

What

PRIVATE WELL OWNERS

Need To Know About

WATER TESTING



If you're the owner of a private water well, one of your most important ongoing responsibilities is testing the water. What you do with the results of a proper water test can make all the difference in the safety and quality of your water.

Water Testing

Public water systems are required to test for an array of potential contaminants under the provisions of the Safe Drinking Water Act (SDWA). Private household wells, however, are not regulated under the SDWA, so the household well owner needs to know what to test for and how to go about it. Of course, a household well owner could test for everything that public water systems are required to test, but to do so would be impractical, expensive and unnecessary for many.

There are, however, reasonable guidelines for water testing by the household well owner. Some key things to test are bacteria, nitrates, and contaminants that are unique to your location.

Bacteria

Testing annually for bacteria is on everyone's list because it is so common to the environment. Drinking water tests check coliform bacteria because these are a possible indicator of the presence of pathogens—microorganisms that can cause severe illness or even death.

If you have not had your well inspected in recent years, it may be advisable before testing your water to have a water well contractor determine whether your well needs to be cleaned. Accumulated debris in the bottom of a well can harbor bacteria, preventing effective disinfection of the well. A well inspection also can determine whether another problem such as a broken well cap or well casing is allowing bacteria into the well.

Well owners should also have their wells disinfected anytime the well is serviced,



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because opening up the well and repairing or replacing a part can introduce bacteria. For this reason (and others), well owners should never try to service their own wells. A qualified water well contractor should perform the disinfection to ensure it is done properly.

Nitrates

Testing annually for nitrate also is near the top of everyone's list because they are so common to the environment. Nitrate is found in fertilizer products, animal and human waste. Some studies indicate that nitrate in groundwater tends to increase in rural areas where fertilized crops, animal lots, and septic systems are commonplace.

Contaminants of local concern

Sometimes the specific locale where a well owner is located may suggest testing for a particular contaminant. For instance, arsenic can occur in certain geologic formations. Often, areas likely to have arsenic in the groundwater are known to the state or federal geological survey, local health officials, or water testing labs. Another local source of contamination could be an industrial site, landfill, or recent chemical spill. The well owner should check with local officials and do some basic research to determine if there is something particular to the locale that should be included in a water test.

Other water quality issues

Some substances can affect water quality but not present a health risk. For instance, hydrogen sulfide is usually not a health risk, but its rotten egg smell can be objectionable. Hard water can cause a residue and prevent soap from lathering. Acidic water can cause corrosion of pipes and water treatment systems. Well owners should describe water quality symptoms to their water well contractor or a drinking water testing lab, and test accordingly.

Where should water samples be taken?

Taking a water sample at the well or before the pressure tank will reflect the quality of the well water. However, a sample taken at the kitchen or bathroom tap can be affected by the house plumbing. This could be significant if, for instance, the house has water pipes containing lead. Also, testing a

water sample at the tap can determine the effectiveness of point-of-use water treatment systems. The well owner needs to determine appropriate intervals for testing water treatment systems' effectiveness.

How do I test the water?

The National Ground Water Association recommends that well owners use certified drinking water testing labs. Certification indicates that a lab has met certain requirements to receive that designation. Not all drinking water testing labs are certified, including some very competent ones. Well owners can get information on drinking water testing labs by calling their state certification officer. Well owners can also check with the local health department or Yellow Pages about drinking water testing labs. Some, but not all, local health departments test for the basics, such as bacteria and nitrates.

While certain water testing kits are available at retail stores, some may not provide the degree of specificity necessary to determine the proper water treatment system. Also, some tests, particularly those for bacteria, can easily be fouled if not taken properly.

How do I interpret the watertest results?

When getting results from a drinking water testing lab, ask the lab to explain the results to you—particularly whether there is anything in the water that presents a health risk. If the lab cannot do so, check the results against the U.S. EPA's Maximum Contaminant Level list.



How do I treat my water?

Two key factors in deciding the appropriate treatment for your water are knowing the substances that need to be treated and their respective concentrations.

Sometimes an effective technology at one contaminant concentration is ineffective at a higher concentration. For example, hydrogen sulfide can be removed at extremely low levels by a carbon filter. However, higher levels of hydrogen sulfide require another technology such as an oxidizing filter or a chemical feed pump that injects chlorine into the inlet-supply line ahead of the pressure tank.

The following chart provides a sampling of contaminants found in untreated well water and corresponding treatment technologies.

How do I know I'm getting the correct treatment system?

Well owners should be diligent in making sure that any treatment systems they buy are designed to treat the desired substances and the concentrations of those substances. The best way to ensure this is to compare the systems' specifications to your water lab results.

If a well owner has the correct treatment system, it is important to maintain the system according to the manufacturer's recommendations. A failure to do so could result in an ineffective system or an overloaded one that actually contributes to health risks.

For more information about water quality and water testing, visit www.wellowner.org. The U.S. Environmental Protection Agency's Contaminant List and other information about drinking water standards may be accessed at <http://water.epa.gov/lawsregs/rulesregs/sdwa/currentregulations.cfm>. Find a certified water-testing lab in your state by going to <http://water.epa.gov/scitech/drinkingwater/labcert/index.cfm>.

The screenshot shows the homepage of www.wellowner.org. It features several content blocks:

- Water Use Calculator:** A section with a calculator icon and the text "Are you water wise? Click the calculator above and try our water use calculator to see your water footprint." Below it is a large "H₂O" graphic with the question "What's your water print?"
- Most Read:** A list of popular articles, including "What exactly is a drilled well?", "Well Caps", and "Finished well checklist".
- Finished well checklist:** A section with a checklist icon and the text "After the well has been constructed and before the contractor removes his equipment from the site, you should inspect the well." Below it is a "Read more..." link.
- How to find a reliable water well contractor:** A section with the text "To help you find a reliable water well contractor, Wellowner.org has developed Contractor Lookup. Simply enter your location to find contractors that service your area. In addition, we have coded contractors with the following designations: Read more..."
- What exactly is a drilled well?:** A section with the text "A drilled well consists of a hole bored into the ground, with the upper part being lined with casing. The casing prevents the collapse of the borehole walls and (with a drive shoe or grout seal) prevents surface or subsurface contaminants from entering the water supply. The casing also provides a housing for a pumping mechanism and for the pipe that moves water from the pump to the surface. Read more..."
- Fix a Leak Week:** A logo for "Fix a Leak Week" with the dates "April 14-21, 2011".
- Water Central:** A logo for "Water Central" with the tagline "Raising groundwater awareness" and a "Follow us on Facebook here" link.
- Earth911.com:** A logo for "Earth911.com" with the text "Protect groundwater—properly dispose of hazardous waste."