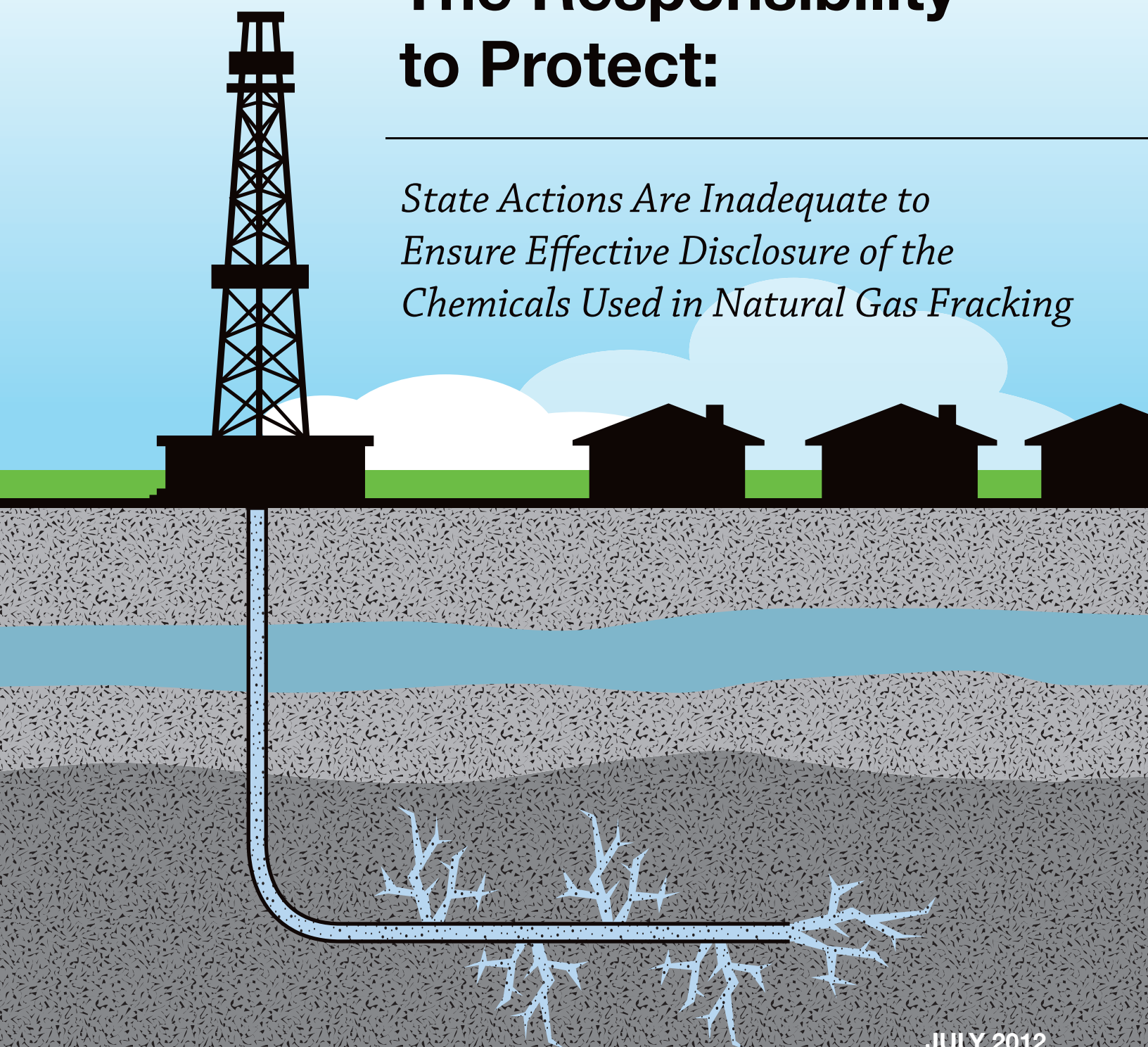


OMB WATCH

The Right to Know, The Responsibility to Protect:

*State Actions Are Inadequate to
Ensure Effective Disclosure of the
Chemicals Used in Natural Gas Fracking*



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About OMB Watch

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This report examines the actions being taken or considered by state governments to ensure that the public can track the chemicals used in hydraulic fracturing, a process used to drill for and extract natural gas supplies. By examining current state disclosure laws, identifying the gap between effective disclosure rules and existing practice, and reviewing the most recent evidence on the health risks of exposure to the chemicals used in hydraulic fracturing, we hope this report will encourage state and local authorities to improve their chemical disclosure standards, especially in those regions of the country most involved in and affected by natural gas extraction.

Community groups, individual citizens, and public officials have a right to know which chemicals are used in the natural gas extraction process. Some of the chemicals known to be used in the process have been linked to a heightened risk of cancer and to kidney, liver, heart, blood, lung, and neurological damage in humans, so it is imperative that the level of these chemicals in the water and air around gas wells be carefully monitored. Almost half a million natural gas wells have been built in at least 30 states and more are planned, so the dangers to public health could be growing.

Disclosing the chemicals associated with natural gas extraction is a necessary first step toward ensuring our search for domestic energy supplies does not threaten our water supplies or the health of our people. Ongoing monitoring to guard against chemical contamination and to ensure a rapid response to leakage or other problems should follow. With the amount of capital and technical expertise that oil and gas companies control, we have a right to demand the highest standards of construction, equipment operations, and safety in the pursuit of new energy resources. The responsibility to ensure these standards are met rests with government.

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Executive Summary

Advances in drilling technologies over the past two decades have created new opportunities for natural gas extraction, and as a result, the number of natural gas wells operating in the United States has grown dramatically. Today, almost half a million wells¹ are operating in at least 30 states.² Just ten of these states combined have more than 400,000 wells in operation; Texas alone has more than 90,000. The top ten companies that drill for natural gas in the United States reported revenues of over \$1.1 trillion in 2010,³ and the four largest reported an estimated \$106 billion in profits in 2011.⁴ Natural gas harvesting is a large, profitable, and growing business.

Nine out of ten gas wells use hydraulic fracturing to release methane gas for energy use.⁵ This is a process that starts with a vertical well dug deep into the earth; then a perpendicular, horizontal shaft is drilled into shale rock. With immense pressure, a mixture of water, sand, and toxic chemicals is pulsed deep into the underground rock formations. The shale rock fractures, and sand or other granular substances prop open the fractures, allowing the natural gas to be released up the well shafts where it is harnessed for sale. If all of the methane and fluid used in the drilling is not contained, underground water supplies can be contaminated. The wastewater left over from hydraulic fracturing (or fracking) can contain toxic chemicals and may be disposed of by drilling new wastewater storage wells, again presenting the possibility of leakage of toxic substances into surrounding soil and water.

Multiple cases of severe water contamination near fracking sites have been documented for at least fifteen years. Some of the chemicals known to be used in fracking fluids have been linked to a heightened risk of cancer and to kidney, liver, heart, blood, lung, and neurological damage in humans, demonstrating that the health risks of water and soil contamination are great. Natural gas drilling uses enormous amounts of fresh water, which also puts pressure on local water supplies. In Ohio, wastewater disposal associated with the natural gas extraction process has been linked to earthquakes. In short, the potential public safety impacts of natural gas harvesting are serious and far-reaching.

But government oversight to ensure the public health and safety of communities near natural gas wells is inconsistent and inadequate. Citizens may assume that gas drilling is covered by the federal Safe Drinking Water Act of 1974, a law whose stated intent is to prevent toxic substances from being injected near underground drinking water supplies. But in the 1990s, the U.S. Environmental Protection Agency (EPA) claimed it did not have authority to regulate hydraulic fracturing under the Safe Drinking Water Act. Thanks to a citizen lawsuit brought by a family in Alabama and an appeals court ruling, the EPA was directed to reconsider this position in 1997.

1 Number of Gas and Gas Condensate Wells. U.S. Energy Information Administration, May 31, 2012. http://205.254.135.7/dnav/ng/hist/na1170_nus_8a.htm.

2 Natural Gas Annual 2010, U.S. Energy Information Administration, Office of Oil, Gas, and Coal Supply Statistics, U.S. Department of Energy, December 2011. <http://205.254.135.7/naturalgas/annual/pdf/nga10.pdf>.

3 Kusnetz, Nicolas. "Who Are America's Top 10 Gas Drillers?" ProPublica, Sept. 1, 2011.

4 "Big Oil's Banner Year: Higher Prices, Record Profits, Less Oil." Center for American Progress, Feb. 7, 2012. http://www.americanprogress.org/issues/2012/02/big_oil_banner_year.html.

5 "What Is Hydraulic Fracturing?" ProPublica. <http://www.propublica.org/special/hydraulic-fracturing-national>.

In spite of this, not much oversight or enforcement was evident over the next eight years, and in 2005, when Congress passed a massive energy bill, a clause was inserted into the law specifically exempting hydraulic fracturing from oversight under the Safe Drinking Water Act.

As a result, the task of protecting the health and safety of citizens and regulating natural gas drilling has been left to state and local governments. Currently, at least 30 states are engaged in natural gas drilling; six states have more than 30,000 wells; another five have between 10,000 and 30,000 wells. Yet only 13 states with active gas reserves have passed laws or established rules requiring even basic public disclosure about the chemicals used in hydraulic fracturing, and only four of those 13 require that any information be provided before drilling occurs so that authorities can monitor potential changes in water and air quality over time. Four other states have proposed hydraulic fracturing policies. Most of the state laws or rules that do exist contain loopholes that allow companies to refuse to disclose the ingredients in the fracking products they use by claiming that these ingredients are “confidential business information” – implying that making the information public would give a competitor an unfair advantage.

We believe an effective state disclosure policy should include the following elements:

1. *As a condition of receiving a drilling permit*, the owners and operators of natural gas wells should be required to submit baseline information, including identification of water sources in the region that could be affected by drilling, measurements of water and air quality, specific chemicals that will be used in the drilling process, and a plan for monitoring air and water quality throughout the life of the well and for three years after it is closed.
2. Specificity is important. Chemical information should be collected from the drilling companies, well operators, and manufacturers. This information should include the unique chemical identification numbers, concentrations, and the quantity of the chemicals used. Only by knowing the exact names of chemicals can states test for the presence of toxic chemicals in water supplies and understand their potential health impacts.
3. To prevent wholesale exemptions of chemical disclosure by companies claiming that the above information is “confidential business information” or a “trade secret,” states should have clear guidelines limiting trade secrets exemptions and should establish a process for substantiating and challenging industry claims about trade secrets.
4. Information about the chemicals used in the natural gas drilling and harvesting process, and the information in the monitoring plan, should be posted on a public website that allows users to search, sort, and download data on individual wells, including the names of the companies that are drilling and operating the wells and the chemicals in the products they are using.

No state has yet established all of the elements of a chemical disclosure policy strong enough to ensure the quality of the water and the health of communities near gas wells. Colorado has made the most progress, putting in place several elements of an effective disclosure policy, including requiring detailed information on the chemicals used in fracking, limiting confidential business information exemptions, and requiring online public posting of some of the information collected. However, Colorado does not mandate baseline studies of air and water quality. Wyoming requires fairly comprehensive disclosure prior to drilling. A few other states (Montana, Arkansas, and Pennsylvania) require much more limited disclosure before drilling begins. Thirteen states⁶ require some public disclosure of the chemicals used in fracturing operations

6 Several states have proposed hydraulic fracturing disclosure policies.

– the first necessary step in monitoring and holding companies accountable for public safety and environmental quality. Eight states⁷ require that this information be posted online in some fashion, but no state currently provides access to chemical disclosure information online in a searchable, downloadable format.

Seven states with significant amounts of natural gas drilling activity have no state laws or rules requiring public disclosure of the chemicals used in the process. One of these states – West Virginia – has more than 52,000 wells in operation.⁸

Table 1. Disclosure of the Chemicals Used in Hydraulic Fracturing in States with Natural Gas Drilling

	Is baseline data collected before the drilling begins?	Is chemical disclosure comprehensive, specific, and timely?	Are there limits on “confidential business information” exemptions?	Is information readily available to the public online?
Better Protections	Wyoming	Colorado	Colorado	California*
Some Protections	Montana New York*	Arkansas California* Illinois* Indiana Louisiana Montana Nebraska* New Mexico North Dakota Ohio Oklahoma Pennsylvania Texas Wyoming	Arkansas Illinois* Louisiana Montana Nebraska* New York* Ohio Oklahoma Pennsylvania Texas Wyoming	Colorado Illinois* Louisiana Michigan Nebraska* New York* North Dakota Ohio Oklahoma Pennsylvania Texas
Inadequate Protections	Arkansas California* Colorado Illinois* Indiana Louisiana Michigan Nebraska* New Mexico North Dakota Ohio Oklahoma Pennsylvania Texas	Michigan New York*	California* Indiana Michigan New Mexico North Dakota	Arkansas Indiana Montana New Mexico Wyoming
No State Action**	Alabama, Kansas, Kentucky, Mississippi, Utah, Virginia, West Virginia			

*Indicates states with proposed policies

**Several states, including Alabama and West Virginia, have policies regulating hydraulic fracturing, but they do not require public chemical disclosure.

⁷ Ibid.

⁸ West Virginia does have a policy regulating hydraulic fracturing, but it does not require public chemical disclosure.



Given the amount of capital and technical expertise that oil and gas companies control, we have a right to demand the highest standards of construction, equipment operations, and safety in the pursuit of new energy resources. A recent international study on natural gas extraction estimates that building wells to the highest possible safety standards would add about seven percent to construction costs.⁹ This is a critical investment in the future – for businesses, communities, and the next generation.

Ultimately, the responsibility to ensure that the natural gas industry drills safely and responsibly rests with government. More federal oversight is needed. The 2005 “Halliburton loophole” exempting natural gas drilling from the protections of the Safe Drinking Water Act needs to be closed.

Under current law, states have been left with oversight responsibility for natural gas drilling. To fulfill their obligation to protect the health and welfare of the people who reside in their states, public officials – legislators and administrators – need to develop disclosure rules. Disclosing the chemicals associated with natural gas extraction is the necessary first step to ensuring that our search for domestic energy supplies does not compromise our water supplies or threaten the health of our people. People have the right to know if potentially toxic chemicals are being discharged into the environment where they’re living and raising children. And government has the responsibility to establish standards and procedures that protect the general welfare. More progress is needed.

⁹ Golden Rules for a Golden Age of Gas. International Energy Agency, 2012.
http://www.worldenergyoutlook.org/media/weowebbsite/2012/goldenrules/WEO2012_GoldenRulesReport.pdf.

Preface

In 1976, Ruben DeVaughn McMillian and his wife began living on 40 acres of land in Northeast Tuscaloosa County, Alabama, that has been in the McMillian family since 1820. In November 1988, the McMillians noticed that their water was turning gray and contained black oily goo that bubbled and smelled of rotten eggs. This change occurred shortly after the River Gas Corporation began hydraulic fracturing to open up a methane well near their home. The McMillians had no methane wells on their land, but a number of wells had been drilled around their property, some within 800 feet of their home.

The family asked the Alabama Oil and Gas Board, the agency that regulates gas drilling, to test their water for contamination. The board tested for “naturally occurring” contaminants and found none, claiming it could not test for the presence of fracking chemicals because it did not have a list of the chemicals used. The family then hired a private consultant to test their water, who confirmed methane gas had contaminated their well. They also contacted the state Environmental Protection Agency. Ten months after the McMillian family filed a complaint, the state EPA tested their water and found no contaminants. However, given the methane the consultant found in their water supply and the fact that they could smell it themselves, the family started buying and carting in bottled water for drinking and cooking.

In 1992, the family reported that a creek near their house had turned blue and all the fish had died. The Fish and Wildlife Service tested the water, confirmed pollution was the cause, but never revealed the source of the pollution. The creek cleared eventually but remained sterile.

Having received no response from state oversight bodies in the previous six years, the McMillians called a public interest environmental organization for help. In 1994, the Legal Environmental Assistance Foundation (LEAF) petitioned the federal EPA to initiate proceedings against Alabama’s Underground Injection Control (UIC) program for failing to protect the McMillians’ drinking water, as required under the federal Safe Drinking Water Act. A year later, the agency denied the petition on the grounds that hydraulic fracturing didn’t fall under the definition of “underground injection” contained in the Safe Drinking Water Act (which had been passed in 1974, before hydraulic fracturing was in widespread use). LEAF asked for a court review of the decision and on Aug. 7, 1997, the 11th Circuit Court of Appeals held that the Safe Drinking Water Act’s definition of underground injection did cover hydraulic fracturing and ordered the EPA to reconsider. Almost ten years after the McMillians’ initial complaint that fracking contaminated their drinking water, they finally found a public institution that listened.

In 2005, Congress changed the law to exempt hydraulic fracturing from the oversight provided by the Safe Drinking Water Act. The McMillians, and everyone else facing problems from fracking wells, were right back where they started.



1. The Debate over Natural Gas Drilling

In the past decade, the number of natural gas wells operating in the United States has grown to almost half a million¹⁰ as advances in drilling techniques have created new opportunities for natural gas extraction. The gas industry estimates that the United States possesses 2,214 trillion cubic feet of recoverable natural gas resources; shale gas (the type extracted through hydraulic fracturing) accounts for almost a quarter of this total.¹¹ Today, up to 5 trillion cubic feet of shale gas is likely being harvested in the U.S. per year, and that amount is projected to grow.¹² As a result of all the new wells established and gas supplies brought to market, the residential price for a thousand cubic feet of natural gas has fallen from \$13.73 in 2006 to \$10.80 in 2011.¹³ The top ten companies that drill for natural gas in the United States reported revenues of over \$1.1 trillion in 2010.¹⁴

Nine out of ten natural gas wells operating in the United States use hydraulic fracturing to extract the gas. With hydraulic fracturing, a mixture of water, sand, and toxic chemicals is pumped deep into the ground under massive pressure in order to break up the shale rock that contains natural gas. While initially hailed as a clean energy technology, a growing body of evidence is raising questions about the long-term public health risks associated with hydraulic fracturing – especially the contamination of water systems.

Natural gas wells may create employment in areas where economic opportunities are few and tax revenue is low. Estimates of the number of jobs that would be created are highly dependent on the assumptions used for “multiplier” effects. Most wells are built in three to four months, and while construction may require several hundred workers, the jobs are temporary and may require specialized skills not found in the local workforce. Estimates of the staff required to operate a complete well vary from less than one to four full-time employees.¹⁵ Since evidence indicates the average life of a fracking well is only seven and a half years,¹⁶ and the damage to

10 Number of Gas and Gas Condensate Wells. U.S. Energy Information Administration, May 31, 2012. http://205.254.135.7/dnav/ng/hist/na117o_nus_8a.htm.

11 “What is shale gas and why is it important?” U.S. Energy Information Administration, updated April 11, 2012. http://www.eia.gov/energy_in_brief/about_shale_gas.cfm.

12 “AEO2012 Early Release Overview.” U.S. Energy Information Administration, 2010. <http://205.254.135.7/forecasts/aeo/er/pdf/o383er%282012%29.pdf>.

13 Natural Gas Prices, U.S. Energy Information Administration, May 31, 2012. http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_nus_a.htm.

14 Kusnetz, Nicolas. “Who Are America’s Top 10 Gas Drillers?” ProPublica, Sept 1, 2011. <http://www.propublica.org/article/who-are-americas-top-10-gas-drillers>.

15 A New York study estimated one well would produce 11 temporary construction jobs, four semi-permanent operations jobs, and 18 other jobs due to the injection of money into the local economy. See “Economic Assessment Report for the Supplemental Generic Environmental Impact Statement on New York State’s Oil, Gas, and Solution Mining Regulatory Program.” Ecology and Environment Engineering, Inc., August 2011. http://www.dec.ny.gov/docs/materials_minerals_pdf/rdsgeisecono811.pdf. Also, an industry-sponsored study in Pennsylvania estimated that each well would generate 100 jobs across multiple industry sectors, including construction, mining, retail trade, educational services, entertainment, and recreation. Each well would generate over \$11 billion in economic activity and over \$1 billion in state and local taxes. See Considine, Timothy J., Watson, Robert, and Blumsack, Seth. “The Pennsylvania Marcellus Natural Gas Industry: Status, Economic Impacts and Future Potential.” The Pennsylvania State University College of Earth and Mineral Sciences, Department of Energy and Mineral Engineering, July 20, 2011. <http://marcelluscoalition.org/wp-content/uploads/2011/07/Final-2011-PA-Marcellus-Economic-Impacts.pdf>.

16 Berman, Arthur. “Lessons from the Barnett Shale suggest caution in other shale plays.” Association for the Study of Peak Oil & Gas – USA, Aug. 10, 2009. <http://aspousa.org/2009/08/lessons-from-the-barnett-shale-suggest-caution-in-other-shale-plays/>.

water and land can be long-term, it can be difficult to strike the proper balance between benefits and costs of natural gas production ¹⁷

The national debate about natural gas extraction and hydraulic fracturing has been distorted by industry promotion. “With natural gas being heavily promoted in TV ads and by politicians and proponents, such as oilman and hedge-fund manager T. Boone Pickens, many Americans have come to see the resource in a positive light,” noted *Vanity Fair*’s Christopher Bateman in a June 2010 article.¹⁸ According to industry claims, shale gas production will significantly reduce energy costs to consumers.¹⁹ A few environmental groups also embraced natural gas as cleaner and less environmentally damaging than coal because the wells produced less disruption at the surface.²⁰

At the local level, in communities that live over natural gas fields, public debate may be even more difficult because the stakes are so high and so personal. The shale beds are often located in regions of the country without a great deal of new economic activity. Sometimes, landowners approached by gas companies find the added income from leasing part of their land a godsend that allows them to stay on their farms or ranches. Others find wells tapped out in two years and their land and water so toxic that they cannot sell their property or move. In each community, there are likely to be winners and losers – people who sold quickly or leased profitably and are happy with the arrangement, and others who see only added traffic, noise, emissions from wells and trucks, inflated prices, and disruptions to the small-town life they love. The local debates are typically not about “tree huggers” versus jobs. The local discussion is about how to best make a living and pass something on to your kids while simultaneously protecting your children’s health and ensuring the land you own is worth keeping. This is not a trade-off American families should have to make. If we are going to harvest natural gas, we should do so safely.

A growing body of evidence is raising questions about the public health risks associated with hydraulic fracturing.

¹⁷ Critics of natural gas drilling point to the \$5 million in financial damages paid by Cabot Oil and Gas for the contamination of 19 water wells in Dimock, Pennsylvania. Considine, Timothy J., Watson, Robert, and Blumsack, Seth. “The Pennsylvania Marcellus Natural Gas Industry: Status, Economic Impacts and Future Potential.” The Pennsylvania State University College of Earth and Mineral Sciences, Department of Energy and Mineral Engineering, July 20, 2011. <http://marcelluscoalition.org/wp-content/uploads/2011/07/Final-2011-PA-Marcellus-Economic-Impacts.pdf>.

¹⁸ Bateman, Christopher. “A Colossal Fracking Mess.” *Vanity Fair*, June 21, 2010.

<http://www.vanityfair.com/business/features/2010/06/fracking-in-pennsylvania-201006>.

¹⁹ Barrett, Paul M. “Could Shale Gas Reignite the U.S. Economy?” *Bloomberg Businessweek*, Nov. 3, 2011. <http://www.businessweek.com/magazine/could-shale-gas-reignite-the-us-economy-11032011.html>.

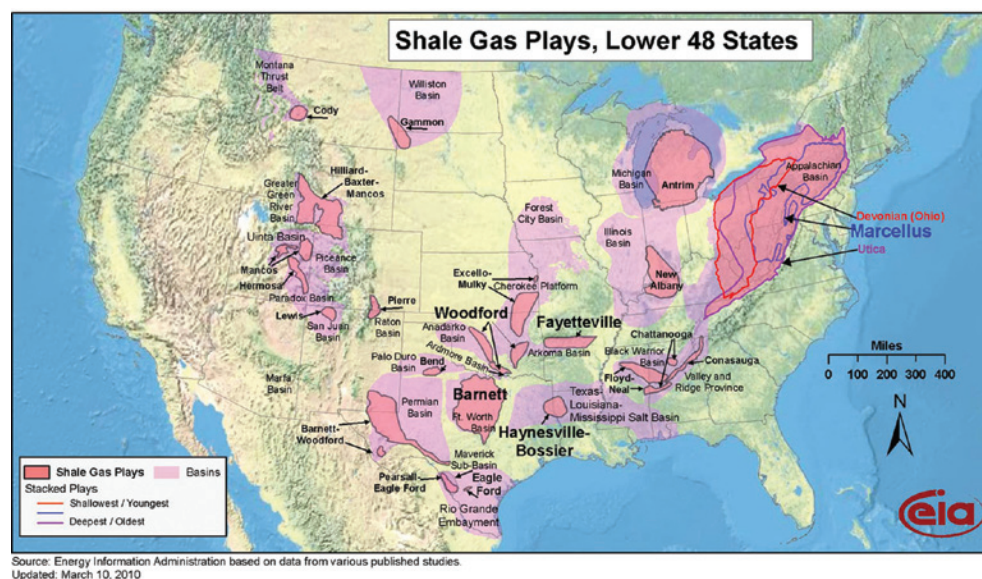
²⁰ Drajem, Mark. “Sierra Club Spurns \$30 Million Gift as Fracking Turns Toxic.” *Bloomberg*, March 14, 2012. <http://www.bloomberg.com/news/2012-03-14/sierra-club-spurns-30-million-gift-after-fracking-turns-toxic.html>.

2. The Expansion of Natural Gas Extraction Across the United States

Over the past two decades, as conventional oil and gas deposits were depleted, the growing demand for energy prompted the extraction industry to develop ways to reach fuel reserves previously deemed inaccessible – deepwater offshore oil reserves, tar sands beds, and natural gas sealed in underground shale rock formations. By the late 1990s, aided by advances in technology, the natural gas industry found it had become profitable to harvest gas locked deep in shale.²¹

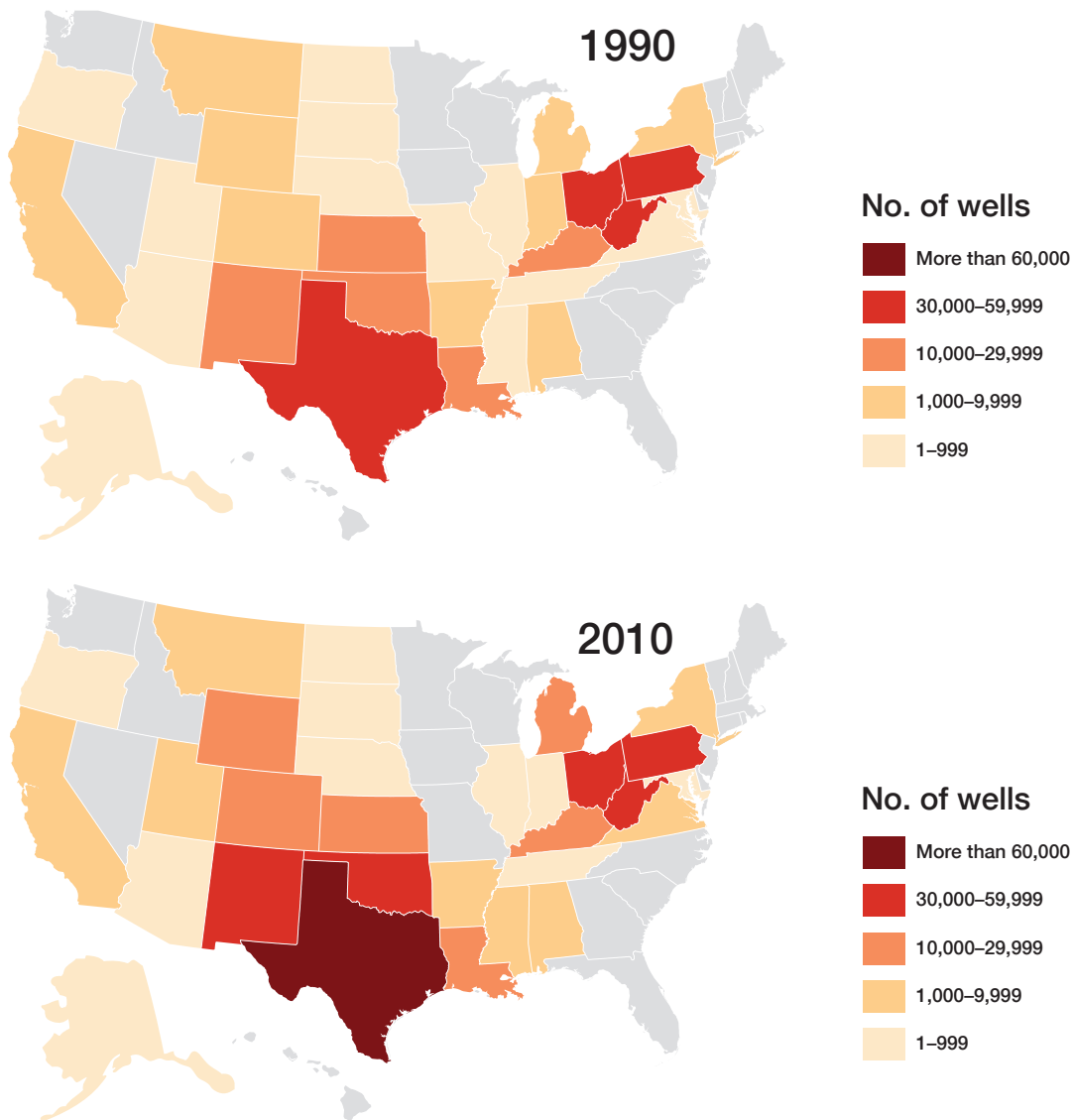
The number of active natural gas wells operating in the United States increased by 42 percent between 2000 and 2010. An intersection of several developments was responsible for this rapid increase. In the late 1990s, a new drilling method – horizontal hydraulic fracturing – made it economically feasible to extract gas from hard rock across vast areas of the country (See Map 1).²² Estimates of the natural gas that could be harvested in the United States increased dramatically. As the cost of imported fuel rose in the early 2000s, both producers and politicians put more emphasis on increasing our domestic supplies of oil and gas.

Map 1. Shale Gas in the United States



21 Gas production from shale increased 65 percent from 1998 to 2007. Andrews, Anthony, et al. "Unconventional Gas Shales: Development, Technology, and Policy Issues." Congressional Research Service, Oct. 30, 2009. <http://www.fas.org/sgp/crs/misc/R40894.pdf>.

22 Another type of fracking, vertical hydraulic fracturing, was first used commercially by Halliburton in 1943 and was in wide use in Texas and Oklahoma by the late 1940s. Montgomery, Carl T., and Smith, Michael B. "Hydraulic Fracturing: History of an Enduring Technology." JPT Online. <http://www.jptonline.org/index.php?id=481>.

Map 2. Number of Natural Gas Wells by State

Natural gas expansion was no doubt also boosted by the passage of the Energy Policy Act of 2005. Thanks to three paragraphs included in the law, hydraulic fracturing operations are exempt from most of the oversight requirements contained in the Safe Drinking Water Act of 1974 (see section 5 of this report for more details on the exemption). The Energy Policy Act simultaneously provided drilling subsidies to the industry and removed requirements that well operators assess and monitor water quality risks.

By 2010, gas wells were operating in at least 30 states, and 20 of those states had more than 1,000 gas producing wells. (See Map 2) The Barnett Shale fields in Texas were the first to be tapped. Energy companies then expanded to other major shale formations across the country, including the Bakken Shale of Montana and North Dakota and the giant Marcellus Shale that underlies several northeastern and Appalachian states.

3. The Hydraulic Fracturing Process

Hydraulic fracturing is used in nine out of ten gas wells operating in the United States today. Although the specific drilling and extraction processes for each well vary depending on geologic, hydrologic, economic, and other factors, most energy companies follow the same three-stage process for extracting gas from unconventional sources.

- Well Construction and Stimulation.* This step involves preparing the site and drilling the well. The land is cleared, access roads are constructed, pits for wastewater are dug, a well pad is built, and the well is drilled. The well bore is then “perforated” using small explosive charges to create fractures radiating from the well bore into the target rock formation. These perforations allow wider access to the gas stored in the rock and serve as a conduit for subsequent fracking treatments.
- Horizontal Drilling.* One of the key technologies that has enabled the recent expansion of gas extraction is horizontal (or directional) drilling. Drillers can redirect the drill bit to drill horizontally, allowing a greater portion of the well bore to pass through the target rock formation. The lateral sections of the well may extend from 1,000 to 6,000 feet or more.²³ Horizontal drilling means less disruption on the surface of the land – instead of drilling several vertical bore holes perpendicular into the shale, a horizontal bore can follow the length of the shale deposit. A vertical well can only access gas relatively near the well shaft. In contrast, lateral drill holes extend 1,500 to 5,000 feet from the main shaft in the Barnett Shale in Texas and up to 10,000 feet in the Bakken formation in North Dakota. (See Figures 1 and 2)
- Hydraulic Fracturing Treatments.* Enormous quantities of fluids are pumped into the well at extremely high pressures, which creates new fissures or enlarges existing fissures. From 2 million to 4 million gallons of water – often shipped to the well in trucks – may be used to fracture a single well.²⁴ Drillers add chemicals and materials known as proppants to the water to improve gas production.

Figure 1. Vertical Drilling

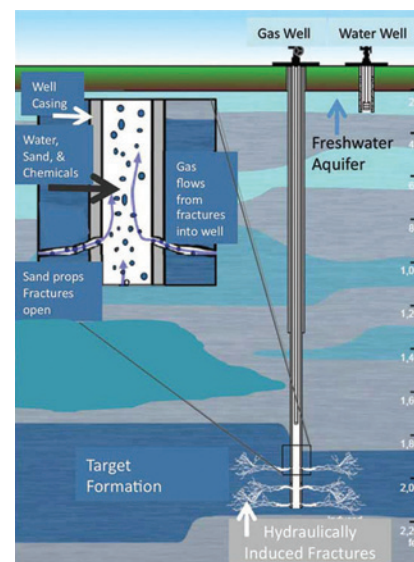


Fig 1 credit: Kansas Geological Survey and U.S. Environmental Protection Agency

Proppants, usually sand or ceramic beads, lodge in the fissures and literally prop them open,

²³ Arthur, J. Daniel, Bohm, Brian, and Layne, Mark. “Hydraulic Fracturing Considerations for Natural Gas Wells of the Marcellus Shale.” ALL Consulting, September 2008. http://www.dec.ny.gov/docs/materials_minerals_pdf/GWPCMarcellus.pdf.
²⁴ “Modern Shale Gas Development in the United States: A Primer.” U.S. Department of Energy, April 2009. http://www.netl.doe.gov/technologies/oil-gas/publications/epreports/shale_gas_primer_2009.pdf.

allowing the gas stored inside the rock to escape into the well and be pumped out. More than 4 million pounds of proppants per well may be used in shale gas extraction.²⁵ Chemical additives include gels to increase the fluid's viscosity and ability to carry the proppant into the fissures, acids to dissolve rock debris, poisons to prevent microbial growth, surfactants to reduce viscosity and improve removal of the fracking fluid, and corrosion inhibitors to preserve the pipes. Tens of thousands of gallons of chemical additives may be used in each well. Drillers also often inject radioactive tracers into fracking fluid to map the pattern and location of the fractures.

The fracking treatment usually occurs in stages, and a single well can be fracked multiple times. The composition of the fluids and additives varies based on the location and type of

Figure 2. Horizontal Drilling

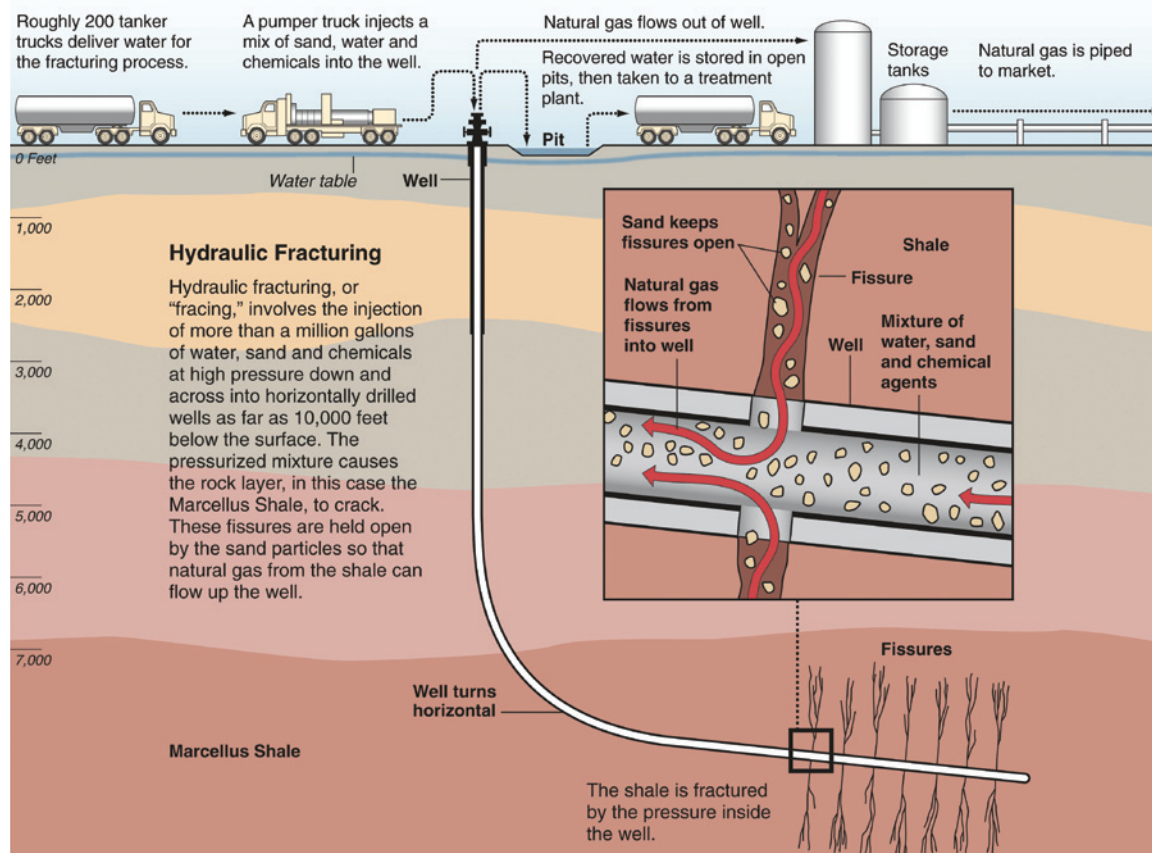


Fig 2 credit: Al Granberg/ProPublica

²⁵ "Hydraulic Fracturing 101: Hydraulic Fracturing – What It Is." Earthworks. http://www.earthworksaction.org/issues/detail/hydraulic_fracturing_101.

well and may change as fracturing proceeds. Up to 80 percent of fracking fluids may remain unrecovered following fracking.²⁶

- *Waste management.* After the fracking treatment, water is brought back to the surface and must be managed. This wastewater, also called flowback water, contains some level of the chemical additives used and may also carry naturally occurring mineral salts and radioactive materials.²⁷ Wastewater is sometimes reused in subsequent fracturing treatments, but ultimately, all water removed from the wells must be disposed of or treated. Wastewater may be pumped into lined pits for storage, or in sparsely populated areas, new wells may be drilled for the wastewater. In more populated areas where storage is limited, the wastewater may be transferred to water treatment plants that may not have the capacity to adequately clean the water for human consumption or reintroduction into the environment.

2 million to 4 million gallons of water may be used to fracture a single well.

A well is generally regarded as complete when the drilling and fracturing is finished and the well produces gas. As production inevitably slows down, a well may be “worked over,” that is, cleaned and maintained and re-fractured to increase the rate of production from the well. While industry often claims that shale gas wells have a potential life of 30 or 40 years, recent studies suggest that many fracking wells will only produce gas for just over seven years, with the most common well life being only four years.²⁸ The costs of production and clean up for each well need to be weighed against this calculus.

²⁶ Kargbo, David M., Wilhelm, Ron G., and Campbell, David J. “Natural Gas Plays in the Marcellus Shale: Challenges and Potential Opportunities.” *Environmental Science & Technology*, 44.15, 2010. <http://pubs.acs.org/doi/pdf/10.1021/es903811p>.

²⁷ Kargbo, David M., Wilhelm, Ron G., and Campbell, David J. “Natural Gas Plays in the Marcellus Shale: Challenges and Potential Opportunities.” *Environmental Science & Technology*, 44.15, 2010. <http://pubs.acs.org/doi/pdf/10.1021/es903811p>.

²⁸ Berman, Arthur. “Lessons from the Barnett Shale suggest caution in other shale plays.” Association for the Study of Peak Oil & Gas – USA, Aug. 10, 2009. <http://www.aspousa.org/index.php/2009/08/lessons-from-the-barnett-shale-suggest-caution-in-other-shale-plays/>.

4. The Risks Associated with Hydraulic Fracturing

Evidence of the risks associated with hydraulic fracturing has been accumulating. First and foremost are the health threats associated with the chemicals used in the fracking process. While the amount of chemical additives in the fracturing fluid is small relative to the total fluid pushed into a well, over the life of a well, the cumulative amount of chemical additives driven into the ground can be as high as tens of thousands of gallons.²⁹ Researchers at Duke University found that a single well can produce more than a million gallons of wastewater in the first month of drilling and production alone. This wastewater can contain levels of pollutants that far exceed what is considered safe for drinking water.³⁰

Of the 2,500 products used in the hydraulic fracturing process, more than 650 contained known carcinogens and other hazardous substances, according to a 2011 report by the U.S. House of Representatives. For example, benzene causes cancer and bone marrow failure; lead damages the nervous system and causes brain disorders; boric acid causes kidney failure and death. A 2010 study of 353 chemicals used in natural gas operations found that more than 75 percent of the chemicals used can lead to skin, eye, and sensory organ damage, as well as damage to the respiratory and gastrointestinal organs; about 40 percent of the chemicals used could damage the brain and nervous system, the immune and cardiovascular systems, and the kidneys; 37 percent of the chemicals could lead to endocrine disruption; and 25 percent could increase the risks of cancer and mutations.³¹

The chemicals used in natural gas drilling can contaminate the water supply in an area in several ways.³² First, if the well shaft is not adequately sealed, chemicals may leak out during injection or extraction of fracking fluids.

Second, up to 80 percent of the chemically treated fracking fluid is left underground during the extraction process, and there are concerns that chemicals could migrate into groundwater used for drinking water and other purposes.

Third, spills and accidents can release chemicals onto the surface of the land surrounding a well, exposing air, vegetation, and surface water to contamination from the chemicals.

29 "Modern Shale Gas Development in the United States: A Primer." U.S. Department of Energy. April 2009. http://www.netl.doe.gov/technologies/oil-gas/publications/epreports/shale_gas_primer_2009.pdf.

30 Jackson, Robert B., et al. "Research and Policy Recommendations for Hydraulic Fracturing and Shale Gas Extraction." Center on Global Change, Duke University, 2011. <http://www.nicholas.duke.edu/cgc/HydraulicFracturingWhitepaper2011.pdf>.

31 Colborn, Theo, et al. "Natural Gas Operations from a Public Health Perspective." *International Journal of Human and Ecological Risk Assessment*, September-October 2010. <http://www.endocrinedisruption.com/files/Oct2011HERA10-48forweb3-3-11.pdf>.

32 Appleton, Albert F. "Unconventional Fuels, Part I: Shale Gas Potential." Written Testimony for Subcommittee on Energy and Mineral Resources Oversight Hearing, June 4, 2009. <http://naturalresources.house.gov/uploadedfiles/AppletonTestimony06.04.09.pdf>.

Fourth, two-thirds of fracking fluid is eventually retrieved and must be disposed of as contaminated wastewater. In less populated areas of the far West, new vertical wells are sometimes drilled for storage of waste materials, creating another opportunity for chemically tainted waste to contaminate water supplies in an area. In more populated areas in the East, wastewater may be run through municipal water treatment plants that are not adequately prepared to effectively treat the wastewater before it is recycled into natural water bodies or manmade water systems.

Hydraulic fracturing has been linked to a growing number of cases of water contamination. The earliest documented case is probably a well in West Virginia in 1982.³³ In 1988, the McMillian family's ordeal began in Alabama.³⁴ More recently, in 2004, Pennsylvania state regulators linked methane contamination in drinking water wells to gas drilling. In 2008 and 2009, wastewater from natural gas operations polluted the Monongahela River when local water treatment plants were unable to treat the wastewater. Afterwards, Pennsylvania regulators forced a drastic reduction in the amount of gas drilling wastewater that water treatment plants could accept.³⁵ From 2009 to 2011, the Cabot Oil and Gas Company trucked in drinking water to residents in the town of Dimock, Pennsylvania, after the company polluted drinking water sources there.³⁶

According to a 2011 study, at least 68 private water wells in Pennsylvania and New York have been contaminated by gas drilling operations.³⁷ In Colorado, between 2003 and 2008, state regulators received around 1,500 reports of hazardous spills by drilling companies, with 300 of these spills measurably impacting water supplies.³⁸ A 2008 report found widespread degradation of well water quality in Garfield County, Colorado, as a result of oil and gas drilling operations.³⁹ In New Mexico, regulators have identified about 800 cases of water contamination by oil and gas operations, with half of the instances caused by chemicals leaking into the ground from wastewater pits.⁴⁰ A 2009 investigation by ProPublica revealed that methane contamination of drinking water, caused by fracking, was widespread.⁴¹

Riverkeepers, an environmental organization, identified more than 100 cases of water contamination caused by spills, leaks, dumping, equipment malfunctions, and other causes related to hydraulic fracturing operations.⁴² In May 2011, a Duke University peer-reviewed scientific study linked fracking to drinking water contamination "so severe that some faucets can be lit on fire."⁴³ In December 2011, the U.S. EPA admitted for the first time that fracking may have been the cause of groundwater pollution in Pavillion, Wyoming (the draft report found dangerous

33 Urbina, Ian. "A Tainted Water Well, and Concern There May Be More." *The New York Times*, Aug. 3, 2011. <http://www.nytimes.com/2011/08/04/us/o4natgas.html?pagewanted=all>.

34 "Petition for Review of a Final Order of the Environmental Protection Agency, EPA No. 65-02889-FED.REG." United States Court of Appeals Eleventh Circuit, Dec. 21, 2011. <http://law.justia.com/cases/federal/appellate-courts/F3/276/1253/642968/>.

35 "Impacts and Incidents Involving High-Volume Hydraulic Fracturing from Across the Country." Riverkeeper, 2010. <http://www.riverkeeper.org/wp-content/uploads/2010/01/Riverkeeper-DSGEIS-Comments-Appendix-1-Case-Studies.pdf>.

36 Lustgarten, Abrahm. "Years After Evidence of Fracking Contamination, EPA to Supply Drinking Water to Homes in Pa. Town." ProPublica, Jan. 20, 2012. <http://www.propublica.org/article/years-after-evidence-of-fracking-contamination-epa-to-supply-drinking-water>.

37 Osborn, S.G., et al. "Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing." *Proceedings of the National Academy of Sciences of the United States of America*, May 17, 2011. <http://www.ncbi.nlm.nih.gov/pubmed/21555547>.

38 Lustgarten, Abrahm. "Setting the Record Straight on Hydraulic Fracturing." ProPublica, Jan. 12, 2009. <http://www.propublica.org/article/setting-the-record-straight-on-hydraulic-fracturing-090112>.

39 Thyne, Geoffrey. "Review of Phase II Hydrogeologic Study, Prepared for Garfield County." SBS LLC, Dec. 20, 2008. http://s3.amazonaws.com/propublica/assets/methane/thyne_review.pdf.

40 Ibid.

41 Lustgarten, Abrahm. "Officials in Three States Pin Water Woes on Gas Drilling." ProPublica, April 26, 2009. <http://www.propublica.org/article/officials-in-three-states-pin-water-woes-on-gas-drilling-426>.

42 Michaels, Craig, Simpson, James L., and Wegner, William. "Fractured Communities: Case Studies of the Environmental Impacts of Industrial Gas Drilling." Riverkeeper, September 2010. <http://www.riverkeeper.org/wp-content/uploads/2010/09/Fractured-Communities-FINAL-September-2010.pdf>.

43 Lustgarten, Abrahm. "Scientific Study Links Flammable Drinking Water to Fracking." ProPublica, May 9, 2011. <http://www.propublica.org/article/scientific-study-links-flammable-drinking-water-to-fracking>.

amounts of benzene, a carcinogenic chemical, and 2-butoxyethanol, which may cause severe kidney damage, in a monitoring well near the town).⁴⁴

There are no doubt additional cases of water contamination resulting from fracking activities, but legal settlements between drilling companies and landowners typically conceal details from public scrutiny. More significantly, the refusal by oil and gas companies to disclose the chemicals they use prevents regulators and others from identifying the sources of water pollution.

In addition to the water contamination issue, the fracking process produces more greenhouse gas emissions over time than traditional methods of oil drilling or coal mining, due to hauling in large quantities of water by truck and the methane released from the wells. Both significantly increase carbon pollution in an area.⁴⁵ Methane is a greenhouse gas that is 21 times more powerful than carbon dioxide. It is also highly flammable and can fuel enormous explosions.

Fracking also poses direct health risks to workers at wells. Many workers breathe in vapors from fracking operations or from flowback wastes stored in pits or tanks, and they may also absorb hazardous chemicals through their skin.

Chemical spills also pose serious health risks to workers, first responders on the scene, people living near the wells, and the health care professionals who take care of individuals hurt in accidents. For example, an emergency room nurse in Durango, Colorado, nearly died after being exposed to fracking fluids that had spilled on a rig worker who was brought to the hospital. The nurse's doctors were stymied when secrecy prevented them from learning about the chemicals used in the fracking fluids the nurse was exposed to.⁴⁶ In April 2011, Chesapeake Energy suspended fracking operations in Pennsylvania after thousands of gallons of drilling fluid spilled following an accident at a gas well.⁴⁷

Besides the chemical risks associated with hydraulic fracturing, the process of horizontal drilling has also been associated with a rise in the following impacts:

- *Depletion of local water supplies.* Hydraulic fracturing uses 70 to 140 billion gallons of water a year and, as described above, most of that water will be too contaminated with toxic chemicals to be recycled.⁴⁸ This is the equivalent of the total amount of water used in 40 to 80 cities of 50,000 people or a city of 4 million.
- *Earthquakes and seismic activity.* In 2011, officials in Ohio shut down an underground injection well that had been receiving fracking wastewater after a series of earthquakes were linked to disposal wells.⁴⁹ Arkansas regulators enacted a partial moratorium on the underground injection of wastewater in 2011 after links between disposal wells and earthquakes

44 Jackson, Larry, and Mylott, Richard. "EPA Releases Draft Findings of Pavillion, Wyoming Ground Water Investigation for Public Comment and Independent Scientific Review." United States Environmental Protection Agency, Dec. 8, 2011. <http://yosemite.epa.gov/opa/admpress.nsf/o/EF35BD26A80D6CE3852579600065C94E>.

45 Howarth, Robert W., Santoro, Renee, and Ingraffea, Anthony. "Methane and the greenhouse-gas footprint of natural gas from shale formations: A letter." *Climatic Change*, March 13, 2011. <http://www.sustainablefuture.cornell.edu/news/attachments/Howarth-EtAl-2011.pdf>.

46 Lustgarten, Abrahm. "Buried Secrets: Is Natural Gas Drilling Endangering U.S. Water Supplies?" ProPublica, Nov. 13, 2008. <http://www.propublica.org/article/buried-secrets-is-natural-gas-drilling-endangering-us-water-supplies-1113>.

47 Soraghan, Mike. "Pa. Well Blowout Tests Natural Gas Industry on Voluntary Fracking Disclosure." *The New York Times*, May 4, 2011. <http://www.nytimes.com/gwire/2011/05/04/04greenwire-pa-well-blowout-tests-natural-gas-industry-on-36297.html>.

48 Isa, Jalil. "EPA Submits Draft Hydraulic Fracturing Study Plan to Independent Scientists for Review / The draft plan is open to public comment." United States Environmental Protection Agency, Feb. 8, 2011. <http://yosemite.epa.gov/opa/admpress.nsf/doc/f6618525a9efb85257359003fb69d/26195e235a35cb3885257831005fd9cd!OpenDocument>.

49 "State Natural Resources Director Reaches Agreement to Halt Operation of Youngstown Area Injection Well." Ohio Department of Natural Resources, Jan. 3, 2012. http://www.ohiodnr.com/home_page/NewsReleases/tabid/18276/EntryId/2644/State-Natural-Resources-Director-Reaches-Agreement-to-Halt-Operation-of-Youngstown-Area-Injection-Well.aspx.

emerged there.⁵⁰ Earthquakes in Oklahoma and the United Kingdom have also been tied to forcing fluids into disposal wells.⁵¹

- *Explosions of wells and homes.* In numerous towns in Pennsylvania from 2007 to 2009, gas drilling forced explosive levels of gas into wells, with at least two reports of wells exploding.⁵² In December 2007, a house in Ohio exploded after hydraulic fracturing forced methane gas into the home's drinking water.⁵³ Also in 2007, natural gas drilling caused explosive levels of methane gas in homes in Pennsylvania, forcing the evacuation of impacted households.

These emerging health, environmental, and safety concerns have prompted outright bans of hydraulic fracturing in Vermont⁵⁴ and the countries of France⁵⁵ and Bulgaria.⁵⁶ The practice has been suspended in Quebec⁵⁷ and South Africa.⁵⁸



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- 50 "Request for an Immediate Moratorium on Any New or Additional Class II Commercial Disposal Well Permits in Certain Areas." Arkansas Oil and Gas Commission, Feb. 8, 2011. <http://www.aogc.state.ar.us/Hearing%20Orders/2011/Jan/602A-2010-12.pdf>.
- 51 Fountain, Henry. "Add Quakes to Rumbles Over Gas Rush." *The New York Times*, Dec. 12, 2011. <http://www.nytimes.com/2011/12/13/science/some-blame-hydraulic-fracturing-for-earthquake-epidemic.html?pagewanted=all>.
- 52 "Impacts and Incidents Involving High-Volume Hydraulic Fracturing from Across the Country." Riverkeeper, 2010. <http://www.riverkeeper.org/wp-content/uploads/2010/01/Riverkeeper-DSGEIS-Comments-Appendix-1-Case-Studies.pdf>.
- 53 "Report on the Investigation of the Natural Gas Invasion of Aquifers in Bainbridge Township of Geauga County, Ohio." Ohio Department of Natural Resources, Division of Mineral Resources Management, Sept. 1, 2008. http://s3.amazonaws.com/propublica/assets/natural_gas/ohio_methane_report_080901.pdf.
- 54 Hallenbeck, Terri. "Vermont governor signs bill banning hydraulic fracturing." *Burlington Free Press*, May 16, 2012. <http://www.burlingtonfreepress.com/article/20120516/NEWS03/120516031/Vermont-governor-signs-bill-banning-hydraulic-fracturing>.
- 55 Patel, Tara. "France Vote Outlaws 'Fracking' Shale for Natural Gas, Oil Extraction." *Bloomberg*, July 1, 2011. <http://www.bloomberg.com/news/2011-07-01/france-vote-outlaws-fracking-shale-for-natural-gas-oil-extraction.html>.
- 56 Daly, John. "Bulgarian Assembly Votes to Ban Hydraulic Fracturing – For Now." *Oilprice.com*, Jan. 20, 2012. <http://oilprice.com/Energy/Natural-Gas/Bulgarian-Assembly-Votes-to-Ban-Hydraulic-Fracturing-For-Now.html>.
- 57 Van Praet, Nicolas. "Quebec ban leaves shale gas drillers staggering." *Financial Post*, July 1, 2011. http://business.financialpost.com/2011/07/01/quebec-moratorium-leaves-shale-gas-drillers-staggering/?__lsa=8ecc59e1.
- 58 Shimkus, John. "South Africa's Mining Minister Extends Shale Frac Ban." *Energy Digital*, Aug. 18, 2011. http://www.energydigital.com/oil_gas/south-africas-mining-minister-extends-shale-frac-ban.

5. Oversight Authority: A Political Football

Federal agencies have limited authority to regulate the chemicals used in hydraulic fracturing, and the federal government has been reluctant to regulate the practice, perhaps because it has been involved in efforts to harvest “unconventional” natural gas resources for over 30 years. In 1976, the Department of Energy (DOE) launched the Eastern Gas Shales Project, a joint federal, state, and private industry partnership, to research new gas resources. In 1986, DOE sponsored the drilling of a 2,000-foot horizontal well in the shales of Wayne County, West Virginia. In his 2012 State of the Union Address, President Obama claimed that “it was public research dollars, over the course of 30 years, that helped develop the technologies to extract all this natural gas out of shale rock.”⁵⁹

Given growing concerns about contaminated well water, the Safe Drinking Water Act (SDWA) of 1974 is the most relevant and comprehensive vehicle available to oversee fracking activities. However, despite increasing complaints of water contamination during the development of the technology, the EPA determined that hydraulic fracturing was not an “injection well” as defined by the SDWA and claimed it had no authority to regulate it. In the *McMillian* case described in the Preface, the 11th U.S. Circuit Court of Appeals disagreed and ruled in 1997 that under the SDWA, the EPA had to regulate fracking associated with coal bed methane wells.⁶⁰

The court decision forced the EPA to study the potential risks to drinking water from fracking. As the study progressed over the next several years, counties in Pennsylvania, Colorado, and Wyoming documented the contamination of drinking water near natural gas wells. But when EPA finally released its study in 2004, it declared fracking to be safe (even though the EPA official in charge of the study said it was “flawed,” and a whistleblower later reported materials were deleted and changed).⁶¹ The study was used to justify congressional action in 2005 that excluded fracking from SDWA oversight.

The Energy Policy Act of 2005 included a provision that stripped the EPA of its authority to oversee fracking by explicitly amending the SDWA to exclude hydraulic fracturing.⁶² The SDWA was designed to keep community water supplies safe by prohibiting companies and individuals from injecting toxic chemicals or waste matter underground in quantities or in places that could pose a risk to drinking water supplies. The Energy Policy Act exempted the oil and gas industry from these federal regulations and prohibitions, leaving federal agencies with limited oversight over natural gas extraction on private land. The oil and gas industry is the only one to enjoy

59 Obama, Barack. “Remarks by the President in State of the Union Address.” Jan. 24, 2012. <http://www.whitehouse.gov/photos-and-video/video/2012/01/25/2012-state-union-address-enhanced-version#transcript>.

60 *Legal Environmental Assistance Foundation, Inc. v. United States Environmental Protection Agency*. United States Court of Appeals, Eleventh Circuit, Aug. 7, 1997. <http://www.ca11.uscourts.gov/opinions/ops/19956501.OPA.pdf>.

61 “Gas Drilling Threatens Public with Undisclosed Chemicals.” OMB Watch, Dec. 2, 2008. <http://ombwatch.org/node/3847>.

62 However, the bill left the door open for the EPA to regulate the use of diesel in hydraulic fracturing operations.

such a blanket exemption, commonly called the “Halliburton loophole” after one of the main companies behind the development of fracking.

In addition to the SDWA exemption, the oil and gas extraction industry does not fall within the scope of most basic environmental and public health protections. In 2007, an internal Bush administration memo loosened air pollution limits on natural gas wells.⁶³ The oil and gas extraction industry is not covered by key provisions of the Clean Water Act; Clean Air Act; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund); or the Resource Conservation and Recovery Act (RCRA, a hazardous waste law). The oil and gas extraction industry is also not one of the industries required to report the toxic chemicals they release, store, and transfer under the Toxics Release Inventory (TRI) program, which was established as part of the Emergency Planning and Community Right to Know Act (EPCRA). Additionally, the manufacturers of fracking fluid chemicals are not required to submit reports to the EPA disclosing the chemical identities, categories, and quantities of those chemicals or their environmental and health effects under the Toxic Substances Control Act (TSCA).

Despite the exemption for fracking, the SDWA does still prohibit the injection of diesel fuel into any wells. An investigation by the House Energy and Commerce Committee found that oil and gas extraction companies injected over 32 million gallons of diesel fuel into gas wells in 19 states between 2005 and 2009 – in direct violation of the federal provision from which they were not exempt. As a result, in 2009, House⁶⁴ and Senate Democrats⁶⁵ introduced the Fracturing Responsibility and Awareness of Chemicals Act (FRAC Act), which would have reestablished the EPA’s oversight authority of hydraulic fracturing under the SDWA and would have mandated full disclosure of all the chemicals used in the process. The legislation stalled in both chambers of Congress.

Wyoming: Preempting Federal Rules

On Aug. 24, 2010, Wyoming Governor Dave Freudenthal (D) signed a rule requiring natural gas companies to publicly disclose the chemicals in fracking fluid, the first such state rule in the country. Freudenthal, who as governor chaired the state’s five-member Oil and Gas Conservation Commission (comprised of state officials and individuals appointed by the governor), directed the commission to draft a chemical disclosure rule that would show federal officials that Wyoming could regulate natural gas drilling without federal mandates.

At this time, congressional Democrats had introduced federal legislation to reestablish Safe Drinking Water Act controls over fracking, and the EPA had begun a major research initiative to investigate the health risks of fracking.

Almost half of all land in Wyoming is technically under the control of federal agencies – the Bureau of Land Management, the Forest Service, and the National Park Service. In 2011, almost 33,000 gas wells in Wyoming were operating on federal lands.

The oil and gas industry in the state initially opposed the move toward state regulation, but industry lobbyists eventually concluded that a state chemical disclosure rule would be preferable to federal disclosure.

After the rule passed, gas companies filed exemptions under the rule’s confidential business information clause to keep specific information on the fracking chemicals they use a secret. Earthjustice and other public interest groups, including OMB Watch and the Wyoming Outdoor Council, have challenged the exemptions in court.

⁶³ Wehrum, William L. “Source Determinations for Oil and Gas Industries.” United States Environmental Protection Agency, Jan. 12, 2007. http://www.eenews.net/public/25/12769/features/documents/2009/10/13/document_pm_o2.pdf.

⁶⁴ H.R. 2766 (111th Congress). “Fracturing Responsibility and Awareness of Chemicals Act of 2009.” GovTrack.us, June 9, 2009. <http://www.govtrack.us/congress/bills/111/hr2766>.

⁶⁵ Ibid.

In 2010, Congress ordered the EPA to conduct another, more comprehensive study of the practices and environmental impacts of fracking, particularly on groundwater. The EPA has stated that the initial results will be made public by the end of 2012, with a final report released in 2014.

After a series of high-profile natural gas drilling spills, in May 2011, President Barack Obama asked the DOE to form an expert panel to identify any immediate steps to “improve the safety and environmental performance” of fracking. The panel, which includes academic, environmental, and industry experts, recommended in August that drilling companies should fully disclose the chemicals they use, concluding that there are no economic or technical reasons to prevent such public disclosure.

On May 4, 2012, the U.S. Department of the Interior released a proposed rule regarding natural gas extraction on public lands. The proposed rule requires companies to disclose the chemicals used in fracking fluid 30 days after drilling operations are completed.

State Oversight

As a result of the federal government’s failure to act, citizens have pressured state governments to do more. Thirteen states have passed some form of chemical disclosure policies, and policies are pending in four more states. The first state to act was Wyoming. To preempt federal rules, Wyoming passed a chemical disclosure policy in 2010. Arkansas, Michigan, Montana, Texas, and Louisiana followed in 2011, and Pennsylvania, New Mexico, Colorado, Indiana, North Dakota, Ohio, and Oklahoma acted in the first half of 2012.

In December 2011, the American Legislative Exchange Council (ALEC), an influential conservative nonprofit that brings together politicians and corporations to draft industry-friendly policies, adopted model legislation on disclosure of the chemi-

“Restore Public Confidence”: The Story of Colorado’s Chemical Disclosure Rule

At the Colorado Oil and Gas Association’s annual conference in August 2011, Governor John Hickenlooper (D) announced that he wanted a new rule requiring the disclosure of chemicals used in fracking by the end of the year. Responding to growing citizen concerns and media attention, Hickenlooper, a former petroleum geologist, said that the chemical disclosure rule would help “restore public confidence” in the oil and gas industry.

Following the announcement, the Colorado Oil and Gas Conservation Commission (COGCC), the state authority responsible for regulating the industry, conducted stakeholder meetings with energy companies and environmental groups. A draft rule was released on Nov. 1, 2011. Following a public comment period, the COGCC held a public hearing on the rule in December.

More than 100 people attended the hearing. Colorado residents and representatives from industry, local governments, environmental groups, and water utilities provided testimony to the state commissioners in a standing-room only setting. Though the stakeholders generally supported the state’s efforts, they disagreed on details. Contentious issues included protection for trade secrets, notice of fracking operations to landowners and local officials, and how and when the information should be disclosed. Community groups like the Western Colorado Congress advocated for tightening the trade secrets provision, disclosing chemical data prior to fracking, and shortening the reporting deadline for filing chemical disclosure information from 60 days to 30 days, as required in Montana and Wyoming.

After more than 11 hours of testimony, the COGCC announced that it would delay issuing its final rule and then held a weekend closed-door meeting to negotiate the final rule with stakeholders that included industry representatives and environmental groups but excluded local officials, public health organizations, and groups representing landowners. On Dec. 13, 2011, the Commission unanimously approved a new rule that went into effect April 1, 2012.

cals used in fracking fluid.⁶⁶ The model bill, called the *Hydraulic Fracturing Fluid Disclosure Composition Act*, which ExxonMobil sponsored within ALEC, was based on the chemical disclosure bill that Texas passed in May 2011.⁶⁷

In a March 2012 blog post, ALEC claimed that legislators in Pennsylvania, Illinois, Indiana, New York, and Ohio had introduced versions of its model bill.⁶⁸ Upon closer examination, however, those state bills vary in the level of disclosure required. The chemical disclosure bill passed by the Illinois Senate is almost verbatim to the ALEC model and the Texas legislation. Pennsylvania's bill is similar to the ALEC and Texas bills, except that Pennsylvania provides more disclosure requirements. For instance, the Pennsylvania bill requires limited disclosure of baseline data; disclosure of the chemical family when a chemical is deemed a trade secret; and that online information must be searchable by January 2013.

It is also interesting to note that in October 2011, almost two months before ALEC adopted its model disclosure bill, the Council of State Governments, a bipartisan nonprofit organization that serves state governments, also adopted the Texas bill as its suggested state legislation, referred to as *Disclosing Composition of Hydraulic Fracturing Fluids*.⁶⁹

Defanging Chemical Disclosure in Texas

In March 2011, State Representative Jim Keffer (R-Eastland), chairman of the Texas House Committee on Energy Resources, introduced a bill requiring natural gas drillers to disclose the chemicals used in fracking fluids. With mounting pressure from his constituents (who reside above the Barnett Shale deposit where fracking has been going on since the 1990s), Keffer sought to balance citizen and industry interests by crafting a bill that included language from both the Environmental Defense Fund and Southwestern Energy Company.

Several local leaders in the gas industry came forward to support the bill at an April 2011 hearing, but the legislation faced tough opposition from major energy companies in Texas, particularly Halliburton, FracTech, and Devon Energy. In a May 4, 2011, markup by the House Energy Resources Committee, Keffer bowed to industry pressure and introduced an amended bill developed by the Texas Oil and Gas Association that exempted existing wells from disclosure requirements and simultaneously exempted certain chemical additives from disclosure on the grounds that they were "trade secrets."

Two days after the substitute bill was passed out of committee, twelve energy companies expressed support for the mostly toothless "disclosure" legislation. Senate Democrats tried to attach amendments that would require certain baseline studies and measures of water contamination, but these were voted down.

Environmental organizations that had supported the original bill withheld support for the final watered down version. However, the Environmental Defense Fund noted this was "landmark" legislation for Texas in that it established the principle that companies should disclose the chemicals used in fracking.⁷⁰ The Sierra Club concurred that "it is a significant step forward."⁷¹

66 Wynn, Todd. "Memorandum: 35-Day Mailing: States and Nation Policy Summit." American Legislative Exchange Council, Oct. 27, 2011. http://www.commoncause.org/atf/cf/%7BFB3C17E2-CDD1-4DF6-92BE-BD4429893665%7D/eea_2011%20AZ_snps_35-day_mailing.pdf.

67 McIntire, Mike. "Conservative Nonprofit Acts as a Stealth Business Lobbyist." *The New York Times*, April 21, 2012. http://www.nytimes.com/2012/04/22/us/alec-a-tax-exempt-group-mixes-legislators-and-lobbyists.html?_r=2&ref=politics.

68 Wynn, Todd. "ALEC Encourages Responsible Resource Production." *American Legislator*, March 1, 2012. <http://www.americanlegislator.org/2012/03/alec-encourages-responsible-resource-production/>.

69 "Disclosing Composition of Hydraulic Fracturing Fluids." The Council of State Governments, October 2011. <http://ssl.csg.org/dockets/2013cycle/2013sslvolume/2013SSldrafts/disclosingfracturingfluid2013ssl.pdf>.

70 Anderson, Scott. "What Can The World Learn From Texas About Frac Chemical Disclosure?" Environmental Defense Fund, May 12, 2011. <http://blogs.edf.org/energyexchange/2011/05/12/what-can-the-world-learn-from-texas-about-frac-chemical-disclosure/>.

71 "At the 11th Hour Texas House & Senate Pass 'Fracking' Disclosure Bill." State Capitol E-Report. Sierra Club Lone Star Chapter, May 31, 2011. <http://www.texas.sierraclub.org/press/scr/scrE20110531.1.asp>.

6. The Elements of an Effective Chemical Disclosure Policy

A model chemical disclosure policy would provide all residents of a state – including workers, regulators, public officials, health care professionals, and environmental and public health advocates – with the information needed to assess the risks of drilling and make decisions about the social costs and individual benefits that natural gas extraction brings to a community.

In the absence of federal regulation,⁷² states have been left to develop their own rules on fracking, resulting in a patchwork of laws requiring the disclosure of the chemicals included in fracking additives. The state of play at the state level is documented in the next section of this report. Below, we outline what a model state fracking chemical disclosure policy would entail.

An effective state disclosure policy for natural gas extraction would include the following:

1. A set of baseline data should be required *as a condition of obtaining a permit* so that accurate assessments of the impact of drilling are obtained before irreversible damage occurs.
 - A study identifying all of the water sources in the region that fracking could impact – either by drilling or the disposal of wastewater – should be conducted before a permit is issued for a well.
 - A study of the geological region where the proposed drilling will take place, including a map showing the key seismic data such as known or suspected faults and results of seismic surveys, should be conducted before a permit is issued.
 - Baseline measurements of water and air quality in the communities in which gas extraction is set to occur should be taken before a permit to drill is issued.
 - Well operators should develop and submit a plan for air and water quality monitoring and at least quarterly reporting before any extraction activity occurs. This monitoring and reporting should occur throughout the extractive process and for at least three to five years after the well has been plugged and abandoned.
2. Comprehensive and specific disclosure of all the chemicals used in the hydraulic fracturing process at each well *should be a condition of obtaining a permit to drill and a condition of continuing to operate a well*. The chemicals the well operators plan to use must be disclosed before a permit is granted; the list of chemicals used should be resubmitted both before fracking occurs and again after the well has been completed, in case there have been changes in the

⁷² In early May, the Bureau of Land Management released a proposed rule to ensure better oversight of natural gas drilling on public land. Its rule focuses on chemical disclosure, improving well bore integrity to ensure fluids do not escape into groundwater, and ensuring that an effective management system for toxic wastewater is in place. State officials' and industry opposition to the new rule may keep it from being implemented for months or even years.

products used; and the list of chemicals used should be reported at least quarterly. The use of carcinogenic compounds (benzene, toluene, ethylbenzene, and xylene, for example) should be prohibited, as current federal law allows.

- **Specific** = companies should disclose unique chemical identifier numbers, the base products they are in, and the concentrations of each chemical used at each well location.
 - **Comprehensive** = well owners, operators, service providers, and vendors should report the full range of chemicals used at each well location.
3. To prevent wholesale exemptions of chemical disclosure by companies claiming that the above information is “confidential business information” or a “trade secret,” states should have clear guidelines that limit confidential business information exemptions and a strong process for evaluating and substantiating industry claims that chemical disclosure is a violation of “trade secrets.”
 4. All of the chemical data, as well as studies and monitoring reports, should be posted on a state-controlled website within 10 days of gathering the data or completing the study or report. The website should allow users to search, sort, and download data by the name of the well operator, location of the well (county and longitude and latitude), well number, chemicals used, and characteristics of the well (size, depth, etc.).

What Should be Disclosed

Disclosing the specific identity of a chemical substance is crucial to accurately assessing its health and safety risks. The American Chemical Society, a recognized authority on chemical substance information, maintains a registry of more than 60 million unique identification numbers known as the Chemical Abstracts Service Registry (CAS). A CAS number is regarded as the authoritative identifier for a chemical, and it is this identifier that should be disclosed to the general public and regulatory authorities. The CAS number is a crucial piece of information for first responders to know in the event of an accident and is important in determining interaction effects with other chemicals.

To fully assess the potential toxicity of the substances used in fracking, the concentration or volume of each chemical (e.g., pounds per gallon) has to be disclosed, along with the amount, type, and sources of base fluid pumped into the well. Knowing the concentration of chemicals helps scientists evaluate the often complex and unpredictable interactions between the ingredients within the additives and with the chemistry and geology of underground formations. In sum, the additive trade name and vendor, a description of the purpose of the additive, along with the chemical name and CAS number of each ingredient of each additive, should be disclosed.

For this reason, state laws should also require the disclosure of “unintentional” chemicals – i.e., chemicals that occur naturally or are the result of chemical reactions caused by the hydraulic fracturing process. An estimated 20 to 70 percent of the fluid used in fracking is brought back to the surface, and this water can contain “toxic substances that are naturally present in underground oil and gas deposits” such as concentrations of salts and minerals, toxins such as cadmium and benzene, and even high levels of radiation.⁷³ States should require well operators to test for all toxins known to be associated with gas and oil drilling.

73 The contaminants in fracking wastewater are researched in The Endocrine Disruption Exchange’s work on oil and gas drilling chemicals, at <http://www.endocrinedisruption.com/chemicals.introduction.php>, as well as investigative reports by ProPublica, Oct. 4, 2009, at <http://www.propublica.org/article/wastewater-from-gas-drilling-boom-may-threaten-monongahela-river>, and *The New York Times*, Feb. 26, 2011, at http://www.nytimes.com/2011/02/27/us/27gas.html?_r=1.

The Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard requires chemical manufacturers to provide workers with information sheets, called Material Safety Data Sheets (MSDSs), containing toxicity and hazard information for substances that OSHA has deemed hazardous to workers.⁷⁴ Many states currently use Material Safety Data Sheets as the disclosure standard for fracking, despite the serious shortcomings of the information the sheets provide.

The information on MSDSs is self-reported by manufacturers of products with no independent verification. OSHA does not review MSDSs for accuracy. Analyses have found that MSDSs frequently contain conflicting and incorrect information and lack critical and basic information, such as the identity of the chemicals in a product.⁷⁵ For instance, an analysis of MSDSs for 980 hydraulic fracturing additives found that only 14 percent of the sheets actually listed at least 95 percent of the chemicals in a given additive;⁷⁶ 43 percent of the MSDSs reported less than one percent of the composition of an additive.

Moreover, MSDSs do not require manufacturers to list the amounts of the hazardous chemicals in a product, nor list all ingredients in a product. Ingredients are often only identified by their general function (such as "biocide" or "corrosion inhibitor") without actually identifying the specific chemicals used. MSDSs are simply not an accurate source by which to ascertain the chemicals in a product, and a disclosure rule that relies on MSDSs is an insufficient one.

Who Should Disclose Chemical Information and When

All well owners, operators, service providers, and vendors should report on all chemicals used at each well location. This is necessary because well operators often do not know what chemicals they are using in the fracking process. In April 2011, the House Energy and Commerce Committee announced that a survey of major oil and gas drilling companies found that, in many instances, the companies were unable to identify the chemicals they had used because the chemical identities were claimed as trade secrets by the product manufacturers.⁷⁷ The drillers themselves did not have access to the proprietary information about products they purchased. The report notes that in many instances, "companies are injecting fluids containing unknown chemicals" and they have "limited understanding of the potential risks posed to human health and the environment."

Regulators should require well operators, owners, service providers, and vendors to report the unique chemical identification number of each ingredient in a fracking additive to ensure the accuracy of the information for each well. Information on the well's location, including longitude and latitude, identification number (such as the API well number (a standard of the American Petroleum Institute)), along with the names and contact information of the owner, operator, and service providers working at each well, should be provided with the chemical disclosure reports. Chemical substances in wastewater extracted from the well should be measured, identified, and disclosed on a quarterly basis.

74 OSHA's Hazard Communication Standard is available at "Hazard Communication." The Occupational Safety and Health Administration, March 26, 2012. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099.

75 Some examples of the weaknesses of Material Safety Data Sheets are found in Mitchell, Clifford S., and Schwartz, Brian S. "Limitations of Information about Health Effects of Chemicals." *Journal of General Internal Medicine*, 16.2, February 2001, pp. 134-135. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1495173/>.

76 See The Endocrine Disruption Exchange's research: "Chemicals in Natural Gas Operations: Health Effects Spreadsheet and Summary." The Endocrine Disruption Exchange, 2012. <http://www.endocrinedisruption.com/chemicals.multistate.php>.

77 "Chemicals Used in Hydraulic Fracturing." United States House of Representatives, Committee on Energy and Commerce, Minority Staff, April 2011. http://www.conservation.ca.gov/dog/general_information/Documents/Hydraulic%20Fracturing%20Report%204%2018%2011.pdf.

Public disclosure of chemical information should occur both prior to fracking (including the identities and estimates of the amount of chemicals to be used) and at the conclusion of drilling (including the actual amounts and identities of the chemicals used).

Disclosure before fracking begins allows government regulators, first responders and health care professionals, and community members the opportunity to review chemical information in advance and take appropriate actions, such as testing drinking water for the listed substances. Testing a region's water prior to drilling allows communities to see what substances are already present and to monitor the water supply for any changes.

Unfortunately, most state rules contain no requirement for the public disclosure of the chemicals well owners and operators are planning to use before fracturing takes place. Wyoming's rule provides for some disclosure prior to fracking, and the Montana, Arkansas, and Pennsylvania rules provide much more limited prior disclosure.

How and Where the Information Should be Disclosed

For maximum public accessibility, government information should be posted online, in a timely fashion and in a database that allows a user to search by numerous criteria and download data in usable formats. Currently, no states provide such access. However, Colorado and Pennsylvania require data to be provided online with searching and sorting capabilities, either through the development of a new state website or through a new intergovernmental online chemical registry called FracFocus.org.

Launched in April 2011, FracFocus.org is the product of the Ground Water Protection Council (GWPC) and the Interstate Oil and Gas Compact Commission (IOGCC), two nonprofit intergovernmental organizations. The GWPC is comprised of state groundwater agencies, and the IOGCC is a multi-state agency that promotes oil and gas development. Several states, including Colorado, Louisiana, Montana, North Dakota, Pennsylvania, and Texas, have begun requiring reporting to the site, which had previously been entirely voluntary.

However, the FracFocus.org site has limitations. For one, the website is not yet fully searchable. Colorado and Pennsylvania both require the FracFocus.org registry to be searchable by geographic area, ingredients, Chemical Abstracts Service Registry number, time period, and well operator by January 2013, or state regulators may have to develop their own searchable websites. The IOGCC and the GWPC have indicated a willingness to improve the searchability of the database to meet states' criteria.

Another serious limitation of FracFocus.org is that it only posts information submitted from Material Safety Data Sheets⁷⁸ and thus does not include a comprehensive or specific list of all the chemicals used in fracking. The site also needs to include information from the manufacturers of fracking materials, service providers, well numbers and locations, Chemical Abstracts Service Registry numbers, and the concentration of chemicals and base fluids.

State regulators must establish their own websites to provide the information the public needs in a timely manner. It is imperative that government holds this critical information to facilitate its dissemination in case of accidents. In addition, ensuring that the government has the information enables the public to submit a freedom of information request on the data.

⁷⁸ According to the FracFocus.org FAQ page, the website discloses "[a]ll chemicals that would appear on a Material Safety Data Sheet (MSDS) that are used to hydraulically fracture a well except for those that can be kept proprietary based on the 'Trade Secret' provisions related to MSDS found on the Trade Secret link at 1910.1200(i)(1)."

How Trade Secrecy Claims Should be Handled

Industry has long argued that the specific ingredients in any product that a company produces is a “trade secret” or “confidential business information” and that disclosure could harm its business. Because of this, companies resist specifying the amounts and details of the chemicals in their products. This “trade secrets” exemption can become the Achilles’ heel of state disclosure rules. If vigorous systems are not in place to defend against abuse and overuse of this exemption, disclosure rules can quickly become meaningless.

Substantiating claims: The presumption should be for disclosure, so that for any request for an exemption, the burden of proof should be on the company making the claim. Colorado’s rule creates a new form for claiming data as trade secrets. The form requires submitters to substantiate and document the legitimacy of their claims.

Challenging claims: States need a strong, transparent, enforceable process for evaluating and challenging trade secrets claims.

Regulators should evaluate every trade secrets claim, rule on each one, and publicly disclose their decisions. Wyoming regulators, whose disclosure program has been operating the longest, provide a record of their trade secrets decisions online. The accountability provided by such a system allows the public to know how strictly regulators are enforcing disclosure rules.

Delinking chemical ID from product ID: Trade secrets protections and a strong chemical disclosure policy can coexist by delinking specific chemical ingredients and amounts from the formulation or “recipe” of commercial additives. A number of chemical companies create premixed fracking fluids with various chemicals set at different amounts. These companies are concerned that reporting specific chemicals will reveal their formulas. However, operators use several different fluids and add their own chemicals as they deem necessary. As long as chemicals are reported in aggregate amounts and concentrations that are used in a well, with no reporting of the amounts or identities of the commercial products in which the chemicals were ingredients, there will be no way for anyone to figure out which chemicals and which amounts came from any particular additive.

Colorado has taken the step of delinking specific chemical identities from additives’ trade names. In an effort to minimize trade secrets claims, the state rule permits reporting the required information in a format that does not link chemical ingredients (including chemical names, unique chemical identification numbers, and concentrations) to their respective hydraulic fracturing additive. The Colorado rule does still allow chemical identities and concentrations to be claimed as trade secrets when necessary. However, the expectation is that allowing the delinked reporting format will allow chemical disclosure to occur while preventing competitors from reverse-engineering additive formulas.

A model chemical disclosure policy would provide all residents of a state with the information needed to assess the risks of drilling.

Access for health providers: Under most state rules, health professionals can obtain access to confidential chemical information if they submit a written statement saying they need detailed information in order to treat a patient (typically due to some exposure incident) and sign a confidentiality agreement. This process provides case-by-case information to only a few people, denying other health care professionals and researchers the data needed to diagnose potential causes of chronic ailments in the broader population that come from cumulative exposure to chemicals. For health professionals, knowing the unique chemical identification numbers of every ingredient used in a well is critical; trade secrets should not trump public health concerns.

A good state system for managing trade secrets should include the following:

- Operators should be required to file a form with state regulators documenting that trade secrets claims meet the appropriate state definition, provide evidence substantiating the claims, and sign an affidavit – under penalty of perjury – that any chemical exempted from disclosure qualifies for trade secrets protection.
- Regulators should have to review and evaluate each claim and decide on its merit before withholding the information. Information not approved for trade secrets protections should be publicly disclosed.
- Where a chemical identity has been granted trade secrets protections, the class or chemical family of the protected chemical should be publicly disclosed.
- Information that is needed to assess the health and safety of a product or process should not be given trade secrets protections. This conforms to current federal policy regarding health and safety data of toxic chemicals.⁷⁹
- The public should have a clear right and process by which to challenge trade secrets claims. This process should be open to any individual or organization, not restricted to those owning land where wells are located and their neighbors. Challenges could stop the drilling process.
- Regulators should regularly report to the public the number of trade secrets claims received, the number approved or rejected, the names of the claimants, and a description of the information being exempted from disclosure.

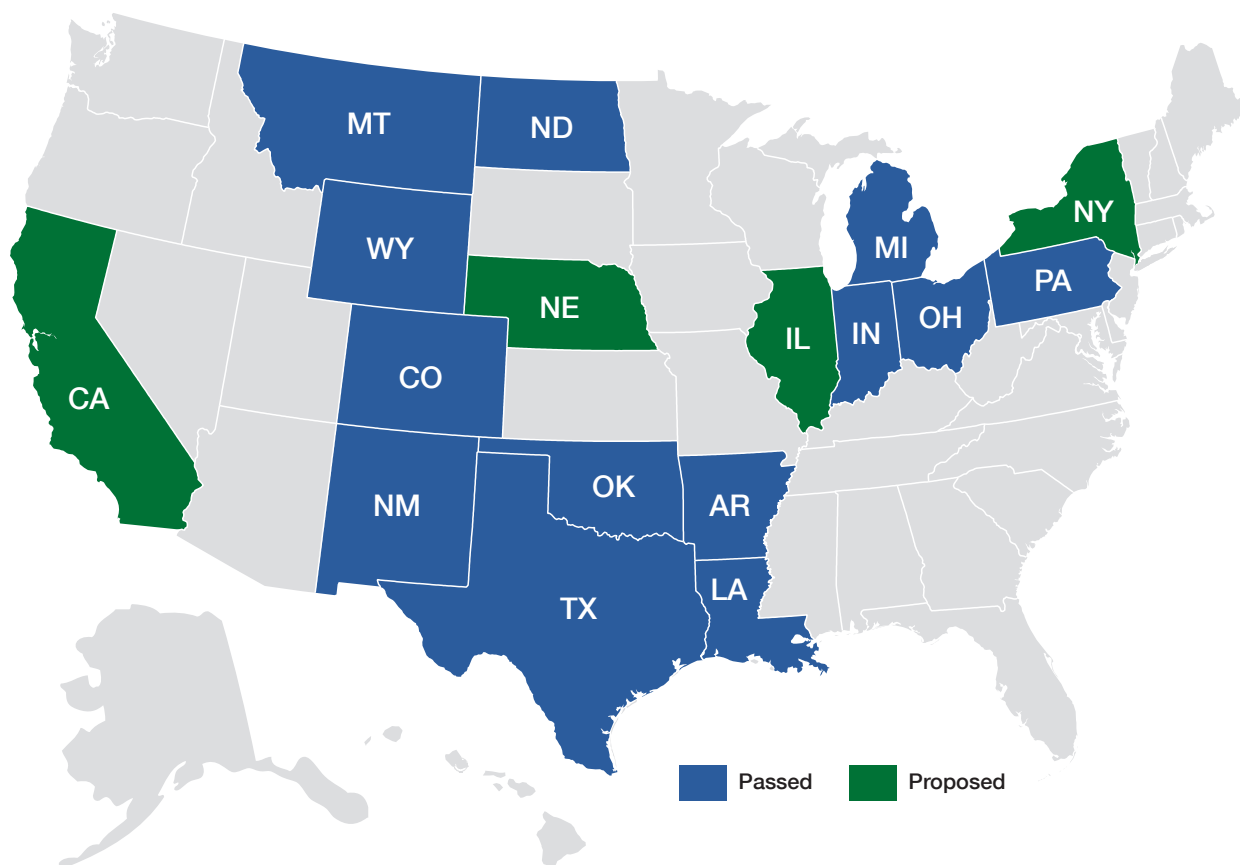
When potentially harmful chemical substances are being used, community members have a need and a right to know what those substances are. The features described above should be included in any policy governing the disclosure of substances used in hydraulic fracturing. These requirements are a minimum, and regulators should be expected to demand additional items if deemed to be in the public's interest.

⁷⁹ The U.S. Environmental Protection Agency's rules for evaluating confidential business information under the Toxic Substances Control Act restrict the use of trade secrets protections for health and safety data. See 40 CFR, Part 2, Subpart B, Section 2.306, <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=682387535cc230b1f054108ab76c9e5e&rgn=div5&view=text&node=40:1.0.1.1.2&idno=40>.

7. The State of State Chemical Disclosure Rules and Safety Standards

This section examines 17 states' laws and rules (passed and proposed) that require the public disclosure of information on fracking chemicals. In doing so, it provides a brief summary of the key features of each rule, as well as an explanation as to how each state handles trade secrets.

Hydraulic Fracturing Chemical Disclosure Policies in the U.S., Passed or Proposed



ARKANSAS

The Arkansas Oil and Gas Commission (AOGC) enacted new rules governing hydraulic fracturing, effective Jan. 15, 2011.⁸⁰ The rules require permits for hydraulic fracturing and include a requirement for disclosure of chemical additives.

BASELINE DATA

- Arkansas provides a generalized notice before fracking begins through a master list of chemicals that well operators use.

THE SCOPE OF CHEMICAL REPORTING

- The rules cover all chemical additives in fracking fluids. They do not limit disclosure to additives with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).
- Only well operators are required to report chemical data.
- Reporting occurs within 30 days of completing the well.⁸¹

SPECIFIC CHEMICAL INFORMATION

- Well operators must submit to the state agency the types and volumes of fracking fluids and proppants (sand or ceramic beads used to hold open fractures) and a list of all additives – with descriptions of their purposes (e.g., biocide, corrosion inhibitor, or surfactant) and the unique chemical identification numbers of the constituents (as listed by the American Chemical Society in the Chemical Abstracts Service Registry).
- The rate or concentration of the additives must also be reported (as a percent by volume of the total fluid).

TRADE SECRETS PROCESS

- The Arkansas rules provide trade secrets protections for chemical identities and concentrations.
- Drillers requesting trade secrets protections must substantiate their claims according to criteria set forth in the federal Emergency Planning and Community Right to Know Act.⁸²
- There is not a process cited for challenging trade secrets claims.

TRADE SECRETS LIMITATIONS

- Submitters must disclose the chemical family of all trade secrets chemicals (a chemical family is a general name for a group of chemicals that share similar properties).
- Chemical identities and concentrations are supplied to health care professionals upon request. The rule does not indicate that there are any required confidentiality agreements for health care professionals that receive information on a chemical that is considered a trade secret.

⁸⁰ Rule B-19. "Requirements for Well Completion Utilizing Fracture Stimulation." <http://www.aogc.state.ar.us/PDF/B-19%20Final%201-15-11.pdf>.

⁸¹ Generally, states define a well as complete when it is ready to produce oil or gas.

⁸² See U.S. Code Title 42: The Public Health and Welfare. United States Government, Jan. 6, 2003. <http://us-code.vlex.com/vid/sec-trade-secrets-19245597>.

ONLINE DISCLOSURE

- The rules do not specify that the information be accessible online or that it be searchable. However, information submitted to state regulators is partially available to the public through the AOGC's website. The website provides limited searchability with no way to search by chemical or time frame.⁸³

CALIFORNIA

During much of 2011, the California legislature considered a bill to require substantial public disclosure of fracking chemicals. The bill, AB 591, progressed through the California Assembly and passed several state Senate committees before stalling in the Senate Appropriations Committee due to oil and gas industry concerns about protection of trade secrets and the costs of implementing the bill's provisions.⁸⁴

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- The bill would add chemical disclosure to current state requirements that well operators keep a log of a well's drilling operations history.
- The bill would require a "person carrying out hydraulic fracturing on behalf of an owner or operator at a well" to supply the well owner or operator with a complete list of all chemicals.
- The well operator has up to 60 days from completion of the well to submit the list of chemicals to the Division of Oil, Gas and Geothermal Resources, located within the state's Department of Conservation.

SPECIFIC CHEMICAL INFORMATION

- The bill would require disclosure of unique chemical identification numbers (as listed by the American Chemical Society in the Chemical Abstracts Service Registry) of all chemicals that are added to the fluid at each well, along with the amount of fracking fluids used and recovered from each well.
- Disclosure of the concentrations of the added chemicals is not required.

TRADE SECRETS PROCESS AND LIMITATIONS

- California law already contains procedures for protecting trade secrets, but AB 591, in its latest form, makes no mention of trade secrets. Current drilling regulations treat submissions from well operators as public records under the California Public Records Act.⁸⁵

ONLINE DISCLOSURE

- State regulators would be required to publish the information online, including the specific chemical lists for each well, as part of the existing online maps of oil and gas wells located on the state agency's website.⁸⁶

83 "Well Fracture Information: Wells Permitted with Intent of Fracture Stimulation." State of Arkansas Oil and Gas Commission. http://www.aogc.state.ar.us/Well_Fracture_Companies.htm.

84 California lawmakers may soon propose new legislation on hydraulic fracturing.

85 Government Code Section 6250-6270. State of California. <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=gov&group=06001-07000&file=6250-6270>.

86 The California Department of Conservation provides online access to maps of oil and gas wells. <http://maps.conservation.ca.gov/doms/doms-app.html>.

COLORADO

On Dec. 13, 2011, the Colorado Oil and Gas Conservation Commission (COGCC), the state regulatory body that oversees gas drilling, approved a new fracking disclosure rule.⁸⁷ Overall, the rule, effective on April 1, 2012, is a meaningful step toward transparency and makes more progress than most other states' policies in providing residents with crucial information needed to protect their health and safety.

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- Drilling service providers and chemical manufacturers have 30 days from the completion of fracking activity to submit chemical information to well operators, who themselves have 60 days from the completion of fracking activity to post the information on FracFocus.org (a third-party fracking disclosure website) or another site.
- This requirement applies to all chemical additives in fracking fluids, not just those with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).

SPECIFIC CHEMICAL INFORMATION

- The rule requires disclosure of the concentrations of the chemicals in fracking fluids, in percent by mass, and the total volume of fracking fluid used.
- The trade name of every additive to the fracking fluid, the purpose of the additive (e.g., biocide, corrosion preventer, or friction reducer), the scientific name of the additive and its unique chemical identification number (as listed by the American Chemical Society in the Chemical Abstracts Service Registry), and the concentration of the additive must be disclosed unless the information is claimed as a trade secret.
- Additionally, the rule requires the name of the well operator and date(s) of fracking, the specific well location (including county and longitude and latitude), well name and identification number, and well depth.

TRADE SECRETS PROCESS

- The operators, service providers, and manufacturers are allowed to conceal the chemical identity and/or concentrations that they believe are entitled to trade secrets protections, with certain limitations.
- Drillers claiming trade secrets protections must submit a form asserting the information meets several criteria and substantiating the claims with specific supporting information. The form must be filed prior to using the chemicals.
- The COGCC does not review claims of trade secrets.
- The rule does allow those negatively impacted by drilling operations to challenge the trade secrets claims.

87 Order 1R-114. <http://cogcc.state.co.us/>.

- By sometime in 2013, the COGCC expects to report on how many trade secrets claims are made and by whom.

TRADE SECRETS LIMITATIONS

An important feature of Colorado's rule is that it allows reporting the required information in a format that does not link chemical ingredients (including chemical names, unique chemical identification numbers, and concentrations) to their respective hydraulic fracturing additive. The expectation is that allowing the delinked reporting format will reduce the need for trade secrets claims to protect proprietary formulas from competitors.

- Operators, service providers, and manufacturers are only allowed to conceal the chemical identities and/or concentrations of chemicals as trade secrets. They must still disclose all other required information, such as well location, the trade names of the chemicals, and the families to which the chemicals belong (a chemical family is a general name for a group of chemicals that share similar properties).

Although there is no requirement for companies to submit required information to the COGCC (in addition to online disclosure), the state agency reserves the right to demand the information, including trade secrets, under certain circumstances.

- The agency may submit a written request for trade secrets information under specific emergency situations, such as a spill or release, but may not publicly disclose the information. The agency may share the information with public health and environmental officials on a need-to-know basis.
- The rule also provides emergency workers and health care providers with access to chemical identities claimed as trade secrets during health emergencies. However, they must sign confidentiality agreements after the emergency has passed.
- In non-emergency medical and research situations, a health professional must submit a statement of need and sign a confidentiality agreement before obtaining chemical identities.

ONLINE DISCLOSURE

- All disclosed information must be posted on the FracFocus website or another website. By January 2013, this information must also be searchable, allowing the public to sort the data by chemical identity, drilling location, operator name, and other categories. If the FracFocus website does not have these capabilities at that time, then the COGCC must create a searchable website to house the information.

ILLINOIS

In February 2012, Illinois State Sen. Michael Frerichs (D-Champaign) introduced fracking legislation that closely mirrored the bill Texas passed in 2011. The Illinois bill, SB 3280, would task the state Department of Natural Resources, which oversees oil and gas operations, with developing new disclosure rules for natural gas fracking in shale.⁸⁸ The legislation quickly gained bipartisan cosponsors and garnered support from both industry groups such as the Illinois Oil and Gas Association, as well as some environmental organizations. However, some community groups, such as Southern Illinoisans Against Fracturing our Environment (SAFE), continued to oppose any policy short of a ban on fracking.⁸⁹ On April 26, 2012, the Illinois State Senate unanimously passed the bill and sent the legislation to the House.

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- Well operators would be required to disclose the total volume of water used and all details displayed on FracFocus.org (a third-party fracking disclosure website) for chemicals with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).
- Well operators would also be required to submit a list of all other chemical ingredients to the department. The rules developed by the department would require that service companies and manufacturers provide the operator with the needed information (though not the concentrations of the chemicals).
- The legislation would require drilling service providers and manufacturers to provide the well operator with the specific identities of all chemicals in fracking fluids, not just chemicals deemed hazardous.

SPECIFIC CHEMICAL INFORMATION

- Well operators would need to complete the standard FracFocus.org form. Operators would also be required to disclose other basic information, including: the operator name; well location (including latitude and longitude); well identification number and depth; and the volume of water or base fluid used, all to be disclosed to the FracFocus website.

TRADE SECRETS PROCESS

- The Illinois bill allows drillers to claim the chemical identity, including its unique chemical identification number (as listed by the American Chemical Society in the Chemical Abstracts Service Registry) and concentration, as trade secrets information and conceal it from the public and regulators.
- The bill instructs the Department of Natural Resources to develop a process for claiming trade secrets status for submitted information.

⁸⁸ Full Text of SB 3280. Illinois General Assembly, Feb. 7, 2012. <http://www.ilga.gov/legislation/fulltext.asp?DocName=&SessionId=84&GA=97&DocType=SB&DocNum=3280&GAID=11&LegID=&SpecSess=&Session=>

⁸⁹ Southern Illinoisans Against Fracturing our Environment (SAFE). <https://dontfractureillinois.org/>.

- The legislation does not offer any guidance on upfront substantiation or agency review of claims.
- The bill instructs the agency to develop a process to handle challenges of trade secrets claims. Other provisions specify that challenges must be submitted within 24 months of well completion and that only affected landowners and government entities with jurisdiction may submit challenges.

TRADE SECRETS LIMITATIONS

- In emergencies, trade secrets cannot be withheld from emergency and health care workers.

ONLINE DISCLOSURE

- Under the bill, well operators would be required to submit the chemical information to FracFocus.org for online posting. If the FracFocus site is discontinued, the bill requires the information to be posted on another publicly accessible website specified by the department.
- There is no requirement for either site to make the information searchable or have any other specific functionality.

INDIANA

In 2010, wells in Indiana produced about 7 billion cubic feet of natural gas. About 90 percent of this production occurred in the New Albany shale formation in southern Indiana.

On Feb. 29, 2012, Governor Mitch Daniels (R) signed a bill (House Enrolled Act 1107) that requires the state's Natural Resources Commission (which oversees the Department of Natural Resources) to adopt rules for reporting and disclosing the chemicals used in fracking fluids.⁹⁰ Rep. Eric Koch (R-Bedford) sponsored the bill, which became effective on July 1.

The bill does not provide much detail but allows the department to adopt rules on any other information it deems necessary.⁹¹

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- The bill refers to gas and drilling operations but does not provide detail as to the scope of disclosure.

SPECIFIC CHEMICAL INFORMATION

- Under the bill, the state's Natural Resources Commission would require oil and gas drilling operations to disclose: the volume and source of the base fluid used; a description of each additive used in fracking treatment; the volume of each additive "expressed as a percentage of the total fracturing fluid volume"; and the maximum surface and injection pressures that are used to obtain base fluid.

⁹⁰ House Enrolled Act No. 1107. General Assembly of the State of Indiana, 2012. <http://www.in.gov/legislative/bills/2012/HE/HE1107.1.html>.

⁹¹ As this report was going to press, the Indiana Department of Natural Resources announced temporary rules designed to implement House Enrolled Act 1107. http://www.in.gov/nrc/files/lisa_12292e.pdf.

TRADE SECRETS PROCESS

- There is no mention of trade secrets processes.

TRADE SECRETS LIMITATIONS

- There is no mention of whether emergency response personnel would have access to trade secrets information.

ONLINE DISCLOSURE

- There is no mention of online disclosure.

LOUISIANA

The Louisiana Department of Natural Resources Office of Conservation finalized a rule governing hydraulic fracturing, effective Oct. 20, 2011.⁹² The rule includes a limited public disclosure feature concerning the chemicals added to fracking fluids.⁹³

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- Both drillers and operators are required to report. The state had already required drillers to submit well history reports after fracking operations concluded. The new rule additionally requires well operators to include information on the chemicals used in fracking.
- Well operators cannot disclose information that they do not have access to, such as trade secrets held by the manufacturer from whom the operators purchase fracking additives.
- The rule also applies to all additives used, not just those with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers), with the exception of the chemicals' unique chemical identification numbers (as listed by the American Chemical Society in the Chemical Abstracts Service Registry) and maximum concentrations (see below).

SPECIFIC CHEMICAL INFORMATION

- The Louisiana rule requires disclosure of the well location, including latitude and longitude.
- Drillers must submit the types and volumes of fracking base fluids (in gallons), a description of all additives used (such as biocide, proppant, or surfactant), along with specific trade names and the names of the manufacturers of all additives.
- The Louisiana rule also requires disclosure of the chemicals' Chemical Abstracts Service Registry numbers and maximum concentrations (as a percent by mass) but limits that requirement to those chemicals that have Material Safety Data Sheets.

TRADE SECRETS PROCESS

- The Louisiana rule retains the extensive trade secrets protections available under Material Safety Data Sheet rules, with one limitation (see below).

⁹² Louisiana Administrative Code 43:XIX.118. <http://www.doa.louisiana.gov/osr/reg/1110/1110.pdf>.

⁹³ As this report was going to press, the Louisiana legislature passed a bill that appears to codify existing rules.

- Louisiana’s rule does not include or reference any procedures for public challenges to trade secrets claims.

TRADE SECRETS LIMITATIONS

- The Louisiana rule allows well operators to claim chemical ingredient information as trade secrets. However, the rule requires that the chemical family of any chemicals claimed as trade secrets must be disclosed (a chemical family is a general name for a group of chemicals that share similar properties).
- Though the rule does not detail procedures for public health researchers to access trade secrets information, it does not allow anyone to “withhold information which is required by state or federal law to be provided to a health care professional, a doctor, or a nurse.”

ONLINE DISCLOSURE

- The Louisiana rule allows drillers to submit their data to FracFocus.org (a third-party fracking disclosure website) or a similar website, provided all information is accessible to the public free of charge.

MICHIGAN

Michigan’s Department of Environmental Quality (DEQ) issued disclosure regulations for fracking but limited the rules to wells using more than 100,000 gallons of fluid – referred to as high-volume hydraulic fracturing. The rules⁹⁴ went into effect on June 22, 2011.

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- The rules require only oil and gas well operators to provide the DEQ with data.
- The rules limit disclosure of chemical additives to those with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).
- The information, along with the well completion report, must be submitted within 60 days after well completion.⁹⁵

SPECIFIC CHEMICAL INFORMATION

- Oil and gas well operators are required to provide the DEQ with copies of the Material Safety Data Sheets for chemical additives, as well as the volume of each chemical used, as part of the record of well completion.
- Well operators are also required to submit the following information with the record of well completion:
 - » “[S]ervice company fracturing records and associated charts showing fracturing volumes, rates, and pressures; and

⁹⁴ See Supervisor of Well Instruction 1-2011. http://www.michigan.gov/documents/deq/SI_1-2011_353936_7.pdf.

⁹⁵ Under current Michigan regulation, R 324.418, oil and gas operators must submit well drilling logs within 60 days of drilling and well completion.

- » [T]otal volume of flowback water (formation and/or treatment water) to date at the time of record submittal,” to be included in the Record of Well Completion.

TRADE SECRETS PROCESS

- There is no mention of how trade secrets claims would be handled (i.e., if upfront substantiation would be required or if challenges to trade secrets would be allowed).

TRADE SECRETS LIMITATIONS

- There is no mention of whether emergency response personnel would have access to trade secrets information.

ONLINE DISCLOSURE

- Though not included in the rules, the DEQ has agreed to post the Material Safety Data Sheets on its website for public access, and the agency plans to post the information within a few days of receipt. The DEQ has already posted the safety data sheets from five permits.⁹⁶

MONTANA

The Montana Board of Oil and Gas Conservation (BOGC), which regulates drilling in the state, adopted a rule governing the disclosure of hydraulic fracturing chemicals that went into effect Aug. 27, 2011.⁹⁷

BASELINE DATA

- The rule provides for limited information disclosure before hydraulic fracturing takes place. Drillers must disclose in their drilling permit applications:
 - » The estimated total volume of fluids to be used
 - » The trade names and estimated amounts of the chemical products to be used
 - » The amount of proppants (sand or ceramic beads used to hold open fractures) estimated to be used, along with other well design information
- The state agency does not require disclosure of the identities of the proposed fracking chemicals. In the opinion of the regulators, knowing beforehand the identities of the chemicals and testing water for these chemicals would be “fruitless.”
- The BOGC does not provide an alternative procedure for collecting baseline data. In order to test water for contamination following hydraulic fracturing, Montana drilling regulators stated that they believe it is only necessary to know the identities of “one or two constituents that are persistent and not naturally occurring in the groundwater to establish a premise for investigation of fracking fluids as a potential source of contamination.”⁹⁸ However, drillers may bypass any requirement for the disclosure of these constituents by claiming that such information is a trade secret.

THE SCOPE OF CHEMICAL REPORTING

- Within 30 days of completion of the well, operators must disclose information on the fluids used in hydraulic fracturing.

⁹⁶ “Hydraulic Fracturing in Michigan: Get the Facts on Fracking.” Michigan Department of Environmental Quality. http://www.michigan.gov/deq/0,4561,7-135-3311_4111_4231-262172--,00.html.

⁹⁷ “Well Stimulation Activities Covered by Drilling Permit.” Montana Board of Oil and Gas Conservation. <http://bogc.dnrc.mt.gov/PDF/FinalFracRules.pdf>.

⁹⁸ See the BOGC’s responses to public comments at <http://bogc.dnrc.mt.gov/PDF/36-22-157adp-arm.pdf>.

- The rule applies to all chemicals, not just those with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).

SPECIFIC CHEMICAL INFORMATION

- Well operators must disclose a description of the additives (e.g., biocide, corrosion inhibitor, or surfactant), the unique chemical identification number (as listed by the American Chemical Society in the Chemical Abstracts Service Registry) for each ingredient of the additives, and the rate or concentration of each additive.

TRADE SECRETS PROCESS

- The rule provides extensive protections for alleged trade secrets. Montana – similar to Wyoming and several other states – defines trade secrets as information that “derives independent economic value, actual or potential, from not being generally known to and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use; and [...] is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.”⁹⁹ This common and rather broad definition fails to consider the demand for information to protect public health and safety. Such consideration by the state would narrow the definition and protect the public’s right to know about potential hazards.
- In the Montana rule, there is no mention of challenges to trade secrets claims by the public or other agencies.

TRADE SECRETS LIMITATIONS

- Well owners and operators may conceal as trade secrets the identities and concentrations of chemical products and ingredients used in hydraulic fracturing. The rule encourages but does not require operators to disclose the trade names or chemical families of trade secrets chemicals and products (a chemical family is a general name for a group of chemicals that share similar properties).
- In the event of a spill or release, the BOGC can demand the specific identities of chemicals, but the information must remain secret from the public.
- Health care professionals who need this information to treat an individual patient must request the information in writing to the well operator, owner, or service provider. In doing so, health care professionals may be required to sign confidentiality agreements.
- When a health care professional determines that an emergency situation exists, a written request is not required, but the drillers may “request” a signed confidentiality agreement after the emergency situation has passed.

ONLINE DISCLOSURE

- The Montana rule gives operators the option to submit the information either to FracFocus.org (a third-party fracking disclosure website) or a similar approved, publicly accessible site, or to the state’s Board of Oil and Gas Conservation. If the information is submitted to the state, there is no mention of whether it would disclose the information online.

⁹⁹ Montana Code Annotated 2011. <http://data.opi.mt.gov/bills/mca/30/14/30-14-402.htm>.

NEBRASKA

In January 2012, a bill was introduced in the Nebraska legislature to require online disclosure of fracking chemicals. After one hearing, the unicameral legislature's Natural Resources Committee labeled the bill "indefinitely postponed."¹⁰⁰ The bill would authorize the Nebraska Oil and Gas Conservation Commission (NOGCC) to develop any rules needed to comply with the law and sets no date for its enactment.

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- The bill would require the owner or operator of a well to provide the composition of fracking fluids to the NOGCC following fracking.
- Well operators would be required to disclose all chemicals, not just those with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).

SPECIFIC CHEMICAL INFORMATION

- The bill would require that the total base fluid be reported, along with two lists of chemicals.
 - » The first list – on a form to be created by the NOGCC – includes only the names of chemicals with Material Safety Data Sheets that are used in fracking fluid.
 - » A second list must include all other chemicals not reported on the first list.
- The concentration of chemical additives is not required.

TRADE SECRETS PROCESS

- Owners, operators, service providers, and manufacturers may claim chemical identities and amounts, and any other information, as trade secrets. The bill would require the NOGCC to develop a process for making these claims.
- The bill would give certain individuals and agencies two years following well completion to challenge trade secrets claims. Only the landowner and adjacent landowner of the property on which the well is located, as well as government agencies with jurisdiction, would be able to challenge the trade secrets claims.
- In the event of a trade secrets challenge, the bill requires the NOGCC to notify the company that made the original claim and provide an opportunity to substantiate the claim.

TRADE SECRETS LIMITATIONS

- The bill would require the chemical family of all trade secrets chemicals to be disclosed (a chemical family is a general name for a group of chemicals that share similar properties).

¹⁰⁰ LB877. "Require disclosure of hydraulic fracturing treatment information." Nebraska Legislature, Jan. 6, 2012. http://nebraskalegislature.gov/bills/view_bill.php?DocumentID=15637.

- The bill specifies that the ingredients in fracking fluid need not be linked to the specific additive in which they are found – a potentially fruitful means of disclosing information while protecting alleged trade secrets. This is similar to Colorado’s approach to the trade secrets problem.
- The bill would also task the state agency with developing a process for providing trade secrets information to health care professionals and emergency responders.

ONLINE DISCLOSURE

- Both chemical lists required by the bill would have to be posted on the NOGCC’s website.

NEW MEXICO

In November 2011, New Mexico’s Oil Conservation District (OCD) of the state’s Minerals and Natural Resources Department adopted new disclosure rules similar to a proposal from the state’s oil and gas industry.¹⁰¹ In August 2011, the New Mexico Oil and Gas Association, an industry trade group, proposed a fracking disclosure rule to the OCD that would require well operators to report the “composition” of fracking fluids to FracFocus.org (a third-party fracking disclosure website) using the site’s template for data submissions, or to submit the same information to state regulators.¹⁰² The new disclosure rules, which went into effect on Feb. 15, 2012, are basically identical to the industry proposal.

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- The rules only require well operators to disclose chemical data. Well operators have 45 days from the completion of the well to submit information.
- The rules only apply to the disclosure of chemicals with Material Safety Data Sheets.

SPECIFIC CHEMICAL INFORMATION

- The well operator is required to disclose:
 - » Well location and ID number
 - » Operator’s contact information
 - » Total volume of fracking fluid used
 - » Description of the fluid’s composition and concentration, listing each ingredient’s trade name, manufacturer, purpose, unique chemical identification number (listed by the American Chemical Society in the Chemical Abstracts Service Registry), maximum ingredient concentration within the additive as percentage by mass, and the maximum ingredient concentration in the fracking fluid as percentage by mass.

¹⁰¹ These rules are incorporated into the New Mexico Administrative Code 19.15.16.
<http://www.nmcpr.state.nm.us/nmac/parts/title19/19.015.0016.htm>.

¹⁰² Carr. William F. “Re: Application of the New Mexico Oil and Gas Association for amendment of certain provisions of Title 19, Chapter 15, Part 16 of the New Mexico Administrative Code concerning log, completion, hydraulic fracturing and workover report, Statewide.” Holland & Hart, LLP, Aug. 8, 2011.
<http://www.nmoga.org/wp-content/uploads/2011/08/Proposed-Hydraulic-Fracturing-Disclosure-Rule.pdf>.

TRADE SECRETS PROCESS

- The rules provide trade secrets protections, but the state does not require well operators to submit trade secrets information.
- There is no requirement that operators provide any upfront substantiation or other information to support their trade secrets claims.
- There is no process to challenge trade secrets claims.

TRADE SECRETS LIMITATIONS

- There is also no requirement to ensure that health care workers can obtain access to such information if needed in response to an emergency. In fact, the ability to simply not report trade secrets information could prevent health care officials and emergency responders from even knowing what information to request.

ONLINE DISCLOSURE

- The rules require submission of the data to the OCD but do not require that the information be publicly accessible online.¹⁰³

NEW YORK

By the end of 2012, New York's Department of Environmental Conservation (DEC) is expected to finalize rules that establish permitting and operations requirements for fracking activity that uses 300,000 gallons or more of water as the primary fluid. The proposed rules, which were open for public comment from September 2011 to January 2012, could lift the state's three-year moratorium on fracking.¹⁰⁴ One small section of the proposed rules calls for chemical disclosure on all permit applications.

BASELINE DATA

- The proposed rules apply only to the permit process, i.e., baseline data.
- Well operators will only have to disclose data (including volume and concentration) on the chemicals they plan to use, not those that companies actually use.
- The proposed rules do not require chemical manufacturers to report the ingredients used in their products.

THE SCOPE OF CHEMICAL REPORTING

- The proposed rules only require well owners or operators to disclose information and requires data for all proposed chemical additives (not just those with Material Safety Data Sheets, which are information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).

SPECIFIC CHEMICAL INFORMATION

- The DEC would require the well owner or operator to disclose all proposed chemical additives in its permit application to drill or deepen a well, including:

¹⁰³ "Proposed Rule Changes: Pits, Closed-Loop Systems, Below-Grade Tanks & Sumps." New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division, May 7, 2012. <http://www.emnrd.state.nm.us/ocd/Rules.htm>.

¹⁰⁴ The DEC received more than 20,000 public comments on the state's draft environmental impact statement and proposed rules. See N.Y. Comp. Codes R. & Regs. tit. 6, Parts 52, 190, 550–556, 560, 750. <http://www.dec.ny.gov/regulations/77353.html>.

- » Proposed volume and concentrations of each additive
 - » Identification of each additive proposed for use
 - » Copies of the Material Safety Data Sheet for each product to be used (if the document is not already on file with the state agency)
 - » The identity of the proposed fracturing service company
- Companies would be required to provide documentation that the proposed chemical additives show reduced aquatic toxicity and pose a lower potential risk to water resources and the environment than alternative products (or that available alternative products are not equally effective or feasible).

TRADE SECRETS PROCESS

- The proposed regulations would follow current DEC rules on trade secrets, which require companies to provide some upfront substantiation for any confidentiality claim. Under current rules, companies have to explain the reason for each claim at the time of the permit application, including how disclosing the information would “likely cause substantial injury” to the company’s competitiveness.
- The DEC may consider various factors in its determination to grant a company’s confidentiality claim (e.g., the definition of a trade secret, the extent to which the information is known outside of the business, the value of the information to the company, the ease or difficulty of accessing the information).
- New York’s trade secrets rule (6 NYCRR Section 616.7) allows challenges to trade secrets claims.¹⁰⁵ After requesting the information and being denied, the requestor has 45 days to submit a written appeal to the Freedom of Information Law Appeals Officer.

TRADE SECRETS LIMITATIONS

- The state’s confidentiality rules do not require companies to maximize disclosure of information around such claims by disclosing the chemical family of all trade secrets chemicals (a chemical family is a general name for a group of chemicals that share similar properties).
- New York’s confidentiality rules fail to ensure that chemical identities and concentrations are supplied to emergency workers or health care professionals.

ONLINE DISCLOSURE

- With the exception of information deemed confidential, the DEC will make the required information publicly available (though it does not specify how or when it plans to do so). It is unclear whether the information will be made available on the agency’s website or on FracFocus.org (a third-party fracking disclosure website).

¹⁰⁵ 616.7 Records Containing Trade Secrets, Confidential Commercial Information, or Critical Infrastructure Information. New York State Department of Environmental Conservation, as amended effective Feb. 11, 2009. <http://www.dec.ny.gov/regs/4491.html#18083>.

NORTH DAKOTA

The Oil and Gas Division of the North Dakota Department of Mineral Resources approved a new disclosure rule for hydraulic fracturing, effective on April 1, 2012.¹⁰⁶

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- The rule requires owners, operators, or service providers to report within 60 days of fracking to FracFocus.org (a third-party fracking disclosure website) “all elements made viewable by the FracFocus website.” FracFocus.org currently only provides chemical information as it appears on Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).

SPECIFIC CHEMICAL INFORMATION

- The specific chemical information required by FracFocus.org, and thus the North Dakota rule, includes well location, identification data, and total fluid volume, as well as the composition of the additives with the trade name and manufacturer, the ingredients and their unique chemical identification numbers (as listed by the American Chemical Society in the Chemical Abstracts Service Registry), and the maximum concentrations of the chemicals in the additives and in the fluid.
- If the FracFocus.org database were to change and make viewable additional data elements, there is nothing in the North Dakota rule that would release operators from having to report those elements, as well.
- There is no requirement that the same information be submitted to state regulators.

TRADE SECRETS PROCESS

- The North Dakota rule does not address the issue of trade secrets claims, so there is no official state process to designate or challenge information as such. It should be noted that FracFocus.org does not disclose trade secrets nor require substantiation of trade secrets claims, nor does the site provide a process for challenges to trade secrets claims.¹⁰⁷

TRADE SECRETS LIMITATIONS

- The section of the rule that covers disclosure of fracking chemicals makes no mention of procedures for providing health care professionals with trade secrets information. However, a separate section of the rule authorizes regulators to “release such confidential completion and production data” to health care professionals if the regulators deem it necessary to protect public health and safety.

¹⁰⁶ “Oil & Gas and Geophysical Exploration Rule Changes.” North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division, April 1, 2012. <https://www.dmr.nd.gov/oilgas/>.

¹⁰⁷ Data retrieved from FracFocus.org include this disclaimer: “All component information listed was obtained from the manufacturer’s Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the manufacturer who provided it. The Occupational Safety and Health Administration’s (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects ‘proprietary’, ‘trade secret’, and ‘confidential business information’ and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.”

ONLINE DISCLOSURE

- The rule requires chemical data to be disclosed to the FracFocus website.

OHIO

On June 11, 2012, Ohio Governor John Kasich (R) signed Senate Bill 315, which requires well operators to disclose chemicals used in fracking fluid.¹⁰⁸ The new legislation makes changes to Ohio's 2010 oil and gas law, which had only required disclosure of Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- Drillers and well owners will have to disclose, within 60 days after the completion of drilling operations, all information on chemicals used in fracking fluid.

SPECIFIC CHEMICAL INFORMATION

- Drillers and well owners will be required to disclose the following information: the trade name and total amount of all products, fluids, and substances, as well as the manufacturer of each.
- The well owner is required to disclose a list of all chemicals added to all products, fluids, or substances, including each chemical's unique identification number (as listed by the American Chemical Society in the Chemical Abstracts Service Registry) and the maximum concentration of each chemical. The owner is also required to provide a brief description of the purpose of each additive and a copy of the Material Safety Data Sheet for all materials used.
- The legislation also requires that the owner make "reasonable efforts" to obtain the chemical information from the drilling company and chemical manufacturer.

TRADE SECRETS PROCESS

- The legislation allows well owners to claim that chemicals are trade secrets and should be kept confidential. It allows well owners to withhold "the identity, amount, concentration, or purpose of a product, fluid, or substance or of a chemical component."
- The legislation does not require well owners to provide any upfront substantiation.
- A property owner, an adjacent property owner, or any interested person or state agency that may be negatively impacted by chemicals in fracking fluid may challenge a well owner's or operator's trade secrets claim in court. The court will determine if the identity, amount, concentration, or purpose of a chemical or fluid is entitled to trade secrets protection.

TRADE SECRETS LIMITATIONS

- In the case of a spill or accident, the state agency can ask for the information but cannot disclose it to anyone.

¹⁰⁸ Senate Bill 315. Ohio 129th General Assembly, 2012. http://www.legislature.state.oh.us/bills.cfm?ID=129_SB_315.

- To assist in the diagnosis or treatment of an individual affected by fracking fluid, the bill allows medical professionals treating the patient to receive the exact chemical composition of each product, fluid, or substance that is labeled a trade secret. The medical professional must keep the information confidential for any purpose that is not related to the diagnosis or treatment of the affected patient.

ONLINE DISCLOSURE

- The legislation requires the well owner to disclose the chemical information to the state's Division of Oil and Gas Resources Management using one of the following methods: a form prescribed by the state agency; through FracFocus.org (a third-party fracking disclosure website); or other means approved by the state.
- The legislation also calls for the state agency to make publicly available copies of the required chemical information and the Material Safety Data Sheets through the agency's website.

OKLAHOMA

Well operators in Oklahoma will have to disclose the chemicals used in fracking fluid under a new rule that went into effect on July 1, 2012.¹⁰⁹ Governor Mary Fallin (R) and state lawmakers signed off on the rules in May, which were developed by the Oklahoma Corporation Commission, the state agency focused on oil and gas development.

Although the rule went into effect on July 1, it only applies to horizontal wells that are hydraulically fractured on or after Jan. 1, 2013. After Jan. 1, 2014, the rule will apply to all wells that are hydraulically fractured.

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- Well operators have 60 days from the completion of hydraulic fracturing operations to submit chemical information.

SPECIFIC CHEMICAL INFORMATION

- In addition to the total volume of base fluid and type of base fluid used, well operators are required to disclose the trade name, manufacturer, and general purpose of each chemical additive or other substances added to the base fluid.
- Well operators are also required to disclose the unique identification number (as listed by the American Chemical Society in the Chemical Abstracts Service Registry) and maximum concentration of each ingredient in any chemical additive or other substance added to the base fluid.
- The maximum concentration for any ingredient "must be presented as the percent by mass in the fracking fluid as a whole, and is not required to be presented as the percent by mass in any particular additive."

¹⁰⁹ Oklahoma Administrative Code 165:10. Oil And Gas Conservation.
<http://www.occeweb.com/rules/proprules/Ch10ProposedRules030912.pdf>.

TRADE SECRETS PROCESS

- The rule allows well operators to claim “in good faith” that chemicals are trade secrets and should be kept confidential, under Oklahoma’s Uniform Trade Secrets Act. Well operators may note the need for confidentiality in their submission to the FracFocus website instead of disclosing the protected information to the site.
- The submission must include the name of the manufacturer, service company, operator, or other person asserting the trade secrets claim, along with the chemical family name or similar descriptor of the chemical if the chemical identity and Chemical Abstracts Service Registry number are not disclosed (a chemical family is a general name for a group of chemicals that share similar properties).
- The Oklahoma Corporation Commission or Oklahoma’s Oil and Gas Conservation Division may require well operators to file with the Oklahoma Conservation Commission a written explanation substantiating the trade secrets claim.

TRADE SECRETS LIMITATIONS

- The state agency has the right to obtain chemical information from well operators under the provisions of its rule.
- The rule does not indicate that first responders or other health care professionals would be able to obtain trade secrets information in case of an emergency.

ONLINE DISCLOSURE

- Well operators are required to submit their chemical information to FracFocus.org (a third-party fracking disclosure website). Well operators have two options to submit their chemical information to FracFocus.org: either directly to the site or through a link on the Oklahoma Corporation Commission’s website.

PENNSYLVANIA

On Feb. 8, 2012, the state’s General Assembly passed a measure that requires disclosure of fracking chemicals.¹¹⁰ The new law replaces regulations implemented in 2011 by the Department of Environmental Protection (DEP) that required very limited disclosure of such chemicals.

BASELINE DATA

- Per prior state regulations, before drilling, operators must prepare a Preparedness, Prevention, and Contingency Plan (PPC Plan) that includes a list of chemicals present at the well site.
- The PPC Plan must be submitted to the DEP upon request. A Material Safety Data Sheet for each stored chemical must be submitted, as well. (Material Safety Data Sheets are information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers.)

¹¹⁰ House Bill No. 1950, Session of 2011, Section 3222.1: “Hydraulic fracturing chemical disclosure requirements.” The General Assembly of Pennsylvania, 2011. <http://www.legis.state.pa.us/CFDOCS/Legis/PN/Public/btCheck.cfm?txtType=HTM&sessYr=2011&sessInd=0&billBody=H&billTyp=B&billNbr=1950&pn=3048>.

THE SCOPE OF CHEMICAL REPORTING

- The new law differentiates between drillers of “conventional” and “unconventional” wells and creates different reporting requirements for each group. Unconventional wells are defined as those drilled in “a geological shale formation existing below the base of the Elk Sandstone...” Thus, the law creates different disclosure rules depending on the location and depth of the well.

SPECIFIC CHEMICAL INFORMATION

- Operators of both well types must submit a well completion report to state regulators within 30 days of drilling a well. The report must include a descriptive list of additives; their trade names and vendors; a list of all chemical ingredients, their unique chemical identification numbers (as listed by the American Chemical Society in the Chemical Abstracts Service Registry), and maximum concentrations in the base fluid; and the total volume of base fluid.

TRADE SECRETS PROCESS

- Well operators are allowed to designate portions of their submissions as trade secrets to be protected under Pennsylvania’s right-to-know law.¹¹¹
- The law does not list any requirement for upfront substantiation of the trade secrets claims.
- The Pennsylvania right-to-know law provides a system for the public to challenge trade secrets claims by submitting written requests for the information to the state’s Office of the Inspector General.

TRADE SECRETS LIMITATIONS

- Well operators and vendors may claim additive names, chemical ingredient identification numbers, and concentrations to be trade secrets, but the chemical family must be disclosed (a chemical family is a general name for a group of chemicals that share similar properties).
- Health care professionals who determine an emergency situation exists must receive the trade secrets information immediately but may be forced to sign a confidentiality agreement after the emergency has passed.

ONLINE DISCLOSURE

- Only “unconventional” well operators are required to post information online. They must submit a report to FracFocus.org (a third-party fracking disclosure website) within 60 days of fracking.
- The law stipulates that the posted information be in “a format that does not link chemicals to their respective hydraulic fracturing additive.”
- Like Colorado’s rule, the Pennsylvania bill requires the online information be searchable by geographic area, chemical ingredient, Chemical Abstracts Service Registry number, time period, and operator. If FracFocus.org doesn’t provide these capabilities by January 2013, the DEP must “investigate the feasibility” of creating its own website.

¹¹¹ “Pennsylvania’s New Right to Know Law: Act 3 of 2008, as signed by Gov. Edward G. Rendell on Feb. 14, 2008, effective Jan. 1, 2009.” Commonwealth of Pennsylvania. https://www.dced.state.pa.us/public/oor/pa_righttoknowlaw.pdf.

TEXAS

In June 2011, Texas became the first state to pass a stand-alone fracking disclosure law when Governor Rick Perry (R) signed HB 3328, which requires limited disclosure of the chemicals used in hydraulic fracturing.¹¹² The Railroad Commission of Texas, the state regulatory body that oversees drilling operations, finalized a fracking fluids disclosure rule in December 2011. The Texas rule applies to all drilling permits issued on or after Feb. 1, 2012.

BASELINE DATA

- There is no requirement to report baseline data.

THE SCOPE OF CHEMICAL REPORTING

- The Texas rule requires drilling service providers, manufacturers, and well operators to disclose certain specific information (see below).
- The rule applies to all chemical additives (except for concentrations), not just those with Material Safety Data Sheets (information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers).

SPECIFIC CHEMICAL INFORMATION

- The Texas rule requires drilling service providers and manufacturers to provide to the well operator the specific identities and unique chemical identification numbers (as listed by the American Chemical Society in the Chemical Abstracts Service Registry) of all chemicals in fracking fluids, not just the chemicals deemed hazardous. The trade names of the fracking additives and brief descriptions of their purposes are also required.
- The concentration of each chemical (percent by mass) must be disclosed but only for chemicals with Material Safety Data Sheets.
- The state's rule also requires basic information, including the operator name; well location (including latitude and longitude); well identification number and depth; and the volume of water or base fluid used.

TRADE SECRETS PROCESS

- The Texas rule allows for drillers to claim the chemical name and family as trade secrets and conceal that information from the public and regulators (a chemical family is a general name for a group of chemicals that share similar properties).
- Texas drillers do not need to substantiate trade secrets claims they make on their required submissions.
- Challenges to trade secrets claims are allowed only by landowners on whose property the well is located or owners of adjacent property, as well as government entities with jurisdiction over an issue impacted by the secrecy.
- Challenges must be submitted to the Railroad Commission within 24 months of well completion. The commission will review the challenges and forward satisfactorily completed challenges to the office of the Texas attorney general for further review.

¹¹² HB 3328. <http://www.capitol.state.tx.us/tlodocs/82R/billtext/pdf/HBo3328F.pdf>.

TRADE SECRETS LIMITATIONS

- In emergencies, trade secrets cannot be withheld from emergency and health care workers.

ONLINE DISCLOSURE

- Upon completion of the well, Texas requires drillers to upload the chemical information to FracFocus.org (a third-party fracking disclosure website). The rule does not require that the website eventually be searchable.

WYOMING

Wyoming became the first state to require some level of disclosure of fracking chemicals when a rule issued by the state's Oil and Gas Conservation Commission (WOGCC) went into effect on Sept. 15, 2010.¹¹³ Much of the controversy surrounding fracking secrecy originated in Wyoming, following well-publicized instances of water contamination.¹¹⁴

BASELINE DATA

- Drillers in Wyoming must submit an application for a permit to drill or deepen a well before any fracturing activity can take place. Included in the permit application, the driller must list the anticipated type and quantity of the base fluid, as well as location and other technical information for the planned drilling.
- The well operator must provide to state regulators the chemical additives and proposed rates or concentrations of the additives, along with a description of the additives (e.g., biocide, corrosion inhibitor, or friction reducer), the unique chemical identification number (as listed by the American Chemical Society in the Chemical Abstracts Service Registry), and chemical name.

THE SCOPE OF CHEMICAL REPORTING

- Disclosure is required for all fracking chemicals, not just those with Material Safety Data Sheets, both before and after a well is fracked. (Material Safety Data Sheets are information sheets the Occupational Safety and Health Administration (OSHA) requires manufacturers to provide for chemicals that OSHA has deemed hazardous to workers.)
- The rule only requires well operators and drillers to submit information, not manufacturers.
- Within 30 days after a well is completed, the operator must file a Well Completion or Re-completion Report with state regulators.

SPECIFIC CHEMICAL INFORMATION

- In the Well Completion or Recompletion Report, well operators must include the actual amounts, concentrations, names, and Chemical Abstracts Service Registry numbers of the chemicals added to the fracking fluid, as well as the total amount of fluid used.

TRADE SECRETS PROCESS

- Wyoming's disclosure rule requires drillers to submit a written request for trade secrets protections for information submitted to the WOGCC. The request must specify what information is being claimed as a trade secret, along with justifications and documentation.

¹¹³ Wyoming Oil and Gas Conservation Commission Rules. Chapter 3. <http://soswy.state.wy.us/Rules/RULES/7928.pdf>.

¹¹⁴ Lustgarten, Abraham. "Buried Secrets: Is Natural Gas Drilling Endangering U.S. Water Supplies?" ProPublica, Nov. 13, 2008. <http://www.propublica.org/article/buried-secrets-is-natural-gas-drilling-endangering-us-water-supplies-1113>.

- Wyoming’s disclosure rule does not define trade secrets for purposes of oil and gas drilling but affords them protection from disclosure under the state’s open records law. State law defines trade secrets as information that “derives independent economic value, actual or potential, from not being generally known to and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use; and is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.”¹¹⁵
- Under Wyoming law, there is no administrative process to challenge trade secrets claims. Denials of access to information claimed to be trade secrets can only be challenged in a state district court.

In August 2011, WOGCC announced that the identities of 146 chemicals submitted by 11 companies had been granted trade secrets protections.¹¹⁶ At that time, Wyoming had rejected just two requests for trade secrets protections.

TRADE SECRETS LIMITATIONS

- Since Wyoming’s disclosure rule does not define trade secrets for purposes of oil and gas drilling, there is no mention of disclosing chemical family information for chemicals that are claimed as trade secrets (a chemical family is a general name for a group of chemicals that share similar properties).
- There is also a process to ensure that health care officials and emergency personnel can access trade secrets information when needed.

ONLINE DISCLOSURE

- There is no requirement for the information to be publicly disclosed online.

¹¹⁵ Numerous states use a general definition of trade secrets as laid out in the Uniform Trade Secrets Act, a template for state legislatures drafted by the National Conference of Commissioners on Uniform State Laws.

¹¹⁶ Fugleberg, Jeremy. “Wyoming Regulators Keep 146 Fracking Chemicals Secret.” *Star-Tribune*, Aug. 25, 2011. http://trib.com/news/state-and-regional/article_d6fb3ab9-5705-5159-bde9-947e09c1ebfa.html. Wyoming’s list of approved trade secrets is available online at http://wogcc.state.wy.us/ap_trade_secrets_new.cfm.

Conclusion: Moving Forward



It's been almost 25 years since Ruben McMillian and his wife found black goo in their tap water. Since then, hydraulic fracturing has grown rapidly in the United States. Despite efforts to reassert federal oversight authority, the responsibility for oversight of natural gas drilling resides with state governments at this moment in time.

As citizen pressure for new protections and greater oversight mounts, more state governments are establishing new laws and rules requiring disclosure of the chemicals used in fracking and better monitoring of their potential impacts on local water supplies and public health. However, no state laws or administrative agency oversight rules meet all the criteria for good oversight policy outlined in earlier sections of this report.

The biggest shortcoming of state chemical disclosure laws is the exemption that allows companies to withhold “confidential business information.” This loophole allows companies to conceal specific information on the ingredients in their products by claiming that disclosure would undermine their business model or give competitors an advantage.

Already, gas drillers in Wyoming have used a “trade secrets” claim to resist the state’s disclosure laws, and a legal challenge has been required to try to wrestle the information from them. As we discussed earlier in the report, honoring the public’s right to know and the government’s responsibility to protect public health and water resources will require moving away from *de facto*

automatic exemptions when trade secrets are claimed, toward a new process of public review of business claims.

In a disturbing development for public interest advocates, the American Legislative Exchange Council (ALEC), an organization funded by large corporations and dedicated to moving state legislation that reflects their priorities, appears to be pushing the adoption of state disclosure legislation with broad “trade secrets” exemptions and other provisions so that state legislatures can claim they are acting, while providing very little in terms of real oversight.¹¹⁷

Savvy industry lobbyists appear to be working on exploiting the confusing and sometimes competing authority structures embedded in American federalism. Some state officials are trying to preempt the right of local communities to decide whether they want natural gas drilling in their communities. In Pennsylvania, legislators committed to expanding gas production passed Act 13, a law that preempted the authority of local governments to ban gas drilling. Seven municipalities in Pennsylvania have challenged the constitutionality of the law. In New York, industry challenged the right of local communities to ban natural gas drilling, but state courts have twice upheld the right of towns to ban the activity.

While state chemical disclosure laws should be much stronger and aggressively enforced, ultimately, federal legislation will be needed to guarantee Americans’ water and air quality. Watersheds and shale gas deposits extend beneath state lines, and it is simply unmanageable to have multiple sets of rules governing natural resources unconstrained by jurisdictional boundaries. Federal action is needed.

Two competing pieces of federal legislation have been introduced. One, the Fracturing Responsibility and Awareness of Chemicals Act, or FRAC Act, would reestablish the EPA’s oversight authority of hydraulic fracturing under the Safe Drinking Water Act and would require that drillers disclose the identities of the chemicals used in fracturing fluids. However, an opposing bill, Fracturing Regulations Are Effective in State Hands Act, or FRESH Act, would legislate that only state governments possess the authority to regulate fluid injections and toxic chemicals used in fracking. Given the extreme partisanship of Congress today, legislation to establish more federal oversight of hydraulic fracturing is unlikely.

But even without legislative action, executive agencies could do more. Under the Emergency Planning and Community Right to Know Act (EPCRA) of 1986, the U.S. Environmental Protection Agency (EPA) is required to make information about the release of toxic chemicals above a certain threshold available to the public. The EPA has the authority to require entire industry sectors to report releases of toxic chemicals, and the oil and gas extraction industries could and should be added to the agency’s industry list.¹¹⁸ Moreover, as part of EPCRA, the Toxics Release Inventory (TRI) tracks over 650 toxic chemicals. A 2008 study found that 36 of the 65 fracking chemicals used in Colorado were being tracked under the TRI program.¹¹⁹

The EPA could also use the Toxic Substances Control Act (TSCA) to improve disclosure of fracking chemicals. In November 2011, EPA agreed to require fracking chemical manufacturers to report data on the chemical substances and mixtures used in their products and to submit copies of existing health and safety studies regarding these chemicals. However, it declined to commis-

117 “Resolution to Retain State Authority over Hydraulic Fracturing.” American Legislative Exchange Council (ALEC) document obtained by ALEC Exposed, Center for Media and Democracy. http://www.alecexposed.org/w/images/9/9e/3E11-Resolution_to_Retain_State_Authority_over_Hydraulic_Fracturing_Exposed.pdf.

118 “Expansion of Industry Sectors Covered by the Toxics Release Inventory (TRI), EPCRA section 313.” United States Environmental Protection Agency. <http://yosemite.epa.gov/oepi/rulegate.nsf/byRIN/2025-AA33>.

119 Horwitt, Dusty. “Colorado’s Chemical Injection.” Environmental Working Group, June 2008. <http://www.ewg.org/reports/injection>.

sion its own toxicity studies of the impact of the chemical mixtures used in the exploration and production of natural gas.¹²⁰ So when rules are issued, they will apply to the manufacturers and processors of fracking chemicals, not to the drillers and operators. This means the EPA will not collect information on the quantities of chemicals used at discrete locations. And TSCA contains trade secrets exemptions that the industry will likely use to withhold information on some chemicals.¹²¹

The Department of the Interior has the authority to oversee and regulate all activities on federal lands, and it has recently released a proposed chemical disclosure rule for companies drilling on public lands. The rule improves standards for gas well construction and establishes requirements for wastewater disposal, but its chemical disclosure requirements don't kick in until after drilling is completed, and it contains a trade secrets loophole. Wells drilled using hydraulic fracturing on public land represent about 23 percent of all fracking wells in operation.¹²²

The natural gas extraction industry contains some of the largest and most technologically sophisticated firms in the world. Given the amount of capital and technical expertise they manage, we should be able to expect and demand that they follow the highest standards of construction, equipment operations, and safety in the pursuit of new energy resources. A recent international study on natural gas extraction estimates that building wells to the highest possible safety standards would add about seven percent to construction costs.¹²³ This is a critical investment in America's future that the industry needs to make.

Ultimately, the responsibility for ensuring that the natural gas industry drills safely and responsibly rests with government. More federal oversight is needed, and the most direct and efficient mechanism for establishing oversight would be to close the 2005 "Halliburton loophole" exempting natural gas drilling from the protections of the Safe Drinking Water Act.

Until that happens, oversight responsibility for natural gas drilling has been left in the hands of state governments. To fulfill their responsibility to protect the health and welfare of the people who reside in their states, public officials – legislators and administrators – need to develop strong chemical disclosure rules that meet the principles set out in this report. Disclosing the chemicals associated with natural gas extraction is the necessary first step to ensuring that our search for new domestic energy supplies does not compromise our water resources or threaten the health of our people. People have the right to know if potentially toxic chemicals are being discharged into the environment where they're living and raising children, and government has the responsibility to establish standards and procedures that protect the general welfare. More oversight is needed.

120 "Re: TSCA Section 21 Petition Concerning Chemical Substances and Mixtures Used in Oil and Gas Exploration or Production," Letter from United States Environmental Protection Agency to Earthjustice, Nov. 23, 2011. http://www.epa.gov/oppt/chemtest/pubs/EPA_Letter_to_Earthjustice_on_TSCA_Petition.pdf.

121 However, EPA has recently been active in limiting the claims allowed under this program and has even disclosed large numbers of records previously claimed as trade secrets, allowing the public to review past claims that may be questionable.

122 Broder, John M. "New Proposal on Fracking Gives Ground to Industry." *The New York Times*, May 2, 2012. <http://www.nytimes.com/2012/05/05/us/new-fracking-rule-is-issued-by-obama-administration.html>.

123 Golden Rules for a Golden Age of Gas. International Energy Agency, 2012. http://www.worldenergyoutlook.org/media/weowebsite/2012/goldenrules/WEO2012_GoldenRulesReport.pdf.

Appendix:

Key Features of State Hydraulic Fracturing Chemical Disclosure Policies and Proposals

State	When does the rule become effective?	Who is chemical data reported to?	Is there chemical disclosure before fracking begins?	Is the base fluid volume disclosed?	Is the unique chemical ID number disclosed?	Is the chemical trade name disclosed?	Is the chemical concentration disclosed?
AR	Jan. 15, 2011	State government	Limited disclosure	Yes	Yes (except trade secrets)	Yes	Yes, but only the percent by volume of the total products used
CA*	N/A	State government	No	Yes	Yes	Yes	Yes
CO	Apr. 1, 2012	FracFocus.org	No	Yes	Yes (except trade secrets)	Yes	Yes (except trade secrets)
IL*	N/A	State government and FracFocus.org	No	Yes	Not specified	No	Yes, but only for chemicals with Material Safety Data Sheets
IN	July 1, 2012	State government	No	Yes	Not specified	No	No
LA	Oct. 20, 2011	State government or FracFocus.org	No	Yes	Yes, but only for chemicals with Material Safety Data Sheets (except trade secrets)	Yes	Yes, but only for chemicals with Material Safety Data Sheets (except trade secrets)
MI	June 22, 2011	State government	No	Yes	Not required, but often disclosed	Not required, but often disclosed	Yes, but only a range, not the concentrations of individual chemicals
MT	Aug. 27, 2011	State government or FracFocus.org	Limited disclosure	Yes	Yes (except trade secrets)	Yes, but only for principal chemicals in fracking fluid	Yes (except trade secrets)
NE*	N/A	State government	No	Yes	Yes (except trade secrets)	No	No
NM	Feb. 15, 2012	State government	No	Yes	Yes (except trade secrets)	Yes	Yes (except trade secrets)
NY*	N/A	State government	Yes	No	Yes (except trade secrets)	No	Yes (except trade secrets)
ND	April 12, 2012	FracFocus.org	No	Yes	Yes (except trade secrets)	Yes	Yes (except trade secrets)
OH	June 11, 2012	State government	No	Yes	Yes	Yes	Yes
OK	July 1, 2012	State government	No	Yes	Yes (except trade secrets)	Yes	Yes
PA	Feb. 8, 2012	State government and FracFocus.org for unconventional wells only	Upon request, operators are required to submit limited information to the Dept. of Environmental Protection	Yes	Yes (except trade secrets)	Yes	Yes (except trade secrets)
TX	Feb. 1, 2012	FracFocus.org	No	Yes	Yes (except trade secrets)	Yes	Yes, but only for chemicals with Material Safety Data Sheets
WY	Sept. 15, 2010	State government	Yes	Yes (except trade secrets)	Yes (except trade secrets)	Yes	Yes (except trade secrets)

*proposed

Key Features of State Hydraulic Fracturing Chemical Disclosure Policies and Proposals (continued)

State	Is the chemical family of trade secrets chemicals disclosed?	Are all chemicals disclosed or only those with Material Safety Data Sheets?	Is the manufacturer name disclosed?	Is upfront trade secrets substantiation required?	Are challenges to trade secrets allowed?	Is information required to be available online?	Is the information required to be searchable online?
AR	Yes	All	Yes	Yes	No details	No, but currently state is posting some information on its website	No
CA*	N/A	All	Yes	No details	No details	Yes, on state government site	Yes
CO	Yes	All	Yes	Yes	Yes	Yes, on FracFocus.org	Yes, by January 2013
IL*	No	All	No	No details	Yes, but limited to landowners, adjacent landowners, government agencies only	Yes, on FracFocus.org	No
IN	N/A	All	No	No details	No details	No	No
LA	Yes	All	Yes	No details	No details	Yes, on FracFocus.org	No
MI	No	Only chemicals with Material Safety Data Sheets	No	No details	No details	No, but currently state is posting Material Safety Data Sheets on its website	No
MT	Yes, unless chemical family is a trade secret	All	No	No details	No details	If companies report info to FracFocus.org, info is online. If they report to the state government, there is no requirement for the info to be posted online.	No
NE*	Yes	All	No	To be determined by regulators	Yes, but limited to landowners, adjacent landowners, government agencies only	Yes, on state government site	No
NM	No	Only chemicals with Material Safety Data Sheets	Yes	No details	No details	No	No
NY*	No	Only chemicals with Material Safety Data Sheets	No	Yes	Yes	Yes, but no details given	No details given
ND	No	Only chemicals with Material Safety Data Sheets	Yes	No details	No details	Yes, on FracFocus.org	No
OH	No	All	Yes	No	No details	Yes, on state government site	No
OK	Yes	All	Yes	Yes, but only if the state requests it	No details	Yes, on FracFocus.org	No
PA	Yes	All	Yes	No details	Yes	Yes, on FracFocus.org for unconventional wells only	Yes, by January 2013
TX	Yes, unless chemical family is a trade secret	All	Yes	No details	Yes, but limited to landowners, adjacent landowners, government agencies only	Yes, on FracFocus.org	No
WY	No	All	No	No details	No details	No	No

*proposed

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