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Hydraulic Fracturing  
Regulatory trends, environmental issues review

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# Fracking Roundup: Legislation and Regulation

By [Adam Orford](#)

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Hydraulic fracturing (commonly called “fracking”) is a method for increasing output at oil and natural gas wells by breaking open gas-bearing rock formations using high-pressure fluid injection. The technique, combined with new innovations in horizontal drilling, has opened up new natural gas development opportunities across the country, especially in the mid-Atlantic region, and the potential environmental impacts of this increased activity are now the center of heated public debate. Unfortunately, the flood of media coverage has largely drowned out the details of the legal processes by which responsible authorities across the nation have been addressing the real issues. This article therefore summarizes the current state of legislative and regulatory responses to the ongoing fracking debate.

## Background

For a comprehensive discussion of hydraulic fracturing and the history of federal regulation in the United States, see A. Orford, [Fractured: The Road to the New EPA “Fracking” Study](#), *Marten Law Environmental News* (Sept. 17, 2010). For information on EPA’s current initiative to study the impacts of hydraulic fracturing on water resources, see A. Orford, [EPA Draft Plan to Study Potential Drinking Water Impacts of Hydraulic Fracturing](#), *Marten Law Environmental News* (Feb. 25, 2011).

## Regulatory Trends

To give a sense of the current trends in the regulation of hydraulic fracturing, it is necessary to discuss a wide variety of materials from various level of government. Currently, the following items are worth looking at:

- The proposed federal FRAC Act, [H.R. 1084](#); [S. 587](#).
- EPA’s proposed [Diesel Fracking Permitting Guidance](#) under the Safe Drinking Water Act (SDWA) Underground Injection Control (UIC) Program.
- Recently adopted state rules and regulations, including:
  - Wyoming Oil and Gas Regulation, [Ch. 3, Section 45](#) (September 2010);
  - [Arkansas Oil & Gas Commission Rule B-19](#) (January 2011);
  - Michigan DEQ [Permitting Instructions](#) (May 2011);
  - Texas [HB 3328](#) (June 2011) and Texas Railroad Commission [Proposed Rules](#) implementing that law (August 2011);
  - Louisiana DNR [Proposed Rules](#) (August 2011);
  - West Virginia DEP [Emergency Regulations](#) (August 2011); and
  - Montana DNRC [Rules](#) (September 2011).

- EPA's proposed revisions to the New Source Performance Standards for oil and gas wells under the Clean Air Act.
- News coverage of the legal challenges to municipal fracking bans.

Each of these will be discussed below.

## **Federal Regulatory Status**

Hydraulic fracturing is a national issue,<sup>[1]</sup> but it is not currently covered by national environmental laws. The Safe Drinking Water Act's Underground Injection Control Program generally governs underground injection activities, including at "Class II" wells related to oil and gas production. However, unless diesel fuel is used, hydraulic fracturing activities are currently exempt from all SDWA requirements.<sup>[2]</sup> Regulation of hydraulic fracturing is, therefore, primarily done at the state level. There have been calls to change this, and in the meantime EPA is considering its authority over diesel fracking.

Since 2009, legislation has been introduced repeatedly in both houses of Congress (most recently as the Fracturing Responsibility and Awareness of Chemicals (FRAC) Act of 2011, H.R. 1084; S. 587) to amend the SDWA specifically to include underground injection of fluids for hydraulic fracturing for oil and gas (and geothermal) production. Specifically including hydraulic fracturing, rather than simply removing the existing exemption, would put to rest old arguments that EPA should not, or could not, regulate the practice under the UIC Program.<sup>[3]</sup> If the bill passes, EPA would be required, in effect, to promulgate nationwide minimum requirements for hydraulic fracturing activities conducted at oil and gas wells.<sup>[4]</sup>

Of course, the FRAC Act may never become law. Several states have urged Congress to leave authority with them,<sup>[5]</sup> and there does not currently appear to be a political consensus to enact it. In the meantime, then, EPA has begun considering what authority it has within the limited confines of the SDWA fracking exemption. The law as written excludes "the underground injection of fluids or propping agents (*other than diesel fuels*) pursuant to hydraulic fracturing operations ..." (emphasis added). Consequently, EPA – despite having in the past declined to regulate – has now stated that hydraulic fracturing using diesel would require a Class II UIC permit,<sup>[6]</sup> and begun the process of developing permitting guidance for hydraulic fracturing using diesel. Among the issues to be addressed, the agency is considering how broadly to interpret the words "diesel fuel," a term undefined in the law and subject to narrow and broad readings. Public comment on the proposed guidance is open through Fall 2011, and a final rule is expected in the first half of 2012.

## **State Permitting Trends**

With EPA regulatory authority limited to diesel fracking (at most), it is left to the states, under their traditional authority, to regulate oil and gas production within their borders, to decide what requirements drillers must meet. Generally, this requires well permits from state oil and gas or environmental agencies. In response to the current public debate over hydraulic

fracturing, states from California to Massachusetts have been reviewing their regulatory programs and – sometimes – imposing additional requirements on drillers using hydraulic fracturing. Review of recently adopted regulations reveals several common themes, each of which is discussed in more detail below.

### **Fluid Chemical Disclosure**

The most obvious trend is the success of the movement to require public disclosure of the chemicals used in hydraulic fracturing fluids. Hydraulic fracturing is not accomplished with water alone, but rather with a mixture of water, propping agents (e.g., sand), and chemicals. While the percentage of chemicals is actually quite small by volume, it takes about 2-5 million gallons of fluid to fracture a shale well, so even a very small percentage can mean a significant quantity of chemicals. Furthermore each fluid will have dozens of chemicals in it – foaming agents, anti-foaming agents, viscosifiers and gellants, biocides, pH regulators, corrosion and scaling inhibitors, tracing chemicals, and many others – and while some of these chemicals are benign, the toxicity of others has not been completely determined, and there is no doubt that some are quite toxic.<sup>[7]</sup>

Up until recently, the oil and gas industry has not been required to disclose what chemicals they were using in their fracking fluids. Oil and gas extraction activities are generally exempt from the disclosure requirements of the Emergency Planning and Community Right to Know Act (EPCRA).<sup>[8]</sup> Consequently, a movement has grown to require disclosure as a part of state permitting processes. The emerging consensus has been that these laws should require fairly detailed reporting and broad public disclosure, preferably on a website. After calls for public disclosure and threats at national legislation (again through the FRAC Act), since last year six states – Wyoming, Arkansas, Michigan, Texas, West Virginia, and Montana – have adopted disclosure rules, and several others, including Louisiana, Colorado, and New Mexico, are likely to follow. These new disclosure rules, combined with independently developed online voluntary chemical registries such as [FracFocus](#), are quickly producing a large body of information on chemicals used to assist in the fracking process.

Public distrust has remained, however, as the interest in full disclosure has come up against interests of trade secrecy. On the one hand, concerned citizens have legitimate health and safety concerns about chemicals that could be released into their groundwater. On the other hand, hydraulic fracturing is not a one-size-fits-all operation – companies compete to tailor the very best chemical mixture depending on significant variations in geology and other factors – and so to disclose exactly who is using exactly how much of what at every well in the country forces these companies to lose significant business advantages. Universally, therefore, states that have required disclosure have also provided for trade secrets protections, generally requiring companies to disclose certain information to the states, but keeping it from the public.

This has caused some controversy recently in Wyoming. In August 2011, the state announced that it had approved requests to keep confidential the chemical properties of 146 fracking



additives under the trade secrets caveat. This news has spurred argument over whether the trade secrets exemption is or is not working for Wyoming (see article at [this link](#)). It appears likely that, as the public digests the information that is available and determines that there are still unknowns, challenges to state trade secrets determinations will be forthcoming.

### **Water Protections: Withdrawals, Flowback, and Well Integrity**

A less obvious but equally important trend is emerging over risks to water posed by the fracturing process itself. States – and particularly state regulatory bodies most familiar with oil and gas development – appear largely to agree that increased environmental risks from hydraulic fracturing in deep shale generally arise from (1) greatly increased water withdrawals for this type of fracturing, (2) improper handling and disposal of chemical-laden return flows, and (3) underground releases due to well blowouts and other accidents or negligent operation. Consequently, as is evident from the state regulations linked above, states have begun requiring submissions, in varying detail, regarding withdrawal water volumes and sources, return flow volumes and disposition, and well pressures, and have sometimes adopted more stringent technical requirements to ensure well integrity.

Regarding withdrawals, a Michigan agency recently explained<sup>[9]</sup> that 5 million gallons of water – necessary for a single fracturing operation – is roughly the equivalent of the water necessary over a season to grow 8-10 acres of corn. This, repeated on a large scale, could have significant impacts on available water resources. Therefore, states – some of which have traditionally exempted oil and gas activities from water withdrawal laws – are moving to adopt more detailed requirements in well permits for disclosure of source waterbodies and expected amounts of water withdrawals, which will give states a better sense of what the cumulative impacts of large scale implementation might have on water supplies.

Regarding flowback – hydraulic fracturing fluid that is pumped out of the well after the fracturing is complete – again, states are moving to require much more detailed tracking and disclosure of the amounts of water produced. There is also a general movement toward evaluating state-level waste and effluent handling laws – particularly storage, transport, and disposal regulations – to ensure that flowback handling is properly covered.

Notably, states do not appear to have taken seriously the possibility that the fracturing itself might cause groundwater contamination. Relatively shallow drinking water supplies generally are considered well enough removed and isolated from shale formations thousands of feet underground.<sup>[10]</sup> Nonetheless, partly to confirm this understanding, several states have begun gathering information on estimated and actual fracture sizes, and companies are voluntarily collecting this information for their own protection.

### **Federal Air Quality Protection**

While the potential water impacts of hydraulic fracturing have drawn the most public attention, concerns also have been raised over potential air impacts. EPA, prompted by a lawsuit in the

D.C. Circuit,<sup>[11]</sup> is now proposing new regulations to address air impacts from oil and gas drilling, with a particular emphasis on hydraulic fracturing at gas wells.<sup>[12]</sup> The proposed rules include revised New Source Performance Standards (NSPS) for volatile organic compounds (VOCs) and sulfur dioxide (SO<sub>2</sub>), as well as controls on toxic air pollutants released at oil and gas wells. The highlight of the rule is a projected industry-wide 25 percent decrease in VOCs by requiring that new or refractured wells be fitted with equipment that captures gases (particularly methane) typically released from wells during the “flowback period,” the three to ten days during which fracturing fluid is pumped out of the well after injection. These so-called “green completions” are currently required only in Wyoming and Colorado. The rule also institutes controls to limit so-called “fugitive emissions” from gas storage, transport, and processing plants and equipment. Most recently, EPA held public hearings on the proposed rules in late September.

Air controls are also intended to address a related controversy: the greenhouse gas (GHG) impacts of natural gas produced by fracking. Generally, natural gas contains significantly lower levels of greenhouse gases than coal and other fossil fuels, and therefore increased energy production with natural gas has the potential to significantly reduce climate-forcing GHG emissions. However, a controversial study out of Cornell University<sup>[13]</sup> concluded that methane venting during flowback recovery could offset any GHG gains and – as the headlines put it – render fracking gas even dirtier than coal. According to EPA, the oil and gas industry accounts for 40 percent of the nation’s methane emissions, and EPA’s VOC NSPS proposal would also capture, burn off, or otherwise significantly limit methane emissions, yielding “significant climate co-benefits.”

## **Bans and Moratoriums**

Despite movement toward reasonable regulation to address concerns related to hydraulic fracturing, there is still a strong movement, especially in the mid-Atlantic, toward banning all hydraulic fracturing. These efforts have gotten so much press that it is now difficult to discern the current status of the law. For the record, New York is the only U.S. state that has actually instituted any sort of ban or moratorium on fracking.<sup>[14]</sup> Other states have also attempted bans, but none have become law.<sup>[15]</sup>

The most interesting thing happening with bans right now is actually at the municipal level. It is much easier to convince a local government to institute a ban than a state, and groups such as the Community Environmental Legal Defense Fund have been lobbying municipal governments for bans with much success. A [map](#) maintained by Food & Water Watch shows over 60 municipal bans currently in effect, mostly in the Marcellus Shale region in the mid-Atlantic.

Municipal bans arise out of an understandable desire in municipalities to determine the types of industrial activities that take place within their borders. The difficulty with such bans, however, is that it is not clear that they are within the power of municipalities to enact. In brief, the issue is whether statewide oil and gas laws preempt the ability of towns and cities to regulate within their own boundaries. The ability of towns and cities to legislate within their

borders – a concept called home rule – varies from state to state, and conflicts between statewide and local laws often raise state constitutional or statutory construction questions that must be resolved by a court. The first ruling on these issues as applied to fracking recently came from a challenge to a ban in Morgantown, West Virginia. There, a state court judge struck down the city's ban, finding that it was preempted.<sup>[16]</sup>

Even if towns are able to pass bans under their state law, such bans also raise significant constitutional issues. Drilling leases give rise to property rights and are worth millions of dollars. Foreclosing the ability to drill can, and has, given rise to claims for just compensation for governmental taking of property.

## Conclusion

Hydraulic fracturing has created a public furor. Little of that debate, however, has focused on the protections that are already in place, and what actually is being done to increase those protections. The debate over hydraulic fracturing should not be silenced, but it should remain based on fact, or it will have failed to serve the public interest. Shedding light on the current status of federal and state regulation should assist in that endeavor.

For more information, please contact Adam Orford or any member of Marten Law's Energy, Water Quality or Water Resources groups.

[1] Shale plays are being explored and developed in the mid-Atlantic, South, Southwest, Midwest, and Mountain, and Western regions of the country. See [map](#).

[2] See 42 U.S.C. § 300h(d)(1)(B); and see Fractured: The Road to the New EPA "Fracking" Study, Marten Law *Environmental News* (Sept. 17, 2010).

[3] See *Legal Envtl. Assistance Found., Inc. v. U.S. E.P.A.*, 118 F.3d 1467 (11th Cir. 1997) (rejecting these arguments); see also *Legal Envtl. Assistance Found., Inc. v. U.S. E.P.A.*, 276 F.3d 1253 (11th Cir. 2001), *cert. denied*, 537 U.S. 989 (2002) (same).

[4] The SDWA allows states to take "primacy" over the UIC Program within their boundaries. In that event, EPA is required to review and approve state regulations. In areas where states have not taken primacy, EPA runs the UIC Program. More information is available at [this link](#).

[5] See, e.g., Kansas HR 6025, North Dakota HCR 3008, urging Congress to leave regulation to the states.

[6] This has led to litigation under the Administrative Procedure Act regarding the timing of this policy. A good summary of the litigation is available at [this link](#).



[7] As reported by the House Energy and Commerce Committee (report at [this link](#)), commonly used chemicals include highly toxic 2-butoxyethanol (2-BE) as a surfactant and foaming agent, and many other potentially hazardous chemicals.

[8] Emergency Planning and Community Right-to-Know Act of 1986 § 313(b), 42 U.S.C. § 11023(b); 40 C.F.R. § 372.23 (2010) (excluding Standard Industrial Classification Major Group 13: Oil and Gas Extraction in facilities that must prepare toxic chemical release forms under EPCRA). EPCRA § 304, 42 U.S.C. § 11004, does require reporting of releases of “extremely hazardous substances.” And see 40 C.F.R. § 302.4, Table 302.4 (reportable substances, including some that may be used in hydraulic fracturing).

[9] See Michigan Department of Environmental Quality, Office of Geological Survey, [Hydraulic Fracturing of Natural Gas Wells in Michigan](#) (May 31, 2011)

[10] The U.S. Dept. of Energy Shale Gas Subcommittee recently released a [report](#) that concluded: “The Subcommittee shares the prevailing view that the risk of fracturing fluid leakage into drinking water sources through fractures made in deep shale reservoirs is remote.”

[11] *WildEarth Guardians v. Jackson*, Case No. 1:11-cv-0001 (D.Colo).

[12] Information on the proposed regulations is available at [this link](#).

[13] An article discussing the study is available at [this link](#).

[14] The New York ban came by executive order from former Governor Paterson after the state’s legislature passed its own one-year moratorium and the governor vetoed it. In effect, the current situation in New York is that horizontal hydraulic fracturing will not be permitted until the New York State Department of Environmental Conservation (NYSDEC) completes its long-delayed Supplemental Generic Environmental Impact Statement, a draft of which is currently out for public review. Meanwhile, various other legislative initiatives to ban fracking in New York until after issuance of EPA’s nationwide study ([A 5547](#)), for five years while the state conducts its own study ([A 6541](#)); permanently within state parklands ([A 5677](#)), or entirely ([A 7218](#), [S 4220](#)) are tied up in committee and currently appear unlikely to pass. A number of non-U.S. jurisdictions have also banned or placed moratoriums on fracking. These include New South Wales in Australia (for coal seam gas ([article](#))); Quebec in Canada ([article](#)); South Africa in the Karoo region ([article](#), [article](#)); and the entire country of France ([article](#)).

[15] For example, the New Jersey legislature passed a blanket fracking ban ([A3653](#), [S2576](#)) in June 2011. However, following New York’s example, New Jersey Governor Christie [conditionally vetoed](#) the bill, recommending that the legislature replace the permanent ban with a one-year moratorium. The state legislature is currently considering whether to accept this proposed alternative, or to attempt to override the veto ([article](#)) ([article](#)). Meanwhile, attempts to ban fracking via legislation failed in the Maryland Senate after passing the House ([HB 852](#), [SB 634](#)).



[16] *Northeast Natural Energy, LLC v. Morgantown, WV*, No. 11-c-411 (Monongalia Cty. Cir. Ct.).  
Order available at [this link](#).

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## Related Practices

**FROM THE AUGUST 3, 2011 NEW YORK TIMES, written by reporter Ian Urbina. This report has not been challenged, and many in the gas industry now accept that fracking has contaminated water supplies.**

“There have been over a million wells hydraulically fractured in the history of the industry, and there is not one, not one, reported case of a freshwater aquifer having ever been contaminated from hydraulic fracturing. Not one,” Rex W. Tillerson, the chief executive of ExxonMobil, said last year at a Congressional hearing on drilling.

It is a refrain that not only drilling proponents, but also state and federal lawmakers, even past and present Environmental Protection Agency directors, have repeated often.

But there is in fact a documented case, and the E.P.A. report that discussed it suggests there may be more. Researchers, however, were unable to investigate many suspected cases because their details were sealed from the public when energy companies settled lawsuits with landowners.

Current and former E.P.A. officials say this practice continues to prevent them from fully assessing the risks of certain types of gas drilling.

“I still don’t understand why industry should be allowed to hide problems when public safety is at stake,” said Carla Greathouse, the author of the E.P.A. report that documents a case of drinking water contamination from fracking. “If it’s so safe, let the public review all the cases.”

Eric Wohlschlegel, a spokesman for the American Petroleum Institute, dismissed the assertion that sealed settlements have hidden problems with gas drilling, and he added that countless academic, federal and state investigators successfully conducted extensive research on groundwater contamination issues.

“Settlements are sealed for a variety of reasons, are common in litigation, and are done at the request of both landowners and operators,” Mr. Wohlschlegel said.

Still, the documented E.P.A. case, which has gone largely unnoticed for decades, includes evidence that many industry representatives were aware of it and also fought the agency’s attempts to include other cases in the final study. . .

The report concluded that hydraulic fracturing fluids or gel used by the Kaiser Exploration and Mining Company contaminated a well roughly 600 feet away on the property of James Parsons in Jackson County, W.Va., referring to it as “Mr. Parson’s water well.”

“When fracturing the Kaiser gas well on Mr. James Parson’s property, fractures were created allowing migration of fracture fluid from the gas well to Mr. Parson’s water well,” according to the agency’s summary of the case. “This fracture fluid, along with natural gas was present in Mr. Parson’s water, rendering it unusable.”

# Fracking Radiation Targeted By DOE, GE

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Shale gas well. Image via Wikipedia

The Department of Energy and General Electric will spend \$2 million over the next two years to remove naturally occurring radioactive materials from the fracking fluids produced by America's booming shale-gas industry.

The New York State Department of Health has identified Radium-226 as a radionuclide of particular concern in the Marcellus Shale formation deep beneath the Appalachian Mountains.

In hydraulic fracturing operations, drillers force water and a mixture of chemicals into wells to shatter the shale and free natural gas.

The brine that returns to the surface has been found to contain up to 16,000 picoCuries per liter of radium-226 ([pdf](#)). The discharge limit in effluent for Radium 226 is 60 pCi/L, and the EPA's drinking water standard is 5 pCi/L.

Uranium and Radon-222 have also been found in water returning to the surface from deep shale wells.