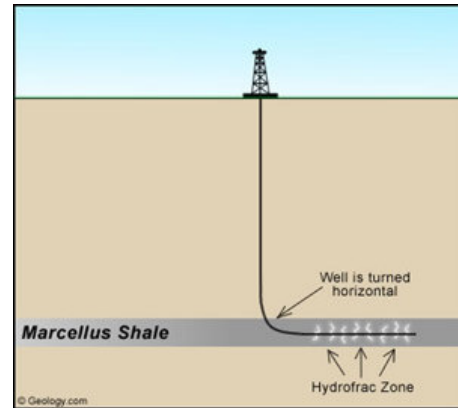


Hydraulic Fracturing

An Unregulated Danger to Our Nation's Drinking Water

What is hydraulic fracturing or “fracking”?

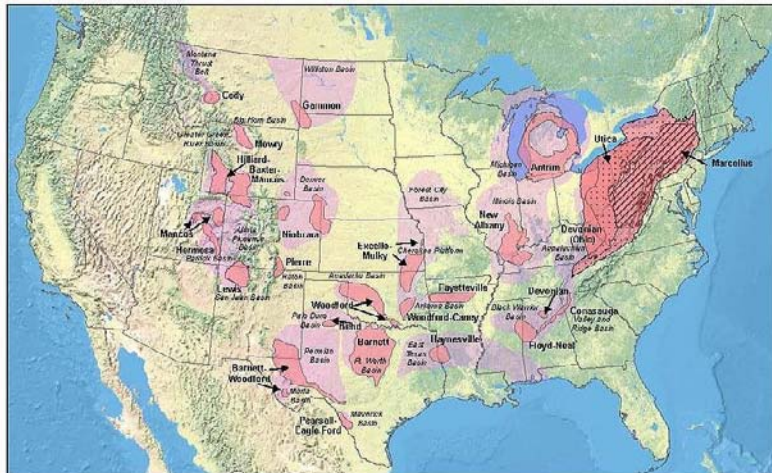
Hydraulic fracturing, or “fracking,” is a resource extraction method used to break down underground rock formations to release natural gas or oil. To release gas trapped within thin layers of rock, natural gas producers inject a pressurized mixture of water, sand, and chemicals into oil or gas wells or coalmine methane beds, a process that breaks down the formations and allows the gas to flow. The technique was developed by Halliburton in the 1940s, and is now employed in 90% of oil and gas operations throughout the United States on both public and private lands.¹



Source: New York State Department of Environmental Conservation

Companies keep the chemicals in fracking fluid secret

Though most of the fluid used in fracking is said to be recovered, some of the injected fluids remain trapped underground. The exact makeup of the fluid blends is unknown, as the chemical components are kept as proprietary secrets by companies. However, some of the chemicals are known, and they include hazardous materials and carcinogens such as benzene, phenanthrenes, and naphthalene, all of which can contaminate groundwater resources.²



United States Shale Gas Plays



Locations with unconventional natural gas (such as shale gas) are potential sites for hydraulic fracturing and its associated affects.

Source: Energy Information Administration

Oil and gas companies are not required by federal law to disclose the chemicals used in fracking, although 10 states require them to do so.³ Industry representatives claim that because chemicals

are only used in low concentrations, there is no public health rationale to make the information available. This begs the question: if fracking is so safe, what does the industry have to fear from disclosing the contents of fracking fluids?

Fracking poses a danger to our drinking water

Fracking fluids are pumped out of the wells after use, but studies have shown that approximately 40-60% of the fluids actually remain underground.⁴ Despite industry claims of safety, there are a number of cases in the U.S. where hydraulic fracturing is the prime suspect in incidences of impaired or polluted drinking water. In Alabama, Colorado, New Mexico, Virginia, West Virginia, and Wyoming, residents have reported changes in water quality or quantity following fracking operations of gas wells near their homes.⁵ The increase in fracking in the Northeast's Marcellus Shale endangers the water and health of highly populated places like New York City and Philadelphia.

Although the Environmental Protection Agency (EPA) completed a study in 2004 concluding that fracking does not pose a risk to groundwater and that no further study was necessary, that study only analyzed hydraulic fracturing in coalmine methane beds, and has additionally been criticized as "scientifically unsound" by EPA whistleblower Weston Wilson.⁶ Soon after it was released, the Oil and Gas Accountability Project produced a critique of the study which included analysis of the original data the EPA used as well as earlier drafts of the study. It concluded that fracking actually poses these potential dangers:

Hydraulic fracturing fluids contain toxic chemicals

Even when diluted by water and sand, the fracking chemicals are used in great quantities. We know that many of the chemicals can pose threats to human health such as cancer, liver, kidney, brain, respiratory and skin disorders; and birth defects, among others.⁷

Chemicals are injected directly into drinking water aquifers

Although the industry claims that it only practices fracking at levels beneath groundwater, many coalbed methane basins contain groundwater that is of good enough quality to drink. Fracking is a common practice in coalbed methane wells, and in some cases, fracking chemicals are injected directly into or adjacent to this high quality groundwater.⁸

Chemicals found in fracking fluids:

Benzene: damages the bone marrow, sometimes causing leukemia, increases heart rate and decreases red blood cell count, leading to anemia.

Phenanthrenes: irritants that cause skin sensitivity to light.

Naphthalene: a possible carcinogen, causes hemolytic anemia, as well as nausea and diarrhea.

Flourenes: can cause fragile and brittle bones, respiratory damage.

Ethylene glycol: can damage kidney function and change the body's acidity which affects the nervous system, lungs, and heart.

Source: Department of Health and Human Services.

A hydraulic fracturing company recommends that unused fluids be disposed of as hazardous waste

Schlumberger, the world's largest oilfield services company, recommends that many of its fracturing fluids be disposed of at hazardous waste facilities.⁹ However, under current law these fluids are allowed to be inserted into or adjacent to underground sources of drinking water.

Citizens from across the country have been affected by hydraulic fracturing

Common complaints from nearby communities after fracking begins include observing water that is murky or cloudy, contains sediments, iron precipitates, soaps, black jelly-like grease, floating particles, diesel fuel, or petroleum odors. Locals also have reported rashes from showering, a gassy taste in their water, decrease in water flow, and soil and surface water contamination from spills of fracking fluids.¹⁰ In these cases, state agencies and the EPA are unable to test for the presence of certain chemicals in fracking fluids because there is no requirement that companies disclose what they have been injecting into the ground.

Contamination may not show up for decades

In a number of areas, fracking occurs on hundreds or thousands of wells, and some of these fluids remain in the rock. Because groundwater tables can rise after oil and gas development, fluids could mobilize and become contaminated years after production in that area has ceased. This is evidenced in comments from hydrogeologists on the EPA's 2002 draft study of hydraulic fracturing and coalbed methane wells.¹¹

Fracking is unregulated under the Safe Drinking Water Act despite its dangers

Section 322 of the Energy Policy Act of 2005 (also known as the "Halliburton Loophole") prohibits the EPA from regulating hydraulic fracturing under the Safe Drinking Water Act. Fracking is one of only two underground injection processes that are exempted from the Safe Drinking Water Act.

Recommendations

The oil and gas industry claims both that fracking is safe for human health and the environment and, contradictorily, that applying the same regulations afforded by the Safe Drinking Water Act would endanger crucial domestic production of oil and gas.¹² If the practice of fracking is as safe as the industry says it is, basic levels of safety and inspection should not pose a problem to fracking operations. If, instead, the practice does pose significant dangers, the health and safety of human and environmental communities should be protected by appropriate regulation of this practice. Closing the loophole would require oil and gas companies to disclose what chemicals they use in fracking, and ensure that the public can judge whether this practice is indeed as safe as the industry claims it is. These regulations would not pose any economic dangers to gas production, since they should not require the industry to do anything particularly onerous, especially given the industry's claims about safety.

Proposed legislation.

The Fracking Responsibility and Awareness of Chemicals Act (FRAC Act) closes the Halliburton Loophole so that fracking is regulated under the Safe Drinking Water Act. It also mandates that companies report the chemicals they use in fracking fluids to the state and that the state in turn makes the information available to the public, including posting it online. The bill has been introduced simultaneously by Senators Casey (D-PA) and Schumer (D-NY) as S.1215 in the Senate and by Representatives DeGette (D-CO), Polis (D-CO) and Hinchey (D-NY) as H.R.2766 in the House.

For more information, please contact Chase Huntley at (202)-429-7431 or Jessica Goad at (202)-429-7433, or see our website: www.wilderness.org

¹ House Energy and Commerce Committee, 109th Congress. Testimony of Victor Carrillo, Chairman, Texas Railroad Commission, Representing the Interstate Oil and Gas Compact Commission. February 10, 2005. <http://www.rrc.state.tx.us/commissioners/carrillo/press/energytestimony.php>

² U.S. Environmental Protection Agency. "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs: Hydraulic Fracturing Fluids." June 2004. http://www.epa.gov/OGWDW/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf

³ ProPublica. "Buried Secrets: Gas Drilling's Environmental Threat." <http://www.propublica.org/series/buried-secrets-gas-drillings-environmental-threat>

⁴ U.S. Environmental Protection Agency. "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs: Hydraulic Fracturing Fluids." June 2004. pp ES-1. http://www.epa.gov/OGWDW/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf

⁵ Sumi, Lisa. "Our Drinking Water at Risk: What EPA and the Oil and Gas Industry Don't Want You to Know About Oil and Gas Fracturing." Oil and Gas Accountability Project. Earthworks. April 7, 2005. <http://www.earthworksaction.org/pubs/DrinkingWaterAtRisk.pdf>

⁶ Wilson, Weston. "Dear Senators Allard and Campbell and Representative DeGette." October 8, 2004. <http://www.earthworksaction.org/pubs/Weston.pdf>

⁷ U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry. "Frequently Asked Questions About Contaminants Found at Hazardous Waste Sites." <http://www.atsdr.cdc.gov/toxfaq.html>

⁸ For a discussion of the fact that fracking chemicals injected into coalbed methane wells, see: U.S. Environmental Protection Agency. "Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs: Hydraulic Fracturing Fluids." June 2004. http://www.epa.gov/OGWDW/uic/pdfs/cbmstudy_attach_uic_ch04_hyd_frac_fluids.pdf

⁹ Sumi, Lisa. "Our Drinking Water at Risk: What EPA and the Oil and Gas Industry Don't Want You to Know About Oil and Gas Fracturing." Oil and Gas Accountability Project. Earthworks. April 7, 2005. <http://www.earthworksaction.org/pubs/DrinkingWaterAtRisk.pdf>

¹⁰ Sumi, Lisa. "Our Drinking Water at Risk: What EPA and the Oil and Gas Industry Don't Want You to Know About Oil and Gas Fracturing." Oil and Gas Accountability Project. Earthworks. April 7, 2005. <http://www.earthworksaction.org/pubs/DrinkingWaterAtRisk.pdf>

¹¹ Dr. Bredehoeft, John. "Expert Testimony on Hydraulic Fracturing Impacts." May 15, 2003. <http://www.earthworksaction.org/publications.cfm?pubID=94>

¹² Independent Petroleum Association of Mountain States. IPAMS News Release: Hydraulic Fracturing: Safe, Reliable and Vital to the Rockies. IPAMS: Wildcatter Weekly, 4 June 2009. Web. <http://ipams.org/wildcatter/wildcatter-weekly-june-4-2009>