PRIVATE DRINKING WATER IN CONNECTICUT

Publication Date: November 2009

Publication No. 39: Sampling Private Wells for Chemical Analysis

Nothing is more frustrating than to investigate a water quality complaint, take some samples, wait a week or more for the results and, when they finally come in, realize that should have asked for other parameters and possibly should have been more careful when you took the samples. Therefore take your time in sampling, sample preservation and deciding what definitive parameters you need to solve the problem you are addressing. This is the one of two articles covering well sampling. This article focuses on sampling for chemicals and physical tests.

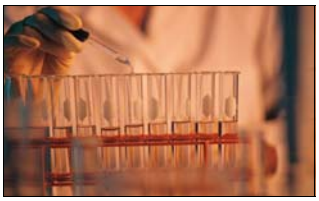
Standard Sanitary Chemical/Physical Tests

Section 19-13-B101 of the Public Health Code (PHC) requires the following tests for new wells:

Bacteria Tests	Physical Tests	Chemical Tests	
Total Coliforms*	Color	Chloride	Nitrate
*Including either	Odor	Hardness	Nitrite
fecal coliforms or	Turbidity	Iron	Sodium
e. coli	pH	Manganese	Sulfate

It might be wise to recommend a few more simple tests such as alkalinity or especially with older houses, lead. The local director of health can also require testing for organic compounds such as volatile organics or pesticides if he or she feels there are reasonable grounds the compounds may be present. It might be prudent to require testing for volatile organic compounds if there were gasoline stations or dry cleaners in the area. Checking for pesticides might be advisable if the land had heavy agricultural use in the past or there are high nitrate concentrations.

How Can I Use the Results



In those instances where there is a water quality problem with a well, one should consider the results of the tests as a whole. For example if it is suspected that a well might be contaminated with sewage, then elevated concentrations of ammonia, nitrite and nitrate nitrogen, detergents, or phosphate may indicate sewage/septic contamination of a well. Total coliforms, by themselves, are not indicative of septic/sewage contamination. These indicators, along with other components of a sanitary chemical screening, can also help to identify common aquifers with the same water quality. This fact could help you when sampling wells of unknown depth (a common occurrence) when their water quality is compared with the water quality of wells with known depths.

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If the water is discolored you would test for turbidity, apparent (suspended/filterable minerals) color, true (dissolved minerals) color, iron and manganese. A foul odor to the water may indicate the presence of iron/ manganese bacteria. Please refer to the article titled *A Case Study in the Control Of Iron-Manganese Bacteria* in this series for a more detailed discussion on these organisms and their treatment.

A water with low alkalinity, pH and hardness is considered agressive (corrosive). In this case you would be wise to test for heavy metals such as lead, cadmium (from cadmium-plated food containers and pipes) and copper depending on the type of plumbing carrying the water.

If you are involved with a water treatment installation, it is a good idea to ensure there is a water tap installed ahead of any treatment system. In this way the treatment can be monitored for efficiency or problems by testing untreated and treated water samples and evaluating the results. It's always a good idea to recommend the homeowner sample for sanitary chemicals every few years, whether the home well has a treatment system or not. It is an inexpensive and simple way of monitoring water quality changes in the well over time. The relatively simplistic lab tests for alkalinity; hardness, sodium, iron and manganese (with little room for lab error or deviation from standard set ranges) are far more reliable than tests looking for exotic contaminants down to parts per quadrillion level with large room for analytical error/deviation. A significant change or trend in these simpler tests could warrant or trigger additional testing for the more exotic parameters that may now be present.

When sampling multiple wells with a single combined discharge (e.g. youth camps, family campgrounds, etc.) always insist upon individual well samples. If one well has water with MCL exceedences, is it being diluted by other well(s) to give acceptable results? What if the diluting well(s) fail and now the non-potable well is the only source that is on-line to supply questionable water to the users of the system?

If a homeowner is considering installing a water treatment system, having a history of their water quality would be useful in evaluating the need for such a system. As a homeowner, do insist on water quality tests done only by a state certified laboratory before you buy any water treatment equipment. Again, having a water quality history of your well may help you decide on the correct type and/or need for water treatment equipment.

By following these guidelines the local sanitarian should be able to make his/her job simpler and a lot more efficient.

For more information please click on the following links:
EPA Office of Groundwater and Drinking Water
http://www.epa.gov/ogwdw/
EPA New England
http://www.epa.gov/region01/

Adapted from *Healthy Drinking Waters for Rhode Islanders*, University of Rhode Island Cooperative Extension, *April 2003*.