

Colorado Fracking Study Blames Faulty Wells for Water Contamination

Faulty construction, rather than the fracking process, is found to have caused the methane leaks in one Colorado area.

Neela Banarjee, Inside Climate News, 7-11-16

Methane contamination of Colorado water wells from nearby fossil fuel development is likely due to faulty oil and gas well construction rather than hydraulic fracturing, according to a new study of aquifer contamination in the state.

The study, published in the Proceedings of the National Academy of Sciences on Monday, is the latest to pinpoint the sources and pathways of methane reported in residential drinking water near drilling sites, a concern to many communities as the fracking boom has spread across the country.

Environmental activists have asserted that fracking opens fissures underground along which methane, the main ingredient in natural gas, migrates from fossil fuel reservoirs into aquifers. Industry has maintained that residents' water already contained methane before oil and gas activity began.

The Colorado study builds on several others published in the last few years, examining water from Texas to Pennsylvania. They all indicate methane can bleed from oil and gas wells if the metal casings inside the wellbore are not cemented completely or sealed deep enough underground.

"The bottom line here is that industry has denied any stray gas contamination: that whenever we have methane in a well, it always preexisting," said Avner Vengosh, professor of earth and ocean sciences at Duke University, who read the paper but was not involved in the study. "The merit of this is that it's a different oil and gas basin, a different approach, and it's saying that stray gas could happen."

The study's authors examined data collected by state regulators from Colorado's Denver-Julesberg Basin from 1988 to 2014. The area has been home to oil and gas development for decades, but horizontal drilling and high-volume fracking began in 2010.

The authors found methane in the water of 593 wells sampled in the area. Analysis of the chemical composition of the methane showed that 42 wells contained gas that was the same as that being produced in the area.

Of the wells, 11 had documentation from state authorities analyzing the cause of the contamination as "barrier failures." The other cases are still under investigation. The barriers are steel casings inside an oil or gas well that are cemented in place to prevent hydrocarbons from seeping into the surrounding earth.

All 11 wells with barrier failure were drilled before 1993 and did not undergo high-volume fracking and horizontal drilling. Further, they were not subject to new regulations adopted by Colorado in 1993 that set more stringent standards for cement casings inside new oil and gas wells.

Colorado's adoption of tougher well-construction standards does not reflect national practices, however. Because Congress banned national regulation of fracking under the 2005 Energy Policy Act, standards for water and air protection around oil and gas sites vary by state.

There are also no laws governing the kind of cement that should be used. The cement used to hold the casings in place has to be "competent," said Dominic DiGiulio, a visiting scholar at Stanford University and retired scientist from the Environmental Protection Agency. Petroleum engineers who work for the drilling company test the cement in a well and determine whether the seal is durable. But not every well is tested.

Industry has resisted efforts to standardize testing of the cement bond in fracked wells. The Bureau of Land Management's draft fracking rules, recently struck down by a federal appeals court, call for testing the cement in fracked wells. The oil and gas industry has argued that it would be prohibitively expensive, estimating that would cost 20 times greater than the federal government has estimated.

Ensuring the integrity of the wellbore casing and cement job "isn't a technical issue but a financial issue," DiGiulio said. "The petroleum industry knows this technology but it's not done on every single well, and that gets down to cost."