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Posted: February 1, 2011 01:22 PM

# [The Hydraulic Fracturing Dilemma, and Danger](#)

Hydraulic fracturing, known as frac'ing, of oil and gas wells has been a common practice for decades yet little is understood about this complex, and potentially very dangerous well treating practice. In the last 10 to 15 years, more and more questions have been raised by both the environmental community and regulatory agencies, and the industry has characteristically kept most information under wraps, citing proprietary technology as their reasons for concealing specific chemicals and concentrations they use. In the last several years, concerns of the environmental community have spilled over into the awareness of the general public, fueled by [Gasland](#), a documentary about shale gas drilling and frac'ing produced by Josh Fox in 2010.

Before we talk about the controversy of frac'ing, let's first talk about exactly what it is and how it's done. Hydraulic fracturing is a well stimulation technique that increases the production from very tight oil and gas formations. In the industry "tight" has several meanings, but in this particular case, it means it has low porosity and permeability. Porosity is the void space or "pore space" within which hydrocarbons reside. Permeability is the ability of the rock to allow the oil and gas to flow within the rock. Frac jobs increase relative permeability, allowing more oil and gas to flow to the wellbore, making the well profitable. It's generally believed that over 80% of wells drilled today are not economic without hydraulic fracturing. Here's a good illustration about how horizontal wells are frac'ed:

The problems with frac'ing are generally twofold; first, control of the frac fluid within the well is always questionable, depending completely on good well design as well as quality of steel casing and properly applied cement jobs. As we all witnessed during the BP well blowout, casing quality and cement quality are critical to proper well design, with potential catastrophic consequences if there is a failure. The second key issue is proper disposal of the frac fluids as they are flowed back from the treated well. These two issues are greatly exacerbated when hazardous materials (like diesel fuel) are used in the treatment, hence the current controversy over hydraulic fracturing. There are fears that chemicals from

frac jobs can (or already have) reached fresh water aquifers, especially when the oil and gas wells are in close proximity to fresh drinking water sources.

Up until just recently, the industry has done what it always does; dismiss concerns about frac'ing as hyperbole with the attendant "it's just too complicated for you to understand" rhetoric pushed by lobbyists. This time, though, fueled by Cabot Oil & Gas being [fined for contaminating water sources in Pennsylvania](#), a [ban on frac'ing in New York](#) state, and constant pressure from environmental groups, the industry has begun to respond to demands for more transparency. While still defending the practice of frac'ing as necessary, some companies have begun efforts to use more benign chemicals and disclose ingredients used by service companies. Energy giant Chesapeake has even started what it calls [GreenFrac](#), a program it claims is designed to reduce the risks to groundwater from hydraulic fracturing.

Yesterday, Democratic members of the House Committees on energy, oversight, and natural resources [sent a letter to EPA administrator Lisa Jackson](#), claiming that oil field service companies have pumped over 32 million gallons of diesel fuel as frac fluid from 2005 to 2009 without proper EPA permits. The letter points out the same difficulties that we witnessed during the BP crisis; lack of communication between service companies and operators, and the lack of risk mitigation and record keeping due to that lack of communication. The alarming thing about the use of diesel fuel in frac jobs is that virtually everyone, including the industry, had assumed that the practice was stopped in 2003. Apparently, that is simply not the case.

This practice, though necessary to make US oil and gas wells productive, requires much more government oversight and industry disclosure to lower the risk of contamination of precious groundwater resource. As long as we don't know what the industry is pumping into the ground and the extent of the damage it may cause, it will be virtually impossible to assure the public that the technique is indeed safe. It's time for the industry to take a pause, similar to the pause we continue to experience in the deepwater, and take the time to determine harmful practices and materials, then replace these techniques with safer operations.

*Bob Cavnar, a 30-year veteran of the oil and gas industry, is the author of [Disaster on the Horizon: High Stakes, High Risks, and the Story Behind the Deepwater Well Blowout](#). He is CEO of Luca Technologies.*

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