



STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH
PRIVATE WELL PROGRAM

Publication No. 24: 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 determine what other nuisance impurities – like iron and manganese – may exist.

Private Water Supplies

The U.S. Environmental Protection Agency (EPA) does not regulate Private wells. 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 semi-annually (spring/fall) 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 should call your local health department first. The Connecticut Department of Public Health (DPH) Private Well Program @ 860-509-7296 can also be utilized as a resource for questions.

Public Water Systems

If you receive your drinking water from a public water system, 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.

Federal and State laws require the public water systems regularly test for over 80 contaminants in the water. Public water systems 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 the DPH. These standards are limits on the amount of contaminants allowed in the treated drinking water. These limits are known as the maximum contaminant level or MCL. The water is safe to drink if the amount of the contaminant is below the MCL. If the amount is above the MCL, the water is not safe to drink.

Public water systems are required by the 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 for



Phone: (860) 509-7296, FAX: (860) 509-7295
Telephone Device for the Deaf (860) 509-7191
410 Capitol Avenue - MS # 51REC
P.O. Box 340308 Hartford, CT 06134
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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 water systems. 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 Publication #23 *Drinking Water Standards* for more information.

When should you test your water?

Homeowners with private wells may not be able to afford the type of testing that public water supplies must perform. 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.

- Twice each year, have your water tested for the following routine analyses: total coliform bacteria, nitrate, pH, sodium, turbidity, and color. All are good general indicators of water quality. You may want to test for additional nitrogen parameters (nitrate, nitrite, and ammonia). The pH of your well water 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, pumps, 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 your local health department or DPH.
- 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 well pump parts. Additionally, chrome fixtures contain brass. For homes with plumbing that has lead pipes, brass and/or chrome fixtures, testing for lead every 3-5 years would be a good idea.
- If there are children under 6 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, and at regular intervals after installation. Comparing water tests of untreated and treated water will help you determine if the treatment system is doing its job.
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The following table (See Table 1) summarizes water testing recommendations.

Table 1 Summary of Water Testing

PROBLEM	COMMON SIGNS/SITUATIONS	CAUSES	TESTS RECOMMENDED
Rust-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, Manganese or Iron bacteria	Iron Manganese Iron/ Manganese Bacteria Test
Blue stains	Copper plumbing. Blue stains on plumbing, fixtures, and laundry	Corrosive water (low pH) leaching copper from plumbing	Copper, Lead, pH, Hardness, Alkalinity & Sulfate.
“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, Hydrogen Sulfide, Sulfate & Lead* (*if home was built before 1990)
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 Connecticut groundwater.	pH, Alkalinity, Hardness, Sulfate & Lead* (*if home was built before 1990) Copper (if copper pipes present)
Cloudy turbid water	“Dirty” or muddy appearance	Silt, sediment, microorganisms	Turbidity & Coliform Bacteria Check well construction with local well driller
Frothy, sudsy water	Water appears frothy	Malfunctioning septic system possible	Detergents

PROBLEM	COMMON SIGNS/SITUATIONS	CAUSES	TESTS RECOMMENDED
Chemical or 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 Compounds (VOC)
Unusual chemical odor	Well near dump, junkyard, landfill, industrial facilities, dry cleaners, and gas stations.	Groundwater contamination of chemicals	Volatile Organic Compounds (VOC), Organic chemical scan, Heavy metals Consult with DPH 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 a road	Fuel spill, Leaking underground fuel storage tank, Road runoff, ponding near well.	Volatile organic Compounds (VOC)
Recurrent gastrointestinal illness	Stomach problems, nausea, diarrhea	Bacterial contamination Cracked well casing Malfunctioning septic system, Flooded well	Coliform Bacteria, Nitrite, Nitrate, & Detergents
Sodium restricted diet, salty brackish taste	Well near the coast, a salt storage pile, or heavily salted roadway, discharge of softener waste.	Saltwater intrusion, Groundwater contamination Ion exchange water treatment system.	Chloride, Sodium & Total Dissolved Solids (TDS)
No obvious problem	Well in an area of past or present apple orchards. Some naturally- occurring areas of arsenic is possible in Connecticut	Arsenic in pesticide formulations – Natural arsenate locations	Arsenic

PROBLEM	COMMON SIGNS/SITUATIONS	CAUSES	TESTS RECOMMENDED
No obvious problem	If your well is in an agricultural area	Pesticide leaching from agricultural practices.	Consult with local health department regarding any known contaminant problems. Test for pesticides used in the area and Nitrate test. Contact CT Department of Environmental Protection for pesticides used in your area
Fluoride in the water	Children under age 12 in the house	Fluoride is naturally occurring in Connecticut groundwater in some limited areas.	Fluoride

How should you collect a water sample?

Most water testing laboratories supply their own sample containers with detailed instructions on how to properly collect a water sample. Use the bottles provided and carefully follow the laboratory's 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 of sample collection. If you have a water sample that is going to be tested for volatile organic compounds (VOCs), don't stop for gasoline with the sample in the car, as you may contaminate it.

A listing of State approved certified laboratories is available on the DPH website, go to www.ct.gov/dph, select Environmental Health from the left side of the webpage, then select Environmental Laboratories. Lab certification means that the laboratory is using accepted testing procedures approved by the State. Confirm that the lab is certified to test for the contaminants you want tested. Some labs may be certified to test for microbiology, but not for inorganics (nitrate, fluoride, or sodium). Please note that some of the listed labs are associated with public water systems and do not accept private clients.

Selecting a State-Certified Lab

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?

Keep Records

Keep a record of all your water tests for 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 a certified laboratory, your local health department, or the DPH. General questions should be directed to the DPH Private Well Program at 860-509-7296. Health effects questions should be directed to the Environmental & Occupational Health Assessment Program at 860-509-7740. If the well is contaminated with levels that might have significant health effects, the well should not be used. If this is the case, there are four basic alternatives:

- Install a new well with expert guidance.
- Connect with a public water system (if available).
- Use bottled water.
- Install a treatment system.

Certain nuisance contaminants, such as hydrogen sulfide or sodium, can also render the need for alternative water sources or at home treatment when found at high enough levels. Refer to other Private Well Publications about specific problematic contaminants in drinking water for more information.

Protection of Private Drinking Water System

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. Regular testing and adopting practices to prevent contamination can help ensure that your well supplies you and your family with good

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quality drinking water. For more information on well protection see Publication #26 *Residential Drinking Water Wells*.