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# THE NOT-SO-SAFE DRINKING WATER ACT: WHY WE MUST REGULATE HYDRAULIC FRACTURING AT THE FEDERAL LEVEL

ANGELA C. CUPAS\*

## INTRODUCTION

When Congress enacted the Safe Drinking Water Act in 1974, it gave the Environmental Protection Agency the power to set national standards governing the maximum acceptable levels of water-contaminates in public water systems.<sup>1</sup> Section 300f of the Safe Drinking Water Act mandates regulation of any contaminant that may adversely affect human health, “in the judgment of the Administrator.”<sup>2</sup> The Safe Drinking Water Act also authorizes states to create specific regulations to protect their underground drinking water sources, as long as each state complies with the EPA’s minimum requirements and receives EPA approval.<sup>3</sup> The Safe Drinking Water Act requires that any state wishing to create its own regulatory regime must incorporate a plan to regulate industrial underground extraction processes known as “underground injection control” programs.<sup>4</sup> Most industrial extraction processes involve the injection of “propping agents,” such as sand, water, nitrogen, and diesel fuel into underground gas or oil reservoirs. These agents are used to pry open gaps in underground reservoirs to allow the fluids to flow toward the collection and production chambers quickly and efficiently.<sup>5</sup>

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<sup>1</sup> Safe Drinking Water Act, Pub. L. No. 93-523 §2(a), 88 Stat. 1660 (1974) (codified as amended at 42 U.S.C. § 300f et seq. (2000)).

<sup>2</sup> 42 U.S.C. § 300f (2000).

<sup>3</sup> See 42 U.S.C. § 300h-1 (2000); 42 U.S.C. § 300g-2 (2000).

<sup>4</sup> 42 U.S.C. § 300h-1(b) (2000). See also Nicholas A. Robinson, *Environmental Controls: Drinking Water Regulation*, 10 REAL PROP. PROB. & TR. J. 675, 678 (1975) (noting that states are given primary enforcement authority to regulate underground drinking water safety standards only after they have adopted regulations and enforcement programs that are at least as strict as the federal standards).

<sup>5</sup> U.S. ENVTL. PROT. AGENCY, EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS, ES-4, ES-12 (2004), available at [http://www.epa.gov/OGWDW/uic/wells\\_coalbedmethanestudy](http://www.epa.gov/OGWDW/uic/wells_coalbedmethanestudy)

Despite efforts to create regulatory uniformity among the states, the EPA granted statutory exemption to a process known as 'hydraulic fracturing,' in which highly pressurized fluids (propping agents) bombard underground coalbed methane reservoirs, releasing natural oil and gas.<sup>6</sup> Intense debate has spawned over why a process that is so similar in substance to one which is heavily regulated under the Safe Drinking Water Act is exempt from federal regulation.<sup>7</sup> The formal battle over whether the Safe Drinking Water Act must regulate hydraulic fracturing began in 1997, when the Legal Environmental Assistance Foundation, Inc. filed a petition asking the EPA to withdraw its approval of Alabama's underground injection program.<sup>8</sup> Specifically, LEAF alleged that the Alabama underground injection control program was inadequate because it completely failed to regulate methane hydraulic fracturing processes.<sup>9</sup> The EPA avoided complying with the court's decision by instead conducting a study from 2000-2004, finding that the injection of certain extraction materials into coalbed methane wells posed "little or no threat to underground sources of drinking water."<sup>10</sup>

Despite the EPA's blatant rejection of the Eleventh Circuit's decision in *Legal Environmental Assistance Foundation v. EPA*, the EPA continues to work with states to regulate *other* forms of underground injections.<sup>11</sup> Yet, even these controls have proved unsatisfactory and unresponsive to complaints of underground aquifer contamination.<sup>12</sup> The

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.html [hereinafter EVALUATION OF IMPACTS] (noting that the EPA has acknowledged that the use of diesel fuel as a propping agent exposes formerly pure underground water supplies to dangerous contaminants called "BTEX compounds," which are heavily regulated under the Safe Drinking Water Act).

<sup>6</sup> See Energy Policy Act of 2005, sec. 322, § 1421(d), 119 Stat. 594, 694 (to be codified at 42 U.S.C. § 300h(d)). See also Robert L. Glicksman, *From Cooperative to Inoperative Federalism: The Perverse Mutation of Environmental Law and Policy*, 41 WAKE FOREST L. REV. 719, 772 (2006) (discussing the weakening of federal protection of the environment from air and water pollution).

<sup>7</sup> See 42 U.S.C. § 300h (2000).

<sup>8</sup> *Legal Envtl. Assistance Found. v. EPA (LEAF I)*, 118 F.3d 1467, 1471 (11th Cir. 1997).  
<sup>9</sup> *Id.*

<sup>10</sup> EVALUATION OF IMPACTS, *supra* note 5, at ES-16. See *id.* at ES-1, ES-7.

<sup>11</sup> NATURAL RES. DEF. COUNCIL, HYDRAULIC FRACTURING OF COALBED METHANE WELLS: A THREAT TO DRINKING WATER 5 (2002), available at [http://www.earthworksaction.org/pubs/200201\\_NRDC\\_HydrFrac\\_CBM.pdf](http://www.earthworksaction.org/pubs/200201_NRDC_HydrFrac_CBM.pdf).

<sup>12</sup> See *id.* at 1-4. The NRDC argued that the Senate should reject section 604 of the proposed Energy Policy Act of 2002. Such rejection would allow coalbed hydraulic fracturing to be regulated under section 1425 of the Safe Drinking Water Act, rather than take an all or nothing approach under the more restrictive section, which regulates other oil and

dangerously vague SDWA statutory requirements regarding oil and gas extraction have been criticized for favoring the oil and gas industries over the need to maintain pure drinking water sources.<sup>13</sup> Even in the face of numerous contamination complaints,<sup>14</sup> the Safe Drinking Water Act continues to specifically prohibit state restrictions upon “any underground injection for the secondary or tertiary recovery of oil or natural gas.”<sup>15</sup> Under the current regulation, it appears that the federal government and its agencies will continue to apply a ‘hands-off’ approach to oil and gas fracturing, unless there is clear proof that restrictions are necessary to protect endangered underground water sources.<sup>16</sup> Despite complaints about damages to water safety, plant and animal life, and human health, the EPA has managed to avoid responsibility and accountability for the potential damage being caused.<sup>17</sup> Instead of acknowledging the harmful

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gas injection processes. *See id.* at 1. *See generally* Energy Policy Act of 2002, S. 1766, 107th Cong. § 604 (1st Sess. 2001), available at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107\\_cong\\_bills&docid=f:s1766pcs.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=107_cong_bills&docid=f:s1766pcs.txt.pdf).

<sup>13</sup> Letter from John D. Bredehoeft, Expert Consultant, Oil and Gas Accountability Project, to Joan Harrigan-Farrelly, Chief, Prevention Branch, Drinking Water Protection Division, Office of Ground Water and Drinking Water, EPA (May 15, 2003), available at [http://www.earthworksaction.org/pubs/Bredehoeft\\_Testimony\\_Hydraulic\\_Fracturing.pdf](http://www.earthworksaction.org/pubs/Bredehoeft_Testimony_Hydraulic_Fracturing.pdf). Bredehoeft notes that although the EPA admits to diesel fuel’s environmentally harmful qualities, the EPA does not regulate against its use, nor against the use of other toxic chemicals, in hydraulic fracturing. *Id.* (“[H]ydraulic fracturing fluids are not fully recovered by subsequent gas development . . . The problem fluids that create aquifer contamination are associated with 1) the use of diesel fuel in the fracking gel, and 2) the use of methanol as an acid treatment.”).

<sup>14</sup> *See* NATURAL RES. DEF. COUNCIL, *supra* note 11, at 3 (describing complaints from six counties in both Alabama and Virginia of deteriorating water quality affecting both households and business operations, i.e., a car wash business near a coalbed methane fracturing site that could no longer operate due to water contamination). *See also* EVALUATION OF IMPACTS, *supra* note 5, at ES-13 (listing complaints from citizens in four basins with coalbed methane development, regarding water quality and quantity).

<sup>15</sup> 42 U.S.C. § 300h(b)(2)(B) (2000).

<sup>16</sup> *See* 42 U.S.C. § 300h-2(b)(2) (2000). *See also* § 300h-2(b) (2000) (describing the available penalties for violating the requirements of underground injection programs).

<sup>17</sup> *See* EVALUATION OF IMPACTS, *supra* note 5, at 6-1 to 6-16 (noting that no further study on the potential threat to underground drinking water sources is warranted). *See also* LISA SUMI, OIL AND GAS ACCOUNTABILITY PROJECT, OUR DRINKING WATER AT RISK: WHAT EPA AND THE OIL AND GAS INDUSTRY DON’T WANT US TO KNOW ABOUT HYDRAULIC FRACTURING 3 (2005) (noting that fracturing fluids create risk from “eye, skin, respiratory, internal organ and reproductive disorders, to cancer.”); U.S. Env’tl. Prot. Agency, Consumer Fact-sheet on: Benzene, [http://www.epa.gov/safewater/contaminants/dw\\_contamfs/benzene.html](http://www.epa.gov/safewater/contaminants/dw_contamfs/benzene.html) (last visited Nov. 26, 2008) (noting that the short term health effects of ingestion of diesel fuel, a common fracturing fluid, include nervous system disorders and anemia, while the long term health effects include “[c]hromosome aberrations, [and] cancer.”).

effects of hydraulic fracturing, the EPA blames naturally occurring phenomena for the water problems.<sup>18</sup> The question becomes how *clear* must the proof of contamination be before the EPA begins to regulate hydraulic fracturing under section 300g-1 of the Safe Drinking Water Act. It seems as though the EPA will continue to find ways to dismiss the all but incriminating evidence of how hazardous hydraulic fracturing truly is.

In response to individual state claims that hydraulic fracturing processes have contaminated local water sources, the EPA's 2004 study did little to prove otherwise. Instead of conducting its own independent research, the EPA merely reviewed the data compiled in state agency reports that were created in response to complaints from areas with nearby coalbed methane basins.<sup>19</sup> The EPA quickly dismissed the complaints stating, that during their review of the state reports, they found "no *conclusive* evidence that water quality degradation in [underground sources of drinking water] is a *direct* result of injection of hydraulic fracturing fluids into CBM wells."<sup>20</sup>

Numerous studies and critiques show that the EPA's 2004 underground injection control program study was nothing more than a lackadaisical approach to an incredibly important environmental issue—one which requires far more aggressive regulation in light of inadequate state underground injection control programs and contamination complaints from multiple states.<sup>21</sup> The quality of aquifers bordering hydraulic fracturing sites is continually at risk from the inordinate amounts of toxic chemicals that are invariably left behind during the fracturing process.<sup>22</sup>

Despite the numerous complaints from residents of various states where hydraulic fracturing occurs,<sup>23</sup> the EPA continually avoids creating a national regulatory scheme with regards to hydraulic fracturing in

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<sup>18</sup> EVALUATION OF IMPACTS, *supra* note 5, at ES-13 (blaming "[r]esource development, naturally occurring conditions, population growth, and historical well-completion or abandonment practices" for the various types of damages to underground drinking water sources).

<sup>19</sup> *See id.*

<sup>20</sup> *Id.* (emphasis added).

<sup>21</sup> *See* NATURAL RES. DEF. COUNCIL, *supra* note 11, at 2; SUMI, *supra* note 17, at 2 (describing Weston Wilson, an EPA whistleblower, who called the EPA's study "scientifically unsound," and suggested that the EPA continue its studies in addition to forming a "peer review panel" that would be comprised of disinterested parties who do not work for the oil and gas industries); Bredehoeft, *supra* note 13.

<sup>22</sup> *See* Bredehoeft, *supra* note 13.

<sup>23</sup> *See* SUMI, *supra* note 17, at vi (describing residents of Virginia, Alabama, Colorado, New Mexico, Wyoming, and West Virginia who have experienced reductions in water quality or quantity as a result of nearby fracturing activities).

coalbed methane basins. The language mandating the administrative imposition of a national drinking water regulation is entirely too permissive. Under section 300g-1, the Safe Drinking Water Act only *requires* the EPA to create a national maximum contaminate level when the contaminate “*may* have an adverse effect on the health of persons. . . . [T]here is a substantial likelihood that [it] will occur in public water systems . . . [And such a regulation] is in the *sole judgement of the Administrator* [whether] regulation of such contaminant presents a meaningful opportunity for health risk reduction.”<sup>24</sup>

This note will explore the weaknesses embodied within the Safe Drinking Water Act that merely *permit* the EPA to create national mandatory drinking water regulations at its discretion. It will suggest that with respect to hydraulic fracturing, permissive attitudes cannot be tolerated; in order to cure the obvious water-contamination problems this process creates, nothing short of a national mandatory scheme will suffice. Section I of this Note will analyze the Safe Drinking Water Act sections relating to underground injection and explore how the EPA has attempted to manipulate the statute’s linguistic loopholes to avoid regulating hydraulic fracturing. Section II of this Note will analyze the 2004 EPA underground injection control program study in relation to the *LEAF I* and *LEAF II* cases, and how the underground injection control study was used as an evasive tool to avoid complying with two rather thorough Eleventh Circuit decisions. Section III of this Note will focus on contamination complaints from various hydraulic fracturing states. Finally, Section IV will propose two solutions to the hydraulic fracturing problem: the EPA should either regulate hydraulic fracturing under the more lenient section 1425 of the Safe Drinking Water Act or use biodegradable hydraulic fracturing fluids instead of toxic chemicals.

## I. HYDRAULIC FRACTURING & STATUTORY MAYHEM

### A. *History*

The process known as hydraulic fracturing (or “fracking”) began in the early 1940’s, when the easily-extracted oil and gas reservoirs began to deplete in noticeable quantities.<sup>25</sup> The purpose of the fracturing process was

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<sup>24</sup> 42 U.S.C. § 300g-1(b)(1)(A)(i)-(iii) (2000) (emphasis added).

<sup>25</sup> Les Bennet et al., *The Source for Hydraulic Fracture Characterization*, OILFIELD REV., Winter 2005/2006, at 42, available at <http://www.slb.com/media/services/resources/oilfieldreview/ors05/win05/composite.pdf>.

to allow fuel industries to extract hydrocarbons<sup>26</sup> from "low-permeability reservoirs," or natural underground gas chambers that require massive amounts of hydraulic stimulation to recover a cost-effective amount of gas and/or oil.<sup>27</sup>

The basic process of hydraulic fracturing is as follows: a combination of highly pressurized fluids and solvents are combined at the fracturing site, where they are then discharged at great rates of speed towards a subterranean reservoir.<sup>28</sup> Many of the liquids, foams, and solvents mixed into the fracturing agent are highly controversial because they contain toxic chemicals that pose serious threats to the purity and safety of underground sources of drinking water ("USDWs").<sup>29</sup> These potentially dangerous fluids are constantly bombarded against the underground well until at least one new fracture appears in the surface of the earth or an existing natural fracture widens.<sup>30</sup> Once the fractures are created or widened, sand is injected into the seams of the fracture to ensure that the cracks remain open during the extraction process.<sup>31</sup> To begin coalbed methane ("CBM") extraction, groundwater and "some of the injected fracturing fluids" are pumped to the surface, but many potential contaminants are left behind.<sup>32</sup>

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<sup>26</sup> "The most common hydrocarbons include petroleum, natural gas, and coal." Oilfield Glossary: Term 'hydrocarbon,' <http://www.glossary.oilfield.slb.com/Display.cfm?Term=hydrocarbon> (last visited Nov. 26, 2008).

<sup>27</sup> See Bennet et al., *supra* note 25, at 42.

<sup>28</sup> See U.S. Patent No. 5,711,376 col. 11.19-28 (filed Dec. 7, 1995), *available at* <http://www.patentstorm.us/patents/5711376-fulltext.html>. See also EVALUATION OF IMPACTS, *supra* note 5, at ES-12 ("The fracturing fluids, additives, and proppant are pumped from the storage tanks to a manifold system placed on the well head where they are mixed just prior to injections.").

<sup>29</sup> EVALUATION OF IMPACTS, *supra* note 5, at ES-12 (noting that because it is possible to dissolve more fracturing agents per volume in diesel fuel than water, the former is commonly used as a base for mixing the propping agents; the EPA admits that the chemicals contained in diesel fuel are heavily regulated under the SDWA, and do pose a serious threat to an otherwise sanitary water source). For a detailed discussion of the hazardous and highly controversial nature of the fracturing fluids see *infra* Part II.

<sup>30</sup> See '376 Patent, *supra* note 28, at 1. See also Bennet et al., *supra* note 25, at 43 (noting that hydraulically-created fractures tend to exploit the weak structure of underground wells by expanding the preexisting natural fractures, therefore further enhancing the oil/gas recovery).

<sup>31</sup> EVALUATION OF IMPACTS, *supra* note 5, at ES-4.

<sup>32</sup> *Id.*

This multi-billion dollar industrial process has permeated the United States from coast to coast,<sup>33</sup> and today, nearly ninety percent of oil and gas recovery units use hydraulic fracturing to impel fuel recovery.<sup>34</sup> It is no wonder why such a powerful industry continues to support the EPA in evading regulation of such an efficient but dangerous process.

*B. The Safe Drinking Water Act & Hydraulic Fracturing*

The Safe Drinking Water Act ("SDWA") is full of loopholes through which the EPA can avoid what should be *mandatory* regulation of hydraulic fracturing activities. First, the permissive qualities of the SDWA under the "National Primary Drinking Water Regulations" ("NPDWRs") allowed the EPA to avoid creating a national regulatory regime with respect to *methane* hydraulic fracturing.<sup>35</sup> The NPDWRs were designed to apply to all public water systems with four exceptions, none of which should apply to the types of water systems affected by hydraulic fracturing.<sup>36</sup> The EPA has an unjustified degree of discretion under the sections of the SDWA, which permits an administrative agency to use its "sole judgment"<sup>37</sup> when determining what types of contamination-reducing technologies are "feasible."<sup>38</sup> In choosing which contamination-reduction processes to use, the EPA generally analyzes whether the costs of complying with a maximum contaminant level are justified by the benefits to public health.<sup>39</sup> Unfortunately, the EPA has ultimately misused this discretion to create soft regulatory schemes that favor powerful politically-charged operations, like the oil and gas industries, over any concern for public welfare.<sup>40</sup>

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<sup>33</sup> See Bennet et al., *supra* note 25, at 42 (stating that in 2005, the major oil and gas industries spent approximately \$3.8 billion on hydraulic fracturing).

<sup>34</sup> SUMI, *supra* note 17, at vi.

<sup>35</sup> 42 U.S.C. § 300g-1 (2000).

<sup>36</sup> Robinson, *supra* note 4, at 677. The four exempted water systems: (1) systems that do not sell water, (2) water systems that do not carry passengers between states, (3) systems that procure water from a system that is not exempt, and (4) systems that merely distribute water, but lack collection and purification facilities. *Id.* at 677 n.18.

<sup>37</sup> 42 U.S.C. § 300g-1(b)(1)(A)(iii) (2000).

<sup>38</sup> 42 U.S.C. § 300g-1(b)(4)(D) (2000).

<sup>39</sup> 42 U.S.C. § 300g-1(b)(6)(A) (2000).

<sup>40</sup> See Glicksman, *supra* note 6, at 772-73 (2006) (noting that in regards to environmentally harmful industrial processes that receive exemptions from legislative control, "[t]he federal government, particularly during the George W. Bush Administration, also has taken steps to weaken federal efforts to protect the environment from pollution . . .").



C. *Safe Drinking Water Act Section 300g-1: The First Lax Regulation*

SDWA section 300g-1 requires the EPA to establish a maximum acceptable level for a given contaminant and create a "national primary drinking water regulation . . . if the Administrator determines that—" (1) the contaminant *may* adversely affect human health; (2) there is a "substantial likelihood" that the contaminant will permeate the public water systems at a rate and quantity that stimulates health concerns; and (3) "in the *sole* judgment of the Administrator, regulation of" the contaminant presents an opportunity to reduce risks to human health.<sup>41</sup> In determining whether a contaminant meets these three permissive requirements, the EPA must conduct research and present analysis on seven factors pertaining to the "health risk reduction benefits" of the regulation which it seeks to adopt.<sup>42</sup>

In an attempt to safeguard against arbitrary and lackadaisical research efforts, the statute requires the EPA to base its decision(s) upon the "best available, peer-reviewed science" and other relevant public information.<sup>43</sup> However, this safeguard is insufficient because it allows the administrator to rely on "data collected by *accepted* methods or *best available* methods (if the reliability of the method and the nature of the decision justifies use of the data)."<sup>44</sup> Section 300g-1 of the SDWA contains no caveats, references, or definitions to qualify the meaning of "*accepted*" or "*best available*" methods—the determination of which is left solely in the hands of the administration.<sup>45</sup> In essence, the administration is allowed to engage in a circular process of assessment; it is free to select "accepted" research that supports its hypothesis, while discarding the rest, as long as

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<sup>41</sup> 42 U.S.C. §§ 300g-1(b)(1)(A)(i)-(iii) (2000) (emphasis added).

<sup>42</sup> 42 U.S.C. §§ 300g-1(b)(3)(C)(i)(I)-(VII) (2000) (describing the seven factors as "quantifiable and nonquantifiable health risk reduction benefits for which there is a factual basis to conclude . . .": (1) that reductions in health risks will occur as a result of compliance with the proposed treatment, (2) that the proposed treatment will target the contaminants causing the damage, (3) that costs resulting from the regulation are justified, (4) that "incremental costs" resulting from compliance with the regulation have been considered, (5) consideration of the contaminant's effect(s) upon the general public as well as upon children, elderly, and pregnancies, (6) any *increased* health risks stemming from compliance, and (7) any other "relevant factors," with discretion invested solely—once again—in the administrative agency) (emphasis added).

<sup>43</sup> See 42 U.S.C. §§ 300g-1(b)(3)(A)-(B) (2000).

<sup>44</sup> 42 U.S.C. § 300g-1(b)(3)(A)(ii) (2000) (emphasis added).

<sup>45</sup> *Id.* (emphasis added).

the selected research is rubber-stamped with the administration's own acceptance.<sup>46</sup> The EPA's 2004 UIC Program Study is proof that as long as an administrative agency incorporates the appropriate buzz words into its presentation, like "state agency report," the statutory authorities will blindly accept as 'fact' whatever the agency decides, without further inquiry into the thoroughness of the investigation.<sup>47</sup>

In general, the legislature gives administrative agencies broad discretion to make decisions about areas of law and policy in which the agency's expertise is purportedly unparalleled.<sup>48</sup> Congress relinquished its discretionary power in these areas to ease the legislature's duty of statutory construction; under the SDWA, the EPA was to use its environmental expertise to conduct all scientific evaluations and devise the complex treatment plans, which the legislature lacked the power and know-how to create.<sup>49</sup> Instead, the EPA has used the deference given to it to manipulate what any reasonable investigation would uncover to be a blatant dismissal of a statutory obligation to explore a contaminant's cause, methods of prevention, and overall public policies for (and against) adopting a national regulatory scheme to limit the scope of damage to USDWs.<sup>50</sup>

During its underground injection control ("UIC") program study, the EPA conducted minimal amounts of original research, and selected only those scientific reports that catered to the conclusion that the administration sought to reach—that hydraulic fracturing "poses little or no threat to USDWs and does not justify additional study . . . ."<sup>51</sup> For example, the EPA conveniently refrained from including reports from nationally-renowned scientific laboratories, such as the Argonne National Laboratory, which reported on the toxic nature of multiple hydraulic fracturing chemicals.<sup>52</sup> In its report, the Argonne National Laboratory concluded that several chemicals frequently used in the extraction process

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<sup>46</sup> *Id.*

<sup>47</sup> See generally EVALUATION OF IMPACTS, *supra* note 5 (explaining the EPA determination that it was unnecessary to engage in further studies regarding threats of hydraulic fracturing to USDWs, after reviewing state incident reports and a hypothetical model of potential damages to USDWs).

<sup>48</sup> *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837, 844 (1984) (citations omitted) ("[C]onsiderable weight should be accorded to an executive department's construction of a statutory scheme it is entrusted to administer, and the principle of deference to administrative interpretations.").

<sup>49</sup> See 42 U.S.C. § 300h (2000).

<sup>50</sup> See EVALUATION OF IMPACTS, *supra* note 5, at ES-1, ES-12, 1-1, 7-5 to 7-6; SUMI, *supra* note 17, at vii-viii.

<sup>51</sup> See EVALUATION OF IMPACTS, *supra* note 5, at ES-1; SUMI, *supra* note 17, at vi.

<sup>52</sup> See SUMI, *supra* note 17, at 3.

"can be lethal at levels as low as 0.1 parts per million," a statistic never cited in the EPA's UIC program study.<sup>53</sup>

Furthermore, it is clear that the EPA has done very little to investigate the potential health risks associated with chemicals that are not specifically covered in the current statutory language.<sup>54</sup> Even more shockingly, the EPA's *draft* study noted that over ten chemicals associated with hydraulic fracturing required SDWA regulation, nine of which exceeded the regulatory standard,<sup>55</sup> however, in the final draft of the study, the EPA either completely removed or favorably altered calculations regarding most of these chemicals.<sup>56</sup> In sum the EPA has abused its discretion for too long without legislative reprimand. Section 300g-1 of the SDWA remains unamended and authorities remain seemingly unsurprised by the EPA's blatant refusal to play by the rules.

*D. Safe Drinking Water Act Section 300h: Another Sorry Excuse For a Regulation*

Although Congress specifically leaves "blanks" in many of its statutes with the expectation that the relevant administrative agency will fill them with proposals and policies that only an expert agency could provide, it is not meant to be a grant of legislative free reign.<sup>57</sup> Instead of filling the SDWA's blanks with expert insight, the EPA has manipulated the statutory loopholes to reach convenient conclusions, and it has not stopped at section 300g-1. Section 300h of the SDWA requires the EPA to create minimum standards with which state UIC programs must comply in order to gain primary enforcement authority over their own underground injection activities.<sup>58</sup> The statute requires all state UIC programs to prohibit underground injections unless they are authorized by state permit, and all programs must include continuous inspection and recordkeeping.<sup>59</sup> If a state program fails to meet the minimum standards, or if an accepted

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<sup>53</sup> *Id.* (quoting J.A. VEILE ET AL., ARGONNE NAT'L LAB., A WHITE PAPER DESCRIBING PRODUCED WATER FROM PRODUCTION OF CRUDE OIL, NATURAL GAS AND COALBED METHANE 7-8 (2004), available at <http://www.ead.anl.gov/pub/doc/ProducedWatersWP0401.pdf>).

<sup>54</sup> *Id.* at 9 (noting that where the SDWA lacked standards for maintaining water quality with respect to certain chemicals, the EPA did little more than refer to its own "Risk-Based Concentrations" for direction on the types of contaminants that may be hazardous to human health).

<sup>55</sup> *Id.* at 6-8.

<sup>56</sup> *Id.* at 6.

<sup>57</sup> See *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837, 843-45 (1984).

<sup>58</sup> 42 U.S.C. § 300h (2000).

<sup>59</sup> See 42 U.S.C. §§ 300h(b)(1)(A)-(D) (2000).

program is improperly run, the EPA has the authority to take responsibility as the primary enforcement authority in that area.<sup>60</sup> Each state wishing to obtain primary enforcement authority must send its application to the EPA, along with a description of the regulations proposed to prevent USDW contamination.<sup>61</sup>

The fact that the SDWA outsources broad amounts of discretion has created additional controversy with respect to whether the states should have the authority to design their own regulations.<sup>62</sup> Advocates of “cooperative federalism” support the idea that states can tailor regulations to their specific needs, while being guided by minimum federal standards.<sup>63</sup> Supporters believe that states are in the best position to decide what types of regulation would be the most effective in combating USDW contamination in their particular domain.<sup>64</sup> Critics of federal and state government cooperation maintain that it is inefficient for states to reproduce each other’s core research and data collection processes, and that the federal government should use the same information to form efficient national standards.<sup>65</sup>

As in section 300g-1, the EPA has the sole discretion under section 300h of the SDWA to decide whether to authorize state UIC program proposals, but this section provides an even stronger improper impetus for the EPA to refrain from regulating hydraulic fracturing activities. Specifically, the statute prohibits EPA interference with the “underground injection of . . . fluids which are brought to the surface in connection with oil or natural gas storage . . . or any underground injection for the secondary or tertiary recovery of oil or natural gas,” unless such regulation is “essential” to protecting the safety of USDWs.<sup>66</sup> In terms of when it is “essential” to regulate a UIC process, the statute specifies that underground injection will “endanger” USDWs when it can “reasonably be expected” to expose a public water system to “any contaminant.”<sup>67</sup> Unfortunately, the 2004 EPA UIC program study treated these sections of the statute as a

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<sup>60</sup> See 42 U.S.C. §§ 300g-3(a)-(b) (2000) (noting that the administration may also sue to compel compliance with the minimum levels of statutory requirement).

<sup>61</sup> 42 U.S.C. § 300h(b)(1) (2000).

<sup>62</sup> See Glicksman, *supra* note 6, at 731-46 (describing both the costs and benefits of allowing individual states to construct their own types of regulation).

<sup>63</sup> *Id.* at 726-27.

<sup>64</sup> *Id.* at 778-86.

<sup>65</sup> *Id.* at 733-36 (noting that other critics of state regulation claim that states may compete in a “race to the bottom,” by creating laws that are tolerant of potentially hazardous industrial activities in their efforts to attract new businesses).

<sup>66</sup> 42 U.S.C. § 300h(b)(2) (2000).

<sup>67</sup> 42 U.S.C. § 300h(d)(2) (2000) (emphasis added).

complete bar against regulating hydraulic fracturing; it dismissed any obligation to further explore or regulate hydraulic fracturing when it stated in its review that hydraulic fracturing presented no "significant potential threat to USDWs."<sup>68</sup>

Advocates of divesting the EPA of its power are wary of the fact that section 300g-1 of the SDWA essentially grants the EPA the sole discretion to define the contaminants that may "endanger" a USDW, what research to use (or not use) in its definition, and when to mandate *national* regulations.<sup>69</sup> These same individuals would most likely see the EPA's additional authority to decide when a state must regulate its own UIC activities under section 300h of the SDWA as an anomaly.<sup>70</sup> The biggest setback for opponents of administrative discretion occurred in 2005, when section 300h(1)(d)(B) of the SDWA was amended to specifically exclude hydraulic fracturing from regulation.<sup>71</sup> This section seeks to specifically exempt from regulation the "underground injection of fluids or propping agents . . . pursuant to *hydraulic fracturing* operations . . ."<sup>72</sup> This section read alone appears to be the pinnacle of statutory bars on hydraulic fracturing regulation.<sup>73</sup> The anomaly continues when section 300h(d)(1) of the SDWA is read in conjunction with other statutory sections that require regulation of many of the individual chemicals used during hydraulic fracturing processes.

## II. THE EPA AND THE LEAF: BATTLE OF THE ACRONYMS

Throughout case law history, arguments over statutory interpretation have plagued the court system. When an administrative agency applies its own interpretation of a statute to a certain situation, the court must invoke the "Chevron doctrine."<sup>74</sup> The Chevron doctrine requires the court to consider two questions when reviewing the legitimacy of an agency's

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<sup>68</sup> EVALUATION OF IMPACTS, *supra* note 5, ES-17 (emphasizing certain natural factors that help mitigate the effects of underground injection, such as biodegradation, absorption, and dilution of the chemical compounds when mixed into other propping agents).

<sup>69</sup> See 42 U.S.C. § 300g-1 (2000).

<sup>70</sup> See 42 U.S.C. § 300h (2000).

<sup>71</sup> See 42 U.S.C. § 300h(d)(1)(B)(ii) (2000 & Supp. V 2005). See also Energy Policy Act of 2005, *supra* note 6.

<sup>72</sup> 42 U.S.C. § 300h(d)(1)(B)(ii) (2000 & Supp. V 2005) (emphasis added).

<sup>73</sup> 42 U.S.C. § 300h(d)(2) (2000). The definition of what "endangers" a USDW follows this exemption—perhaps implying that if hydraulic fracturing endangered a USDW the statute would require regulation. *Id.*

<sup>74</sup> See CHARLES H. KOCH, Jr., ADMINISTRATIVE LAW AND PRACTICE § 12.32 (2d ed. 1997 & Supp. 2007).

statutory interpretation. First, the court must decide if Congress has clearly spoken on the specific issue at hand.<sup>75</sup> If Congress has expressed its intent in a clear and unambiguous manner, the court must apply this interpretation over any others that the administrative agency may have offered.<sup>76</sup> If Congress has not clearly spoken on the issue at hand, the court is confronted with its second question: if the statute is silent or ambiguous with respect to the specific issue, “the question for the court is whether the agency’s answer is based on a permissible construction of the statute.”<sup>77</sup> If the agency’s statutory construction is “reasonable,” the court may not replace it with another interpretation, especially in light of the deference given to each agency’s adeptness in creating policy within its particular area of expertise.<sup>78</sup>

On two separate occasions, the Eleventh Circuit Court of Appeals has encountered the Chevron doctrine for the purposes of answering the following question in the LEAF cases: whether the EPA was correct in stating that hydraulic fracturing for the purposes of extracting coalbed methane did not fit into its interpretation of the SDWA’s definition of “underground injection” processes for which regulation is mandated.<sup>79</sup>

#### A. *LEAF I*

The first LEAF case involved a petition to rescind the EPA’s approval of an Alabama UIC program, which engaged in unregulated methane gas hydraulic fracturing activities on at least eight separate occasions.<sup>80</sup> LEAF claimed that the SDWA’s guidelines for state UIC programs required the prohibition of all types of “underground injection,” unless the state obtained an authorized permit for such activities.<sup>81</sup> LEAF claimed that the nonconforming methane fracturing activities harmed nearby underground water sources and demanded that the EPA force the state to reform its UIC program immediately.<sup>82</sup>

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<sup>75</sup> *Id.*

<sup>76</sup> *Id.*

<sup>77</sup> *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837, 843 (1984). The court may not, however, apply its own interpretation to the statute where Congress has left “gaps” for the administrative agency to fill by regulation, unless the agency’s interpretation or regulation is “arbitrary, capricious, or manifestly contrary to the statute.” *Id.* at 843-44.

<sup>78</sup> *See id.* at 843-44, 865-66.

<sup>79</sup> *See LEAF I*, 118 F.3d 1467, 1471 (11th Cir. 1997); *Legal Envtl. Assistance Found. v. EPA (LEAF II)*, 276 F.3d 1253 (11th Cir. 2001).

<sup>80</sup> *LEAF I*, 118 F.3d at 1471 n.4.

<sup>81</sup> *Id.* at 1469, 1471.

<sup>82</sup> *Id.* at 1471. *See also* 42 U.S.C. § 300h(b)(1)(B) (2000) (noting that before obtaining an

In response, the EPA ultimately denied LEAF's request to nullify the Alabama UIC program.<sup>83</sup> The EPA claimed that the methane fracturing processes were left properly unregulated because their principal purpose was not that of "underground injection," or extraction processes that primarily involved the underground "emplacement" of fluids.<sup>84</sup> LEAF contended that the EPA's narrow interpretation of processes involving "underground injection" was inconsistent with the regulatory requirements under the SDWA, and that hydraulic fracturing must be regulated under every valid state UIC program. LEAF further claimed that the EPA was acting outside of its "statutory authority" in relying on an invalid interpretation of the SDWA to justify its decision to deny LEAF's petition.<sup>85</sup> LEAF asserted that the SDWA required such regulation because the process fit within the statutory definition of "underground injections."<sup>86</sup> The Eleventh Circuit Court of Appeals agreed with LEAF that the methane extraction processes being used were, in fact, "underground injections" for the purposes of regulation.<sup>87</sup>

During its review under the Chevron doctrine, the Eleventh Circuit held that "it [was] clear that Congress dictated that *all* underground injection be regulated under UIC programs," and that hydraulic fracturing fit within the statutory definition of "underground injection."<sup>88</sup> The court found that it was Congress's intent to cast a "wide regulatory net" over UIC programs that is "not limited to the injection of wastes or to injection for disposal purposes; it is intended also to cover, among other contaminants, the injection of brines and the *injection of contaminants for extraction or other purposes*."<sup>89</sup>

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underground injection permit, a state must prove that the "underground injection will not endanger drinking water sources").

<sup>83</sup> *LEAF I*, 118 F.3d at 1472.

<sup>84</sup> *Id.* at 1471.

<sup>85</sup> *Id.* at 1473.

<sup>86</sup> *Id.* at 1471-72. See also 42 U.S.C. § 300h(d)(1) (2000) (defining "underground injection" as "the subsurface emplacement of fluids by well injection [but excluding] . . . the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities").

<sup>87</sup> *LEAF I*, 118 F.3d at 1475.

<sup>88</sup> *Id.* at 1474. The court further held that "[n]othing in the statutory definition suggests that the EPA has the authority to exclude from the reach of the regulations on a activity (i.e., hydraulic fracturing) which unquestionably falls within the plain meaning of the definition . . ." *Id.* at 1475.

<sup>89</sup> *Id.* See also H.R. REP. NO. 93-1185, at 31 (1974) (discussing the definition of underground injection and its intended scope).

## B. *LEAF II*

Upon holding that all types of underground fracturing activities must be regulated, the Eleventh Circuit made it clear that the SDWA's statutory loopholes have not only been noticed, but interpreted such that they should be effectively closed with respect to regulation of hydraulic fracturing.<sup>90</sup> Yet, before the court could carry out a writ of mandamus to enforce its holding in *LEAF I*, Alabama threw a monkey wrench into the equation: a revised UIC program, in which the state purported to have implemented restrictions upon hydraulic fracturing.<sup>91</sup> This diversion created an opportunity for the EPA to consider approving the revised UIC program under section 1425, a different and less restrictive section of the SDWA.<sup>92</sup> This section provides an opportunity for states to show that they have developed an "alternative showing of effectiveness" of their UIC programs; if a state can show that its underground injection activities satisfy the requirements of SDWA section 300h(b)(1)(A)-(D), approval is warranted.<sup>93</sup> However, section 1425 of the SDWA does not specifically include hydraulic fracturing in the activities eligible for alternative approval.<sup>94</sup> Thus, to fit the UIC activities under section 1425 of the SDWA, the EPA classified them as "Class II-like underground injection activities," which means that CBM wells fell outside the classification of "Class II injection wells for purposes of complying with all of the Class II regulatory requirements . . . ."<sup>95</sup>

Undistracted by EPA's tactics, *LEAF* once again challenged EPA's interpretation of the statutory language, claiming that Alabama's revised

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<sup>90</sup> *LEAF I*, 118 F.3d at 1478.

<sup>91</sup> *LEAF II*, 276 F.3d 1253, 1256 (11th Cir. 2001) (stating that the revised Alabama UIC program would regulate hydraulic fracturing as a "Class II-like underground injection activity") (emphasis added). See also 42 U.S.C. § 300h-4 (2000) (defining Class II wells as "wells which inject fluids: (1) which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants . . . unless those waters are classified as hazardous waste at the time of injection.").

<sup>92</sup> See 42 U.S.C. §§ 300h-4(a)(1)-(2) (2000). See also *LEAF II*, 276 F.3d at 1257 (noting that unlike approval requirements under other SDWA sections, the "requirements for those programs covered under section 1425 are more flexible than the requirements for those programs covered under [other sections]").

<sup>93</sup> See 42 U.S.C. §§ 300h(b)(1)(A)-(D) (2000) (requiring a state UIC program to comply with minimal statutory requirements, including recordkeeping, monitoring, and reporting, and proof that the underground injection program will not endanger USDWs).

<sup>94</sup> See 42 U.S.C. § 300h-4(a) (2000).

<sup>95</sup> *LEAF II*, 276 F.3d at 1262 (emphasis added).



UIC program must also be rejected until hydraulic fracturing was properly *classified and regulated*.<sup>96</sup> LEAF argued that the EPA's classification of all CBM fracturing activities as "Class II-like underground injection activities" was contrary to Congressional intent.<sup>97</sup> Once again, the Eleventh Circuit ruled in favor of LEAF; the court held that the EPA must classify hydraulic fracturing into one of the five specific SDWA categories for the clear purpose of underground injection regulation.<sup>98</sup>

### C. *Life After the LEAF Cases*

Despite the Eleventh Circuit's holdings, the EPA continued to search for alternative means of approval for UIC activities, instead of complying with the court's orders to regulate hydraulic fracturing in the same manner as underground injections of other hazardous materials (i.e., as a Class II well).<sup>99</sup> After the *LEAF II* decision, the EPA has not conducted any other panoptic studies on the environmental effects of hydraulic fracturing aside from its study ending in 2004, in which it disregarded multiple states' complaints of water contamination as inconclusive proof of a direct relationship between the fracturing and water damage.<sup>100</sup> Yet, some environmentalists remained uneasy in the face of the EPA's blunt conclusion that the "injection of hydraulic fracturing fluids into CBM wells poses little or no threat to USDWs and does not justify additional study . . . ."<sup>101</sup> In an attempt to appease the opposition, the EPA entered an agreement with ninety-five percent of the oil and gas operators that engaged in hydraulic fracturing, which asked the industry to remove diesel fuel and other toxic substances from the fracturing fluids injected into USDWs.<sup>102</sup> The 2003 Memorandum of Agreement ("MOA") established a "voluntary agreement" between the EPA and three major oil companies; any company that agreed to comply with the MOA would have thirty days from signing the agreement to terminate their use of diesel fuel in hydraulic

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<sup>96</sup> See *id.* at 1255-56.

<sup>97</sup> *Id.* "According to LEAF, wells used for hydraulic fracturing are Class II wells and should be regulated as such." *Id.* at 1262 (emphasis added).

<sup>98</sup> See *id.* at 1264. The court agreed with LEAF that "wells used for the injection of hydraulic fracturing fluids fit squarely within the definition of Class II wells." *Id.* at 1263.

<sup>99</sup> See 42 U.S.C. § 300h-4 (2000); *supra* notes 92-95 and accompanying text.

<sup>100</sup> See James M. Inhofe & Frank Fannon, *Energy and the Environment: The Future of Natural Gas in America*, 26 ENERGY L. J. 349, 371 (2005); EVALUATION OF IMPACTS, *supra* note 5, at ES-1 to ES-2.

<sup>101</sup> EVALUATION OF IMPACTS, *supra* note 5, at ES-1.

<sup>102</sup> Inhofe & Fannon, *supra* note 100, at 371.

fracturing processes.<sup>103</sup> The EPA indicated that the three targeted oil companies performed ninety-five percent of the hydraulic fracturing operations in the United States.<sup>104</sup> In theory, if all three companies signed the MOA, diesel fuel would be virtually eliminated from hydraulic fracturing activities once and for all.<sup>105</sup>

In the end, the MOA did not cast the type of authoritative dye that was originally hoped for; permissive language permeated the agreement and stunted its potential for becoming a new regulatory control over hydraulic fracturing processes.<sup>106</sup> In other words, the MOA permitted oil companies that notified the EPA within thirty days after a decision to abandon the agreement to “re-institute the use of diesel fuel additives in hydraulic fracturing fluids injected into USDWs for CBM production.”<sup>107</sup>

In sum, the EPA made only the most minimal efforts to comply with the Eleventh Circuit’s Court of Appeals rulings, which appeared to compel the EPA towards regulating hydraulic fracturing.<sup>108</sup> In what seemed to be a step in the right direction, the EPA drafted a single document designed to curtail the use of some, but not all,<sup>109</sup> toxic hydraulic fracturing chemicals: the MOA. The EPA subsequently diluted the agreement’s effect when it made adherence to the agreement completely optional, without imposing any repercussions on oil companies wishing to re-institute diesel fuel into their fracturing activities.<sup>110</sup> In the face of a company’s decision to retract its compliance with the MOA, the EPA would have “no residual

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<sup>103</sup> EPA, A MEMORANDUM OF AGREEMENT BETWEEN THE UNITED STATES EPA AND BJ SERVICES COMPANY, HALLIBURTON ENERGY SERVICES, INC., AND SCHLUMBERGER TECHNOLOGY CORP.: ELIMINATION OF DIESEL FUEL IN HYDRAULIC FRACTURING FLUIDS INJECTED INTO UNDERGROUND SOURCES OF DRINKING WATER DURING HYDRAULIC FRACTURING OF COALBED METHANE WELLS 2, 5 (2003) [hereinafter EPA MOA], available at [http://epa.gov/safewater/uic/pdfs/moa\\_uic\\_hyd-fract.pdf](http://epa.gov/safewater/uic/pdfs/moa_uic_hyd-fract.pdf).

<sup>104</sup> EPA, PUBLIC COMMENT AND RESPONSE SUMMARY FOR THE STUDY ON THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING OF COALBED METHANE WELLS ON UNDERGROUND SOURCES OF DRINKING WATER 7 (2004) [hereinafter EPA PUBLIC COMMENT], available at [http://www.epa.gov/safewater/uic/pdfs/cbmstudy\\_attach\\_uic\\_resp\\_to\\_comments.pdf](http://www.epa.gov/safewater/uic/pdfs/cbmstudy_attach_uic_resp_to_comments.pdf).

<sup>105</sup> See *id.*

<sup>106</sup> See EPA MOA, *supra* note 103.

<sup>107</sup> *Id.* at 5.

<sup>108</sup> See *LEAF I*, 118 F.3d 1467, 1478 (11th Cir. 1997); *LEAF II*, 276 F.3d 1253, 1264-65 (11th Cir. 2001).

<sup>109</sup> EVALUATION OF IMPACTS, *supra* note 5, at 4-5. Specifically, the report discussed diesel fuel, nitrogen, carbon dioxide, and glycol ethers. The report noted that “diesel is a petroleum distillate and may contain known carcinogens,” while the other fracturing agents “can cause negative liver and kidney effects.” *Id.* at 4-4, 4-5.

<sup>110</sup> See EPA MOA, *supra* note 103, at 2, 5.

authority to enforce [the MOA] under the Safe Drinking Water Act.”<sup>111</sup> This approach to gaining control over hydraulic fracturing concerned many members of Congress; several of these members immediately proposed amendments to the SDWA to regain control of the unwieldy regulatory milieu.<sup>112</sup> While most of the suggested amendments did not pass muster, a common sense of distrust for the oil and gas industry could potentially lead to an increased Congressional ‘push’ towards regulating hydraulic fracturing in the future. In the words of dissenters,

[t]he oil and gas industry says that it is possible to develop in an environmentally responsible way, yet this language would exempt them from pollution control requirements that other industries have to follow. If they are serious about their claims, they should follow the rules every other industry has learned to live with.<sup>113</sup>

Members of Congress also criticized the final draft of the 2004 EPA study for its failure to refer to public comments or incorporate valuable insights from other SDWA affiliates.<sup>114</sup> To this day, the EPA remains unpersuaded despite Congressional concerns and numerous state complaints;<sup>115</sup> the regulatory solution sought by Congressmen and civilians alike remains at large.

### III. STATE COMPLAINTS: SQUEAKY WHEELS BUT NO GREASE

Hydraulic fracturing discharge is accused of negatively impacting the water quality in at least five states, including Virginia, Alabama, Wyoming, Montana, and Colorado.<sup>116</sup> Since hydraulic fracturing emerged

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<sup>111</sup> See *id.* at 5.

<sup>112</sup> See STAFF OF H. COMM. ON ENERGY AND COMMERCE, 108TH CONG., DISSENTING VIEWS ON ENERGY POLICY ACT OF 2003, <http://archives.energycommerce.house.gov/legviews/108lvhr0006-oilgas.shtml> (last visited Jan. 26, 2009) [hereinafter DISSENTING VIEWS 2003]; STAFF OF H. COMM. ON ENERGY AND COMMERCE, 109TH CONG., DISSENTING VIEWS ON ENERGY POLICY ACT OF 2005, <http://archives.energycommerce.house.gov/legviews/109lvhr1640-oilgas.shtml> (last visited Jan. 26, 2009) [hereinafter DISSENTING VIEWS 2005].

<sup>113</sup> DISSENTING VIEWS 2003, *supra* note 112.

<sup>114</sup> *Id.* (noting that the EPA created its final study “[w]ithout the benefit of any hearings on this matter by the Subcommittee on Environment and Hazardous Materials, which has jurisdiction over Safe Drinking Water Act matters.”).

<sup>115</sup> NATURAL RES. DEF. COUNCIL, *supra* note 11, at 3-4.

<sup>116</sup> *Id.* at 3. See also SUMI, *supra* note 17, at 47 (noting that a private company found methane in an Alabama citizen’s water after complaints that the water was foggy and had an oily texture. The Alabama Oil and Gas Board tested the citizen’s water but *only*

as a popular method of extracting CBM in the 1990s, numerous individuals and civic associations have filed suit against CBM industries and the EPA in protest of the fracturing activities.<sup>117</sup> Not only have citizens applied for judicially-imposed regulations, but environmental groups have also joined the battle against hydraulic fracturing.<sup>118</sup> The combined efforts of both individuals and environmental groups have unearthed, so to speak, the major underlying issue that must be addressed: whether hydraulic fracturing is the source of the contamination that these states are experiencing.<sup>119</sup>

Typical complaints from residences located near hydraulic fracturing fields include: greasy or oily films in water, pungent odors, increased salinity, and even a rise in certain types of cancer.<sup>120</sup> For example, the Hocutt family in Lake View, Alabama complained that their well water was contaminated with "brown, slimy, petroleum smelling fluid" that was similar in substance to the hydraulic fracturing runoff from the

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for natural pollutants, thus ignoring methane, and the EPA did not test the citizen's water until six months after the complaint).

<sup>117</sup> See, e.g., *Swartz v. Beach*, 229 F.Supp.2d 1239, 1248 (D. Wyo. 2002) (complaining that water from a CBM drill site located in Gillette, Wyoming, flowed onto plaintiff's ranch and caused permanent soil damage due to two major problems resulting from hydraulic fracturing runoff: (1) increased salinity of USDWs used for irrigation, which killed off valuable vegetation, replacing it with "salt-tolerant species that are less valuable as forage," and (2) an increased sodium absorption ratio ("SAR"), which is the measure of levels of sodium, calcium, and magnesium in a water source). See also *San Juan Citizens' Alliance v. Babbitt*, 228 F.Supp.2d 1224, 1226-28 (D. Colo. 2002) (complaining that additional information regarding the environmental impacts of coalbed methane mining have surfaced since the EPA's last Environmental Impact Study ("EIS") in 1991. Plaintiffs demanded the United States Bureau of Land Management to update their analysis of CBM impacts before they allowed the number of CBM wells in Colorado to practically double).

<sup>118</sup> See generally, *NATURAL RES. DEF. COUNCIL*, *supra* note 11 (urging the Senate to reject a section of the proposed Energy Policy Act of 2002).

<sup>119</sup> See *SUMI*, *supra* note 17, at 41-43 (noting the major deficiencies in the EPA's final report, including the exclusion of information on the toxicity of hydraulic fracturing chemicals when mixed together, no information on the concentration of fracturing chemicals found in CBM discharge water, and conclusions about the benign nature of some fracturing fluids including benzene, which lack any and all empirical proof or substantive data to back up EPA's assumptions).

<sup>120</sup> *NATURAL RES. DEF. COUNCIL*, *supra* note 11, at 3. *BRUCE BAIZEL ET AL., CORPWATCH, HOUSTON WE STILL HAVE A PROBLEM: AN ALTERNATIVE ANNUAL REPORT ON HALLIBURTON 12* (2005), available at [http://www.halliburtonwatch.org/about\\_hal/houston.2005.pdf](http://www.halliburtonwatch.org/about_hal/houston.2005.pdf) ("Stories of explosive levels of methane in homes, numerous wells simultaneously going dry, and gobs of black substances smelling of petroleum coming out of taps fed by drinking water wells were not uncommon in these two regions.").

USX-Amoco CBM well near their home.<sup>121</sup> The family, along with at least eight other families in the vicinity, developed cancers from an “unknown” source; several neighborhood residents also noticed that the runoff seemed to harm or kill nearby vegetation and animals.<sup>122</sup> In response to these complaints, the EPA collected a mere *two* samples from the groundwater surrounding Lake View, and found no “*targeted* contaminants,” according to their report.<sup>123</sup> Additionally, Virginia residents living near CBM sites have filed over one hundred complaints, claiming damages to their water supplies, but the EPA filed them as damages resulting from a different type of mining; the National Resource Defense Council alleged that this was an effort to bury the evidence of hydraulic fracturing and its harmful environmental impacts.<sup>124</sup>

State residents are not the only individuals taking issue with the EPA’s apathetic approach to hydraulic fracturing complaints. In 2004, an EPA environmental engineer named Weston Wilson blew the whistle on the EPA’s final conclusion that the “injection of hydraulic fracturing fluids into coal bed methane wells poses little or no threat to USDWs and does not justify additional study at this time.”<sup>125</sup> Wilson stated that the EPA’s study was “scientifically unsound. . . . that the study’s findings were premature, [and] that hydraulic fracturing may endanger public health.”<sup>126</sup> In response, the EPA maintained their position that hydraulic fracturing was a safe process, stating that even though there were no direct studies done on the connection, they “had never found a definitive example of fracking’s effect on human health . . . .”<sup>127</sup> Despite the EPA’s perpetual dismissive habits, scientists, senators, and even other EPA employees continue to state their distrust for hydraulic fracturing.<sup>128</sup> A geology professor from the Colorado School of Mines said it all when he claimed that “[a]bsence of proof is not proof of absence—that’s not good science.”<sup>129</sup>

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<sup>121</sup> NATURAL RES. DEF. COUNCIL, *supra* note 11, at 3.

<sup>122</sup> *Id.*

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

<sup>125</sup> BAIZEL ET AL., *supra* note 120, at 16.

<sup>126</sup> *Id.*

<sup>127</sup> Rebecca Clarren, *EPA to citizens: Frack you*, SALON.COM NEWS, May 5, 2006, <http://www.salon.com/news/feature/2006/05/05/fracking/print.html>.

<sup>128</sup> *See id.* When an anonymous EPA worker asked about the EPA’s efforts to protect human health, he/she stated that “[t]here doesn’t seem to be attention whatsoever to health and the environment. [The EPA is] ignoring all of their own standards and regulations left and right. It’s just about corporate power to get the gas out.” *Id.*

<sup>129</sup> *Id.*

Generally speaking, skepticism towards the EPA's approach to hydraulic fracturing comes from all sides.<sup>130</sup> The EPA even ventured into the realm of criticizing itself, or accepting some responsibility, but has since opted to abstain from any attempt to further cleanse itself of its alleged inadequacies.<sup>131</sup> Specifically, the EPA redacted information from its final study regarding "mined-through studies" of many CBM wells,<sup>132</sup> during which fluorescent paint was injected into fracturing fluids and tracked as it moved through man-made and natural fractures.<sup>133</sup> The EPA's *draft* studies stated that "hydraulic fracturing fluids can move beyond, and sometimes significantly beyond, the propped, sand-filled portions of hydraulically induced fractures," and yet the 2004 final study did not mention such findings anywhere.<sup>134</sup> But this wasn't all! The EPA left other interesting and undesirable findings out of their final study, including the potential effects of "residual fracturing fluids" on CBM sites that are fractured more than once, or in more than one place, in a site's lifetime.<sup>135</sup> These omissions are misleading and have caught the critical eye of many environmentally-concerned individuals and organizations.<sup>136</sup>

In the EPA's defense, other noteworthy authorities came down on the side of hydraulic fracturing. Most notably is a case from the Ninth Circuit Court of Appeals, *Northern Cheyenne Tribe v. Norton*, in which the EPA sought to enjoin the Bureau of Land Management ("BLM") from implementing a coalbed methane well development program until the BLM modified and finalized an environmental impact statement, which would describe the impact of the proposed CBM extraction projects on

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<sup>130</sup> See *id.* (citing criticism regarding the EPA and oil and gas industries from a United States Senator, collegiate professors, residents living near CBM wells, scientists, environmentalists, and citizen organizations).

<sup>131</sup> See SUMI, *supra* note 17, at 22-52.

<sup>132</sup> *Id.* at 34. The EPA conducted mined-through studies in hydraulic fracturing sites in Pennsylvania, Alabama, West Virginia, Illinois, Virginia, Utah, and Australia. *Id.*

<sup>133</sup> *Id.* at 34-35.

<sup>134</sup> *Id.* at 35 (emphasis removed).

<sup>135</sup> *Id.* at 31-32 (noting that during the initial fracturing process, groundwater is pumped out to reduce the pressure that holds the coalbed methane underground, which also helps to flush out the fracturing fluids trapped underground; but during a second—or even third—fracturing of the same CBM well, less groundwater exists to be pumped out, allowing more fracturing fluids to remain underground, with the potential to contaminate nearby USDWs).

<sup>136</sup> See, e.g., James Murphy, *Slowing the Onslaught and Forecasting Hope for Change: Litigation Efforts Concerning the Environmental Impacts of Coalbed Methane Development in the Powder River Basin*, 24 PACE ENVTL. L. REV. 399, 411-12 (2007). See also Clarren, *supra* note 127 (citing multiple sources of distaste for the EPA and hydraulic fracturing).

surrounding areas.<sup>137</sup> The Ninth Circuit upheld the district court's finding that "the challengers failed to show coal bed methane would cause environmental degradation," because the rate of emissions and amounts of wastewater produced were much lower than the BLM had predicted.<sup>138</sup>

While the *Norton* decision is all well and good for supporters of coalbed methane extraction, the BLM failed to mention a particularly important detail—exactly *how* they planned on extracting the methane from the underground wells.<sup>139</sup> The BLM never once mentioned the words "hydraulic fracturing" in its brief, nor did the EPA.<sup>140</sup> It begs the question of whether this case has less to do with the EPA's concern for safe drinking water and more concern for deterring abuse of discretion by other federal agencies over the EPA's oil and gas 'turf.' It seems as though the EPA is more concerned with abridging the BLM's managerial authority over the Powder River Basin CBM resources, rather than protecting and preserving those resources.

In conclusion, despite numerous complaints from residents of multiple hydraulic fracturing states, related litigation and settlements,<sup>141</sup> legislative proposals,<sup>142</sup> and even federal circuit court holdings,<sup>143</sup> the EPA is steadfast in its belief that hydraulic fracturing should remain virtually unregulated under the SDWA. Yet, "[m]ost of the literature pertaining to fracturing fluids relates to the fluids' operational efficiency rather than their potential environmental or human health impacts. There is very little documented research on the environmental impacts that result from

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<sup>137</sup> *N. Cheyenne Tribe v. Norton*, 503 F.3d 836, 840-41 (9th Cir. 2007).

<sup>138</sup> *Id.* at 841.

<sup>139</sup> *See id.*

<sup>140</sup> *See* Responsive Brief for Federal Appellees, *N. Cheyenne Tribe v. Norton*, Nos. 05-35408, 05-35413, 05-35586, 05-35587 (9th Cir. July 11, 2005); Opening Brief of Plaintiffs-Appellants, *N. Cheyenne Tribe v. Norton*, Nos. 05-35408, 05-35413, 05-35586, 05-35587 (9th Cir. June 27, 2005); Opening Brief of Plaintiffs-Appellants, *N. Cheyenne Tribe v. Norton*, Nos. 05-35408, 05-35413, 05-35586, 05-35587 (9th Cir. June 24, 2005); Opening Brief of Plaintiffs-Appellants, *N. Cheyenne Tribe v. Norton*, Nos. 05-35408, 05-35413, 05-35586, 05-35587 (9th Cir. June 23, 2005); Opening Brief of Plaintiffs-Appellants, *N. Cheyenne Tribe v. Norton*, Nos. 05-35408, 05-35413, 05-35586, 05-35587 (9th Cir. June 22, 2005).

<sup>141</sup> *Clarren*, *supra* note 127 (describing Laura Amos, a Colorado resident, and her plight after she developed an adrenal gland tumor within two years after an oil company used hydraulic fracturing in the same underground water source as Amos's drinking water; the oil company immediately settled the claim, in which both parties were legally forbidden from disclosing the settlement amount).

<sup>142</sup> NATURAL RES. DEF. COUNCIL, *supra* note 11, at 1 (urging the Senate to amend the SDWA and to eliminate the exemption for hydraulic fracturing under the regulatory requirements).

<sup>143</sup> *See LEAF I*, 118 F.3d 1467 (11th Cir. 1997); *LEAF II*, 276 F.3d 1253 (11th Cir. 2001).

the injection and migration of these fluids into subsurface formations, soils, and USDWs.<sup>144</sup> It is, therefore, not evident on what basis the EPA purports to support its pro-fracking stance.

#### IV. SOLUTION, ACCOUNTABILITY TIME

The SDWA extends a significant amount of federal authority to force state action in the area of water safety, in order to achieve enhanced control over the purity of drinking water sources.<sup>145</sup> To further this goal, Congress required the creation of national primary drinking water regulations, which set maximum contaminant levels for all pollutants that adversely affect health.<sup>146</sup> The combined regulations also require states to adopt the maximum feasible regulations to achieve the desired purity levels, based on the costs of comparable plans.<sup>147</sup> Most importantly, the SDWA recognizes that underground injection processes subject USDWs to some of the specified contaminants that *can* and *do* affect water safety.<sup>148</sup>

A state must adopt regulations at least as strict as those required under the SDWA in order to obtain federal authorization to control its own underground injection activities.<sup>149</sup> However, this requirement does not touch the issue of hydraulic fracturing because the SDWA exempts the “underground injection of . . . fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations . . . unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection.”<sup>150</sup> Unfortunately, the latter part of the sentence (“*unless . . .*”) has no effect on hydraulic fracturing after the 2004 EPA study concluded that: (1) the hydraulic fracturing process presents no threat to human health or to the purity of aquifers, and (2) that no further research or

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<sup>144</sup> SUMI, *supra* note 17, at 42.

<sup>145</sup> See Robinson, *supra* note 4, at 677.

<sup>146</sup> See 42 U.S.C. §§ 300f(1), 300g-1(b)(2)(E) (2000).

<sup>147</sup> See 42 U.S.C. §§ 300f(1), 300h-1 (2000).

<sup>148</sup> See 42 U.S.C. § 300h (2000) (proscribing regulations for the protection of USDWs).

<sup>149</sup> See Robinson, *supra* note 4, at 678.

<sup>150</sup> 42 U.S.C. § 300h(b)(2) (2000). See also Markus G. Puder & Michel J. Paque, *Tremors in the Cooperative Environmental Federalism Arena: What Happens When a State Wants to Assume Only Portions of a Primacy Program or Return a Primacy Program?—The Underground Injection Control Program under the Safe Drinking Water Act As a Case Study*, 24 TEMP. J. SCI. TECH. & ENVTL. L. 71, 75 (2005) (“In the wake of a Congressional amendment in 1980, Section 1425 of the SDWA relieves oil and gas-related injection well programs in the states from having to meet the technical requirements in the UIC regulations.”).



regulation of hydraulic fracturing is currently required upon reaching the first conclusion.<sup>151</sup> As a result, minimum UIC standards do not mandate states to regulate hydraulic fracturing, and the EPA has thus far used its discretion to decide against any national regulatory scheme.<sup>152</sup>

The EPA has approved several states' underground injection regulatory schemes, including Alabama's,<sup>153</sup> Florida's, and Wisconsin's.<sup>154</sup> The EPA can approve state UIC programs, or "delegate" the federal power to the states, under two separate sections of the SDWA, depending on the "class" of wells located in each state.<sup>155</sup> The EPA can approve of "delegation" of UIC powers by either (1) approving *all* classes of wells under SDWA section 1422, or (2) approving only the "oil and gas injection wells under section 1425 of the SDWA . . . ."<sup>156</sup>

Today, the EPA has approved state UIC programs under section 1422 of the SDWA for all well classes in thirty-three states, and it shares the responsibility of regulating UICs with seven other states.<sup>157</sup> The main problem lies with the states approved *not* under section 1422 of the SDWA, but under section 1425. Under section 1425, the EPA can approve Class II wells that inject oil and gas-recovery fluids (i.e., fracking fluids) above USDWs, as long as the EPA determines that the state program does not allow "underground injection which endangers drinking water sources."<sup>158</sup> As seen throughout this note, the EPA's determination that hydraulic fracturing activities pose "little or no threat to USDWs," has preempted any mandatory regulation of fracking activities.<sup>159</sup>

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<sup>151</sup> EVALUATION OF IMPACTS, *supra* note 5, at ES-16.

<sup>152</sup> *See id.*

<sup>153</sup> *LEAF I*, 118 F.3d 1467, 1470 (1997).

<sup>154</sup> Memorandum from Stephen F. Heare, Director, Drinking Water Protection Division, OGWDW, to Regions I-X (July 14, 2005), *available at* [http://www.epa.gov/safewater/uic/pdfs/memo\\_uic\\_fy06\\_grant\\_alloc.pdf](http://www.epa.gov/safewater/uic/pdfs/memo_uic_fy06_grant_alloc.pdf) (discussing tentative grant allocations, for fiscal year 2006, for underground injection control programs).

<sup>155</sup> *See* Puder & Paque, *supra* note 150, at 74-75. Class I wells are used to store industrial hazardous and nonhazardous wastes and are the most heavily regulated under the SDWA regarding their placement near a USDW. Class II wells store brines and other fluids used for oil and gas production. Class III wells are those used for fluids used during mining operations. Class IV wells are associated with radioactive wastes and are generally prohibited from being located above a USDW. Class V wells inject nonhazardous fluids above a USDW. *See id.* at 75.

<sup>156</sup> *Id.* at 76.

<sup>157</sup> *Id.*

<sup>158</sup> 42 U.S.C. § 300h-4(a) (2000). *See* EPA, GUIDANCE FOR STATE SUBMISSIONS UNDER SECTION 1425 OF THE SAFE DRINKING WATER ACT: GROUND WATER PROGRAM GUIDANCE #19 9.

<sup>159</sup> EVALUATION OF IMPACTS, *supra* note 5, at ES-1.

As a result of the statutory loopholes, the Alabama UIC program is one of the only states that includes a regulatory plan for hydraulic fracturing, as mandated by the LEAF case.<sup>160</sup> The solution seems clear: until one of two alternative national regulations is created, a majority of states will allow unregulated fracking to continue injecting poisonous substances directly above USDWs, as is currently accepted in Class II wells.

A. *First Solution: Apply the SDWA Correctly!*

In a “Dear Congress”-esque memorandum written in 2002, the Natural Resources Defense Council (“NRDC”) implored Congress to reject all proposals to extend the EPA’s “moratorium” on regulation of hydraulic fracturing.<sup>161</sup> Instead, the NRDC requested that Congress follow the two Eleventh Circuit decisions that defined hydraulic fracturing as an underground injection activity that must be regulated under the SDWA as Class II wells.<sup>162</sup> The Eleventh Circuit also held that “regulation of hydraulic fracturing under the SDWA can be accomplished using the more flexible oil and gas injection regulatory provisions in SDWA section 1425, rather than the more stringent requirements of SDWA section 1422.”<sup>163</sup>

The EPA is clearly amenable to approving state UIC programs under section 1422 of the SDWA when a state’s program seeks to regulate all oil and gas injection activities minus hydraulic fracturing.<sup>164</sup> Because of the growing concern for the detrimental effects of current fracking fluids on nearby USDWs, it appears entirely reasonable to require that hydraulic fracturing activities meet the more lenient standards required under section 1425 of the SDWA. That is, unless the government is truly a champion for the oil and gas industries. Dare we say that fracking’s exemption from the SDWA is “an example of how litigation victories can be undone by a Congress too willing to help the oil and gas industry without proper regard for the environmental costs[?]”<sup>165</sup> If this is not the case, then the EPA should prove it. Prove it to the Americans who have developed rare tumors and have tolerated black, greasy, fizzy water

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<sup>160</sup> *LEAF I*, 118 F.3d 1467, 1469 (11th Cir. 1997).

<sup>161</sup> NATURAL RES. DEF. COUNCIL, *supra* note 11, at 1.

<sup>162</sup> *Id.* See *LEAF I*, 118 F.3d at 1478; *LEAF II*, 276 F.3d 1253, 1264 (11th Cir. 2001).

<sup>163</sup> NATURAL RES. DEF. COUNCIL, *supra* note 11, at 1.

<sup>164</sup> Puder & Paque, *supra* note 150, at 76.

<sup>165</sup> Murphy, *supra* note 136, at 411.

flowing from their taps.<sup>166</sup> Prove it by regulating hydraulic fracturing under section 1425 of the SDWA.

Regulation under section 1425 of the SDWA would finally impose reasonable requirements on fracking, which would appease those opposed to the current laissez-faire system, and would prevent proposals of a zero-tolerance policy against the process in the future. Using section 1425 of the SDWA to control fracking would also be consistent with regulation of all other types of oil and gas extraction as Class II wells, and "would leave in place two recent US Court of Appeals decisions finding that hydraulic fracturing is underground injection subject to the public health protection provisions of the SDWA."<sup>167</sup>

### B. *Second Solution: "Amend" Fracking Fluids*

If Congress refuses to listen to this Note's plea to regulate hydraulic fracturing under section 1425 of the SDWA, then so be it. Nevertheless, there is always more than one way to nag Congress. If the government will not regulate hydraulic fracturing under the current statute, it should at least require the oil and gas industries to clean up their own act. In other words, Congress should require the EPA to enter into another "agreement" with the oil and gas industries as it did in 2003 as mentioned above.<sup>168</sup> However, this "agreement" should contain a less-voluntary, more-mandatory requirement that the industry refrain from injecting diesel fuel and any other toxic chemicals into the ground during hydraulic fracturing activities.

If the oil and gas industry complains that without the use of "minute" amounts of these toxic fluids, the extraction process will be inhibited to the point of sheer inefficiency, there may be an alternative solution to their problem. If current fracturing fluids were replaced with biodegradable or organic substances, such as ground fruit seeds and nutshells, these might be a sufficient substitute for the thickness of diesel fuel and other dense fracturing fluids used today.<sup>169</sup> In 1967, the United States Court of Customs and Patent Appeals rejected this idea,<sup>170</sup> but advances in

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<sup>166</sup> SUMI, *supra* note 17, at 47.

<sup>167</sup> NATURAL RES. DEF. COUNCIL, *supra* note 11, at 1.

<sup>168</sup> See generally EPAMO, *supra* note 103 (a voluntary agreement between the EPA and companies to "eliminate the use of diesel fuel in hydraulic fracturing fluids.").

<sup>169</sup> Cf. Application of Huitt, 375 F.2d 484, 484 (C.C.P.A. 1967) (rejecting a patent appeal for an invention that used ground nutshells or granular hard plant seeds as a propping agent).

<sup>170</sup> *Id.* at 488.

technology since then may lead the oil and gas industry towards innovative fracking techniques involving biodegradable substances. To boost the industry's compliance with these requirements, the government could subsidize the use of biodegradable fracking substances, give tax breaks, or even assist in research and development efforts to explore suitable organic fracturing fluids.

## CONCLUSION

It is true that CBM extraction provides natural gas to power countless activities around the world, but without a healthy environment, that power is useless. The EPA cannot continue to ignore hydraulic fracturing's potential side effects upon the environment. This Note is not asking the EPA to develop extremely complex or novel substitutes for hydraulic fracturing; it is merely asking the EPA to comply with that which has already been asked of it under the SDWA.

Regulating fracking under a satisfactory, yet less rigid section of the SDWA, such as section 1425, would provide structure to this previously unregulated oil and gas activity. Regulating underground injections associated with hydraulic fracturing as Class II wells would not require any further legislative development on the part of Congress, nor any further legislative interpretation on the part of the EPA. Section 1425 of the SDWA is familiar territory for the EPA, and the EPA is more than competent to regulate oil and gas-related activities under its terms, including hydraulic fracturing.

If the SDWA does not suffice as a solution, research and development could reveal organic or biodegradable substitutes for dense fracking fluids. Injection of natural compounds above USDWs would not have the negative effects associated with diesel fuel and other fracking fluids currently in use.<sup>171</sup> Even though this area is less familiar to the EPA, it is certainly a reasonable alternative, and it is one that may even cost less than diesel fuel—not to mention reduce the United States' dependency on foreign oil sources!

The EPA can only hide its true motivations for exempting hydraulic fracturing from regulation for so long, while it continues to regulate every other oil and gas-related activity under the SDWA. It is too speculative to say whether the EPA is acting as a champion of the oil and

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<sup>171</sup> See NATURAL RES. DEF. COUNCIL, *supra* note 11, at 3 (showing several examples of negative effects associated with contamination of USDWs near hydraulic fracturing wells).

gas industry, but if it continues down this path, this Note would not be the first to suggest such an idea.<sup>172</sup> The EPA should clean up its act, and more importantly, clean up our waters, preferably before our faucets emit black, smelly substances<sup>173</sup> from allegedly nonthreatening UIC activities.

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<sup>172</sup> See Murphy, *supra* note 136, at 411.

<sup>173</sup> See SUMI, *supra* note 17, at 47.