

## Study: Fracking doesn't affect water

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/ From staff and wire reports

A federal study on hydraulic fracturing, or fracking, shows no evidence that chemicals from the natural gas drilling process moved up to contaminate drinking water aquifers at a Western Pennsylvania drilling site, the Department of Energy told The Associated Press.

After a year of monitoring, the researchers found that the chemical-laced fluids used to free gas trapped deep below the surface stayed thousands of feet below the shallower areas that supply drinking water, Richard Hammack, a geologist with the National Energy Technology Laboratory, said.

The results are preliminary and the study is still ongoing, NETL officials cautioned on Friday.

Drilling fluids tagged with unique markers were injected more than 8,000 feet below the surface but were not detected in a monitoring zone 3,000 feet higher. That means the potentially dangerous substances stayed about a mile away from drinking water supplies.

One finding surprised the researchers: Seismic monitoring determined that one hydraulic fracture, an induced crack in the shale, traveled 1,800 feet out from the well bore; most traveled just a few hundred feet.

The researchers believe that fracture may have hit naturally occurring faults, and that's something both industry and regulators don't want.

"We would like to be able to predict those areas" with natural faults and avoid them, Mr. Hammack said.

Industry research has shown it's not uncommon for fractures in the Marcellus to span more than 1,000 feet.

Findings like that could become more consequential as companies ramp up their development of shale layers above and below the Marcellus.

Layers of shale and sandstone in the Upper Devonian formation can be found just a few hundred feet above the Marcellus, depending on where in Pennsylvania a company is drilling.

Range Resources Corp., whose Marcellus headquarters is in Canonsburg, has drilled several Upper Devonian wells. Spokesman Matt Pitzarella said it's not uncommon for fractures from one shale to be detected in another.

But no fluid has traveled between the two, he said.

Cecil-based Consol Energy Inc. reported this week the results of its first horizontal well tapping

into the Upper Devonian. The well hit the shale at about 7,600 feet underground. The Marcellus in that part of the state is only a few hundred feet deeper.

The NETL study was conducted on wells in Greene County close to West Virginia.

Eight Marcellus Shale wells were monitored seismically, and one was injected with four different man-made tracers at different stages of the fracking process, which involves setting off small explosions to break the rock apart. The scientists also monitored a separate series of older gas wells that are about 3,000 feet above the Marcellus to see if the fracking fluid moved up to them.

The DOE team will start to publish full results of the tests over the next few months, said Mr. Hammack, who called the large amount of field data from the study "the real deal."

But while it may bring comfort to some, people in the oil and gas industry and many of its opponents have said for years that fluid migration from fractures isn't a substantial environmental danger of shale extraction.

Fred Baldassare, owner of Echelon Applied Geosciences Consulting and former geologist with the Pennsylvania Department of Environmental Protection, repeated his warnings about methane migration posing the biggest threat during Marcellus operations.

"Gas is compressible, so it's going to travel longer distances [than fluids]," he said.

Mr. Baldassare's research shows that gas tends to migrate up the well bore as a result of improper cementing, for example, rather than through fractures, although it could happen if a fracture intercepts an old, abandoned deep well.

"That's a concern and the industry, I know, is doing a lot more now" to locate those wells before drilling, he said.

Staff writer Anya Litvak contributed to this report.

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