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HYDRAULIC FRACTURING ADDITIVES: A SOLUTION TO THE TENSION BETWEEN TRADE SECRET PROTECTION AND DEMANDS FOR PUBLIC DISCLOSURE

TRAVIS D. VAN ORT*

I. INTRODUCTION

Hydraulic fracturing is not a new process for extracting energy supplies. It has been developing since at least the 1970's but the process has recently spurred public debate.¹ Hydraulic fracturing, also known as hydrofracking or fracking,² is a process for stimulating wells in order to maximize the extraction of a resource such as oil, natural gas, or even water.³ "Shale rock has gas trapped in pores smaller than the width of a hair,"⁴ thus the rock needs to be broken, or fractured, so that the gas can be extracted. To break the rock, a well is drilled hundreds to thousands of feet below the land surface into shale or other formation that holds gas or other resource. Then, hydrofracking fluids, "a mixture of 90 percent water, 9.5 percent sand, and 0.5 percent chemicals"⁵ are pumped down at high pressure and volume to create and hold open fissures so that the gas can flow.⁶ The actual fracturing lasts only for a short period, approximately 2 to 5 days according to ExxonMobil's vice president of public and government affairs, and then the well will produce gas for decades.⁷ At the end of the fracturing process, some of these fluids used to break the rock are removed, but a substantial amount remains in the well to keep the fractures open during gas extraction.⁸

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¹ *Review of Emerging Resources: U.S. Shale Gas and Shale Oil Plays*, U.S. ENERGY INFO. AGENCY (July 8, 2011), <http://www.eia.gov/analysis/studies/usshalegas>.

² *What is Shale Gas and Why is it Important?*, U.S. ENERGY INFO. AGENCY, http://www.eia.gov/energy_in_brief/about_shale_gas.cfm (last updated Feb. 14, 2012).

³ *Hydraulic Fracturing Background Information*, U.S. ENVTL. PROTECTION AGENCY, http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydrowhat.cfm (last updated Mar. 23, 2012).

⁴ Ken Cohen, *Facts on the Hydraulic Fracturing Process*, EXXONMOBIL PERSPECTIVES (June 17, 2011), <http://www.exxonmobilperspectives.com/2011/06/17/facts-hydraulic-fracturing-process>.

⁵ *Id.*

⁶ *Id.*

⁷ *Id.*

⁸ MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, 112th CONG., CHEMICALS USED IN HYDRAULIC FRACTURING 3 (Comm. Print 2011), available at

The increasing use of hydraulic fracturing as a method for extracting energy supplies, however, has led to tension between private companies and the general public. Companies that are making and using the additives for hydraulic fracturing are seeking to protect their additive formulas as trade secrets while the general public is demanding disclosure of the chemicals used as additives.⁹ Currently, states regulate disclosure, and a number of states have promulgated new rules or updated their old rules on this issue in the last two years.¹⁰ To resolve the aforementioned tension, however, disclosure should be promulgated at the federal level to ensure one uniform standard. Relying on state standards could destroy companies' trade secret protection if any one state requires too much information to be publicly disclosed. While regulation should be at the federal level, enforcement should be left to the states because state enforcement agencies are closest both to the general public and the sites where these chemicals are used.

This paper will examine the current tension regarding hydrofracking and propose a solution. Part II will give a brief overview of the hydraulic fracturing process and will explain the public concern over the composition of the additive products used in the fracking. After defining the problem, the paper will continue by examining how some states have attempted to address the issue and some possible solutions. The first possibility, examined in Part III, would be to use an alternative form of intellectual property right protection to resolve this tension. Upon finding the other types of intellectual property will not work, Part IV examines the state level regulations to find best practices and explain the hazards of piecemeal regulations. Lastly, Part V explains the proposed federal/state regulatory scheme and its superiority to the other proposed solutions.

II. THE CURRENT PREDICAMENT: THE LACK OF FEDERAL REGULATION AND WHY PEOPLE CARE

Hydrofracking is an important process because, when it is used with horizontal drilling, it allows energy producers to extract natural gas from unconventional sources like shale rock at a reasonable cost. Without

<http://democrats.energycommerce.house.gov/sites/default/files/documents/Hydraulic%20Fracturing%20Report%204.18.11.pdf>.

⁹ Mike Soraghan, *In Fracking Debate, 'Disclosure' is in the Eye of the Beholder*, N.Y. TIMES (June 21, 2010), <http://www.nytimes.com/gwire/2010/06/21/21greenwire-in-fracking-debate-disclosure-is-in-the-eye-of-19087.html?pagewanted=all>.

¹⁰ See Scott Detrow, *How Pennsylvania's Fracking Chemical Disclosure Rules Stack Up Against Other States*, STATEIMPACT (Aug. 12, 2011), <http://stateimpact.npr.org/pennsylvania/2011/08/12/whats-in-the-frack-how-pennsylvanias-chemical-disclosure-rules-stack-up-against-other-states; see also Proposed Express Terms 6 NYCRR Parts 550 through 556 and 560, N.Y. DEPARTMENT OF ENVTL. CONSERVATION, http://www.dec.ny.gov/regulations/77401.html> (last visited, Apr. 1, 2012).

these two techniques, the gas or other resources will not flow to the well rapidly enough to justify the cost of production, and commercial quantities of the resource cannot be produced from these unconventional sources.¹¹ This large supply of unconventional gas is important not only because natural gas is a cleaner burning fuel than oil or coal,¹² but also because in 2010 natural gas supplied approximately 25 percent of the U.S.'s overall energy consumption.¹³ Unconventional sources of natural gas, such as shale gas, will become an increasingly important source of energy for the United States in the forthcoming decades. The Energy Information Agency (EIA) estimated in 2010 that the U.S. has over 100 years of potential natural gas supply at current consumption rates, and roughly one-third of this potential supply is in the form of one unconventional source, shale gas.¹⁴ The EIA predicts that shale gas alone will constitute nearly 50 percent of the U.S. natural gas supply by 2035.¹⁵ Since shale gas requires hydrofracking to be a commercially viable source of energy, hydrofracking will continue to be a very important process in energy extraction in the future.¹⁶

Hydrofracking has garnered a lot of attention recently and public concern is growing over possible risks associated with the practice. One major concern stems from the practice's contribution to natural disasters. Recent developments give weight to the public's concern over hydrofracking. For instance, it is suggested that there may be a link between an earthquake in Ohio on New Year's Eve 2011 and the underground injection of liquids under high pressure related to hydrofracking.¹⁷ More prevalent concerns deal with the contamination of groundwater, particularly water that is used for drinking.¹⁸ Oil and gas industry executives, such as the CEO of ExxonMobil, have long claimed that this concern is unfounded because hydrofracking has never contaminated underground drinking water.¹⁹ However, it appears that this industry position has recently been proven wrong. The U.S. Environmental Protection Agency (EPA) has discovered contamination of groundwater by

¹¹ See *What is Shale Gas and Why is it Important?*, *supra* note 2.

¹² *Id.*

¹³ *What Are the Major Sources and Users of Energy in the United States?*, U.S. ENERGY INFO. AGENCY, http://www.eia.gov/energy_in_brief/major_energy_sources_and_users.cfm (last updated Oct. 25, 2011).

¹⁴ *What is Shale Gas and Why is it Important?*, *supra* note 2.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ Kim Palmer, *Ohio Earthquake Was Not a Natural Event, Expert Says*, YAHOO! NEWS (Jan. 3, 2012), <http://news.yahoo.com/ohio-earthquake-not-natural-event-expert-says-002703764.html>.

¹⁸ See Soraghan, *supra* note 9.

¹⁹ Ian Urbina, *A Tainted Water Well, and Concern There May Be More*, NY TIMES, Aug. 4, 2011, at A13, available at <http://www.nytimes.com/2011/08/04/us/04natgas.html>.

chemicals associated with hydrofracking near Pavilion, Wyoming.²⁰ Specifically, the Agency found benzene and methane at levels significantly higher than allowed by the federal Safe Drinking Water Act.²¹ There may have been earlier cases of contamination, but these suspected cases could not be investigated because the details of these cases “were sealed from the public when energy companies settled lawsuits with landowners.”²²

The public has a justified concern over what chemicals are being injected into the ground, especially near drinking water supplies.²³ A variety of chemicals are used during hydrofracking. Some are inert or harmless like salt and citric acid while some are toxic or hazardous like benzene and lead.²⁴ One congressional report states that “[b]etween 2005 and 2009, the 14 oil and gas service companies used more than 2,500 hydraulic fracturing products containing 750 chemicals and other components.”²⁵ Of these 750 chemicals, 29 were either “(1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act.”²⁶ These chemicals were found in more than 650 of the 2,500 hydrofracking products used.²⁷ During that five-year span, the 14 companies used 780 million gallons of hydrofracking products.²⁸ This number covers only the products used to fracture the rock containing natural gas; it does not include the volume of water used in the process,²⁹ which far exceeds the volume of hydrofracking additives.³⁰

A few examples of these hazardous chemicals can illustrate the propriety of the public concern over contamination, especially since, as mentioned above, one of these very hazardous chemicals, benzene, has already been found contaminating an aquifer in Wyoming.³¹ Benzene is a highly flammable carcinogen, which can also cause anemia or a decrease in blood platelets when a person is exposed to excessive amounts of benzene for a long period.³² The amount of benzene that is considered “excessive” is actually very small.³³ The EPA regulates benzene under the Safe

²⁰ James O’Toole, *EPA Sounds Alarm on Fracking in Wyoming*, CNNMONEY (Dec. 9, 2011), http://money.cnn.com/2011/12/09/news/economy/epa_fracking_wyoming.

²¹ *Id.*

²² Urbina, *supra* note 19.

²³ See Detrow, *supra* note 10.

²⁴ Joe Napsha, *Drilling Companies Claim Fluid Components are Trade Secrets*, PITTSBURGH TRIB.-REV. (Aug. 28, 2011), http://www.pittsburghlive.com/x/pittsburghtrib/business/s_753824.html.

²⁵ MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, *supra* note 8, at 1.

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.*

²⁹ See *id.*

³⁰ See Cohen, *supra* note 4.

³¹ O’Toole, *supra* note 20.

³² *Basic Information about Benzene in Drinking Water*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/drink/contaminants/basicinformation/benzene.cfm> (last updated Mar. 6, 2012).

³³ *Id.*

Drinking Water Act, and the maximum contaminant level allowed by the regulations is 0.005 milligrams per liter.³⁴ Amounts above this level can cause the aforementioned health problems and raise a person's risk of cancer.³⁵

The following analogy better illustrates the miniscule nature of this amount: for an Olympic sized swimming pool, which contains approximately 2.5 million liters,³⁶ the amount of benzene necessary to reach the maximum contaminant level and render the water unsafe to drink is 12.5 grams.³⁷ This is equivalent to the mass of five U.S. pennies.³⁸ Thus, while hydrofracking additives will only use a small amount of chemicals such as benzene in the process of breaking up the shale or other natural gas rich rock,³⁹ even these very small amounts of benzene could cause serious health problems if it contaminated drinking water because benzene is hazardous even in small amounts.

Benzene is just one of the many hazardous or toxic chemicals used in hydrofracking. Metals such as lead as well as chemicals such as methanol, 2-butoxyethanol, xylene, toluene and even diesel are some of the other hazardous additives used in fracking.⁴⁰ Lead, for example, can cause development problems in children and kidney problems and high blood pressure in adults.⁴¹ The EPA, therefore, has set a goal of having no lead contamination in drinking water because "the best available science... shows there is no safe level of exposure to lead."⁴² Methanol, a flammable air pollutant, appears to be one of the most widely used hazardous hydrofracking additives.⁴³ Methanol can cause irritation and respiratory problems in smaller doses and more serious problems, up to and including death, with higher doses. It can also cause liver or nervous system damage.⁴⁴ 2-butoxyethanol, another chemical used in hydrofracking

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Olympic-Size Swimming Pool*, WIKIPEDIA, http://en.wikipedia.org/wiki/Olympic-size_swimming_pool (citing to the official regulations by the Fédération Internationale de Natation, which is the international federation recognized by the International Olympic Committee for administering international aquatic sports competitions) (last updated Jan. 9, 2012).

³⁷ The calculation for this analogy is: 0.005 milligrams per liter * 2.5 million liters = 12,500 milligrams per Olympic sized pool, or 12.5 grams.

³⁸ *Coin Specifications*, U.S. MINT, http://www.usmint.gov/about_the_mint/index.cfm?flash=yes&action=coin_specifications (each penny weighs 2.5 grams, so 12.5 grams of benzene is exactly the same weight as five pennies) (last visited Apr. 1, 2012).

³⁹ See Cohen, *supra* note 4.

⁴⁰ See MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, *supra* note 8, at 8.

⁴¹ *Drinking Water Contaminants*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/drink/contaminants/index.cfm#1> (last updated Mar. 6, 2012).

⁴² *Basic Information about Lead in Drinking Water*, U.S. ENVTL. PROTECTION AGENCY, <http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm> (last updated Mar. 6, 2012).

⁴³ See MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, *supra* note 8, at 1.

⁴⁴ N.J. DEP'T OF HEALTH & SENIOR SERVICES, HAZARDOUS SUBSTANCE FACT SHEET: METHYL ALCOHOL 1-2 (2011), available at <http://nj.gov/health/eoh/rtkweb/documents/fs/1222.pdf>.

compounds, can destroy red blood cells and cause “damage to the spleen, liver, and bone marrow.”⁴⁵ 2-butoxyethanol, like benzene, has already been found contaminating drinking water in Wyoming.⁴⁶

Xylene can cause nervous system damage and toluene can cause problems with the nervous system, kidneys, and liver.⁴⁷ Xylene and toluene, however, must be present in much higher concentrations to cause these health problems than a chemical like benzene. The threshold contaminant level for xylene is 10 milligrams per liter and the threshold for toluene is 1 milligram per liter.⁴⁸ Exposure must be above these levels to damage a person’s health. Applying the pool analogy, in an Olympic sized pool, there would need to be 25 kilograms of xylene to contaminate the water or 2.5 kilograms of toluene.⁴⁹ These are substantially higher levels than benzene’s threshold, but given the volumes of hydrofracking chemicals used, dangerous levels of contamination are still theoretically possible. For instance, the hazardous chemicals benzene, ethylbenzene, toluene, and xylene were present in 11.4 million gallons of hydrofracking chemicals used between 2005 and 2009.⁵⁰

Diesel fuel is another dangerous additive used in hydrofracking products. Between 2005 and 2009, “hydraulic fracturing companies injected more than 30 million gallons of diesel fuel or hydraulic fracturing fluids containing diesel fuel in wells in 19 states.”⁵¹ Diesel can contaminate water, but has an additional danger because it can contain other dangerous contaminants such as benzene.⁵² Diesel fuel is the only hydrofracking additive that is not excluded from regulation under the 2005 amendment to the Safe Drinking Water Act.⁵³

While hydrofracking does utilize a number of harmless or inert chemicals, the process also uses a number of toxic or hazardous chemicals and compounds, like those described above. The public concern over the use of these hazardous chemicals is not unwarranted, given the deleterious effects of even small amounts of chemicals like benzene. The regulatory scheme for hydrofracking needs to balance the public concern over the chemicals used and with the US need for the hydrofracking process for energy extraction. The remainder of this paper will examine how this balance may be achieved.

⁴⁵ MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, *supra* note 8, at 7.

⁴⁶ *Id.*

⁴⁷ *Drinking Water Contaminants*, *supra* note 41.

⁴⁸ *Id.*

⁴⁹ The calculation for this xylene is: 10 milligrams per liter * 2.5 million liters = 25 million milligrams per Olympic sized pool, or 25 kilograms. The calculation for this toluene is: 1 milligram per liter * 2.5 million liters = 2.5 million milligrams per Olympic sized pool, or 2.5 kilograms.

⁵⁰ MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, *supra* note 8, at 10.

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Hydraulic Fracturing Background Information*, *supra* note 3.

III. PROTECTION OF ADDITIVES AS TRADE SECRETS: OTHER INTELLECTUAL PROPERTY RIGHTS CANNOT REMEDY THIS TENSION

The energy extraction industry has been using trade secret protection to safeguard the chemical formulas used in fracking.⁵⁴ “A trade secret is any information that can be used in the operation of a business or other enterprise and that is sufficiently valuable and secret to afford an actual or potential economic advantage over others.”⁵⁵ “A trade secret can consist of a formula, pattern, compilation of data, computer program, device, method, technique, process, or other form or embodiment of economically valuable information.”⁵⁶ Clearly, the chemical formulas of the additives used in hydrofracking can be protected as a trade secret.

One potential solution to this tension between maintaining trade secrets and satisfying the public demand for disclosure would be to change the type of protection used to safeguard the additive formulas as an intellectual property right. However, the three intellectual property rights - trademarks, copyrights, and patents - are all in some way inappropriate for use in protecting the chemical formulas of the additives.

Trademarks and copyrights would not be able to provide the protection needed for the chemical formulas of the hydrofracking additives. A trademark can be defined as “a word, name, symbol, device, or other designation, or a combination of such designations, that is distinctive of a person's goods or services and that is used in a manner that identifies those goods or services and distinguishes them from the goods or services of others.”⁵⁷ A copyright protects “original works of authorship fixed in any tangible medium of expression.”⁵⁸ However, copyrights do not protect the procedure or process that is embodied in the original work.⁵⁹ Neither of these types of intellectual property right would actually protect the formula of the fracking additives.

Unlike trademarks and copyrights, patents do seem like a possible substitute for trade secret protection of the additive formulas. Patents protect “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof...”⁶⁰ Patents must also be novel and non-obvious.⁶¹ An additive chemical could be a new composition of matter, and it would fulfill the novel and non-obvious

⁵⁴ See Napsha, *supra* note 24.

⁵⁵ RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 39 (1995).

⁵⁶ *Id.* § 39 at cmt. d.

⁵⁷ *Id.* § 9.

⁵⁸ 17 U.S.C.S. § 102(a) (LexisNexis 2012).

⁵⁹ See 17 U.S.C.S. § 102(b) (LexisNexis 2012).

⁶⁰ 35 U.S.C.S. § 101 (LexisNexis 2012).

⁶¹ See 35 U.S.C.S. §§ 102, 103 (LexisNexis 2012).

requirements if the company creating the formula came up with a completely new combination of chemicals to use that is sufficiently different from other known formulations.

However, even if a company could obtain patent protection for its additive formula, trade secret protection would still be preferable. Patents last for only 20 years from the date of filing.⁶² A natural gas well can last well beyond the term of the patent. ExxonMobil estimates natural gas wells produce for 25 to 40 years, and at least some of the additives will remain in the well, holding the fissures open so that the gas can flow.⁶³ Additionally, once a patent is granted, the chemical formula is published. Thus, competitor companies could copy an additive formula and start using it before the company who created and patented the formula finished using the additive in its first well. This presumes, of course, that other companies will act legally and ethically and not use the formula before the patent expires. Since the formula is publicly disclosed when the patent is granted, a competitor could theoretically begin illegally using the creating company's formula immediately. This would be nearly impossible to detect and it would be extremely difficult to prove infringement. The company that created the formula would have no way of detecting infringement because it won't be able to monitor what chemicals its competitors are creating or purchasing or how these competitors are mixing said chemicals. Trade secret protection, on the other hand, depends on efforts to keep this information secret, and defends against improper disclosure of the secret.⁶⁴ Trade secret protection defends the economic value of the formula⁶⁵ and prevents competitors from enriching themselves at the creating company's expense by using the formula without paying for it.

Since the tension between industry's desire to protect their formulas and the public demand for disclosure cannot be ameliorated by using another form of intellectual property protection, state laws on disclosure must be examined. This examination may offer the basis for a solution to the current predicament as well as illustrate the problem with differing state regulations.

IV. EXAMPLES OF CURRENT STATE LEGISLATION

As indicated above, hydrofracking is specifically excluded from federal regulation under the Safe Drinking Water Act's Underground Injection Control program; no fluid or agent used in hydrofracking, with the

⁶² 35 U.S.C.S. § 154(a)(2) (LexisNexis 2012).

⁶³ Cohen, *supra* note 4.

⁶⁴ RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 39, cmt. a (1995).

⁶⁵ *Id.* § 39 at cmt. d.

exception of diesel fuel, is regulated.⁶⁶ Most underground injections are regulated under this act, but the injections used in hydrofracking are not included because Congress modified the law in 2005 to specifically exclude it.⁶⁷ This modification is known as the Halliburton loophole.⁶⁸ However, there are some efforts being made to close this loophole. The EPA has announced that they will begin regulating the chemical laced water that comes back up from the well after hydrofracking.⁶⁹ But these new regulations will not touch on one of the most important concerns the public has over hydrofracking: the contamination of groundwater used for drinking by hazardous hydrofracking additives. The wastewater regulations only deal with water that is removed from the well but do not address what is pumped into the well in the first place.⁷⁰

Gaps in federal law leave regulation of hydrofracking additives to the states. While the states are beginning to adopt regulations mandating disclosure of additives to health agencies or the general public, not all states have adopted or updated such regulations. This patchwork of regulations is potentially problematic. The following examines the regulations or proposed regulations for four states: New York, Montana, Pennsylvania, and New Jersey. These states were selected to show the diversity that currently exists in state disclosure regulations. All four, at a minimum, touch on a shale gas play, which as mentioned above is an important source of natural gas that requires hydrofracking to be commercially viable.⁷¹ The amount of shale gas that underlies each state varies, from large plays under New York and Pennsylvania to much smaller plays under Montana and New Jersey.⁷²

A. New York

In December 2010, New York had imposed a moratorium on certain types of hydrofracking to give the New York Department of Environmental Conservation (NYDEC) more time to complete an environmental and health impact review of hydrofracking techniques.⁷³

⁶⁶ *Regulation of Hydraulic Fracturing Under the Safe Drinking Water Act*, U.S. ENVTL. PROTECTION AGENCY, http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_hydroreg.cfm (last updated Mar. 23, 2012).

⁶⁷ MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, *supra* note 8, at 3; *see also Hydraulic Fracturing Background Information*, *supra* note 3.

⁶⁸ Detrow, *supra* note 10.

⁶⁹ Michael Rubinkam, *EPA to Regulate Disposal of Fracking Wastewater*, BLOOMBERG BUSINESSWEEK (Oct. 20, 2011), <http://www.businessweek.com/ap/financialnews/D9QG86000.htm>.

⁷⁰ *See id.*

⁷¹ *What is Shale Gas and Why is it Important?*, *supra* note 2.

⁷² *See id.*

⁷³ *See* Exec. Order No. 41, available at <http://www.governor.ny.gov/archive/paterson/executiveorders/EO41.html>.

This moratorium ended last year.⁷⁴ Currently, New York has no regulations on disclosure of the chemicals in hydrofracking additives, but the NYDEC is in the process of creating new rules following the end of the moratorium.⁷⁵ These rules are still working through the approval process after the public comment period on the proposed rules ended January 11, 2012.⁷⁶ These rules include a ban on drilling in state parks, wildlife preserves, and certain watersheds and aquifers, in addition to requirements on disclosure.⁷⁷ With these rules, New York plans to go further than other states in the U.S. on disclosure.⁷⁸

The proposed regulations, 6 NYCRR part 560.3(c)(1), require that the owner or operator of a proposed well include with each drilling application:

- (i) proposed volume of each additive product to be used in hydraulic fracturing
- (ii) identification of each additive product proposed for use;
- (iii) copies of Material Safety Data Sheets for each product to be used if the Material Safety Data Sheet is not already on file with the Division;
- (iv) proposed percent by weight of water, proppants and each additive product;
- (v) documentation that proposed chemical additives exhibit reduced aquatic toxicity and pose a lower potential risk to water resources and the environment than available alternatives; or documentation that available alternative products are not equally effective or feasible; and
- (vi) the identification of the proposed fracturing service company.⁷⁹

This information, provided to NYDEC, will be disclosed to the public by the agency unless the applicant claims that the information is a trade secret and requests that it not be disclosed.⁸⁰ However, the ultimate decision of whether or not to grant a request to protect information rests with the

⁷⁴ See Tom Zeller, *New York Governor Vetoes Fracking Bill*, N.Y. TIMES BLOG (Dec. 11, 2010, 7:35 PM), <http://green.blogs.nytimes.com/2010/12/11/new-york-governor-vetoes-fracking-bill>.

⁷⁵ N.Y. COMP. CODES R. & REGS. tit. 6, § 550-56, 560 (2012); *Proposed Express Terms 6 NYCRR Parts 550 through 556 and 560*, *supra* note 10.

⁷⁶ *High Volume Hydraulic Fracturing Proposed Regulations*, N.Y. DEPARTMENT OF ENVTL. CONSERVATION, <http://www.dec.ny.gov/regulations/77353.html> (last visited Apr. 1, 2012).

⁷⁷ Mireya Navarro, *Latest Drilling Rules Draw Objections*, N.Y. TIMES, July 15, 2011, at A21, available at <http://www.nytimes.com/2011/07/15/science/earth/15frac.html>.

⁷⁸ *Id.*

⁷⁹ *Proposed Express Terms 6 NYCRR Parts 550 through 556 and 560*, *supra* note 10.

⁸⁰ *See id.*

NYDEC.⁸¹ In essence, the NYDEC gets to decide whether or not a company will be able to maintain its trade secret protection for its additive formula.

B. Montana

Montana, on the other hand, has a very different disclosure scheme. An owner or operator of a well must disclose to the Montana Board of Oil and Gas the name, type, and rate or concentration of each ingredient used in the hydrofracking additive.⁸² However, this disclosure does not have to be made with the application for the drilling permit, as New York will require.⁸³ In Montana, the disclosure does not have to be made until after the hydrofracking process is complete.⁸⁴ Thus, the hydrofracking additives have already been injected into the ground and used to break up the rock holding the natural gas or other energy source before the Montana Board is ever made aware of what is being injected into the ground. Additionally, there is nothing in this disclosure rule that requires any type of public disclosure of the chemicals used in the fracking additives. Companies have the option to post the chemicals used on a voluntary disclosure website in lieu of making the disclosure to the Montana Board, but public disclosure on this website is not required.⁸⁵ Clearly, this regulatory scheme is not helpful in reducing the tension between the energy companies and the public because the public receives no guaranteed disclosure.

In addition, Montana's regulations are much friendlier to claims for trade secret protection. Under the Montana Administrative Regulations, if the formula of a chemical product used in fracking is protected by a trade secret, the well owner or operator does not have to even disclose this formula to the Montana Board of Oil and Gas.⁸⁶ The well owner only has to give a less specific description and some useful information, such as the trade name of the protected chemical product and the quantity used of this protected product.⁸⁷ This leniency on disclosing the formulas of trade secret protected products is subject to a few, limited exceptions. If there is a spill or release of the additive product in question, the well owner must disclose the chemical formula to the Montana Board, in spite of any prior claims to trade secret protection.⁸⁸ Furthermore, there are more two exceptions relating to medical needs for the chemical formula. If a health

⁸¹ *Id.*; see also N.Y. COMP. CODES R. & REGS. tit. 6, § 616.7(c) (2011).

⁸² MONT. ADMIN. R. 36.22.1015(2) (2011).

⁸³ See *Proposed Express Terms 6 NYCRR Parts 550 through 556 and 560*, *supra* note 10 (see 560.3(c)).

⁸⁴ MONT. ADMIN. R. 36.22.1015(1) (2011).

⁸⁵ See MONT. ADMIN. R. 36.22.1015(4) (2011).

⁸⁶ MONT. ADMIN. R. 36.22.1016(1) (2011).

⁸⁷ *Id.*

⁸⁸ MONT. ADMIN. R. 36.22.1016(2) (2011).

professional needs the formula to treat or diagnose a patient exposed to the product⁸⁹ or to respond to a medical emergency, the well owner or operator must disclose the formula, even if they had previously claimed trade secret protection.⁹⁰

C. Pennsylvania

Pennsylvania's disclosure regulations, adopted in February 2011, require that within 30 days after completing a well, the well owner must submit a report to the Pennsylvania Department of Environmental Protection (PA DEP) that includes a stimulation record.⁹¹ This record discloses to the PA DEP a list of the chemicals used in stimulating or hydrofracking the well, including their percent by volume in the stimulation fluid.⁹² The well owner or operator must also provide this list of chemicals used for fracking in the well whenever else it is requested by the PA DEP.⁹³

The public does have the ability to obtain these reports, including the stimulation record, but the information is not currently posted online.⁹⁴ Anyone who wishes to obtain this information must request the report through the Right-to-Know process.⁹⁵ This process is Pennsylvania's version of a freedom of information law and allows citizens to request that a government record be made available for inspection or copying.⁹⁶ This public availability is subject to a key exception. A well owner can designate parts of its stimulation record as a trade secret, and the "[PA DEP] will prevent disclosure of the designated confidential information to the extent permitted under the Right-to-Know Law."⁹⁷

D. New Jersey

New Jersey has taken a different approach to the issue of hydrofracking; it imposed a one year ban on the procedure.⁹⁸ This is a compromise between the Governor and the state legislature, since the initial proposal was for a permanent ban.⁹⁹ While there is a suggestion that New

⁸⁹ MONT. ADMIN. R. 36.22.1016(3) (2011).

⁹⁰ MONT. ADMIN. R. 36.22.1016(4) (2011).

⁹¹ 25 PA. CODE § 78.122(b)(6) (2011).

⁹² *Id.*

⁹³ 25 PA. CODE § 78.122(d) (2011).

⁹⁴ Detrow, *supra* note 10.

⁹⁵ *Id.*; see also 25 PA. CODE § 78.122(c) (2011).

⁹⁶ See *Open Records, Pa. Office of Open Records*, http://openrecords.state.pa.us/portal/server.pt/community/open_records/4434 (last visited May 5, 2012).

⁹⁷ 25 PA. CODE § 78.122(c) (2011).

⁹⁸ *New Jersey Fracking Ban: Gov. Chris Christie's 1-Year Recommendation Accepted By Lawmakers*, HUFFINGTON POST (Jan. 10, 2012), http://www.huffingtonpost.com/2012/01/10/new-jersey-fracking-ban-chris-christie_n_1197075.html.

⁹⁹ *Id.*

Jersey's action is largely symbolic, given the small amount of gas that lies under the state,¹⁰⁰ the initial push for a permanent ban is cause for concern. Public concern over hydrofracking and the safety of water supplies has frequently manifested itself as a demand for public disclosure of the chemical formulas used. However, in New Jersey, this public concern led to a push for far more drastic action. This is indicative of how far the public, or at least its advocates, may be willing to go to ensure safe drinking water. This type of ban leaves no room for compromise, which is problematic given the importance of domestic supplies of natural gas to the U.S.'s future energy needs.¹⁰¹

E. Analysis of State Hydrofracking Regulation

A balance must be struck between the public demand to be informed and protected and the need to allow drilling companies to exploit important and large domestic energy supplies. Current state regulations like those examined above do not fully satisfy both of these competing desires. New York and New Jersey imposed a moratorium and a ban, respectively, on at least some types of hydrofracking. While New York is developing new rules on disclosure with respect to hydrofracking, the final content and scope of these rules will not be known until they are completed. Montana and Pennsylvania have taken a different approach in regulating hydrofracking. They do not require any type of disclosure until after the chemicals have been injected into the ground and used in fracking. Neither of the approaches mentioned above, instituting bans or not requiring disclosure until after fracking is complete, are good ways to balance the public demand for information with the need to develop domestic energy sources. Montana and Pennsylvania are particularly problematic with respect to the public demand for information because the public only finds out about what chemicals are being used when it is too late to raise their concerns.

The policy outlined below in Section VI responds better to competing policy objectives than current state regulations. It demands disclosure of chemicals used before they are actually injected, thus encouraging companies to use less toxic chemicals in a particular well.¹⁰² Disclosure prior to injection would satisfy the public demand for information, and would give the drillers the opportunity to negotiate, if necessary, with residents around the well about what additive products will be used. Including the public in these types of decisions could reduce the

¹⁰⁰ *Id.*

¹⁰¹ See *What is Shale Gas and Why is it Important?*, *supra* note 2.

¹⁰² See Soraghan, *supra* note 9 (suggesting that "disclosure would... encourage companies to use less toxic chemicals.").

backlash that has been seen over hydrofracking. Furthermore, if implemented the policy prescription below is designed to remove the public demand for bans on hydrofracking and to remove at least some of the tension between drilling companies and the public by offering a way to balance the desire to protect company trade secrets with the public demand for disclosure.

V. WHY STATE LEVEL REGULATION IS INSUFFICIENT AND WHAT THE POLICY SHOULD BE

State by state regulation of disclosure is problematic for a few reasons. Disclosure rules that vary from state to state pose a threat to the trade secret protection of additive formulas. These formulas are only protected as long as they are kept secret.¹⁰³ Limited disclosure, such as to certain government agencies, will not vitiate the trade secret protection. Full public disclosure, however, would destroy protection because any competitor can obtain “the information through an examination of a publicly available product, [and by doing so] has obtained the information by proper means and is thus not subject to liability.”¹⁰⁴ State by state regulation is a potential threat to additive protection because inconsistent state laws may require differing levels of disclosure. If one state law requires enough disclosure that the trade secret protection of the additive formula is destroyed, protection is destroyed everywhere, not just in the state that required disclosure. There are numerous shale gas and other unconventional gas plays in the U.S. in a number of different states.¹⁰⁵ There is an undeniable risk that public pressure could result in state laws that would require substantial disclosure and would thus destroy trade secret protection.

Non-uniform state regulations also complicate business for companies that operate in multiple states. As it currently stands, any company that drills in more than one state has to deal with each state’s regulatory agency and ensure that they are complying with each state’s individual disclosure regulations. As a practical matter, this imposes an additional administrative burden on companies drilling in multiple states. A further administrative burden may occur if state laws and regulations do not balance protecting formulas covered by trade secrets and satisfying the public demand for information. Failing to properly balance these two policy concerns will lead to challenges to existing laws and regulations, and state governments will have to continue to propose new state laws and

¹⁰³ RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 39 cmt. f (1995).

¹⁰⁴ *Id.*

¹⁰⁵ See *What is Shale Gas and Why is it Important?*, *supra* note 2.

amendments to satisfy these challenges to the old laws.¹⁰⁶ Until the two policy concerns are balanced, states will be stuck on a treadmill of proposing new laws, having those laws challenged, and then having to propose a different law or an amendment to the existing law to address the challenge. This frequent changing of the laws means that energy drilling companies will have to repeatedly learn new state laws and regulations on what they have to disclose.

There is a fairly simple and practical solution to deal with both the problem of inconsistent state regulations as well as the tension between trade secret protection and the demand for public disclosure. This solution is to regulate disclosure of the chemicals in fracking additives at the federal level. While safe drinking water may seem like a local issue, the scale of hydrofracking in the U.S. requires a uniform federal standard. The regulation of hydrofracking additives has been specifically excluded from the Safe Drinking Water Act, which is the EPA's main source of authority to protect drinking water.¹⁰⁷ Congress should amend the Act to include regulations covering the disclosure of hydrofracking formulas.

A. Structure of the Regulatory Regime and How it Maintains Trade Secret Protection

The wisest way to regulate disclosure is to have the federal government, specifically the EPA, promulgate the rules and to have state entities monitor industry compliance with the rules. This means that there is one uniform, national standard for disclosure. This structure ends the danger of destroying trade secrets through legislative or administrative action. There will not be varying standards across the country that could potentially conflict or require enough disclosure to defeat trade secret protection. Since the level of disclosure, discussed below, will not be extensive enough to destroy trade secret protection, the tension between maintaining secrecy and public disclosure will be resolved. Additionally, this uniformity in regulation should be advantageous to drilling companies that operate in multiple states because it will reduce the administrative burden. If there is a uniform standard, companies will not have to worry about being aware of and complying with differing state regulations. This reduced complexity may even result in some cost savings for drilling companies; at a minimum, it should reduce their regulatory headaches.

While the EPA will be setting a uniform standard at the federal level, monitoring and enforcing compliance with that standard should be

¹⁰⁶ See Detrow, *supra* note 10; See also *Proposed Express Terms 6 NYCRR Parts 550 through 556 and 560*, *supra* note 10 (showing examples of state laws and regulations that have been changed in the last year and a half due to increased public demand for disclosure).

¹⁰⁷ *Regulation of Hydraulic Fracturing Under the Safe Drinking Water Act*, *supra* note 66.

done by the states. A number of federal environmental laws already have a similar division of authority and responsibility between the federal government and the states.¹⁰⁸ By having the appropriate state agencies complete these tasks, the monitoring and enforcement functions are moved closer to both the wells and to the public that is concerned about additive contamination. Since they are closer, state agencies should have an easier time monitoring the wells within their jurisdiction, and, at least in theory, will be more responsive to the public. State agencies would likely be more responsive because if the state agency fails in its monitoring or enforcing duties, the public can go to their local state level politicians and demand that these politicians exert pressure on the monitoring agency and private companies to comply. This system is based on the reasonable assumption that local politicians will be more responsive when their constituents demand action because they work and live closer to their constituents than federal level politicians.

B. How Disclosure Works Under the Regime

There are two important issues when it comes to disclosure: (1) what chemicals are required to be disclosed by the regulations and (2) how much detail is required to be disclosed, and to whom. For the latter issue, the amount of detail that must be disclosed depends upon to whom the disclosure is being made. The Safe Drinking Water Act already regulates the levels of a number of contaminants, from benzene to lead to diesel fuel, that are permissible in drinking water. This list of regulated chemicals would serve well as the basis for a list of chemicals that have to be disclosed in hydrofracking additives. Since this list is not a comprehensive catalogue of the chemicals used in fracking, it will likely need to be expanded to include other toxic and hazardous chemicals that serve as hydrofracking additives. For example, there are chemicals that are carcinogens or hazardous air pollutants that are used in fracking but not regulated by the Safe Drinking Water Act.¹⁰⁹ Any of these types of chemicals that can cause negative health effects through ingestion or skin contact would need to be added to this list of chemicals to be disclosed.

The second issue, of how much detail to disclose and to whom, requires a two level disclosure process. The two groups to whom disclosure is required are appropriate state officials, such as the state agency charged with enforcing disclosure and the state health department, and the general public. To the state officials, the companies would be required to

¹⁰⁸ See Hubert H. Humphrey III & LeRoy C. Paddock, *The Federal and State Roles In Environmental Enforcement: A Proposal For a More Effective and More Efficient Relationship*, 14 HARV. ENVTL. L. REV. 7, 13 (1990) (giving a survey of the division of federal and state roles in enforcing various environmental legislation).

¹⁰⁹ See MINORITY STAFF OF H.R. COMM. ON ENERGY & COMMERCE, *supra* note 8, at 8-10.

make complete disclosures of all chemicals used in the fracking process, including any chemicals or products that are protected by trade secrets. The government will not publicly disclose this information. This would ensure that the trade secret protection of the chemicals is maintained, because “[i]nformation known by persons in addition to the trade secret owner can retain its status as a trade secret if it remains secret from others to whom it has potential economic value.”¹¹⁰ Thus, as long as the information protected by the trade secret is not disclosed to competitors or the public at large, the protection is maintained.¹¹¹ The purpose of this disclosure is so that the regulating and health officials know what substances are going into the ground in their state and are able to avoid or address a contamination emergency.

The information disclosed to the public would be much more limited in comparison to the information disclosed to state agencies. Companies would have to publicly disclose any toxic or hazardous chemicals that they use to frack a well and that are listed in the EPA disclosure regulations. However, to meet the public demand for disclosure, it would not be necessary to disclose the volumes of the chemicals used. The companies would have to disclose toxic chemicals even if the amount is small enough that it is unlikely to cause health risks. The regulations would be flexible enough to allow companies to indicate that the amount injected is unlikely to cause health risks, and companies would always have the option to disclose more than is required. This disclosure would be online, so that people living around wells would be able to find the information without having to contact the drilling company or the government.

C. The Problem with the Current Level and Mode of Disclosure

Industry advocates, such as Energy in Depth (EID), claim that there is no problem with the current level and mode of disclosure of the chemicals used in hydrofracking additives.¹¹² EID claims “there isn’t a single ‘hazardous’ additive used in the fracturing process that’s hidden from public view.”¹¹³ It bases this claim on two facts. First, under the Community Right-to-Know Act, the company has to prepare and maintain product information sheets on the chemicals used and make these sheets available to emergency personnel in cases of accidents at the drill site.¹¹⁴ EID’s first fact does not resolve the issue both because there is no actual

¹¹⁰ RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 39 cmt. f (1995).

¹¹¹ *Id.*

¹¹² *Just the Facts: Isn't the Composition of Fracturing Fluids a Secret?*, ENERGY IN DEPTH, <http://www.energyindepth.org/just-the-facts/#secret> (last visited Apr. 1, 2012).

¹¹³ *Id.*

¹¹⁴ *Id.*

disclosure unless there is an accident and also because disclosure only occurs to accidents and not to water contamination. The second fact EID uses to make its claim is that some companies are beginning to disclose the chemicals they use in hydrofracking through a website, FracFocus.org.¹¹⁵ According to this site, companies can choose to disclose, so it is voluntary, instead of mandatory, disclosure.¹¹⁶

Voluntary disclosure is a good start, but it is not enough. It seems clear that two key factors causing the public demand for disclosure: first, fear of contamination that can cause health problems and, second, a lack of trust in the industry to keep the groundwater safe and uncontaminated. Voluntary disclosure cannot remedy these two elements. Voluntary disclosure does not create trust, and there is no entity to check the accuracy of the disclosures under a voluntary scheme. Voluntary disclosure amounts to allowing the industry to self-regulate, which has already proved unworkable.

To remove the fear and engender trust, any violation of disclosure rules, either from not disclosing or from only partially disclosing, must be backed by the force of law. Noncompliance with a voluntary disclosure scheme imposes no penalty or sanction on companies. A disclosure regime backed by the force of law and by penalties, however, will force companies to take the matter of disclosure seriously and will encourage compliance with the disclosure regulations.

Industry advocates, as indicated above, prefer and want the public to accept this a voluntary self-regulation scheme. For the public to be satisfied with a voluntary disclosure regime, the public would have to have a great deal of faith and trust in the industry. It seems unlikely that the public will have trust in an industry that has at best been wrong and, at worst, has misled the public for years about the contamination risks from fracking. In a congressional hearing in 2010, Rex Tillerson, the CEO of ExxonMobil, stated “There have been over a million wells hydraulically fractured in the history of the industry, and there is not one, not one, reported case of a freshwater aquifer having ever been contaminated from hydraulic fracturing.”¹¹⁷ Statements like these are designed to lead people to the conclusion that there has been no instance of groundwater contamination in fracking’s history, which is patently not the case. As early as 1984, contamination of a well caused by hydrofracking chemicals was discovered in Jackson County, West Virginia.¹¹⁸ This past December, the

¹¹⁵ *Id.*

¹¹⁶ See *How Can My Company Become a Fracfocus Participating Company and Begin Entering Records?*, FRACFOCUS CHEMICAL DISCLOSURE REGISTRY, <http://fracfocus.org/faq> (click “How can my company become a FracFocus participating company and begin entering records?”) (last visited Feb. 27, 2012).

¹¹⁷ Urbina, *supra* note 19.

¹¹⁸ *Id.*

EPA reported the contamination of an aquifer near Pavilion, Wyoming associated with hydrofracking.¹¹⁹ In the intervening period, there may have been more examples, but how many more, if any, cannot be ascertained because of the common practice of sealing the details of cases when they are settled between landowners and energy companies.¹²⁰ If companies are continuing to deny the dangers of groundwater contamination after cases of such contamination have been discovered, the public will not have enough trust in the industry to be satisfied with voluntary disclosure. Therefore, such self-regulatory measures are insufficient to resolve the tension between the drilling companies and the public's demand for disclosure.

VII. CONCLUSION

It is almost axiomatic that businesses will resist new regulations. However, if industry advocates are correct, the proposal outlined above will not add any substantial burden to energy extraction companies.¹²¹ Advocates claim that these companies disclose, at least to some extent, the composition of their hydrofracking additives on sites such as FracFocus.org.¹²² Indeed, these companies should welcome the proposal herein because having one promulgator of these regulations, the EPA, would simplify regulations on disclosure. States wouldn't promulgate their own regulations; they would just be empowered to enforce the federal regulations.

Energy formations, such as shale gas plays, recognize no state boundary. Thus, a company currently drilling for gas on both sides of a state border has to be aware of, and comply with, two different disclosure regulations. This proposal would protect existing trade secrets by creating one law on disclosure, uniform across the U.S. Companies would have to disclose the composition, by volume, of the trade secret protected formulas to state agencies, such as the state health department and the agency enforcing public disclosure, but would only have to publicly disclose any toxic or hazardous chemicals, such as those regulated under the Safe Drinking Water Act, that are being injected into the wells. The companies would, of course, have the freedom to publicly disclose more information, on FracFocus.org or in some other manner, should they so choose. The key difference between voluntary public disclosure and public disclosure imposed by regulation, even if the information disclosed is the same, is that the imposed disclosure has the weight of law behind it, and entities that fail to disclose or only partly disclose will face legal sanctions. Voluntary

¹¹⁹ O'Toole, *supra* note 20.

¹²⁰ Urbina, *supra* note 19.

¹²¹ *Just the Facts: Isn't the Composition of Fracturing Fluids a Secret?*, *supra* note 112.

¹²² *Id.*

disclosure is an admirable first step in this area, but it is not enough to dispel public concerns about hydrofracking and build the public's trust. Regulated disclosure is necessary to accomplish those goals.