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Comment
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*1039 A NATION FRACTURED: DRILLING INTO THE DEBATE OVER FRACKING

INTRODUCTION

The production of shale natural gas in the United States has boomed since the recent development of hydraulic fracturing, commonly known as "fracking." Fracking is the method used to extract natural gas from underground rock formations. It involves the high-pressure injection of water, sand, and chemicals deep underground, fracturing the rock to release trapped gas that then flows up to the surface. Although hydraulic fracturing has been around for decades, a recent technological development in a horizontal drilling technique has substantially increased recoverable deposits that previously would have been uneconomical to produce.

Natural gas is an important part of the U.S. economy and its energy sector, providing over 25 percent of the country's total energy.[1] Due to the fracking developments, shale gas production has risen from a trivial amount just a few years ago to accounting for almost 30 percent of the total U.S. natural gas production.[2] Some have called the developments a "game changer" and a "natural gas revolution."[3] On March 31, 2011, President Obama declared that "recent innovations have given us the opportunity to tap large reserves--perhaps a century's worth" of shale gas.[4] The surge in production has led to sizeable economic benefits for states, lower gas prices, an increase in domestic jobs, improved energy security for the United States, and the potential for enhanced national security due to the opportunity of substantial domestic production, less reliance on foreign import, and increased foreign investment.[5] In addition, industry leaders think it will help the "transition from dirty fossil fuels to clean, renewable sources of energy."[6]

***1040** However, the rapid expansion of the industry has left regulations over the production process lagging, resulting in escalating public turmoil and intense debate over the environmental and health concerns associated with fracking. For example, New York recently received over 20,000 public comments on its proposed rules to regulate fracking.[7] Mainly, concern is that methane (a major component of natural gas) and chemicals in the fracking injection fluid can contaminate drinking water and surface water, as well as increase air pollution.[8] The recent documentary *Gasland* shows a scene where a person ignites his kitchen sink water--usually an indication of high levels of gas.[9] The public and environmental advocates think state and federal regulations are inadequate, with some people advocating for a complete ban on fracking. Indeed, states have actually attempted bans, and a few, as recently as January 2012, have successfully implemented moratoria on drilling until further evaluation of its environmental impact have been completed.[10]

While the apprehension is valid, recent public discourse has clouded the facts surrounding the production process. Nevertheless, given the amount of negative publicity fracking has received and the obvious opposition by many citizens, maintaining the status quo is not a viable option for the government and drilling companies. Environmental regulations must be given the chance to catch up to the rapid development of the industry. Furthermore, if we want to successfully develop our large supply of natural gas and realize its enormous benefits, then a balanced and informed nationwide evaluation of the

effects of fracking needs to be conducted. We must find ways to continually reduce the adverse impacts and conduct operations in a safe and environmentally cognizant manner.

I. POTENTIAL ENVIRONMENTAL IMPACTS

The most widely debated environmental issue associated with fracking is the contamination of drinking water by fracking fluid chemicals and methane. When a well is fracked, some of the fluid injected into the ground comes back up to the surface as wastewater along with the extracted natural gas. Although the fluid is mostly water, a small percentage contains several substances that are potentially hazardous.[11] Many of the ***1041** constituents, however, are unknown to the public since companies claim the contents are proprietary, providing for business advantages over competitors.[12]

Yet, there are many phases throughout the production process where these toxins can contaminate ground and surface water. Faulty equipment, poor well construction, and underground pipe blowouts can cause methane and wastewater chemicals to leak into shallow drinking wells near drilling sites.[13] A Duke University study, for example, found that methane levels in shallow drinking water wells were 17 times higher near drilling areas than non-drilling areas.[14]

In addition, wastewater *disposal* can be a harmful and difficult process, given that a single well may require up to four to five million gallons of fracking fluid.[15] Many companies will store the wastewater in holding pits or tanks, or inject it back into underground wells.[16] There is a substantial risk of potential overflow or leakage during the disposal and storage process.[17] Wastewater is also sent to municipal wastewater treatment facilities, which are often not equipped to adequately remove these chemicals from the water.[18] This partially treated water is then released into surface water from the wastewater facilities.[19] For example, Pennsylvania, one of the largest gas fracking states, produced more than 1.3 billion gallons of wastewater over the past three years, most of it being transported to treatment plants that were unequipped to remove the toxic chemicals and "at least 12 plants in three states discharged this partly treated waste into rivers, lakes and streams."[20]

A second concern with shale gas production is the release of volatile organic compounds (VOCs), toxic air pollutants, and methane--a potent greenhouse gas (GHG)--into the ambient air.[21] The increased use of natural gas would displace the need for coal and other fossil fuels, thereby decreasing carbon dioxide emissions, the most prominent GHG. Controversial studies have shown, however, that methane may actually trap more heat by weight than carbon dioxide--it could have 33 times greater warming potential over a 100-year time scale and 105 times greater potential over 20 years.[22] Needless to say, more studies need to be conducted to determine the scale of emissions of VOCs, air toxics, and methane.

*1042 II. RULEMAKING HISTORY AND CURRENT TRENDS

Congress passed on the opportunity to regulate hydraulic fracturing when it enacted the Energy Policy Act in 2005. The law amended the Safe Drinking Water Act (SDWA) to exclude non-diesel fracking from the Underground Injection Control (UIC) program, creating what is known as the "Halliburton Loophole."[23] However, the Environmental Protection Agency (EPA) has recently revisited its authority over fracking. It is currently conducting studies on whether fracking has contaminated drinking water, with preliminary findings expected in 2012.[24] It also expects to release new air pollution regulations this year for the oil and gas industry.[25]

The Fracturing Responsibility and Awareness of Chemicals Act (FRAC Act), introduced to Congress in 2009, proposed to repeal the loophole in the SDWA.[26] It also would require the EPA to regulate the injection process under the SDWA, and proposes to mandate full disclosure of the chemical constituents (but not the proprietary chemical formulas) used in the fracking fluid.[27] Nevertheless, no action has been taken on the FRAC Act. As a result, until any formal federal laws are implemented, regulation is, as it mainly has been, left up to the states.

So far, certain states have made considerable headway to regulate some components of natural gas extraction. Some states are moving to require, as part of the permitting process, disclosure of the chemicals used in fracking fluids.[28] Wyoming, Arkansas, Michigan, Texas, West Virginia, and Montana have implemented disclosure rules, with Louisiana, Colorado, and New Mexico expected to follow.[29] The detailed reporting of these chemicals is publicly available on independent online registries, such as FracFocus.org.[30] In addition to chemical-disclosure laws, a few states are moving toward requiring more-detailed tracking and disclosure of the amount of wastewater produced and ensuring parties properly handle it during

the transportation, disposal, and storage process.[31]

However, states still lack adequate information concerning whether fracking itself causes groundwater contamination. Many experts claim contamination is not likely because "shallow drinking water supplies generally are considered well enough removed and isolated ***1043** from shale formations thousands of feet underground."[32] Nonetheless, citizens have filed a multitude of lawsuits alleging groundwater contamination, and this number is rapidly increasing.[33] Undoubtedly, further studies need to be conducted, and in fact, several states and companies have evaluations currently in progress.

III. REGULATORY PROPOSAL

Regulators need to put aside the recent controversy and public debate over fracking and organize a comprehensive, scientific, and unbiased inquiry into the environmental impact of the natural gas production process. The government and the industry should work collectively to create a sound regulatory system and instill a culture of best practices and full public disclosure. The approach should foster a policy and practice of data monitoring, continuously reducing environmental impact, and improving safety in operations.

First, improving public information about shale gas operations entails requiring disclosure of the chemical constituents in the fracking fluid.[34] This mandatory disclosure should also provide quantitative data to ensure achievement of best practices and continuous reduction in environmental impact. Creating a website to report all information to the regulatory agencies and the public would be the ideal mechanism.[35] As stated above, some states already require companies to report the chemical ingredients used in fracking fluid. But the federal government needs to mandate that *all* states implement disclosure rules. Reintroducing the FRAC Act to Congress would help achieve this. Further, there should only be one centrally funded database or registry where the public can find all the information available. If the federal government cannot fund this meager expense, then private companies should have to pony-up.

Second, the EPA, state regulators, and the industry should work collectively to analyze the overall GHG footprint of natural gas, specifically the levels of methane and other ozone precursors emitted throughout the process. This should include determining how much methane is vented, flared, and captured. Regulatory agencies should then implement air pollutant standards and require drillers to collect and publicly report emissions data. Studies are already under way, and the EPA is currently in the process of promulgating nationwide air pollution regulations under the Clean Air Act (CAA) for natural gas ***1044** fracking.[36] Again, regulators should work with the industry to reduce emissions by using proven technologies, supplying accurate information, and implementing best practices.[37]

Third, the industry should continue to develop best practices in operations to assure protection of water and air quality. This should include an integrated water management system. Comparable to tracking hazardous substances under the Resource Conservation and Recovery Act (RCRA), operators should be required to monitor and report the composition and location of the fracking fluid and wastewater from "cradle to grave."[38] In addition, companies should obtain pre-drilling water quality measurements of the surrounding water sources. This can be used as a measuring and monitoring tool to study the effects fracking has on groundwater and to ensure toxic chemicals do not contaminate local water supplies. Moreover, the industry should work with regulators to further implement best practices in well development and construction, especially in areas where the causes of contamination frequently arise, such as well-casing, cementing, and pressure management.[39]

Fourth, to incentivize continuous development of best practices, the federal government should implement an enforcement system, penalizing polluters and requiring responsible parties to pay for cleanup costs of contamination. This could be modeled after the enforcement mechanisms and strict liability principles of the Superfund regulations.[40] Enforcement laws will motivate companies to develop the most environmentally conscious technology for equipment and safety mechanisms.

Finally, one of the concerns that may come with accomplishing these objectives is--who is going to pay for all of this? Funding may be a significant hurdle given the current state of the economy and our nation's recent budget overhaul. However, given the rapid technological developments of the industry, many improvements and efficiencies in best practice should occur organically. For example, there has been an industry switch from single well to pad-based drilling and production of multiple wells.[41] In addition, states could impose a fee on natural gas leases to fund studies and R&D. For example, two state agencies in Maryland recently recommended that the state implement a fee-based program to fund environmental studies related to fracking.[42]

CONCLUSION

The vast economic, energy, and environmental benefits of natural gas will fuel the sustained expansion of drilling operations. And undoubtedly the pace of production will ***1045** progress dramatically over the next 20 years.[43] However, there are many aspects of the process that can lead to increasingly more contamination and lawsuits. Public discourse and concern will continue to grow as shale gas production expands. To ensure public trust, the government and the industry must be committed to discovering and disclosing the impacts of fracking while minimizing and mitigating risks to the environment and public health.

Footnotes

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1 U.S. ENERGY INFO. ADMIN., Annual Energy Review 2010, Table 1.3, *available at* http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb0103.

2 DEPT. OF ENERGY, SECRETARY OF ENERGY ADVISORY BOARD SHALE GAS PRODUCTION SUBCOMMITTEE 90-DAY REPORT 6 (2011), *available at* http:// shalegas.energy.gov/resources/081811_90_day_report_final.pdf.

3 FOOD & WATER WATCH, THE CASE FOR A BAN ON GAS FRACKING 5 (2011), *available at* http://documents.foodandwaterwatch.org/frackingReport.pdf.

4 DEPT. OF ENERGY, *supra* note 2, at 5.

5 *Id.* at 1.

6 FOOD & WATER WATCH, *supra* note 3, at 1.

7 Mireya Navarro, *Evaluating Feedback on Fracking Rules*, N.Y. TIMES GREEN BLOG, Jan. 13, 2012, http:// green.blogs.nytimes.com/2012/01/13/evaluating-feedback-on-fracking-rules.

8 *See, e.g.*, FOOD & WATER WATCH, *supra* note 3, at 2.

9 GASLAND (Jan. 18, 2012), http://gaslandthemovie.com/trailer; FOOD & WATER WATCH, *supra* note 3, at 7.

10 New York and New Jersey have both imposed temporary bans until studies are completed. Adam Orford, *Hydraulic Fracturing: Legislative and Regulatory Trends*, MARTEN LAW (Oct. 4, 2011), http:// www.martenlaw.com/newsletter/20111004-fracking-roundup; Lorraine McCarthy, *New Jersey Governor Signs One-Year Ban On Hydraulic Fracturing to Allow for Study*, 11 DEN A-9, Jan. 19, 2012, at A-9.

11 *See, e.g.*, Brent Allen & Lesley Lawrence-Hammer, *Hydraulic Fracking and Marcellus Shale: Drilling for Mass Torts?*, 13 NO. 1 ABA ENVTL. LITIG. & TOXIC TORTS COMM. NEWSL. (A.B.A., Chi., Ill.) Dec. 2011, at 3.

12 Orford, *supra* note 10.

[13] Allen & Lawrence-Hammer, *supra* note 11, at 5.

[14] *E.g.*, *id.* at 4.

[15] *Id.*

[16] *Id.*

[17] *Id.* at 5.

[18] FOOD & WATER WATCH, *supra* note 3, at 10.

[19] *Id.*

[20] *Id.* at 3.

[21] DEPT. OF ENERGY, *supra* note 2, at 15.

[22] FOOD & WATER WATCH, *supra* note 3, at 7.

[23] *See, e.g.*, *id*, at 6; *see also* 42 U.S.C.A. § 300h(d).

[24] Alan Kovski, *EPA, Interior, States to Continue Reshaping Regulations Governing Hydraulic Fracturing*, 05 DEN B-8, Jan. 10, 2012, at B-8.

[25] Renee Schoof, *As Shale Fracking Booms, Environmental Protection Lags*, MCCLATCHY NEWSPAPERS, Jan. 12, 2012, http://www.mcclatchydc.com/2011/12/21/133807/as-shale-frackingboomsenvironmental.html.

[26] George M. Haley & Eric Maxfield, *Regulation of Hydraulic Fracturing -- Proposed Federal Regulation of Hydraulic Fracturing*, 11 BUS. & COM. LITIG. FED. CTS. § 127:26 (3d ed. 2011).

[27] *Id.*

[28] Orford, *supra* note 10.

[29] *Id.*

[30] *Id.*

[31] *Id.*

[32] *Id.*

[33] Allen & Lawrence-Hammer, *supra* note 11, at 5.

[34] *See* DEPT. OF ENERGY, *supra* note 2, at 24. President Obama's "Blueprint for a Secure Energy Future" calls for the formation of a subcommittee to examine fracking issues and recommend shale gas extraction practices that ensure protection of public health and the environment. A report released in August 2011 by the Secretary of Energy Advisory Board (SEAB) Shale Gas Production Subcommittee provides a set of proposals to effectively develop the shale gas industry while reducing its environmental impact. *Id.*

[35] *See id.* at 14.

[36] Schoof, *supra* note 25.

[37] *See* DEPT. OF ENERGY, *supra* note 2, at 18.

[38] *See* 40 C.F.R. § 260-79 (West 2012).

[39] *See* DEPT. OF ENERGY, *supra* note 2, at 20-22.

[40] *See generally* 42 U.S.C.A. §§ 9601-9630 (West 2012).

[41] DEPT. OF ENERGY, *supra* note 2, at 33.

[42] Kathy Lundy Springuel, *Report Urges Fees on Maryland Gas Leases To Fund Study of Maryland Shale Concerns*, 07 DEN A-4, Jan. 12, 2012, at A-4.

[43] Allen & Lawrence-Hammer, *supra* note 11, at 7.