High Country News

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Feds Link Water Contamination to Fracking for the First Time

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In a first, federal environment officials today scientifically linked underground water pollution with hydraulic fracturing, concluding that contaminants found in central Wyoming were likely caused by the gas drilling process.

The findings by the Environmental Protection Agency come partway through a separate national study by the agency to determine whether fracking presents a risk to water resources.

In the 121-page draft report released today, EPA officials said that the contamination near the town of Pavillion, Wyo., had most likely seeped up from gas wells and contained at least 10 compounds (http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf) known to be used in frack fluids.

"The presence of synthetic compounds such as glycol ethers … and the assortment of other organic components is explained as the result of direct mixing of hydraulic fracturing fluids with ground water in the Pavillion gas field," the draft report states. "Alternative explanations were carefully considered."

The agency's findings could be a turning point in the heated national debate about whether contamination from fracking is happening, and are likely to shape how the country regulates and develops natural gas resources in the Marcellus Shale and across the Eastern Appalachian states.

Some of the findings in the report also directly contradict longstanding arguments by the drilling industry for why the fracking process is safe: that hydrologic pressure would naturally force fluids down, not up; that deep geologic layers provide a watertight barrier preventing the movement of chemicals towards the surface; and that the problems with the cement and steel barriers around gas wells aren't connected to fracking.

Environmental advocates greeted today's report with a sense of vindication and seized the opportunity to argue for stronger federal regulation of fracking.

"No one can accurately say that there is 'no risk' where fracking is concerned," wrote Amy Mall, a senior policy analyst at the Natural Resources Defense Council, on her blog. "This draft report makes obvious that there are many factors at play, any one of which can go wrong. Much stronger rules are needed to ensure that well construction standards are stronger and reduce threats to drinking water."

A spokesman for EnCana, the gas company that owns the Pavillion wells, did not immediately respond to a request for comment. In an email exchange after the EPA released preliminary water test data two weeks ago (http://www.propublica.org/article/epa-finds-fracking-compound-in-wyoming-aquifer/), the spokesman, Doug Hock, denied that the company's actions were to blame for the pollution and suggested it was naturally caused.

"Nothing EPA presented suggests anything has changed since August of last year– the science remains inconclusive in terms of data, impact, and source," Hock wrote. "It is also important to recognize the importance of hydrology and geology with regard to the sampling results in the Pavillion Field. The field consists of gas-bearing zones in the near subsurface, poor general water quality parameters and discontinuous water-bearing zones."

The EPA's findings immediately triggered what is sure to become a heated political debate as members of Congress consider afresh proposals to regulate fracking. After a phone call with EPA chief Lisa Jackson this morning, Sen. James Inhofe, R-Okla., told a Senate panel that he found the agency's report on the Pavillion-area contamination "offensive." Inhofe's office had challenged the EPA's investigation in Wyoming last year, accusing the agency of bias.

Residents began complaining of fouled water near Pavillion in the mid-1990s, and the problems appeared to get worse around 2004. Several residents complained that their well water turned brown shortly after gas wells were fracked nearby (http://www.propublica.org/article/hydrofracked-one-mans-mystery-leads-to-a-backlash-against-natural-gas-drill/), and, for a time, gas companies operating in the area supplied replacement drinking water to residents.

Beginning in 2008, the EPA took water samples from resident's drinking water wells, finding hydrocarbons and traces of contaminants that seemed like they could be related to fracking (http://www.propublica.org/article/epa-chemicals-found-in-wyo.-drinking-water-might-be-from-fracking-825). In 2010, another round of sampling confirmed the contamination, and the EPA, along with federal health officials, cautioned residents not to drink their water and to ventilate their homes (http://www.propublica.org/article/feds-warn-residents-near-wyoming-gas-drilling-sites-not-to-drink-their-wate/) when they bathed because the methane in the water could cause an explosion.

To confirm their findings, EPA investigators drilled two water monitoring wells to 1,000 feet. The agency released data from these test wells in November that confirmed high levels of carcinogenic chemicals (http://www.propublica.org/article/epa-finds-fracking-compound-in-wyoming-aquifer/)

such as benzene, and a chemical compound called 2 Butoxyethanol, which is known to be used in fracking.

Still, the EPA had not drawn conclusions based on the tests and took pains to separate its groundwater investigation in Wyoming from the national controversy around hydraulic fracturing. Agriculture, drilling, and old pollution from waste pits left by the oil and gas industry were all considered possible causes of the contamination.

In the report released today, the EPA said that pollution from 33 abandoned oil and gas waste pits – which are the subject of a separate cleanup program – are indeed responsible for some degree of shallow groundwater pollution in the area. Those pits may be the source of contamination affecting at least 42 private water wells in Pavillion. But the pits could not be blamed for contamination detected in the water monitoring wells 1,000 feet underground.

That contamination, the agency concluded, had to have been caused by fracking.

The EPA's findings in Wyoming are specific to the region's geology; the Pavillion-area gas wells were fracked at shallower depths than many of the wells in the Marcellus shale and elsewhere.

Investigators tested the cement and casing of the gas wells and found what they described as "sporadic bonding" of the cement in areas immediately above where fracking took place. The cement barrier meant to protect the well bore and isolate the chemicals in their intended zone had been weakened and separated from the well, the EPA concluded.

The report also found that hydrologic pressure in the Pavillion area had pushed fluids from deeper geologic layers towards the surface. Those layers were not sufficient to provide a reliable barrier to contaminants moving upward, the report says.

Throughout its investigation in Wyoming, The EPA was hamstrung by a lack of disclosure about exactly what chemicals had been used to frack the wells near Pavillion. EnCana declined to give federal officials a detailed breakdown of every compound used underground. The agency relied instead on more general information supplied by the company to protect workers' health.

Hock would not say whether EnCana had used 2 BE, one of the first chemicals identified in Pavillion and known to be used in fracking, at its wells in Pavillion. But he was dismissive of its importance in the EPA's findings. "There was a single detection of 2-BE among all the samples collected in the deep monitoring wells. It was found in one sample by only one of three labs," he wrote in his reply to ProPublica two weeks ago. "Inconsistency in detection and non-repeatability shouldn't be construed as fact."

The EPA's draft report will undergo a public review and peer review process, and is expected to be finalized by spring.

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