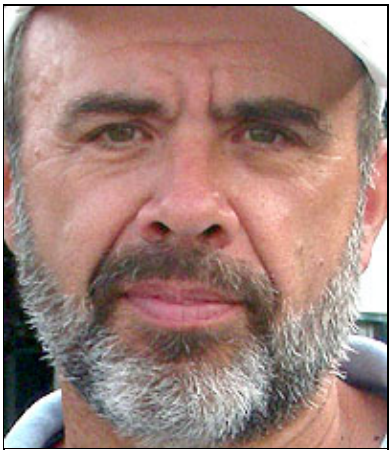
Features

The Odessa File

Home
Sports
People
Features
Business
Govt.
Forum
Schools
PSA
Calendar
History

The Marcellus Watch

State tests show high levels of radioactivity at several Schuyler County natural gas wells. In his latest column about drilling in the region's Marcellus Shale formation, journalist Peter Mantius of Burdett writes that the findings may raise costs for drillers.



Left: Peter Mantius

Schuyler's Hot

By Peter Mantius

BURDETT, Nov. 13 -- When the state recently tested brine extracted from all 12 of New York's active Marcellus Shale natural gas wells, several of the samples were highly radioactive.

Six of those tested wells, including the four found to be the most contaminated, are located in Schuyler County.

The tests conducted between October 2008 and April 2009 found that wastewater from the six deep vertical wells in Orange, Dix and Reading showed concentrations of Radium 226 ranging from 60 to 260 times the legal limit for discharge into the environment.

The results could complicate plans for aggressive natural gas drilling locally and lead to

calls for more active radiological monitoring throughout the Marcellus Shale drilling region, including Pennsylvania.

"Whatever entity produces those kinds of numbers will have to be licensed by the state," said Theodore G. Adams, a radiological and environmental consultant in suburban Buffalo. "The waste will have to be managed, treated and disposed of (to avoid human contact)."

Radium 226, which is intensely radioactive, has a half-life of 1602 years and decays into radon gas.

In July, the state Department of Health expressed concerns about the test results in a confidential letter to the Department of Environmental Conservation, which conducted the tests.

Existence of the letter was recently reported by the website ProPublica. DEC confirmed that it received the letter but denied my repeated requests for a copy.

So far, the agency isn't raising alarms about the test results, saying radioactivity readings can vary widely at any given site.

But if further testing confirms that the readings are roughly accurate indicators of current radioactivity levels, it could significantly drive up the cost of extracting natural gas.

Sites that consistently turn in high radiological readings for their brine would need to obtain special licenses, said Adams, a former federal Department of Energy radiation inspector who runs his own firm that serves clients such as Westinghouse and Alcoa.

Adams noted that wastewater or sludge from such wells would likely require expensive special handling.

Fortuna Energy Inc. of Horseheads operates several of the wells that showed high radioactivity readings, ProPublica has reported. But Mark Scheuerman, Fortuna's general counsel, declined Friday to confirm or deny the company's involvement. He said the company planned to address a myriad of drilling issues in written comments to the DEC by yearend.

The DEC conducted extensive radiological tests of New York State natural gas wells in 1999 and found little cause for concern. But none of those were Marcellus wells. In contrast, all of the recent tests were Marcellus wells (six in Schuyler, five in Steuben County and one in Chenango County), and several of them showed much higher readings than any of the 1999 tests.

The results are buried deep in an appendix to the state's draft Generic Environmental Impact Statement for gas drilling. The charts are presented without any explanation or footnotes.
But the simple numbers speak powerfully, according to Adams.

For example, one well in Orange showed Radium 226 concentrations of 16,030 picocuries per liter. Adams said the state and federal limit for legal discharges into the environment is 60 picocuries per liter.

The legal limit for drinking water is 5 picocuries per liter. The limit for water treated at a sewage treatment plant is 600 picocuries per liter.

Three other Schuyler County wells also showed readings of more than 10,000 picocuries per liter. The highest reading detected outside Schuyler County was 7,885 picocuries per liter at a well in Steuben County. (The findings were reported with uncertainty levels of roughly 25 percent).

All 12 of the tested wells were drilled vertically in the Marcellus Shale, a rock formation several thousand feet below the surface that extends through most of the Southern Tier, Pennsylvania and parts of West Virginia and Ohio.

Until recently, vertical drilling was standard practice in the industry.

But a new drilling method developed in the last few years is a far more efficient way to tap the Marcellus formation, which experts describe as the largest gas reserve in North America.
That process is known as hydraulic-fracturing, or fracking.

When drillers frack a well, they bore down thousands of feet before turning their drills at a right angle to mine hundreds of feet horizontally – the way the formation runs. Then they force water, sand and chemicals into the well to create fissures in the rock, freeing the gas.

Fracking is widely practiced in Pennsylvania, and drillers are eager to introduce it in the Southern Tier. In fact, Schlumberger recently won approval for a massive staging center in Horseheads for natural gas fracking within a 300-mile radius.

But New York has a moratorium on new gas drilling until the DEC completes its final rules for fracking. The public comment period for those rules was recently extended from Nov. 30 to Dec. 31.

(The DEC has scheduled a public hearing on the rules for Wednesday, Nov. 18, at Corning East High School (201 Cantigny St., Corning). Doors will open at 6 for people who want to sign up to speak. The open session begins at 7 p.m.)

Although previous public hearings on drilling have touched on a host of environmental issues, radioactivity hasn't been a prime concern.

Yancey Roy, a spokesman for the DEC, said the agency has long known about naturally occurring radioactive material, or NORM, in oil and gas drilling. The DEC's 1999 test of oil and gas wastes at non-Marcellus wells found NORM levels that seemed unremarkable.

But Roy acknowledged that the radium concentrations found in the latest well tests were higher. He noted that readings can vary "in different portions of the (Marcellus) formation and at a given well over time."

Roy said the 12 tested wells were the only active Marcellus Shale wells in the state. And while more radiological testing is needed, he said, that can't occur until new drilling operations get underway.

Once fracking begins in New York, "decisions will be made, based on the results, as to the proper handling and disposal of waste materials," he added.

In the past, brine has been used on state roads to help melt snow.

An appendix to the proposed DEC drilling rules says: "The modeling showed that the most common method of brine disposal in New York State, spreading it on the roads to control

ice and snow, does not present significant (radiation) doses to the public."

Roy noted that the DEC is concerned about potential buildup of radioactivity in pipes and other drilling equipment and said that equipment may have to be monitored. NORM is also apt to accumulate in sludge that is a byproduct of well wastewater.

By law, radioactive waste can't be dumped in any municipal landfill in New York State. That means local drillers might have to ship their waste to Michigan, Illinois, Utah, Idaho or Washington, states that have facilities licensed to handle it.

Peter Mantius (pmantius@gmail.com) was a financial, legal and political reporter at The Atlanta Constitution *for 17 years and editor of two business weeklies in the Northeast.*

Note: *This is his third column, To see his first column, click here. To see his second column, click here.*

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