

Your Private Drinking Water and the Natural Gas Industry: Part Four

This column is presented weekly by the Public Education sub-committee of the Clinton County Natural Gas Task Force in an effort to provide accurate, up-to-date information on activities surrounding the Marcellus Shale formation and the natural gas exploration industry. For more information on Task Force activities, visit the Task Force page on the Clinton County government website at www.clintoncountypa.com.

Maintaining the quality of private drinking water supplies – wells and spring water – in the wake of natural gas drilling activities in the region was the focus of two recent public forums hosted by the Clinton County Natural Gas Task Force. At those meetings, Bryan Swistock, water resource extension specialist with Penn State's School of Forest Resources, provided valuable information and practical advice for people interested in protecting their water. His presentation is being reproduced in this column, with today's article being the final in a four-part series.

Once you've decided to have your drinking water tested, and have determined what to test for, understanding the results can be complex. Swistock says the report you will receive from the certified testing lab is considered a legal document, and it can be difficult to understand what the numbers mean.

"The Penn State Cooperative Extension office in Lamar has both the people resources and informational materials to help people better understand their water test results. In fact, there's an on-line form to help people interpret test results. You can also ask the lab that conducted the test if they will explain the results to you," says Swistock.

Interpreting Your Water Test Report

They are legal documents – understand what they are saying about your water !

The collage includes three main components:

- Water Tests: What Do the Numbers Mean?** A blue brochure with a woman drinking water, featuring chemical symbols like SO₄, Cl, and H₂S, and the unit μg.
- How to Interpret a Water Analysis Report** A Penn State document by Paul B. Reichard, Agricultural Professor of Agricultural Engineering. It explains how to read a water analysis report, including a table of common water quality parameters and their units.
- DWIT Drinking Water Interpretation Tool** A web application with a grid of buttons for selecting parameters to be interpreted, such as: Total Hardness, Total Dissolved Solids, Calcium, Magnesium, Sulfate, Chloride, Nitrate, Nitrite, Ammonia, Total Phosphorus, Total Suspended Solids, Total Organic Carbon, Total Organic Nitrogen, Total Organic Phosphorus, Total Organic Sulfur, Total Organic Chlorine, Total Organic Fluorine, Total Organic Bromine, Total Organic Iodine, Total Organic Selenium, Total Organic Tellurium, Total Organic Antimony, Total Organic Arsenic, Total Organic Bismuth, Total Organic Cadmium, Total Organic Lead, Total Organic Mercury, Total Organic Manganese, Total Organic Nickel, Total Organic Silver, Total Organic Zinc, Total Organic Copper, Total Organic Iron, Total Organic Aluminum, Total Organic Silicon, Total Organic Potassium, Total Organic Sodium, Total Organic Magnesium, Total Organic Calcium, Total Organic Strontium, Total Organic Barium, Total Organic Radium, Total Organic Uranium, Total Organic Thorium, Total Organic Protactinium, Total Organic Actinium, Total Organic Francium, Total Organic Radium, Total Organic Actinium, Total Organic Thorium, Total Organic Protactinium, Total Organic Actinium, Total Organic Francium.

Swistock also provided a number of informational web sites. He said the eNotice web site at www.dep.state.pa.us/enotice/ allows people to sign up to receive e-mail notices when drilling is going to occur in a specific municipality or county.

Web Sites to Help Determine When to Test Your Water?

- eNotice – sign up to receive notice of drilling permits
 - www.dep.state.pa.us/enotice/
- eMap – web-based GIS allows mapping of proposed well locations by permit number
 - www.emappa.dep.state.pa.us/emappa/viewer.htm
- eFacts – after drilling begins, monitor inspection reports, violations, etc.
 - www.ahs2.dep.state.pa.us/eFactsWeb/default.aspx
- Web page – rlstore.com - \$18 subscription, limited counties
- DEP home page – Marcellus reports and maps
 - www.dep.state.pa.us (click on “Oil and Gas”)
 - “Marcellus Shale” and “Reports” pages – lots of information!

Swistock says there are a number of pro-active measures people can take to protect their drinking water. For people leasing land to drillers, he recommended several stipulations that should be included as part of the lease. He also urged people to report problems and concerns to the PA Department of Environmental Protection, which has regulatory oversight for the natural gas activities in the region.

Additional Actions to Protect Water

- Landowner leasing stipulations
 - Greater setbacks to water
 - Use of tanks vs. pits for wastewater
 - Pre + post-drilling testing of ALL water
 - Water flow measurements (before seismic)
 - Proper retirement of seismic holes
 - Access to water (and payment)
 - No surface lease?
- Voluntary water testing and documentation
- Reporting obvious problems (sediment, tastes, odors, loss of water, etc.) and report problems to DEP and gas drilling company
- Updated regulations
 - Casing and cementing regulations updated
 - Many proposals to increase setbacks, increase testing, restrict hydraulic fracturing



In addition, Swistock says researchers at Penn State University, through the Center for Rural Pennsylvania, have begun natural gas-related research to monitor drinking water wells and gather data.

Penn State Water Well Research (Center for Rural Pennsylvania)

- Objectives
 - 1) Determine occurrence of groundwater contamination
 - 2) Determine factors related to contamination if it occurs
 - 3) Survey water supply owners to document their experiences
- Phase 1 – intensive monitoring
 - 50 water wells before, during and after gas drilling
 - Located within ~2,000 feet of a site that will be drilled in 2010
 - Detailed testing of ~20 parameters
 - Continuous TDS measurements
- Phase 2 – broad monitoring
 - 200+ water well after drilling
 - Within 5,000 feet of Marcellus well
 - Participants provide pre-drilling data and attend workshop



Swistock finished his presentation by noting the vast amount of information that is available from the Extension Office. He encouraged people to visit their web site at <http://extension.psu.edu/naturalgas>.

The screenshot shows the Penn State Cooperative Extension website. The left sidebar contains a navigation menu with 'Marcellus Shale' highlighted by a red circle. The main content area is titled 'Marcellus Shale' and features several articles and links related to hydrofracturing, water testing, and environmental impacts. The bottom of the page shows a search bar and a footer with 'Internet | Protected Mode: On'.