



Brian Oram

# Private Well Protection

Hydraulic fracturing operations allow us to access valuable natural gas resources, but they also have the potential to affect another precious resource: water. Here Brian Oram, a professional geologist and founder of B.F. Environmental Consultants, discusses how fracking in Pennsylvania has affected private water wells.

**Kate Cline:** Why is it important for well owners to have their water tested?

**Brian Oram:** The primary reason to test the quality of your private well is because they are not regulated by the U.S. Environmental Protection Agency (EPA) or Pennsylvania Department of Environmental Protection (PADEP). In Pennsylvania, there are no statewide construction standards and there is no assurance that the water will meet EPA and PADEP drinking water standards. In fact, 30% to 50% of the existing private wells in Pennsylvania fail to meet at least one primary drinking water standard. Primary standards are those that, if violated, could cause or induce a chronic health concern. The second reason is to establish a formal baseline to document the quality of your water prior to any changes in surrounding land use or development that could potentially affect your drinking water source or other water sources on your property.

**Cline:** In your experience, how has fracking affected private drinking water supplies?

**Oram:** In general, there have not been issues with the hydraulic fracturing of the Marcellus Shale, but there have been issues with spills, roadway construction, pipeline installation, near-surface releases or disturbances during drilling and development, and reported issues of methane gas migration from some shallow rock formations that are associated with the process of developing the Marcellus Shale and getting the gas to the market. Methane gas migration from the shallower non-Marcellus Shale formation typically has been associated with inadequate or insufficient casing or cementing practices that did not create adequate seals. Increased concentrations of methane gas in water can become an explosion hazard and can influence levels of iron, manganese, arsenic and a few other elements in the groundwater.

**Cline:** How can well owners living near fracking operations protect their water supplies?

**Oram:** Private well owners need to protect their groundwater source from all activities and not just activities related to natural gas development. This is one of the key points of our "Private Well Owner Outreach Efforts." The first step is to compile the available records and data about your water source—i.e., your well or spring—and then conduct a certified baseline test that covers the activities and known problems that are [occurring] or have occurred in the "capture zone" for your

well. During this baseline testing, it is critical to document the capacity of your well. Baseline sampling should be conducted by a third-party professional; we discuss our recommendations regarding baseline testing in our new booklet. If any problems are documented during baseline testing, these problems should be addressed.

After baseline testing, the next step would be tracking your well water quality and conducting some annual testing. Annual testing has always been recommended by EPA. Finally, if a natural gas company or some other company requests to conduct baseline testing of your private well, the answer is yes. Natural gas companies are assumed liable under Pennsylvania law if a problem occurs within 2,500 ft of the wellhead and within one year from the most recent modification. If you do not allow the company to conduct a baseline test, you will place the burden of proof on your shoulders.

**Cline:** What should homeowners do if they suspect there is methane in their drinking water?

**Oram:** I think the critical issue is that most well water contains some detectable level of methane gas. Methane is not considered toxic, but it is an asphyxiant at a concentration of more than 50% in air (it displaces oxygen). Therefore, the primary risks would be asphyxiation [due to] not enough oxygen in a confined or poorly vented area, or a potential explosion hazard. If you have baseline testing done and your methane level is less than about 2 mg/L and you suddenly notice that the water has become very fizzy, with a lot of bubbles that disperse quickly, and/or has a salty taste, it would be advisable to contact your local [environmental officials] immediately. If your baseline testing indicates that the methane level is more than 7 mg/L, contact [environmental officials] immediately. A more detailed description about methane can be found in our new booklet, and a more detailed discussion can be found on our website, [www.water-research.net](http://www.water-research.net). We also have generated some free documents that discuss issues with methane gas. *wqp*

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## Vermont Tax Deal Upholds Bottled Water Sales Tax Exemption

Vermont lawmakers have announced that no further tax increases will be introduced in the state besides those already in place on gasoline and diesel, and another on cigarettes that is currently in review. An additional sales tax that was included in budget proposals for 2014 was a provision that would eliminate the existing sales tax exemption for bottled water.

## EPA to Award Funding to Areas Impacted by Hurricane Sandy

The U.S. Environmental Protection Agency (EPA) announced that it will provide grants of \$340 million to the state of New York and \$229 million to the state of New Jersey for improvements to wastewater and drinking water treatment facilities impacted by Hurricane Sandy.



## IAPMO, ASPE, WQRF to Collaborate on Research Project

The International Association of Plumbing and Mechanical Officials, the American Society of Plumbing Engineers and the Water Quality Research Foundation will jointly fund a research project using data provided by Aquacraft Inc. to update Hunter's Curve for estimating water supply for residential applications using water-efficient fixtures. The research project will provide statistical analysis of fixture use behavior in single-family residential homes and multi-family dwellings.

## Senate Approves Water Infrastructure Finance & Innovation Authority

The U.S. Senate passed legislation that would create a Water Infrastructure Finance and Innovation Authority (WIFIA), a key development in addressing America's trillion-dollar water infrastructure challenge. A WIFIA pilot program is included in the Water Resources Development Act of 2013.



## CDC Study Finds Fecal Contamination in Pools

A study of public pools in the summer of 2012 found that feces are frequently introduced into pool water by swimmers. Through the study, the Centers for Disease Control and Prevention collected samples of water from pool filters from public pools and tested them for genetic material of multiple microbes. The study found that 58% of the samples tested positive for *E. coli*, a marker for fecal contamination. *wqp*



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