

Healthy Drinking Waters for Rhode Islanders

SAFE AND HEALTHY LIVES IN SAFE AND HEALTHY COMMUNITIES

Residential Well Water Testing

TESTING YOUR WELL WATER CAN PROVIDE YOU WITH INFORMATION ON THE QUALITY OF YOUR DRINKING WATER. Testing is one way to ensure that your private drinking water supply is safe from harmful impurities. In addition, testing can help you to determine the extent to which other nuisance impurities – like iron and manganese - may exist.



Private Water Supplies

Private wells currently are not regulated by the U.S. Environmental Protection Agency (EPA). Private well owners are responsible for the quality of their own drinking water. Homeowners with private wells are generally not required to test their drinking water. However, they can use the public drinking water standards as guidelines to ensure drinking water quality. We suggest you test your water annually for a few of the more common contaminants. Even if your current water supply proves to be clean and safe to drink, regular testing is important because it establishes a record of water quality that may help solve future problems.



Additionally, if there are known contamination problems in your area and if neighbors have experienced well water contamination, you should consider testing your drinking water for those contaminants. Know the history of your neighborhood and whether or not there are any water quality problems from either natural or manmade contaminants. If you have questions, you can call the Rhode Island Department of Health, (HEALTH), Office of Drinking Water Quality or URI Cooperative Extension Home*A*Syst Program.

Additionally, if there are known contamination problems in your area and if neighbors have experienced well water contamination, you should consider testing your drinking water for those contaminants. Know the history of your neighborhood and whether or not there are any water quality problems from either natural or manmade contaminants. If you have questions, you can call the Rhode Island Department of Health, (HEALTH), Office of Drinking Water Quality or URI Cooperative Extension Home*A*Syst Program.

Public Water Supplies

If you receive your drinking water from a public water supplier, the source of drinking water is either a surface water reservoir, a public well that pumps groundwater, or both. A system of pipes distributes the water to you and your neighbors.

There are about 480 public water supply systems in Rhode Island, serving 90 percent of the people in the state. The largest public water supplier in the state is the Providence Water Supply Board, which provides water to roughly 60% of the state's population. In contrast, small rural public water systems may be little more than a well accommodating a community of 20-30 residents.

Federal and State laws require that public water supply systems regularly test for over 80 contaminants in the water. Public water companies test water from the raw supply – the rivers and ponds in their watershed, the reservoir(s), or the well(s) – the water treatment plant, and public and private buildings throughout their distribution system. The water quality must meet standards set by the EPA as well as additional standards set by HEALTH. These standards are limits on the amount of pollutants allowed in the treated drinking water. The water is safe to drink if the amount of the pollutant is below the water quality standard. If the pollutant amount is above the water quality standard, the water is not safe to drink.

Public water supply systems are required by law to develop and distribute an annual water quality report (known as the Consumer Confidence Report) to their customers. This report contains information about the previous year's water quality and whether or not there were any violations of the federal and state water quality standards. You can also call your water utility supplier for information about drinking water quality.

Drinking Water Standards

As authorized by the 1974 Safe Drinking Water Act and its

amendments, the EPA has established limits, or standards, on the concentrations of certain contaminants that are allowed in public drinking water supplies. These standards are set to protect public health by ensuring good water quality. EPA standards for drinking water fall into two categories: primary standards and secondary standards. Refer to the factsheet *Drinking Water Standards* for more information.

When should you test your water?

Use the following testing frequencies as guidelines, but test more often if you suspect a problem or notice a sudden change in the quality of your drinking water.

- ◆ Once each year, have a routine analysis which tests for: total coliform bacteria, nitrate, sodium, turbidity, and color. All are good general indicators of water quality. In addition, test the pH of your well water – this will help you to determine the acidity of the water and whether you might have problems with pipe pitting and leaching of metals from the plumbing. The best times to test are usually after a spring or summer rainy period or after repair or replacement of your well, pump, or water pipes.
- ◆ Whenever you notice a change in taste, color, odor, turbidity (as indicated by cloudiness), or sediments, or if you think your water quality has been affected, as indicated by unexplained household illness. Contact HEALTH or URI Cooperative Extension Home*A*Syst Program to help you determine what to test for.
- ◆ If household plumbing contains lead pipes, fittings, or solder joints: Test for pH, lead, copper, cadmium and zinc. Also, brass contains 3-8% lead and may be found in your fixtures or on parts of the well pump. Additionally, chrome contains brass. For this reason, HEALTH suggests that you test for lead every three to five years.
- ◆ If there are children under six years old living in a house, test for lead. If there are children under 12 years of age, include a fluoride test.
- ◆ If you wish to monitor the efficiency and performance of home water treatment equipment: Test for the specific contaminant(s) being treated upon installation of a treatment device, at regular intervals after installation, and if you notice a change in water quality as indicated by odor, taste, color, turbidity, sediments, or other conditions. Comparing water tests of untreated and treated water will help you determine if the treatment system is doing its job.

How should you collect a water sample?

Most water testing laboratories supply their own sample containers and detailed instruction on how to properly collect a water sample. Use the bottles provided and carefully follow laboratory instructions to obtain a good sample. Complete all forms that come with the containers so that your sample can be processed quickly and accurately. Make sure you understand the sampling procedure before you begin.

How to take 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. Cleanliness is a must, make sure that nothing but the water 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 cool 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. For example, some labs may not accept certain water samples on a Friday, as the test procedure must be started within 24 hours. If you have a water sample that is going to be tested for volatile organic compounds (VOCs), don't stop for gas with the sample in the car as you can contaminate it.

Where can you have your water tested?

HEALTH's water testing lab offers water testing services for a fee. Sample bottles, detailed instructions and forms are available from the lab on Orms Street in Providence. Sample bottles, instructions and forms for the Routine Screen Kit A are also available at the Cooperative Extension Education Center at URI in Kingston. You can call the Center at 874-2900 to confirm that Kit A is currently in stock prior to stopping by. Kit A includes tests for total coliform bacteria, nitrate, turbidity screen, color, and sodium, totaling \$79.00. All samples must be taken to the lab in Providence.

If you choose to have your water tested at a private laboratory, be sure it is a Rhode Island state certified lab. Certification means that the lab is using accepted testing procedures. It is also important to confirm that the lab is certified to test for the contaminants you want to test. For example, some labs may be certified to test for microbiology, but not for inorganics, which includes nitrate, fluoride, and sodium. HEALTH maintains a list of certified labs on its webpage at <http://www.health.ri.gov/labs/instate.htm>. Note: some of the listed labs are associated with public water suppliers and do not accept private clients.

Keep records

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

Interpreting the test results

Once the tests are completed, you are faced with interpreting any positive results. The presence of a contaminant is not always an indication of a health hazard or a serious nuisance. It is the level at which it is found that is most important. You can discuss your results with HEALTH or URI Cooperative Extension Home*A*Syst Program.

Summary of Water Testing

PROBLEM	COMMON SIGNS/SITUATIONS	CAUSES	TEST RECOMMENDED
Rusty colored water	Rust stains on clothing and porcelain plumbing fixtures. Metallic taste to water. Rust coating in toilet tank. Tap water turns rust colored after exposure to air.	Iron or manganese, or iron bacteria	Iron, manganese
Blue stains	Copper plumbing Blue stains on plumbing, fixtures, and laundry	Corrosive water (low pH) is leaching copper from plumbing	Copper test, pH, sulfate test
"Rotten egg" odor	Iron, steel, or copper parts of pumps, pipes, and fixtures corroded. Fine black particles in water. Silverware turns black.	Hydrogen sulfide gas, sulfate-reducing bacteria, or sulfur bacteria.	Odor test, hydrogen sulfide test, sulfate test, if home built before 1990, test for lead.
Corrosive water	Metal parts on pump, piping, tank and fixtures corroded. Red stains from corrosion or galvanized pipe; blue-green stains from corrosion of copper or brass.	Corrosive water (low pH) is naturally occurring in Rhode Island groundwater.	pH test, sulfate test If home built before to 1990, test for lead. If copper pipes, test for copper.
Cloudy turbid water	"Dirty" or muddy appearance	Silt, sediment, microorganisms	Check well construction with local well driller. Turbidity test. Bacteria test.
Frothy, sudsy water	Water appears frothy	Malfunctioning septic system	Detergent screen
Chemical odor, fuel odor	Underground fuel storage tank nearby; gas station; improper use, storage, or disposal of fuels used around the home (car, lawn mower, other gas-powered machines)	Leaking underground fuel storage tank, fuel spills	Volatile organic chemical scan
Unusual chemical odor	Well near dump, junkyard, landfill, industrial facilities, dry cleaners, gas stations	Chemical leaching	Organic chemical scan, heavy metals, consult with HEALTH on testing suggestions.
Fruity odor	Underground fuel storage tank nearby; gas station; improper use, storage, or disposal of fuels used around the home (car, lawn mower, other gas-powered machines); well close to road	Fuel spill, leaking underground fuel storage tank, road runoff ponding near well.	Volatile Organic Chemical scan.
Recurrent gastrointestinal illness	Stomach problems, nausea, diarrhea	Bacterial contamination, cracked well casing, malfunctioning septic system	Bacteria, nitrate, detergent tests
Sodium restricted diet, salty brackish taste	Well near the coast, a salt storage pile, or heavily salted roadway	Saltwater intrusion, groundwater contamination, ion exchange water treatment system	Chloride, sodium, Total Dissolved Solids (TDS) tests
No obvious problem	If your well is an area of past or present apple orchards	Arsenic in pesticide formulations	Arsenic test
No obvious problem	If your well is in an agricultural area	Pesticide leaching from agricultural practices.	Consult with HEALTH regarding any known contaminant problems. Test for pesticides used in the area. Nitrate test. Contact RI DEM Division of Agriculture for pesticides used in your area.
Fluoride in the water	Children in the house under the age of 12	Fluoride is naturally occurring in Rhode Island groundwater	Fluoride test

Water Testing at a Private, State-certified Lab

If you choose to have your water tested at a private, state-certified lab, take some time to call the labs listed on HEALTH's webpage. Make sure the private lab is certified to test for the contaminants you are requesting. Ask the following questions:

- Do you accept samples to test individual homeowner well water?
- What type of screening packages do you offer?
- How much does it cost?
- Do I pick up the sample bottles or will you send them to me?
- How much time do I have to bring the sample back to the lab?
- How long will it take to get results?

For More Information:

This factsheet is one in a series on drinking water wells, testing, protection, common contaminants, and home water treatment methods. Contact the URI Home*A*Syst Program for more information.

University of Rhode Island Cooperative Extension Home*A*Syst Program

Offers assistance, information, and workshops on private well water protection. 401-874-5398 www.uri.edu/ce/wq

RI Department of Health, Office of Drinking Water Quality

Offers assistance, information on testing and state certified laboratories.

401- 222-6867 <http://www.health.ri.gov/environment/dwq/Home.htm>

For a listing of HEALTH's certified private laboratories in Rhode Island <http://www.health.ri.gov/labs/instate.htm>

US EPA New England website: <http://www.epa.gov/ne/eco/drinkwater/>

US Environmental Protection Agency. For a complete list of primary and secondary drinking water standards:

<http://www.epa.gov/safewater>

RI Department of Environmental Management, Office of Water Resources

Maintains listing of registered well drillers, information on well location and construction.

401-222-4700 <http://www.state.ri.us/dem/programs/benviron/water/permits/privwell/index.htm>

NSF International

For information on water treatment systems, NSF International has tested and certified treatment systems since 1965.

800-NSF-MARK <http://www.nsf.org/water.html>

Water Quality Association

The Water Quality Association is a not-for-profit international trade association representing the household, commercial, industrial, and small community water treatment industry. For information on water quality contaminants and treatment systems. www.wqa.org

This project is a collaboration of the staff at the Rhode Island Department of Health: Richard Amirault, Gary Chobanian P.E., Dana McCants, and the University of Rhode Island Cooperative Extension Water Quality Program: Alyson McCann, Holly Burdett, Brienne Neptin.

Issued in furtherance of Cooperative Extension work and Acts of May 8 and June 30, 1914. Jeffrey Seemann, Dean and Director, College of the Environment and Life Sciences. The University of Rhode Island U.S. Department of Agriculture, and local governments cooperating. Cooperative Extension in Rhode Island provides equal opportunities in programs and employment without regard to race, sex, color, national origin, sex, or preference, creed or disability. This is contribution number 3969 of the College of the Environment and Life Sciences, University of Rhode Island.

Funding for this project is supported by HEALTH.

This project is a collaboration of the staff at HEALTH and the University of Rhode Island Cooperative Extension Water Quality Program.

