

## Fracking may endanger groundwater in California

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Fracking for oil in California happens at shallower depths than previously realized and could pose a risk to precious groundwater supplies, according to a federally commissioned report released Thursday.

The report found that half of the oil wells fracked in the state lie within 2,000 feet of the surface, close to aquifers. Hydraulic fracturing uses a high-pressure blend of water, sand and chemicals to crack rocks containing oil or natural gas. Those cracks can sometimes extend as far up as 1,969 feet - not far from the surface.

Fracking chemicals, some of them toxic, could migrate along the cracks and leach into drinking water, according to the report. There are no recorded cases of that happening in



Photo: David McNew / Getty Images

Pump jacks and wells are seen in an oil field on the Monterey Shale formation where gas and oil extraction using hydraulic fracturing, or fracking, is on the verge of a boom on March 23, 2014 near McKittrick, California. Critics of fracking in California cite concerns over water usage and possible chemical pollution of ground water sources as California farmers are forced to leave unprecedented expanses of fields fallow in one of the worst droughts in California history.

California, the authors note, but it remains a possibility needing further study.

“In California, hydraulic fracturing is occurring at relatively shallow depths and presents an inherent risk for fractures to intersect nearby aquifers,” reads the report, from the California Council on Science and Technology.

Water wells in Kern County, where most of California's fracking takes place, lie 600 feet to 800 feet below the surface, according to the U.S. Geological Survey.

The U.S. Bureau of Land Management commissioned the report last year after losing a lawsuit brought by California fracking opponents, who argued that the bureau couldn't lease land for hydraulic fracturing without first studying its environmental risks. The lawsuit prompted the bureau to stop selling leases to companies interested in fracking the Monterey Shale, a vast geologic formation that lies beneath the southern San Joaquin Valley and nearby coastal hills.

With the report's release, the bureau signaled on Thursday that it would start offering leases in California again. The report will provide guidance for safe drilling operations, said Jim Kenna, the bureau's California state director. The report delves into issues ranging from the amount of water used by fracking in California - an amount significantly smaller than in other states - to the possibility that disposing of fracking waste water deep underground could trigger earthquakes.

"With these pieces in place, we will be able to both contribute to meeting America's energy needs and implement appropriate, safe and responsible measures to protect groundwater and other critical resources," Kenna said.

Fracking opponents consider the report flawed. The authors themselves noted that much of the information they hoped to

find about fracking and other forms of well stimulation - particularly acidizing, the use of acid to open up oil-bearing rocks - does not yet exist. The report also expressed skepticism that the Monterey Shale would produce the kind of oil production boom seen in North Dakota and Texas. The federal government recently slashed by more than 95 percent its estimate of how much oil could be pumped from the Monterey Shale using current technology.

Kassie Siegel, director of the Climate Law Institute at the Center for Biological Diversity, said the report contains too many warning flags to support more fracking. Her group brought the lawsuit that led to the report.

"It turns out that they're fracking right around the water table," she said. "We shouldn't be polluting our air and water for a treasure trove that may never materialize."

The oil industry insists that fracking doesn't pose a danger to groundwater, although the industry has often argued that the depth of fracking wells will protect aquifers. The Bakken Shale formation in North Dakota, for example, ranges from 4,500 feet to 7,500 feet - more than twice as deep as the majority of wells fracked in California.

The Western States Petroleum Association said it is studying the council's report. The council was formed in 1988 to advise California's governor and legislators on scientific issues.

“Public discussion on all aspects of well stimulation in California helps ensure the debate on hydraulic fracturing is fully informed, properly balanced and inclusive,” the association said.