blood to carry oxygen. Sources of nitrate include fertilizer, manure and failing septic tanks.

- **TDS (total dissolved solids)** is a measure of all dissolved components in water, and a good indicator of general water quality.

You may also want to test for additional contaminants based on health concerns, nuisance symptoms, such as staining or smell, or nearby land uses. See the table on page 2 for information about additional testing. After receiving test results, compare them to the Environmental Protection Agency's drinking water standards for public systems (www.epa.gov). These standards are useful guidelines for private water systems. Consider visiting our resource page (<http://www.wellwater.bse.vt.edu/>)

(Continued on page 3)



What to test for? Symptoms of Concern

Symptom	Consider Testing For
Gastro-intestinal illness	total coliform bacteria, nitrate, sulfate
Orange or black stains	iron, manganese, hydrogen sulfide
Soap has no lather; white residue	hardness
Salty taste	chloride, sodium, total dissolved solids
Odor of gas or oil	hydrocarbon scan
Pin-hole leaks, blue, green or grey stains	pH, copper, lead
Metallic taste	pH, cadmium, copper, iron, lead, zinc
Rotten egg smell	hydrogen sulfide

From Private Drinking Water Supplies, NRAES-47, pg 20-21

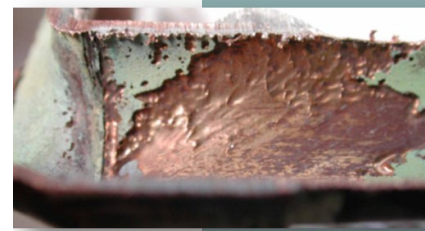
What to test for? Nearby Land Uses of Concern

Nearby Land Use	Consider Testing For
Agricultural operations	nitrate, coliform bacteria, pesticides, pH, total dissolved solids
Coal mining	pH, iron, manganese, total dissolved solids, sulfate, aluminum
Gas or oil drilling	sodium, chloride, barium, total dissolved solids (TDS), lead, pH, hydrocarbon scan, strontium
Dump, landfill, factory	heavy metals, volatile organic compounds, total dissolved solids, pH, chloride
Heavily salted roadways	sodium, chloride, total dissolved solids
Septic tank	fecal coliform bacteria, nitrate

Heavy Metals in Drinking Water

Your
Water
Questions...
Answered!

What metals should I be concerned about? Heavy metals such as lead, copper, arsenic, and mercury may be present in water supplies for a variety of reasons. Nearly all of these metals have serious health effects. Lead and copper rarely occur naturally in groundwater, but may leach into water supplies through corrosion of household plumbing pipes, fittings, or solder. Leaching of these metals is more likely if water is corrosive, or low in pH (below 6.5). Arsenic may be naturally occurring in some rocks and soils, or may exist in runoff from orchards from certain fungicides and pesticides. Mercury can be found in some natural deposits, and may be contained in runoff from batteries, light bulbs or other electrical equipment.



What problems are associated with metals in my water? In addition to health concerns (see chart on page 3), metals can also cause nuisance or aesthetic problems, such as staining of fixtures or laundry, or a metallic taste. It is important to note that dangerous levels of metals in water may be undetectable by human senses. Always use a certified laboratory for testing (list available here: <http://www.wellwater.bse.vt.edu/files/lablist2010.pdf>). Consider testing water after it has been sitting in the pipes for at least 8 hours (first draw) and once the water has been run for 5 minutes or so to determine if metals are coming from the plumbing system. Test for pH too!



How can I best address heavy metal contamination?

It depends on the source of the metals. If they are coming from the plumbing system, and your water is low in pH, increasing the pH using an acid neutralizing filter may fix the problem. One can also remove lead, copper, brass or galvanized steel plumbing pipes and components. Metals concentrations can also be reduced using reverse osmosis, activated carbon, or cation exchange units. These systems are best used for treating only water for drinking and cooking. For more information visit: <http://www.wellwater.bse.vt.edu/resources.php>.

Right photo: Visible pitting of copper pipes indicates corrosive water and metals leaching.

Left photo: Blue-green staining is a common indicator of low pH with copper pipes present.

Sources and Health Effects of Various Metals

From *Private Drinking Water Supplies*, NRAES-47, pg 24.

Metal and EPA health standard	Source	Health Effects
Lead (0 µg/l MCL/ 0.015 mg/L Health action level)	Corrosion of household plumbing systems	Damage to the brain, kidneys, nervous system, and red blood cells. Stunting of mental and physical development in children
Mercury (0.002 mg/l)	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands	Kidney damage
Arsenic (0.01 mg/l)	Erosion of natural deposits, runoff from orchards	Cardiovascular, pulmonary, immunological, and neurological effects (acute). Skin, bladder, lung, kidney, liver, and prostate cancer (chronic)
Copper (1.3 mg/l)	Corrosion of household plumbing systems	Gastrointestinal distress, liver or kidney damage

Protect our water: Properly dispose of pharmaceuticals on April 30!

The US Drug Enforcement Administration, in conjunction with local law enforcement, will hold
A DRUG-TAKE-BACK EVENT on April 30, 2011.

Visit www.deadiversion.usdoj.gov/drug_disposal/takeback/ or contact your local police department for more information. Help keep drugs out of our water supply and away from children!

To learn more about safely disposing of pharmaceuticals, visit
<http://www.smarxtdisposal.net/>.



(From *Spring into action!* Continued from page 1)

[resources.php](#)), a Master Well Owner or our coordinator for help interpreting your results.

Spring is also a great time to perform your annual well check. Keeping your well in good repair is the best way to protect your drinking water quality from surface water infiltration, which can introduce bacteria or contaminants like nitrate to your water supply.

- Check the casing and cap carefully for any cracks or damage, and make sure the casing extends at least 12" above the ground. Ensure a sanitary, sealed well cap for a drilled well, or a sealed concrete cap on a bored well, is tightly attached to the casing.
- Make sure the area around your well is clean and free of debris. Keep paint, motor oil, pesticides and fertilizers away from the well. If you don't want to drink it, don't get it near your well!
- Make sure the ground around the well casing is sloping away from the well to prevent pooling.

- If it's been a few years since you had a professional water well systems provider check out your system, give them a call. Visit <http://www.vawaterwellassociation.org/> for a list of well drillers.



A sanitary, sealed well cap is secure and has bolts running up and down and a rubber gasket.

Casing should be free of holes and cracks and extend at least 12 inches above the ground.

If possible, slope the ground around the well so water will not pool around it.

Upcoming Events	Details	Contact
Virginia Master Well Owner Network Extension Educator Training	Thursday May 19 VT Richmond Center 2810 Parham Rd Richmond 8 am - 5 pm	Erin James Ling ejling@vt.edu 540-231-9058
Virginia Master Well Owner Network VOLUNTEER Training	Location to be determined Late Summer 2011	Complete an application today! www.wellwater.bse.vt.edu
Frederick and Clarke County Drinking Water Clinics	March– April 2011	Karen Ridings ridingsk@vt.edu (540) 665-5699 ext. 8315
Lee-Dickenson-Scott-Wise County Drinking Water Clinics	March– April 2011	Lee and Scott: Scott Jerrell sjerrell@vt.edu (276) 452-2772 Wise and Dickenson: Amy Fannon afannon@vt.edu (276) 328-6194
Loudoun County Drinking Water Clinic	May– June 2011	Debbie Dillion ddillion@vt.edu (703) 777-0373
Isle of Wight, Surry, Suffolk County Drinking Water Clinic	June– July 2011	Janet Spencer jaashle2@vt.edu (757) 365-6262
Buckingham County Drinking Water Clinic	Fall 2011	Jennifer Ligon jligon@vt.edu (434) 969-4261
Spotsylvania-Stafford County Drinking Water Clinic	Fall 2011	Kim Elkins KimElkins@vt.edu John Howe jhowe@vt.edu (540) 507-7570

Important! Master Well Owner Volunteers:

Ensure that your hours of service and hard work are accounted for! Your *Accomplishments* and *Numbers of Contacts* are needed. Please visit <http://www.wellwater.bse.vt.edu/protected/volunteers.php> today. Thanks!

Interested in volunteering too? Visit http://www.wellwater.bse.vt.edu/become_a_mwo.php today!



VIRGINIA HOUSEHOLD
WATER QUALITY
PROGRAM
Virginia Cooperative Extension

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Virginia Master Well Owner Network
Education for Protection of Virginia Private Home Water Supplies

Our objective is to improve the water quality and health of Virginia families reliant on private water supplies.

Visit www.wellwater.bse.vt.edu