LOS ANGELES
Daily Journal
www.dailyjournal.com
FRIDAY, JUNE 12, 2015

PERSPECTIVE

Little fracking risk, despite EPA disclaimers

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With nearly 30,000 new injection wells being drilled each year, hydraulic fracturing, or "fracking," is a rapidly expanding method of oil and gas extraction which involves injecting large volumes of fluid or sand at high pressure into an underground well to extract oil and gas from fractures created in the underground rock. Fracking's proliferation has been contentious, and last week, the U.S. Environmental Protection Agency aligned itself with fracking industry advocates when it released its long-awaited assessment of the impacts of hydraulic fracturing on drinking water.

After evaluating the various mechanisms by which fracking could impact drinking water resources, the EPA found no evidence that hydraulic fracturing has led to widespread, systemic change in the quality or quantity of drinking water resources in the United States. The only evidence of fracking's impacts on drinking water were isolated incidents, almost all of which are traceable to the small subset of fracking wells that fail to meet current industry safety standards. The study concludes that modern fracking technology, when properly implemented, is protective of both ground and surface waters.

Anti-fracking factions, however, have jumped on the EPA's choice to couch its well-supported findings based on the disclaimers included in the report. A careful reading of the EPA's conclusions throughout the study, however, is enough to assuage any significant concern about the core conclusion from the EPA's assessment: Hydraulic fracturing activities pose little danger to drinking water. We address each disclaimer in turn below:

Disclaimer 1: The false assertion that there have been insufficient pre- and post-fracturing data on water quality

While the EPA claims it lacks a point-of-reference to evaluate changes in water quality, it does not claim insufficient water quality data. This is a crucial distinction, as water quality standards are not set by the change in concentration of a particular contaminant, but rather by absolute concentrations. For drinking water, the EPA sets maximum contaminant levels (MCLs).

Although the deltas of various substances' concentrations may be needed to assess *any* impacts to waters, they are not needed to assess the more pragmatic question raised by the EPA: whether fracking activities cause widespread, systemic change in the quality or quantity of drinking water resources in the United States. Instead, the EPA's evaluation of water sources near fracking activities largely revealed what existed before fracking operations began: a body of water which could serve as a source of drinking water.

The EPA's assessment also notes that even a moderate change in the concentrations of certain compounds would be noted by treatment plants. Elevated bromide levels, for example, can make it difficult for plants to meet drinking water MCLs, as bromide interacts with a disinfectant, such as chloride, forming a tertiary compound which is then difficult to remove.

Disclaimer 2: The unfounded contention that there have been few long-term studies

The EPA states longer-term studies would account for the "several years" it can take for spilled fluid to infiltrate soil and then leach into ground water. Fracking, however, has been quite active during the past 10 years, and even long before that. Absent a specifically identified spill or slow-moving chemical impact, which the EPA has not identified, there is no reason to believe we aren't already seeing and evaluating the long-term impacts of fracking.

The EPA further qualifies its findings by noting that the chemical makeup of wastewater produced from fracking is rarely assessed as part of spill response. It follows, says the EPA, that the chemicals contained in the wastewater, along with their relative concentrations, usually remain unknown, meaning the wastewater's long-term potential impacts to drinking water are also unknown. But this assumes a significant number of fracking spills impact drinking water. In the course of its assessment, the EPA evaluated 457 spills related to fracking activities which occurred between 2006 and 2012, only 151 of which involved the fracturing fluid or its chemical additives. Of those spills, the median volume was only 420 gallons, only 13 reached any surface water, and none reached groundwater. Given only 13 of 457 spills even touched a potential source of drinking water, the chemicals in fracking wastewater are unlikely to have caused unknown impacts to drinking water.

Disclaimer 3: The misguided claim that other sources of contamination preclude a definitive link between fracking and drinking water impacts

The EPA's study is misleading to the extent that it implies that *but for* "other sources" of contamination, fracking would be linked to pollution. To use one of the EPA's own examples, a fracking well located near natural methane concentrations may result in methane naturally migrating into, and contaminating, groundwater. Thus, when methane gas is eventually found in the groundwater, it may be unclear whether the gas originates from the well or from the natural source.

Scientists and statisticians, however, can establish the origin source, both through modeling and by analyzing the isotopic composition of the gas, in the case of methane contamination. The "other sources" therefore do not preclude finding a definitive link between fracking and pollution. The studies cited by the EPA are unable to correlate the pollution and fracking activities in this manner.

Disclaimer 4: The misleading assertion that inaccessibility of some information on hydraulic fracturing activities and potential impacts

The assessment makes clear that the EPA is unsettled by the 70 percent of fracking wells that still withhold from disclosure at least one injection chemical compound based on confidentiality concerns. The report compiles a list of 1,076 different compounds used in injection solutions, issuing a warning that it has not begun to assess the health impacts of even a fraction of these. But according to the EPA's report, the number of unique chemicals per well range from four to 28, with a median of only 14. These chemicals include not only those known to be toxic at certain concentrations, but also the more mundane, such as acetic acid (better known as vinegar). Given the limited number of chemicals used per well, the risks of sparsely used compounds with less-studied impacts is attenuated.

The EPA's assessment offers broad support for the position that hydraulic fracturing activities pose little danger to drinking water. The caveats in the EPA's study, while unnecessary, do little to undermine its cardinal premise: that it has found no evidence to support the contention that hydraulic fracturing has led to widespread, systemic change in the quality or quantity of drinking water resources in the United States.

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