

Gas Drilling Companies Hold Data Needed by Researchers to Assess Risk to Water Quality

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Photo by Abrahm Lustgarten/ProPublica

For years the natural gas drilling industry has decried the lack of data that could prove—or disprove—that drilling can cause drinking water contamination. Only baseline data, they said, could show without a doubt that water was clean before drilling began.

The absence of baseline data was one of the most serious criticisms leveled at a group of Duke researchers last week when they published the first peer-reviewed study linking drilling to methane contamination in water supplies.

That study—which found that methane concentrations in drinking water increased dramatically with proximity to gas wells—contained “no baseline information whatsoever,” wrote Chris Tucker, a spokesman for the industry group Energy in Depth, in a statement debunking the study.

Now it turns out that some of that data does exist. It just wasn’t available to the Duke researchers, or to the public.

Ever since high-profile water contamination cases were linked to drilling in Dimock, Pa., in late 2008, drilling companies themselves have been diligently collecting water samples from private wells before they drill, according to several industry consultants who have been working with the data. While Pennsylvania regulations now suggest pre-testing water wells within 1,000 feet of a planned gas well, companies including Chesapeake Energy, Shell and Atlas have been compiling samples from a much larger radius—up to 4,000 feet from every well. The result is one of the largest collections of pre-drilling water samples in the country.

“The industry is sitting on hundreds of thousands of pre and post drilling data sets,” said Robert Jackson, one of the Duke scientists who authored the study, published May 9 in the Proceedings of the National Academy of Sciences. Jackson relied on 68 samples for his study. “I asked them for the data and they wouldn’t share it.”

The water tests could help settle the contentious debate over the environmental risks of drilling, particularly the invasive part of the process called [hydraulic fracturing](#), where millions of gallons of toxic chemicals and water are pumped underground to fracture rock. Residents from Wyoming to Pennsylvania fear that the chemicals will seep into aquifers and pollute water supplies, and in some cases they complain it already has. But the lack of scientific research on the issue—including a dearth of baseline water samples—has hindered efforts by government and regulators to understand the risks.

The industry has two reasons to collect the data: to get to the bottom of water contamination problems, and to protect itself when people complain that drilling harmed their drinking water.

“Unless you have the baseline before the analysis you can argue until the sky turns green,” said Anthony Gorody, a geochemist who often works for the energy industry. “The only real way to address this without anybody bitching and moaning is by doing this before and after.”

Chesapeake Energy alone has tested thousands of private water supplies in the Marcellus Shale, and the company says its findings demonstrate that much of the water was contaminated before drilling began.

“Water quality testing ... has shown numerous issues with local groundwater,” wrote the company’s spokesman, Jim Gipson, in an email to ProPublica. “One out of four water sources have detectable levels of methane present ... and about one in four fail one or more EPA drinking water standards.”

Gipson declined to elaborate on the findings or share Chesapeake’s test results, making it difficult to verify whether the companies had, indeed, found the water was contaminated before drilling began. But he did note that Pennsylvania does not regulate water quality in private wells and that water sampling is typically not done by homeowners.

“This fact substantially explains why many of these pre-existing issues have not been previously identified or resolved by landowners,” he wrote.

It is also unclear whether Pennsylvania state environment officials—who declined to answer questions for this story—have been allowed to review the industry data or are using it when they investigate drilling accidents in the state.

That leaves open questions about who will see the water data, whether it has been verified by independent labs and how it might be useful in the public debate. The Environmental Protection Agency’s study of hydraulic fracturing is due to be completed next year, and the Department of Energy recently appointed a review panel to assess the risks of drilling.

Energy in Depth's Tucker and others expect the industry will eventually make its data public.

“There has been talk about releasing it and putting it in the public domain,” said Fred Baldassare, a former Pennsylvania environment official and expert on underground gas migration who now consults for the industry. Baldassare said the drilling companies were concerned that releasing water test results could affect property values for residents and amounted to a violation of their privacy. “How do you identify these points while maintaining some confidentiality?”

Jackson said the data should be made available now to independent researchers and to agencies investigating the hydraulic fracturing process. But even without the data, he stands behind his study. The Duke report said that the link between drilling activity and water degradation was clear and said the contaminants could be migrating through manmade underground fractures or, more likely, were coming from cracks in the well structure itself. The researchers said the wells they analyzed had been hydraulically fractured, but that more study of that process was needed to understand whether fracturing might be causing the contamination. No indicators of fracturing fluids were found in the samples.

Jackson likened the questions about drilling risk to those about the link between smoking and lung cancer.

“In an ideal study you follow people through their lives. You take measurements on them in their lungs as they start smoking and as you grow old. That's what you need to prove cause and effect,” he said. “But instead they asked: ‘If you smoke, did you get lung cancer?’ That doesn't prove that smoking is the cause, but it's a pretty good step.

“That's all we did here. If you live near a gas well are you more likely to have methane contamination? That answer is yes. It's not proof, but it's a good first step.”