Well Water Testing

A homeowner sampling for VOC's from a faucet.

Properly constructed and maintained water wells can provide many years of trouble-free service, but wells can eventually deteriorate or become damaged and allow surface contaminants to enter the water. In addition, some groundwater can contain one or more chemical substances in concentrations above health-based standards. In some cases, contamination of the water can be detected by sight, taste or smell; however, many of the most serious problems can only be detected through laboratory testing of the water.

Community public water systems are tested regularly under the supervision of the Illinois EPA for a variety of contaminants. However, if you have a private well, regular testing is your responsibility.

The information on this page is also available in the Testing Private Well Water brochure (2 pages, 196K pdf) produced jointly by the Illinois EPA and the Illinois Department of Public Health.

Here are some recommendations that you can follow to help ensure that your well water is safe:

Test your well water at least once a year for bacteria

Water that has become contaminated by human or animal waste can transmit a variety of infectious diseases, including dysentery, salmonellosis, hepatitis, and giardiasis. Symptoms vary, but nausea, vomiting, and diarrhea, with or without fever, are most common. To assess bacterial safety, drinking water is tested for a group of "indicator bacteria" called *coliform bacteria*. These bacteria do not usually cause disease themselves, but their presence indicates that surface contamination has found its way into the well and disease organisms may also be present. When coliform bacteria are found in well water, the water should be boiled before being used for drinking or cooking, and the well should be disinfected.

Test your well water every year for nitrate, and always test the water for nitrate before giving it to an infant

Nitrate is a common contaminant in Illinois groundwater. An elevated level of nitrate is often caused from septic systems or by run-off from barnyards, feedlots, or farm fields. Wells most vulnerable to nitrate contamination include shallow wells, dug wells with non-watertight casings, and wells with damaged, leaking casing or fittings. Well water containing nitrate at levels above the maximum contaminant level established by the U.S. Environmental Protection Agency (EPA), which is 10 milligrams per liter as nitrogen, should never be given to infants less than 6 months old because it can cause a potentially fatal disease called "blue baby syndrome." In many cases, constructing a deeper well can reduce or eliminate a nitrate problem. If you know, or suspect, that your well water may contain high levels of nitrate, **do not boil the water**, as this will only concentrate nitrate levels.

Testing your well water for other contaminants

VOCs
Volatile organic compounds, or "VOCs," are common components of gasoline and other fuels, as well as paints and solvents, such as cleaners and degreasers. Long-term exposure to VOCs at levels above health standards may damage the central nervous system, liver, or kidneys, and some VOCs are known to cause cancer. If you live near a current or former commercial or industrial area, gas station, or landfill, and especially if your well is old or shallow, you should consider having your water tested for VOCs periodically, or when recommended by your local health department.

Pesticides
Wells most at risk of pesticide contamination are shallow or old, located close to areas of pesticide use or storage, and located in geologically sensitive areas, such as sand plains or "karst" bedrock areas. Wells that have elevated levels of nitrate are also more likely to have detectable levels of pesticides. Long-term exposure to some pesticides at levels above health standards may affect the development of the nervous system. If you have an old or shallow well and you live in an agricultural area, or if your well has an elevated level of nitrate, consider testing your well water for one or more of the pesticides used most frequently in your area.

Radium
This naturally occurring radioactive element is found primarily in the northern third of Illinois within the deep rocks and soil. Radium has been detected in private wells and can only be identified through testing of the water. Long-term exposure to radium at levels above health standards may increase the risk of bone cancer.

There are other potential contaminants for which you may want to test your well water.

Flush standing water to reduce levels of lead.
Well water in Illinois rarely contains detectable levels of lead. However, lead can enter drinking water through decay of plumbing materials. Homes built before 1986 are more likely to have lead pipes, fixtures and solder. However, new homes are also at risk: even legally "lead-free" plumbing may contain up to 8 percent lead. The most common problem is with brass or chrome-plated brass faucets and fixtures. Exposure to lead at levels above health standards can impair a child's development, as well as cause a variety of other adverse health effects in both children and adults.

To minimize your exposure to lead in drinking water, **run the water until it gets cold** before using it for drinking or cooking. This will flush out most of the lead that may have accumulated in the plumbing. Also, never use water from the hot water tap for drinking or cooking. Hot water is likely to contain higher levels of lead. The only way to be sure of the amount of lead in your household water is to have it tested by a certified laboratory.

Who can I contact to have my well water tested?
Coliform bacteria and nitrates should be tested on a yearly basis and can be done by most local health departments. To find your local county health department, visit the Illinois Department of Public Health's alphabetical listing of Local Health Departments. You can also locate your local health department by county on their online regional map. Certified labs also test well water and may be your only option for certain chemicals.

For More Information
For more information about water quality testing for private wells, including information about contacting certified labs in Illinois, contact your local health department, the Illinois Department of Public Health at (217)782-5830, the Illinois Environmental Protection Agency at (888) 372-1996 or visit these links: