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**Jim Rubin and Jennifer Morrissey on
Fracking in the Spotlight: What Regulatory Developments Can
Be Expected and How Companies Can
Best Position Themselves**

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Background. Natural gas is increasingly becoming a major source for power generation in the United States. In 2009, natural gas fueled more than 20% of the nation's annual electricity production.¹ That percentage is expected to rise significantly as older coal plants are retired and coal generation is subject to ever more stringent regulations. The nuclear renaissance in the U.S. appears stalled due to rising construction costs and safety issues in the aftermath of the nuclear crisis in Japan, and widescale dependence on renewables is not yet economic. At the same time, natural gas has become our nation's most cost-effective power generation option in terms of both fuel and construction costs. Natural gas reserves are becoming more plentiful as techniques are developed to reach unconventional shale gas sources, such as found in the Marcellus, Haynesville and Barnett shale deposits. The gas has always been there, up to 10,000 feet underground, but the development and increased use of horizontal drilling and hydraulic fracturing – or “fracking” – has made these large deposits newly accessible.

Fracking is not without challenges and controversies. The development of our nation's natural gas supplies will depend on the regulatory framework that develops in this area.

Fracking 101. Fracking itself is not a new technology. It has been used in the oil and gas sector for over 60 years. Fracking is a well-stimulation technique that employs high pressure fluids – water, sand and a small mixture of chemicals – to create and prop open small fissures in shale rock, providing a path for gas entrapped within underground formations to move easily to perforated wellbore for extraction. By combining fracking with new horizontal drilling techniques, companies are now able to reach deep supplies of shale gas that in the past would have not been physically or economically accessible. The process also allows access to far greater quantities of gas with much less surface disruption than with vertical drilling alone.

1. See Energy Information Administration (EIA) Annual Energy Outlook 2011 Early Release Overview, available at ([http://www.eia.gov/forecasts/aeo/pdf/0383er\(2011\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383er(2011).pdf)). According to EIA, coal comprises approximately 45% of current generation, nuclear 20% and 12% renewables (including hydropower).

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But natural gas production, even with the new techniques, remains a heavy industrial process with significant environmental impacts. For one, fracking requires large amounts of water – between 2.4 and 4 million gallons for each well. This water can become contaminated with traces of fracking chemicals as well as substances occurring naturally in the subsurface, including metals and radioactive materials. A significant amount of water remains in the well after fracking, while the water that returns to the surface, or “flowback,” contains concentrated brine and other contaminants and must be properly handled, treated or disposed. Companies have begun to use recycled water, but this, too, requires storage and eventual disposal as the water becomes too contaminated for future use.

The Controversy Over Fracking. The potential for pollution of drinking water aquifers as well as surface waters has created much of the controversy surrounding fracking, though gas production can also affect air quality through the use of drilling machinery, heavy trucks, and so forth. Added to this concern is the fact that many companies use a variety of chemicals in their fracking fluids that are considered proprietary, leading to a concern that undisclosed toxic chemicals are being released into the environment.

Concerns over the potential contamination of surface and groundwater have grown exponentially over the last several years as gas drilling has proliferated near urban areas in the northeast that overlie the Marcellus Shale formation. Even though the fracking activity takes place far below potable aquifers, there is still the potential for leaks from improper concrete seals in the well bore and other construction defects. Responding to these concerns, several states and municipalities have recently banned, at least temporarily, further drilling (see below). A handful of lawsuits have been filed in a number of states alleging that fracking activity is responsible for contamination of wells and harm to the health of residents near drilling sites.²

More recently, a number of press reports, including a series in the *New York Times*,³ have generated new controversy over the disposal of large amounts of fracking wastewater into water treatment facilities, which then release the water into rivers. The arti-

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2. See, e.g., *Berish v. Southwestern Energy Production Co.*, [2011 U.S. Dist. LEXIS 10626](#) (M.D. Pa. Feb. 3, 2011); *Fiorentino v. Cabot Oil & Gas Corp.*, [2010 U.S. Dist. LEXIS 120566](#) (M.D. Pa. Nov. 15, 2010) (denying motion to dismiss).
 3. See, e.g., I. Urbina, “Regulations Lax as Gas Wells’ Tainted Water Hits Rivers,” *New York Times* (Feb. 26, 2011), available at (<http://www.nytimes.com/2011/02/27/us/27gas.html>); I. Urbina, “Wastewater Recycling No Cure-All in Gas Process,” *New York Times* (Mar. 1, 2011), available at (www.nytimes.com/2011/03/02/us/02gas.html).

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cles cite federal and state studies identifying naturally occurring radioactive materials and other contaminants that may overwhelm or fail to be neutralized by the treatment plants and thus flow into the environment downstream of water treatment facilities.

Finally, concerns have been raised about precisely how much water companies are actually recycling, how that water is eventually disposed of, and the potential impacts from use of recovered brine.⁴

Current Regulation of Fracking. One public misconception about fracking is that it is unregulated, which has added fuel to the controversy. This misconception is rooted in the fact that at the federal level, hydraulic fracturing is specifically exempted from the federal Safe Drinking Water Act (SDWA), except if diesel is used in the process.⁵ Drilling fluids, produced waters, and other wastes associated with the exploration, development, and production of natural gas are exempt from the hazardous waste provisions of the Solid Waste Disposal Act,⁶ and hydrogen sulfide air emissions from oil and gas drilling are also not regulated as hazardous air pollutants under the federal Clean Air Act.⁷

In fact, most regulation of drilling activity occurs at the state level. State oil and gas permitting and oversight regulations control the issuance of drilling permits and the required practices for drilling and operating the wells, including the design and installation of cement casings through water-bearing zones and the disclosure of chemicals used in the process.

Recently, some states with significant drilling and fracking operations have stepped up oversight. For example, due to concerns over groundwater contamination, New York has

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4. See, e.g., D. Hopey, "Bromide: A Concern in Drilling Wastewater," Pittsburgh Post Gazette (Mar. 13, 2011), (<http://www.post-gazette.com/pg/11072/1131660-113.stm>).
 5. [42 U.S.C. § 300h](#)(d) excludes from the SDWA "the underground injection of fluids and propping agents (other than diesel fuels) pursuant to [fracking operations] related to oil, gas or geothermal production activities." If diesel is used, the underground injection of water is regulated under the SDWA's Underground Injection Control (UIC) program or by states with primary UIC enforcement authority. This provision negated a ruling that hydraulic fracturing of coal bed methane is subject to the UIC program of the SDWA. See Legal Environmental Assistance Foundation v. EPA, [118 F.3d 1467](#) (11th Cir. 1997). Companies also cannot inject hazardous materials into drinking water aquifers.
 6. [42 U.S.C. § 6921](#)(b)(2)(A).
 7. [42 U.S.C. § 7412](#)(n)(5). While some emissions requirements exist for individual wells, oil and gas drilling is also exempted from aggregated "major source" requirements under the National Emission Standards for Hazardous Air Pollutants ("NESHAP"). *Id.* at § 7412(n)(4).

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taken a very cautious regulatory approach to fracking. By preventing issuance of new permits for fracking in the Marcellus Shale underlying the state, New York has created a *de facto* moratorium on the process.⁸ The state's environmental agency is conducting a study on the environment impacts of fracking, and the Cuomo administration says it will not lift the moratorium until that study is completed in June 2011. New York further stated that it will not wait for the results of the EPA study.⁹ State regulations also govern the drilling process and require the disclosure of chemicals used in the process.¹⁰

Pennsylvania has a particular interest in fracking, with most of the state overlying the Marcellus Shale play, and that state has taken a vigilant but more business-friendly approach. State regulations requires a permit to drill, including a list of chemicals and a description of wastes and practices, and state requirements apply to waste storage and disposal of flowback and other materials on land and in state waters.¹¹ Other regulations on pollution liability make a pre-drilling survey a business necessity to establish a baseline in case of a release of contaminants into the environment.¹²

Also in the northeast, an interstate compact among Pennsylvania, New York, New Jersey, Delaware, and the federal government has required special approval of natural gas drilling in the Delaware River Basin region, which has resulted in a *de facto* moratorium, as permits are seldom granted.¹³

Texas has a longer history of interaction between regulators and the gas industry. Overlaying the Haynesville, Barnett, and Eagle Ford Shale plays, Texas has taken an active

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8. The New York legislature had sought a ban on all fracking activity but this was vetoed by Governor David Paterson. See S. Hoye, "New York governor pauses 'fracking'," CNN.com, (<http://www.cnn.com/2010/US/12/13/new.york.fracking.moratorium/index.html>).
 9. N. Reisman, "State continues cautious drilling approach," Press & Sun Bulletin, Feb. 8, 2011, (<http://www.presconnects.com/apps/pbcs.dll/article?AID=2011102080383>).
 10. See H. Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and gas Production and the Need to Revisit Regulation*, 20 Fordham Envtl. L. Rev. 115, 159 (2009).
 11. Pennsylvania Department of Environmental Protection, Oil and Gas Operators Manual, at § 76, 78-80; 25 P.S. § 78.56.
 12. 58 P.S. §§ 601.208(c), (d)(1). Pennsylvania recently rescinded a rule that considered different pieces of machinery at a site as one source of pollution for purposes of determining required controls. The new rule will consider each source of pollution at a site individually, which might allow an easing of regulatory burdens on drilling companies. See "Pennsylvania: Corbett administration relaxes air pollution rules for drilling," Greenwire (Feb. 28, 2011).
 13. There are signs that the Delaware River Basin is looking to open up the region more to drilling, but efforts have been criticized by state leaders. See Report, DRBC, Natural Gas Drilling in the Delaware River Basin (Oct. 15, 2010), (<http://www.state.nj.us/drbc/naturalgas.htm>).

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role in regulating fracking, including a proposal to require disclosure of chemicals;¹⁴ however, regulators have supported the industry against charges by EPA that drilling in a specific site has contaminated local drinking water sources.¹⁵

Along with individual state regulation, federal law also plays a significant role governing many key aspects of fracking. For example:

- Surface water discharges and contaminated stormwater runoff are regulated under the Clean Water Act's National Pollutant Discharge Eliminate System (NPDES). Under the Clean Water Act, flowback must be treated prior to discharge into surface water.
- The emissions from engines, gas processing equipment and other sources associated with drilling and production are regulated by the Clean Air Act.
- The release of hazardous substances is regulated under the Comprehensive Emergency Response, Compensation and Liability Act (CERCLA), and the Emergency Planning & Community Right-to-Know Act requires reports of regulated chemicals held in certain quantities to local and state emergency responders.
- The National Environmental Policy Act (NEPA) requires an assessment of impacts from drilling on federal lands.¹⁶

In addition to these regulations, EPA is planning a comprehensive study on the lifecycle of fracking, from acquisition of the water, through the mixing of chemicals and actual fracturing, to the post-fracturing stage.¹⁷ As part of its analysis, EPA plans to conduct

14. See "Natural Gas: Texas bill on fracking disclosure gets broad support," Greenwire (Mar. 16, 2011). Wyoming was the first state, in August 2010, to require administrative disclosure of substances used in fracking fluids.

15. See M. Passwaters, "Texas Railroad Commission contradicts EPA, says Range did not pollute Barnett wells," SNL Daily Gas Report (Mar. 16, 2011).

16. Section 390 of the Energy Policy Act of 2005, [42 U.S.C. § 15492](#) establishes several categorical exclusions for drilling in national forest lands, e.g. where surface disturbances are less than 5 acres and broader assessments have been made or where drilling has already occurred or has been assessed.

17. See Office of Research and Development, *Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources* (Feb. 2011) at 13 ("EPA Draft Plan"), available at (<http://water.epa.gov/type/grounwater/uic/class2/hydraulicfracturing/index.cfm>).

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case studies of places where critics reported problems with hydraulic fracturing during scoping hearings EPA held in 2010. The case studies could involve field sampling, modeling and investigations to determine the potential relationship between the concerns raised in the past (or potentially in the future) and fracking. EPA has sent the plan to its Science Advisory Board for review and will make any revisions and begin the review promptly. The study itself will not be completed until 2012, with a follow-up in 2014.¹⁸ This is not the first time EPA has analyzed the potential impacts of drilling on groundwater,¹⁹ but it represents the most comprehensive approach the agency has taken to date. EPA's proposal does not cover all potential risks of natural gas drilling and production, such as air quality, aquatic and terrestrial ecosystem effects, seismic risk, public safety concerns, occupational risks, or economic effects, which the EPA states should be examined in the future.²⁰

EPA is also beginning to play a more significant regional oversight role with regard to the handling of fracking wastes in certain states. In early March, in apparent response to the controversy raised by the articles on radioactive contamination, EPA Region III Regional Administrator Shawn Garvin sent a letter to the Acting Secretary of the Pennsylvania Department of Environmental Protection (PADEP) questioning the testing that the state agency had done on fracking wastewater sent to municipal treatment plants. The letter stated that "several sources of data . . . indicate that the wastewater . . . contains variable and sometimes high concentrations of materials that may present a threat to human health and aquatic environment, including radionuclides, organic chemicals, metals and total dissolved solids" that may not be completely removed by treatment facilities.²¹ EPA requested that PADEP conduct sampling for radionuclides at facilities receiving Marcellus Shale fracking wastewater and to re-open NPDES permits for these treatment plants to ensure they can effectively process and treat such wastewater. EPA stated it would take additional steps, including sending information requests to treat-

18. EPA Draft Plan at vii-viii.

19. In 2004, EPA conducted a study of fracturing as applied to coalbed methane deposits, which are typically located closer to the surface than shale gas. EPA did not do its own testing on groundwater but rather surveyed state officials to determine if problems arose and concluded that hydraulic fracturing posed little or no threat to public health. See *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs* (EPA 816-R-04-00), available at (http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_coalbedmethanestudy.dfm).

20. EPA Draft Plan at viii.

21. EPA, Letter from Shawn Garvin, Regional Administrator to the Hon. Michael Krancer, Acting Secretary, PADEP, March 7, 2011. Environmental groups have threatened suit against 11 treatment facilities in Pennsylvania for treating fracking wastes without a permit. "Water Pollution: Planned Pa. suit aims to halt discharges of Marcellus waste," Greenwire (Mar. 11, 2011).

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ment facilities, conducting inspections, providing guidance, and other actions needed to ensure that the treatment facilities can adequately handle the wastewater.

EPA has also indicated plans to proceed with permit application review and issuance of UIC wells for disposal of fluids associated with gas production, to inspect permitted disposal wells, and to enforce the existing UIC permits.²² The agency also continues to pursue compliance with a September 2010 request to several hydraulic fracturing service companies for information on the identity and quantity of chemicals used in each company's fracking fluids.²³

What Regulation Can be Expected in the Future. It appears that the current concerns raised over fracking are not likely to go away in the short term and that some type of further regulation at the federal and state level may be imposed in the future. This creates continuing uncertainty in the industry.

At the federal level, EPA is unlikely to push for greater regulation until its studies are completed, after 2014, barring any unforeseen major accident or turn of events. At the same time, EPA regions will no doubt continue to push for more stringent monitoring and assessment where concerns have been raised about the health and environmental effects of specific projects. Ultimately, given EPA's publicly stated concerns, political pressure for regulation, and EPA's ongoing data-gathering efforts, the agency may, at the very least, focus on further disclosure of chemical use, improvement of waste disposal practices, and greater assessment of potential impacts from the technique. The Department of the Interior may also get into the act by establishing requirements for disclosure of chemicals and assessment of impacts for drilling on federal lands.²⁴

Meanwhile, efforts are underway in both houses of Congress to repeal the SDWA exemption and require EPA to regulate fracking under the SDWA, as well for the full disclosure

22. EPA Region VIII also recently commented on a draft plan to start gas drilling inside a Wyoming national forest, expressing concern over the potential impact of drilling on the aquifer and domestic water wells and urging the Forest Service to require groundwater monitoring. See "EPA: Groundwater concerns about Hoback gas wells," The Associated Press State & Local Wire (Mar. 16, 2011).

23. See Press Release, US EPA, EPA Formally Requests Information From Companies About Chemicals Used in Natural Gas Extraction (Sept. 9, 2010), available at (<http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/ec57125b66353b7e85257799005c1d64!OpenDocument>).

24. Following a public session in late 2010 sponsored by the Department, Secretary Salazar suggested that Interior may be heading in that direction. See, e.g., P. Taylor, "BLM chief says fracking is safe but wants disclosure, blowout regs," Land Letter (Mar. 10, 2011).

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of chemicals used in the process. Democrats in the House and Senate have introduced the Fracturing Responsibility and Awareness of Chemicals Act (“FRAC Act”) to accomplish these goals.²⁵ Democrats in the House have also launched parallel legislation to end the Clean Air Act exemptions for hazardous air emissions related to drilling and to require high-level controls on emissions from large groupings of wells.²⁶ With the current conservative majority in the House, it is unlikely that either of these proposals, which are perceived by many as anti-industry and anti-gas-development, will be enacted.

Given the slow development of federal policy and the political debate over the future of natural gas, it is likely that further regulatory activity will center in the states that overlie the significant shale gas plays. Every interested state will provide some degree of control over drilling, but all will face the conflict between, on the one hand, trying to balance the development of a key alternative to coal and a source of revenue for the state, and, on the other hand, dealing with concerns over increased drilling and attendant environmental impacts. Ultimately, most states will probably seek to resolve this conflict by regulating drilling techniques and waste disposal and by requiring what now are considered “best practices” such as chemical disclosure and greater use of recycled water. But states will also need to ensure that their regulatory structures are economically and technically feasible and do not ultimately block further development of this important energy source.

What Companies Can Do to Best Position Themselves in the New Regulatory Climate. Faced with public scrutiny and an uncertain but inevitable regulatory scenario, counsel to shale gas drillers and producers need to advocate proactive policies that will promote further development of the energy source in a protective yet economically sustainable manner. Best practices include:

- Development of, investment in, and promotion of high-level industry standards for drilling and well designs, drilling techniques and practices, equipment, waste handling, recycling and waste disposal. Companies should leave no doubt that they are committed to protecting and maintaining clean and safe drinking water supplies.²⁷

25. M. Soraghan, “Natural Gas: House, Senate Dems reintroduce the ‘FRAC Act,’” *Greenwire* (Mar. 16, 2011).

26. M. Soraghan, “Oil and Gas: ‘FRAC Act’ sponsors take aim at air pollution from drilling,” *Greenwire* (Mar. 18, 2011).

27. The American Petroleum Institute (“API”), for example, is working on establishing standards based on the best practices of some companies. These include standards for well construction and integrity to isolate underground sources of drinking water from drilling impacts; standards of design and construction of access roads and well locations; guidelines for handling and treating wastewater and process flu-

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- Support for full disclosure of chemicals used in the process (though not necessarily precise proprietary formulas) and a transparent and publicly available assessment of the risks from these chemicals.
- Further assessment and monitoring of the effects of drilling, especially in regions of concern, to establish baselines and help demonstrate that fracking is not likely to cause groundwater or surface water contamination. To enhance credibility, this should be done in conjunction with the EPA and state authorities for credibility purposes.
- Assistance in efforts to test wastewater and improve the capabilities of publicly owned treatment works to treat fracking-related wastewater discharges.
- Taking ownership of situations where contamination does appear to have occurred or is alleged from improper drilling techniques or other industrial activities. This includes helping communities analyze the contamination and causation, working with regulators, helping to mitigate contamination even when causation may not be clear, and simply providing a forum for public dialogue.

To best accomplish these goals, practitioners should counsel their clients to become visibly involved in the regulatory process at the outset, working wherever possible to ensure that future programs meet their clients' needs. Ultimately, these companies must play a lead role in educating the public and the regulators about the actual risks inherent in the fracking process, how those risks may be minimized, and the positive aspects of natural gas development. Taking a leading role in monitoring, risk assessment, and developing industry standards may be the best long-term approach to developing this important resource.

For additional information on fracking, see [1-2 Williams & Meyers, Oil and Gas Law § 228](#)

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including climate change law and policy, air pollution, natural resource laws, and federal, state and citizen enforcement matters, particularly related to the energy sector. He also provides counsel to businesses on domestic and international compliance matters in the environmental context. He served for 15 years in the Environment & Natural Resources Division of the U.S. Department of Justice.

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