

## **A quick summary of private well water testing and natural gas drilling in New York**

### **Drinking water standards**

If you own a private drinking water well, it is your responsibility to test it regularly to make sure it is a safe drinking water source. Wells are often tested for a few substances when they are drilled or when the property is sold, but groundwater quality can change over time. Drinking water always contains some dissolved substances. Some chemicals that are naturally occurring or that are left by human activity can be harmful. Health standards set by the U.S. EPA and New York State Department of Health (NYS DOH) for public drinking water utilities can be used as general guidelines for safe levels of chemicals in private drinking water wells.

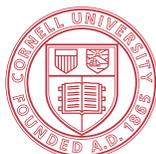
### **General well water quality testing**

Water quality testing is actually a combination of separate tests for bacteria, elements, ions, compounds, or groups of chemicals. Some substances present a direct health risk; others are more of a nuisance. Some tests may indicate that surface water may be reaching your well water too quickly and carrying surface water or soil contaminants with it. If you have few well testing records, you may want to test your well for many compounds once, and then repeat testing for a few of them including coliform bacteria every year, or every fifteen months to get a sense of seasonal variation. NYS DOH has a two-page list of testing recommendations [www.health.ny.gov/environmental/water/drinking/regulations/fact\\_sheets/docs/fs3\\_water\\_quality.pdf](http://www.health.ny.gov/environmental/water/drinking/regulations/fact_sheets/docs/fs3_water_quality.pdf) with specifics based on your family's health needs and local land use. Be sure to read all the text and not just the tables. Some water testing labs offer packages of multiple tests at a discount. Be a careful consumer and make sure that all the tests you want are included but that you are not paying for unnecessary tests. Several counties and towns in southeastern NYS have specific well testing requirements for real estate transfers.

### **Water quality tests related to natural gas development**

The possibility of increased natural gas development in upstate New York has increased awareness of drinking water sources and raised concerns of drinking water contamination. Many people are interested in testing their water for contaminants associated with drilling activity to watch for health risks and to have a "baseline" before drilling in case of an investigation. The New York State Department of Environmental Conservation (NYS DEC) regulates gas drilling. Drilling will not be allowed in certain areas and buffer distances from certain water resources will be required. As of the 2011 revised draft supplemental generic environmental impact statement (rdSGEIS, [www.dec.ny.gov/energy/205.html](http://www.dec.ny.gov/energy/205.html)) and 2012 proposed regulations (560.5 Testing, Recordkeeping and Reporting Requirements (d) Water well and spring testing: [www.dec.ny.gov/regulations/87420.html](http://www.dec.ny.gov/regulations/87420.html)), applicants for drilling permits using high-volume hydraulic fracturing will be required to test all private drinking water wells in a 1000 foot radius from the well pad (2000 feet if no private wells are in that radius) for a list of compounds before and several times after drilling. In short, gas drilling companies will have to pay for testing close to well pads and share the results with private well owners and the NYS DOH. Homeowners may be interested in earlier or additional testing at their own expense.

As for what tests homeowners should consider, there is not a single consensus list. References below give more background information about testing recommendations. Some well owners are concerned about testing for every possible compound used in natural gas drilling or found in drilling wastewater. Bear in mind that many chemicals change form when they dissolve in water, and most of the chemicals are used specifically because they react with other chemicals. Some chemicals are used in low amounts and low concentrations compared to others, or compared to naturally occurring chemicals in shale or groundwater. Testing recommendations have been developed based on contaminants associated with wastewater surface spills or an improperly constructed well that would be easily detected above background groundwater variation. Some recommendations divide tests into tiers of testing, prioritizing a group of the most important tests that can be done for a reasonable cost first. For example, drilling wastewater is extremely salty, so tests for sodium, chloride, and conductivity are recommended and might indicate the need for further testing.



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Legal testing requirements for drilling permits or recommendations for homeowners concerned about gas drilling overlap with some of the general well water quality testing recommendations for all private wells mentioned above, but are not the same. Many labs are now marketing “gas drilling” testing packages, but be a careful consumer about what is actually in the tests so that you are getting the tests you want, both for overall health and any sort of gas drilling baseline.

The 2011 rdSGEIS and 2012 proposed regulations list these minimum testing parameters. (In comments to NYS DEC on the SGEIS, I recommended adding bromide and turbidity or TSS (total suspended solids)).

pH, iron, manganese, barium, sodium, chloride, conductivity, TDS (total dissolved solids)  
BTEX (benzene, toluene, ethylbenzene, xylene; these are volatile organic compounds (VOCs))  
methane and ethane (gases, main components of natural gas)  
gross alpha and gross beta (radiological)  
static water level (at the well)

### **Use certified laboratories and collect samples properly**

NYS DOH certifies environmental laboratories. The directory of water testing labs that take samples from the public is online: [www.wadsworth.org/labcert/elap/comm.html](http://www.wadsworth.org/labcert/elap/comm.html). The list is sorted by county; look for “potable water” (drinking water) testing and check nearby counties. Some labs have additional drop-off locations not listed on the DOH website. Most labs do not have the equipment or certification for every possible test. Few labs do radiological water tests [www.wadsworth.org/labcert/elap/radiochem.html](http://www.wadsworth.org/labcert/elap/radiochem.html). Some labs subcontract some testing to other labs. Call several labs to find out what tests are available, prices, and whether they will collect samples for you. Your water test results may have more legal standing if they are collected by someone other than you or the gas drilling operator; this is called “third-party” or “chain of custody” testing. Not all labs offer this service and those that do may charge for staff time and mileage depending on the distance from the lab. Some tests can only be done accurately at your well or tap.

If you are collecting a sample yourself, the general procedure is to pick up sterile sample bottles and instructions from the lab, collect the samples, and return them to the lab promptly. Pay attention to instructions about whether to collect the first water that comes out or let it run first, whether to collect cold water, whether to keep the sample cool, whether the bottle contains a preservative, etc. Avoid contaminating the sample bottle (especially the opening, neck, and cap) with your fingers or by touching it to surfaces. If you have water treatment equipment such as a filter or softener, you may want to test the water before and after the equipment.

### **For more information**

New York State Water Resources Institute [wri.eas.cornell.edu/](http://wri.eas.cornell.edu/)

*Private Water Well Testing in Areas Impacted by Marcellus Shale Gas Drilling*  
[wri.eas.cornell.edu/WRI\\_Private\\_Water\\_Well\\_Testing.pdf](http://wri.eas.cornell.edu/WRI_Private_Water_Well_Testing.pdf)

Penn State Extension Water Resources

*Testing Drinking Water Supplies Near Gas Drilling Activity*

[extension.psu.edu/water/marcellus-shale/drinking-water/testing-drinking-water-supplies-near-gas-drilling-activity/view](http://extension.psu.edu/water/marcellus-shale/drinking-water/testing-drinking-water-supplies-near-gas-drilling-activity/view)

Other related publications (remember that PA regulations may differ from those in NY):

[extension.psu.edu/water/marcellus-shale/drinking-water](http://extension.psu.edu/water/marcellus-shale/drinking-water)

More information on wells, water testing, interpreting test results, and water treatment devices is available on <http://waterquality.cce.cornell.edu> and we have links to your county or district environmental health department.

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