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Blake Lara
University of Baltimore School of Law

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HYDRAULIC FRACTURING: EVALUATING FRACKING REGULATIONS

Blake Lara

I. Introduction

The demand for nonrenewable energy resources has increased in nations around the world despite the reality that these remaining resources are both scarce, and increasingly difficult to acquire.¹ In 2010 Earth's reserves held the equivalent of approximately 406 billion tons of natural gas and oil.² However, at yearly consumption rates, this amount would only serve the planet's energy needs for about fifty years.³ The rapid elimination of conventional sources for oil and gas has led to the utilization of alternative methods to access sources that were previously not worth drilling.⁴ In the United States, for example, there are several types of underground rock formation that hold valuable oil and gas.⁵ The resources found in these formations are very difficult to extract, so one method developed to effectively retrieve the oil and gas is hydraulic fracturing.⁶

Hydraulic fracturing is a process involving the injection of fluid into a well to fracture geological formations, so that trapped natural gases can be released.⁷ The effectiveness of hydraulic fracturing has led to an increase in the adoption of this technique in the United States.⁸ However, the process results in the destruction of the environment and dangers to public health.⁹ Specifically, millions of gallons of fresh-water, sand, and toxic chemicals are injected into the ground contam-

1. Jason Obold, *Leading by Example: The Fracturing Responsibility and Awareness of Chemicals Act of 2011 as a Catalyst for International Drilling Reform*, 23 COLO. J. INT'L ENVTL. L. & POL'Y 473, 475 (2012).

2. *Id.*

3. *Id.*

4. Hannah Wiseman, *Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas and the Need to Revisit Regulation*, 20 FORDHAM ENVTL. L. REV. 115, 155 (2009).

5. *Id.* at 117.

6. *See id.* at 118.

7. Jeremy I. Maynard, *Fracking the Oil and Gas Trade Secrets of the Marcellus Shale Natural Gas Play*, 6 KY. J. EQUINE, AGRIC. & NAT. RESOURCES L. 161, 162 (2013-2014).

8. *See generally* Joe Carroll, *Fracking Market to Grow 19% to \$37 Billion Worldwide in 2012*, BLOOMBERG (Jan. 19, 2012), <http://www.bloomberg.com/news/2012-01-19/frack-market-to-grow-19-in-2012-to-37-billion-correct.html>.

9. Emily Rand, *EPA Subpoenas Halliburton Over "Fracking"*, CBS NEWS (Nov. 9, 2010), <http://www.cbsnews.com/news/epa-subpoenas-halliburton-over-fracking/>.

inating surface and groundwater sources.¹⁰ State and federal regulations have attempted to prevent these environmental harms, but have not fully solved the issues that hydraulic fracturing can cause.¹¹ Currently, Maryland is in the process of deciding what regulations to implement within the state in order to avoid these harms.¹²

II. Background

a. *The Fracking Process*

Hydraulic Fracturing or “fracking” – is a multi-step industrial process used for the extraction of natural gas.¹³ First, a well is drilled vertically into the Earth for several hundred miles, then turned horizontally and submerged into rock that is believed to hold natural gas.¹⁴ The well is then fitted with a perforated steel and concrete casing in order to allow fluid to enter and break up the rock formation.¹⁵ Next, fracking fluid is pumped into the well at high pressures, causing the rock to create fissures and crack.¹⁶ Fracking fluid is a viscous gel made up of 90 percent water, along with highly toxic chemical agents and proppants.¹⁷ Finally, escaping gas flows through the well and can be collected from the once impervious rock formation.¹⁸ Unfortunately, a substantial portion of the fracking fluid remains at the drill sight, and has the potential to migrate into and contaminate surface and groundwater sources.¹⁹

b. *Federal and State Regulations*

In 1974 Congress passed the Safe Drinking Water Act (SDWA) “to protect public health by regulating the nation’s public drinking water supply.”²⁰ The SDWA authorized the Environmental Protection

10. *Id.*

11. See Obold, *supra* note 1, at 476.

12. John Wagner, *O'Malley says he is Ready to Allow 'Fracking' in Western Maryland, with Strict Safeguards*, WASH. POST (Nov. 25, 2014), http://www.washingtonpost.com/local/md-politics/omalley-says-he-is-ready-to-allow-fracking-in-western-maryland-with-strict-safeguards/2014/11/25/36234f34-74b9-11e4-9d9b-86d397daad27_story.html.

13. Emily C. Powers, *Fracking and Federalism: Support for an Adaptive Approach that Avoids the Tragedy of the Regulatory Commons*, 19 J.L. & POL'Y 913, 919 (2011).

14. *Fracking: The Process*, CLEAN WATER ACTION, <http://www.cleanwateraction.org/page/fracking-process> (last visited Nov. 13, 2014).

15. Powers, *supra* note 13, at 920.

16. Joe Schremmer, *Avoidable “Fraccident”: An Argument Against Strict Liability for Hydraulic Fracturing*, 60 U. KAN. L. REV. 1215, 1219-20 (June, 2012).

17. *Id.* Proppants are tiny spheres intended to permanently hold open the shale fractures, of which the most commonly used in fracking fluids is sand. *Id.* at 1220.

18. Powers, *supra* note 13, at 920.

19. *Id.*

20. *Water: Safe Drinking Water Act*, ENV'T'L PROT. AGENCY, <http://water.epa.gov/lawsregs/rulesregs/sdwa/index.cfm#sdwafs> (last visited Nov. 14, 2014). See

Agency (EPA) “to set national health standards for drinking water to protect against naturally occurring and man-made contaminants,” found in underground drinking water sources.²¹ In addition, the SDWA allowed the EPA to establish an Underground Injection Control (UIC) Program to regulate injection wells that place toxic fluids underground.²² States must submit a UIC proposal to the EPA that meets health guidelines to regulate fracking within its borders.²³ However, in 2005 Congress excluded fracking from the SDWA due to the “Halliburton Loophole.”²⁴

After George W. Bush was elected in 2001, he established the National Energy Policy Development Group designed to help state and local governments promote the production and distribution of energy.²⁵ Former Vice President Dick Cheney, who previously worked for the world’s largest oilfield company Halliburton, chaired the task force.²⁶ To no surprise, an insider report revealed that the energy industry dominated the task force.²⁷ Thus, the energy industry influenced the language and passage of the Energy Policy Act of 2005.²⁸ This led to the exclusion of hydraulic fracturing fluids from Part C of the SDWA.²⁹ Instead of the EPA directly regulating fracking within states where a UIC did not meet SDWA requirements, the Energy Policy Act of 2005 prevents the EPA from invalidating a state UIC, thereby giving state governments the power to regulate fracking.³⁰

III. Analysis

a. *Environmental Concerns with Fracking*

Fracking causes several adverse effects to the environment, all which involve the wastewater that is produced from the fracking pro-

Safe Drinking Water Act, Pub. L. No. 93-523, 88 Stat. 1660 (1974) (codified at 42 U.S.C.A. § 300F-300J-26 (2006)).

21. *Safe Drinking Water Act*, *supra* note 20.

22. *Basic Information About Injection Wells*, ENVT’L PROT. AGENCY, http://water.epa.gov/type/groundwater/uic/basicinformation.cfm#what_is (last visited Mar. 29, 2015).

23. Obold, *supra* note 1, at 482.

24. Rosalie D. Morgan, *What the Frack?: An Empirical Analysis of the Effect of Regulation on Hydraulic Fracturing*, 16 QUINNIPIAC HEALTH L.J. 77, 93 (2012-2013).

25. Eric Dannenmaier, *Executive Exclusion and the Cloistering of the Cheney Energy Task Force*, 16 N.Y.U. ENVTL. L.J. 329, 330 (2008).

26. *Id.*

27. *Id.* at 331-32.

28. *See* Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005).

29. *Id.* at § 322. Underground injection means “the subsurface emplacement of fluids by well injection and excludes the underground injection of natural gas for purposes of storage and the underground injection of fluids or propping agents pursuant to hydraulic fracturing operations related to oil, gas or geothermal production activities.” *Id.*

30. Obold, *supra* note 1, at 484.

cess.³¹ Wastewater is the remaining fracking fluid left in the well or discharged out of the well once the job has been completed.³² Up to 60 percent of used fracking fluid becomes wastewater and a single well releases up to 100,000 gallons of wastewater.³³ Due to this large amount, there is a potential for the wastewater to escape to land, surface water, or groundwater sources if it is not properly managed.³⁴

One of the greatest concerns regarding wastewater is its ability to migrate into groundwater and contaminate local drinking water.³⁵ This concern is based on the high pressure of injecting fracking fluid, the toxicity of the fracking fluid, the potential explosion and asphyxiation hazard of natural gas, and the large number of wells in rural areas that rely on groundwater for household use.³⁶ Over 600 chemicals, including mercury, hydrochloric acid, and formaldehyde, have been identified for drilling operations.³⁷ Additionally, 75 percent of these chemicals affect sensory organs, 40 to 50 percent of chemicals affect immune and cardiovascular systems, and 25 percent of chemicals are linked to cancer and mutations.³⁸ A study conducted by the Center on Global Change concluded that the water extracted from well areas near active drilling had a methane concentration seventeen times higher than the water from wells that were not near active drilling sites.³⁹ This creates a public health issue as the fracking industry edges closer to urban areas.⁴⁰

Another concern of wastewater is land and surface water contamination from improper on-site storage and disposal.⁴¹ Well operators typically collect the wastewater and eventually dump it into injection wells or saltwater disposal wells.⁴² Before the wastewater reaches those

31. See Barbara H. Garavaglia, *Hydraulic Fracturing*, 92 MICH. B.J. 58, 58 (Sept. 2013).

32. Jeff Easton, *Fracking Wastewater Management*, WATERWORLD, <http://www.waterworld.com/articles/wwi/print/volume-28/issue-5/regional-spot-light-us-caribbean/fracking-wastewater-management.html> (last visited Nov. 15, 2014).

33. *Id.*

34. Michael N. Mills & Robin B. Seifried, *What is Fracking Wastewater and How Should We Manage It?*, 28 NAT. RESOURCES & ENV'T 9, 9 (2014).

35. Stephen G. Osborn, et al., *Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing*, PNAS (April 14, 2011), <http://www.pnas.org/content/108/20/8172.full>.

36. *Id.*

37. Joe Hoffman, *Potential Health and Environmental Effects of Hydrofracking in the Williston Basin, Montana*, NAGT, http://serc.carleton.edu/NAGTWorkshops/health/case_studies/hydrofracking_w.html (last visited Nov. 15, 2014).

38. *Id.*

39. Osborn, et al., *supra* note 35.

40. *See id.*

41. Mills & Seifried, *supra* note 34, at 9.

42. Brian J. Smith, *Fracing the Environment?: An Examination of the Effects and Regulation of Hydraulic Fracturing*, 18 TEX. WESLEYAN L. REV. 129, 135 (2011).

wells, it sits in tarp lined pits and metal tanks near the dig site.⁴³ On-site storage risks arise when the tarps and tanks leak.⁴⁴ In addition, operators are responsible for hauling the wastewater through crowded urban areas to get to the disposal wells.⁴⁵ A single well may require over one hundred hauls of wastewater, so the likelihood that an accident, such as a spill, could occur is very high.⁴⁶ When leaks or spills occur, chemicals can seep into the soil and render the land unusable or storm water runoff can carry these contaminants to lakes, streams, or other bodies of water.⁴⁷ Finally, much of the wastewater is taken to water treatment plants that cannot treat the chemicals contained in the water.⁴⁸

b. Inconsistency with Regulation

Due to the federal government's failure to regulate fracking and increasing environmental concern, state legislatures decided to develop regulations for fracking.⁴⁹ Some of the areas that state regulations focus on include the disclosure of the chemical composition and additives used in fracking, water quality protection, and regulation of the storage, transportation, treatment, and disposal of wastewater.⁵⁰ The problem with state regulation is that it varies widely across states.⁵¹ While many states are taking efforts to regulate fracking, others have not taken seriously the consequences fracking can cause.⁵² Currently, only 27 states have laws in place to regulate fracking.⁵³ Within these states there is a wide spectrum of policies for fracking, from the complete ban to very little or no regulation.⁵⁴

For example, in Colorado, the Department of Natural Resources' Colorado Oil and Gas Conservation Commission (COGCC) was established in 2012 as a regulatory program to be viewed as a model for other states.⁵⁵ COGCC requires the full disclosure of chemicals used

43. *Id.*

44. Mills & Seifried, *supra* note 34, at 11.

45. Smith, *supra* note 42, at 135.

46. *Id.*

47. *Id.* at 139.

48. Jay Kimball, *Congress Releases Report on Toxic Chemicals Used in Fracking*, 8020 VISION (Apr. 17, 2011), <http://8020vision.com/2011/04/17/congress-releases-report-on-toxic-chemicals-used-in-fracking/>.

49. Shawna Bligh & Chris Wendelbo, *Hydraulic Fracturing: Drilling Into the Issue*, 30 NO. 5 GPSOLO 72, 72-73 (2013).

50. *Id.* at 73.

51. Morgan, *supra* note 24, at 95.

52. Morgan R. Whitacre, *An Environmentally Hazardous Process: Why the United States Should Follow France's Lead and Ban Hydraulic Fracturing*, 23 IND. INT'L & COMP. L. REV. 335, 362 (2013).

53. *Id.* at 361.

54. *Id.* at 362.

55. Matt Watson, *Colorado Sets the Bar on Hydraulic Fracturing Chemical Disclosure*, ENV'T'L DEF. FUND (Dec. 31, 2011), <http://blogs.edf.org/energyexchange/>

in the fracking process.⁵⁶ Fracking chemicals must be disclosed within sixty days following the conclusion of a fracking job but no later than 120 days after the commencement of fracking.⁵⁷ In addition, the disclosure must be submitted to the chemical disclosure registry, a public website that provides a searchable database for chemicals and well locations.⁵⁸ The downfall of this program is that it does not require the identity of trade secret chemicals to be disclosed except for in drastic circumstances.⁵⁹ Specifically, under certain medical conditions, such as chemically related diseases, the identity of the chemical will only be disclosed if “the information is needed for purposes of diagnosis or treatment of an individual, the individual being diagnosed or treated may have been exposed to the chemical concerned, and knowledge of the information will assist in such diagnosis or treatment.”⁶⁰ Even in the event of a spill or leak, disclosing the identity of the trade secret chemical is merely discretionary.⁶¹

At the other end of the spectrum, some states, including Ohio, have extremely lax regulations.⁶² The growing fracking business in Ohio has caused the state to process thousands of tons of waste from fracking each year.⁶³ In 2013, three landfills in Ohio received over 100,000 tons of fracking waste from operations conducted within both the state and neighboring states.⁶⁴ In addition to piling the waste up in landfills, Ohio has approved waste being sent through ill-equipped treatment facilities and re-injected into old and unused gas wells.⁶⁵ Despite complaints from environmentalists and residents, the governor of Ohio approved regulations that require only a small fraction of the waste to be subjected to oversight.⁶⁶ The Ohio legislature also did not approve a bill requiring companies to provide information on the chemicals and fluids that they inject into wells.⁶⁷ These regulations

2011/12/13/colorado-sets-the-bar-on-hydraulic-fracturing-chemical-disclosure/.

56. *Id.*

57. COLO. CODE REGS. § 404-1:205A (2012).

58. *Id.* § 404-1:205A(b)(2)(A).

59. Morgan, *supra* note 24, at 98.

60. *Id.*

61. *Id.*

62. See OHIO REV. CODE ANN. § 1509.02 (West 2013); See also James O’Reilly, *Free to be Fracked: The Curious Constitutional Consequences of Ohio Gas Law*, 41 CAP. U. L. REV. 675 (2013).

63. Naveena Sadasivam, *The Poor Regulation of the Fracking Industry*, PACIFIC STANDARD (May 21, 2014), <http://www.psmag.com/navigation/nature-and-tech-nology/ohio-regulation-fracking-hotbed-muted-approach-gas-oil-drilling-environment-81763/>.

64. *Id.*

65. *Id.*

66. *Id.*

67. *Drinking Water: Characterization of Injected Fluids Associated with Oil and Gas Production*, GOV’T ACCOUNTABILITY OFFICE (Sept. 23, 2014), <http://www.gao.gov/products/GAO-14-857R>.

have prompted a serious reform regarding how Ohio regulates fracking.⁶⁸

Even worse are states, such as North Dakota, that refuse to support fracking regulations.⁶⁹ Legislators there rejected legislation that proposed an increase in fracking regulations out of fear that those regulations would kill the oil boom within the state.⁷⁰ Currently, operators are regulated by the general permitting process that seeks “to conserve the natural resources of North Dakota, to prevent waste, and to provide for operation in a manner as to protect correlative rights of all owners of crude oil and natural gas.”⁷¹ This process, in effect, has given operators the right to refuse to reveal their trade secrets when it comes to fracking fluids and disregard a drill site’s environmental surroundings before the fracking job.⁷²

Given the inconsistencies in applying fracking regulations between these relatively Midwestern states, and generally all states that allow fracking, there are few procedures that a majority of states have accepted.⁷³ Creating a commission or legislative board to oversee fracking conducted within the state is one common procedure.⁷⁴ The purpose of these commissions is primarily to regulate the production of oil within the state while facilitating safe practices that will protect the environment.⁷⁵ Variations in how regulations are enforced between states have undermined the effectiveness of commissions, which have taken proactive steps to prevent adverse environmental effects.⁷⁶ For example, many states require fracking operations to receive approval from the commission before operations commence in order to prevent damage to water sources or surface areas around the site.⁷⁷ Additionally, drafting environmental impact statements has been effective.⁷⁸ These reports consider the potential environmental harms

68. *See id.*

69. *See* N.D. CENT. CODE ANN. § 38-08-04 (West 2013); Heather Ash, *EPA Launches Hydraulic Fracturing Study to Investigate Health and Environmental Concerns While North Dakota Resists Regulation: Should Citizens be Concerned?*, 87 N.D. L. REV. 717, 733 (2011).

70. *Id.* at 732.

71. *Id.* at 733.

72. *Id.* at 736, 739.

73. *See* Wes Deweese, *Fracturing Misconceptions: A History of Effective State Regulation, Groundwater Protection, and the Ill-Conceived FRAC Act*, 6 OKLA. J. L. & TECH. 49, 21 (2010).

74. *Id.* at 22.

75. *Id.*

76. *Id.*

77. ALA. CODE § 9-17-1 (1975).

78. *See* *Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program*, N.Y. STATE DEP’T OF ENVTL. CONSERVATION, <http://www.dec.ny.gov/energy/45912.html> (last visited Nov. 19, 2014).

of each fracking job.⁷⁹ This allows oil companies the opportunity to address any future issues and prevent them from occurring.⁸⁰

Another prominent procedure among states is to require chemical disclosure of fracking fluid.⁸¹ However, this has not been effective due to several state legislatures' refusal to pass bills requiring chemical disclosure.⁸² In addition, many chemicals used in fracking fluid have not been adequately studied and therefore are not identified by the state government as hazardous.⁸³ Rules involving chemicals used in fracking primarily focus on workplace safety, so the contamination of surface and groundwater sources are unlikely to be studied.⁸⁴ States have also given energy companies leeway to avoid disclosing chemical constituents when trade secrets are claimed to be involved.⁸⁵ These companies are not required to submit any specific information in order to justify their claim of trade secrets.⁸⁶

c. Solution: The FRAC Act

Since 2009, Congress has attempted to introduce legislation that would reinstate the pre-2005 SDWA requirements.⁸⁷ Named in 2011 as the Fracturing Responsibility and Awareness of Chemicals (FRAC) Act, this legislation would amend the SDWA to include underground injection fluids for hydraulic fracturing and compel companies to disclose the chemical constituents of the fracking fluid that it uses.⁸⁸ Furthermore, it would require the EPA to administer nationwide minimum requirements for fracking and subject certain operations to scrutiny if it fails to adequately protect the public.⁸⁹ This includes taking reasonable steps to ensure that drinking water sources near wells are contaminate-free and wastewater is properly disposed.⁹⁰

The reason that this legislation has failed in the past is because many companies in the oil and gas industry believe that the FRAC Act fails to adequately protect the trade secret chemicals that they use in

79. *Id.*

80. *Id.*

81. Jacquelyn Pless, *Fracking Update: What States Are Doing to Ensure Safe Natural Gas Extraction*, NAT'L CONFERENCE OF STATE LEGISLATURES (July 2011), <http://www.ncsl.org/research/energy/fracking-update-what-states-are-doing.aspx>.

82. *Id.*

83. Mathew McFeeley, *State Hydraulic Disclosure Rules and Enforcement: A Comparison*, NATURAL RES. DEF. COUNCIL (July 2012), <http://www.nrdc.org/energy/files/Fracking-Disclosure-IB.pdf>.

84. *Id.*

85. *Id.*

86. *Id.*

87. Adam Orford, *Hydraulic Fracturing: Legislative and Regulatory Trends*, 279 ENVTL. COUNS. N.L. 2, 2 (2011).

88. *Id.*

89. *Id.*

90. *Id.*

the fracking process.⁹¹ In order to protect this information, the FRAC Act requires fracking operators to disclose to the relevant SDWA enforcement authority the chemical constituents used in their fracking operation, but does not require the company to disclose the quantities of each constituent in its trade secret formulas, or “proprietary chemical formulas.”⁹² The enforcement authority, whether it is the state or UIC administrator, is then required to make the identity of the chemicals known to the public.⁹³ Overall, the FRAC Act would allow more transparency, the main concern for many state regulations, while still protecting the legitimate concern of the industry confidentiality.⁹⁴

d. Maryland’s Current Debate Over Fracking

The Maryland General Assembly currently faces a number of proposed regulations to restrict fracking within the state.⁹⁵ Former Governor Martin O’Malley determined that in order to allow fracking, energy companies must “adhere to some of the most restrictive public health and environmental safeguards in the country.”⁹⁶ Several bills that limit fracking, such as House Bill 952 (HB 952) and Senate Bill 29 (SB 29), are currently in debate within their respective committees.⁹⁷ HB 952 would require companies who engage in fracking to submit to the Department of Health and Mental Hygiene specific information relating to the chemicals used during the fracking process.⁹⁸ This includes the name of the chemicals, the maximum concentrations of the chemicals, and chemical changes that may occur as a result of the fracking process.⁹⁹ In addition, this bill would establish a fund to educate health care providers on the dangers of chemicals used in fracking and provide financial relief to those who suffer an injury caused by these chemicals.¹⁰⁰ SB 29, on the other hand, would outright prohibit fracking within the state of Maryland.¹⁰¹ This bill would, along with preventing the handling of wastewater produced from fracking, prohibit anyone from engaging “in the hydraulic fracturing of a well for the exploration or production of natural gas in the state.”¹⁰²

91. Deweese, *supra* note 73, at 11.

92. H.R. 1084, 112th Cong. (1st Sess. 2011).

93. *Id.*

94. *Id.*

95. Wagner, *supra* note 12.

96. *Id.*

97. Timothy B. Wheeler, *Lawmakers wade into Debate over Fracking in Western Maryland*, BALT. SUN (Mar. 3, 2015), <http://www.baltimoresun.com/features/green/blog/bal-lawmakers-wade-into-debate-over-fracking-in-western-maryland-20150303-story.html>.

98. H.D. 952, 2015 Leg., 435th Sess. (Md. 2015).

99. *Id.*

100. *Id.*

101. *See* S. 29, 2015 Leg., 435th Sess. (Md. 2015).

102. *Id.*

Despite how strict these proposed regulations are, it is unlikely that the bills will come to fruition.¹⁰³ In order for the bills to become actual law, they will have to be approved by the current Governor, Larry Hogan.¹⁰⁴ Hogan has consistently repeated his support for fracking in Maryland and has criticized the government for waiting this long to consider fracking.¹⁰⁵ As a result, it seems that Hogan will oppose strict regulations for fracking in Maryland.¹⁰⁶ Without regulations, energy companies will have more leeway in their fracking operations.¹⁰⁷ This can lead to serious dangers toward the health of residents and workers.¹⁰⁸ Air pollution caused by fracking can affect residents who live near oil and gas wells.¹⁰⁹ In addition, workers will be directly exposed to fracking chemicals and at risk for on-site accidents, “which accounted for 49 percent of oil and gas extraction fatalities in 2012.”¹¹⁰ While the government takes strides to permit fracking in Maryland, the bigger obstacle is to decide how it will be regulated.¹¹¹

IV. Conclusion

Conventional forms of retrieving nonrenewable energy sources have depleted a significant amount of the Earth’s natural resources.¹¹² Due to the economical demand and technological advances, there has been a movement towards fracking in order to reach resources that were once inaccessible.¹¹³ However, these processes have received a lot of criticism as a result of the harm that it places on the environment.¹¹⁴ The use of numerous toxic chemicals in the fracking process contaminates surface and groundwater sources that are vital to human health.¹¹⁵ Unfortunately, inconsistent and unreliable state and local regulations do not effectively solve the problems that fracking cause.¹¹⁶ In order to limit or completely halt the environmental effects that result from fracking, regulation should be given back to the

103. See Timothy B. Wheeler, *Maryland fracking rules proposed, but Hogan gets final say*, THE BALT. SUN (Dec. 12, 2014), <http://www.baltimoresun.com/features/green/blog/bal-maryland-fracking-rules-proposed-20141212-story.html>.

104. *Id.*

105. Wagner, *supra* note 12.

106. *Id.*

107. *Id.*

108. Katie Valentine, *How Fracking In Maryland Would Threaten The Health Of Anyone Who Breathes Nearby*, THINKPROGRESS.ORG (Aug. 19, 2014), <http://thinkprogress.org/climate/2014/08/19/3472955/maryland-fracking-report/>.

109. *Id.*

110. *Id.*

111. Wagner, *supra* note 12.

112. See *supra* Part I.

113. See *supra* Part II.a.

114. See *supra* Part III.a.

115. See *supra* Part III.a.

116. See *supra* Part III.b.

federal government and specific fracking standards should be set for all states to follow.