

## POLICY BRIEF ON HYDRAULIC FRACTURING

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Hydraulic fracturing has become the latest fossil fuel extraction technique to find itself in the crosshairs of environmentalists. Despite the recent buzz, hydraulic fracturing, or “fracking”, has been used in the United States for over 60 years to extract natural gas. The reason for the the recent excitement has much more to do with recent technological developments in drilling than it does with the technology of fracking itself.

Hydraulic fracturing involves pumping a combination of a fluid and a proppant into a hole in order to fracture the soil and enable more ready extraction of the fossil fuel, in this case natural gas (though the origins of the technique stem from the oil industry). The earliest proppant was sand, and it is added to the fluid so that once the high-pressure fluid has broken apart the rock surrounding the natural gas reservoir, it is able to “prop open” and stabilize the fractures, ensuring ready extraction of the gas. Initially, nitroglycerine was used as the fracking fluid; however, eventually water became the primary fluid, to which were added numerous compounds in order to create a proper viscosity and enable an appropriate suspension of the proppant.

The biggest change in today's fracking techniques from that of a couple decades ago has to do with the borehole itself. Drilling down to the gas reserve is the most resource-intensive part of the extraction process – this is part of the reason fracking was invented, to optimize the extraction capacity of each well. The recent capability to drill horizontally into the rock housing the gas has greatly increased the volumetric potential of a single drill site. Moreover, it has also enabled a much faster extraction process. These developments, combined with rising costs of oil and the deregulation of the natural gas industry, spurred on the development of natural gas resources. This includes drilling in areas that would not have previously been economically viable, such as the Marcellus Shale in PA and NY.

As in any situation where someone stands to make a lot of money, there was significant pressure on Congress to ensure that this new domestic source of energy could be tapped. In the 2000s, then-Vice President Dick Cheney, in particular, pushed strongly to exclude the EPA from regulating the industry, which it would have been able to do under the Safe Drinking Water Act (SDWA). However, in what has come to be known as the “Halliburton Loophole” due to Cheney's ties to Halliburton and Halliburton's interest in natural gas, the Energy Policy Act of 2005 (EPA2005) amended the SDWA to exclude fracking fluid and proppants (other than diesel)<sup>1</sup>. From the industry's perspective, this is done not simply out of expedience but also to ensure that they do not need to disclose the specific components of their proprietary chemical mixtures.

It could also be argued that the Safe Drinking Water Act is not the EPA's only line of defense in ensuring that natural gas extraction be environmentally safe. In 1969, the National Environmental Protection Act ensured that the Federal Energy Regulatory Commission, who is responsible for siting and generally regulating the natural gas industry, must provide an Environmental Impact Statement (EIS) or Environmental Assessment (EA) for any natural gas site. While an EIS or an EA do not exclude the possibility of a site having an environmental impact, it forces any project to disclose the likely environmental impact of its work. In the case of significant impact, the responsible party must also outline how it plans to mitigate these impacts.

There is currently much debate as to the specific environmental impact of natural gas wells on the local environment. The popular documentary *Gasland* helped to ignite a backlash with its visuals of local landowners whose water was now flammable due to natural gas contamination near a particular fracking site. Other towns have complained of local water wells being contaminated with carcinogenic compounds found in fracking fluids, signifying that the fracking fluid may have entered the groundwater. The natural gas industry has dismissed

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<sup>1</sup> Excerpt from the **ENERGY POLICY ACT OF 2005 (Sec. 322. Hydraulic Fracturing)**: Paragraph (1) of section 1421(d) of the Safe Drinking Water Act (42 U.S.C. 300h(d)) is amended to read as follows: “(1) UNDERGROUND INJECTION.—The term ‘underground injection’ — (A) means the subsurface emplacement of fluids by well injection; and (B) excludes — (i) the underground injection of natural gas for purposes of storage; and (ii) the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.”.

these complaints, noting that hydraulic fracturing takes place nowhere near the water table and natural phenomena such as biogenic methane common to coalbeds explains the “firewater”. While these are, in part, true, there is evidence to suggest that there is suspect integrity of some wells, and it may be that the biogenic methane is actually being “freed” as a byproduct of the high-pressure fracking process nearby.

There is additional concern about the processing and treatment of the fracking fluid afterwards. Currently it is common to put the water back deep into the ground for storage, but that is not possible in areas such as Pennsylvania due to its unique substrata. The processing and treatment of the fluid in PA has come under fire recently because wastewater plants responsible for treating the water did not have the capability to properly treat many of the chemicals found in the fracking fluid. It is also possible that some contamination of the water supply seen is due to run off and improper treatment of the waste fluid. However, the industry has been moving towards recycling the fluid on its own, and spokespersons for the industry claim upwards of 90-95% recycling efficiencies.

Though the EPA released a report on hydraulic fracturing in 2004 that claimed it posed no risk to drinking water, the House of Representatives felt in 2009 that there were sufficient concerns about the technique to require a comprehensive study on the safety of the process, particularly in regards to the water supply. The full scope of the study commissioned by the Appropriation Conference Committee in its FY2010 Report encompasses a full lifecycle analysis, from the chemical mixing and actual fracking process on through disposal and treatment. The study plan has undergone numerous opportunities for public comment, and currently it is in revision after comments from the EPA's Scientific Advisory Board. The study's initial results are due by the end of 2012 with a final report expected in 2014.

In the meantime, there is current legislation reviving the 2009 Fracturing Responsibility and Awareness of Chemicals (FRAC) Act as H.R. 1084 (sponsored by Rep. Diana DeGette, D-CO) and S. 587 (sponsored by Sen. Robert Casey, D-PA), both of which are currently in committee. The central goal of this policy is to remove the exceptions to the SDWA put in under EPA2005. It would also require disclosure of proprietary chemicals to the State and/or EPA (whoever has primacy). This would enable the EPA to inspect drilling sites and ensure the integrity of the wells while also maintaining regulatory authority over the water treatment process, which has come under much scrutiny recently. And of primary concern to the energy industry, it would do so without introducing a new permitting process that would unduly slow the safe extraction of this rapidly-developing energy source. Furthermore, like products from Coca-Cola to pesticides, processes would be in place to ensure that proprietary information would be disclosed for public safety but not to such a specific degree as to be useful for competitors.

*Recommendations:*

- 1) **Pass the FRAC Act** – The “Halliburton loophole” is an unjustifiable exemption created for economic expediency without proven necessity. There is enough research available at this point to warrant the regulation of fracking fluid, but the current protection of proprietary compounds ties the hands of regulators at both the state and federal level. It would also not preclude most individual states from regulating the industry as they see fit, which is a concern of states such as Wyoming and Texas.
- 2) **Do not create hasty regulations** – After passing the FRAC Act, it is important to focus on information gathering before clamping down on current hydraulic fracturing operations. In this highly volatile political climate, it is in everyone's interest to focus first on the science – until the EPA's report is finalized, it will be unjustifiable to warrant any new regulations, and attempting to do so will simply incense supporters of natural gas. Furthermore, the CDWA would already then provide sufficient regulatory authority to ensure the safety of the country's water supply, which is the primary health risk.
- 3) **Provide for thorough research** – There has been an exponential growth in natural gas extraction, and for both economic and political reasons, it is not likely to slow down. However, the ongoing EPA study is thus far the only major, comprehensive, independent study into its repercussions. Even after its release, there are likely to be still further questions about the process, particularly those regarding long-term issues such as the integrity of the wells. Continued research into the technology should not slow down because of how widespread it is used, even if some aspects of it are eventually considered safe.