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POLICY INITIATIVE

Legal Fractures in Chemical Disclosure Laws

Why the Voluntary Chemical Disclosure Registry FracFocus
Fails as a Regulatory Compliance Tool

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Introduction

In April 2011, a voluntary chemical disclosure registry was launched for companies developing unconventional oil and gas wells. Two years later, eleven states direct or allow well operators and service companies to report their chemical use to this online registry: FracFocus (www.fracfocus.org). The Bureau of Land Management (BLM) has also proposed adopting FracFocus as the reporting method for companies fracturing wells on federal and tribal lands.

When first announced, FracFocus held promise as a positive response to public concern about chemical use, storage, and disposal at well sites. The concept of a centralized, on-line registry appeals to under-resourced agencies, since it offers them the ability to delegate data gathering to a third party, and promises transparency by posting some chemical information online. However, our evaluation of FracFocus suggests that reliance on the registry as a regulatory compliance tool is misplaced or premature.

Summary

In its current form, FracFocus is not an acceptable regulatory compliance method for chemical disclosures. The registry's shortcomings – and opportunities for improvement – fall into three categories:

- (1) Timing of Disclosures. State laws attach penalties to a company's late submittal of, or failure to submit, chemical disclosures. However, FracFocus does not notify a state when it receives a disclosure from a company operating in that state. Nor can most states readily determine when a disclosure is made. As a result, states cannot enforce timely disclosure requirements.
- (2) Substance of Disclosures. FracFocus creates obstacles to compliance for reporting companies. For example, by not providing state-specific forms, FracFocus leaves companies to figure out how to account for state disclosure requirements not covered by the FracFocus form. FracFocus staff does not review submissions, and states usually do not receive the form; factors that may encourage some companies to under-value careful reporting. Meanwhile, no state sets minimum reporting standards for FracFocus. In fact, were FracFocus to disappear entirely, most states using the registry would have no backup disclosure methods readily identified and available to them.
- (3) Nondisclosures. Trade secret protection is critical in order to reward development of unique products in the marketplace. However, three characteristics of a robust trade secret regime prevent overly broad demands for this protection: substantiation by the company, verification by a government agency, and opportunity for public challenge. FracFocus has none of these characteristics; operators have sole discretion to determine when to assert trade secrets. As a result, inconsistent trade secret assertions are made throughout the registry.

Although FracFocus provides training, and has made some modifications to its form in response to criticism, shortcomings remain. Our research uncovered numerous examples where information about the same product differs across forms.ⁱ The research was very time-consuming, because the registry does not allow searching across forms – readers are limited to opening one PDF at a time. This format prevents site managers, states, and the public from catching many mistakes or failures to report. More broadly, the limited search function sharply limits the utility of having a centralized data cache.

Disclosure serves many purposes in a healthy civil society. It helps people make informed decisions about risk – for instance, a landowner determining whether to agree to have a well on her property, a worker considering employment, an investor researching oil and gas companies, or an insurance company determining whether to extend a policy. Chemical disclosure facilitates effective emergency response, and enables doctors to treat patients more effectively. Disclosure can improve policy-making, too, by helping agencies prioritize regulatory action, and by encouraging public participation. In fact, disclosure may be viewed as a societal prerequisite for hydraulic fracturing – what some have called a “social license” to drill.ⁱⁱ

Incomplete and inaccurate disclosures, however, serve no public purpose. If a property owner searches for a well form on FracFocus, she may find that the form omits information required by the state, contains non-existent Chemical Abstract Service (CAS) numbers, or hides the identity of chemicals. Unable to search across forms, the property owner will not know that other forms disclose chemicals withheld in this form, or list different ingredients for the same product. If she asks for more information from FracFocus she will be denied, on the grounds that the site’s organizers are not subject to state or federal public records laws.ⁱⁱⁱ Unless disclosures were also made to the state, the property owner may not petition the state for more complete answers or challenge the company’s trade secret claims.

States and the BLM are expending valuable resources issuing hydraulic fracturing disclosure requirements. Companies are spending valuable time submitting disclosures. We should make sure these systems work.



Unconventional shale gas platform located just outside Fort Worth, Texas.

Background

The United States is in the midst of an energy boom. Geologists have known since the 1970s that vast quantities of natural gas lie trapped in the country's shale formations^{iv} Only recently, however, have advances in technology made recovery economically viable.^v Shale gas represents nearly one quarter of U.S. gas production, and that share is growing.^{vi} Technological advances and high oil prices are sparking similar interest in shale oil;^{vii} North Dakota's Bakken Shale produced nearly 600,000 barrels of oil a day in 2012.^{viii}

As its name suggests, hydraulic fracturing involves injecting a large volume of fluid (usually water-based) into a well at high pressure, to fracture the rock, prop open the cracks with sand, and release trapped oil or gas. Chemicals represent a small fraction of the fracturing fluid; however, given that millions of gallons of fracturing fluid may be injected into a well^x, the fluid may contain thousands of gallons of chemicals.

The public has raised concerns about the potential health and environmental risks associated with shale oil and gas production.^x These concerns often focus on the chemicals used in the hydraulic fracturing process. By 2010, elected officials and environmental organizations were calling for increased chemical disclosure, to educate the public and provide policymakers with the information needed to assess and manage risk.^{xi} In response, industry worked with the Interstate Oil and Gas Compact Commission (IOGCC) and the Groundwater Protection Council (GWPC) to create a voluntary chemical registry called FracFocus. The online registry provides disclosure forms in PDF, enabling the public to view information one well at a time.

When FracFocus launched in April 2011, six states – Alabama,^{xii} Arkansas,^{xiii} Colorado,^{xiv} Pennsylvania,^{xv} West Virginia,^{xvi} and Wyoming^{xvii} – had drilling rules that required some form of chemical disclosure, ranging from minimal reporting and maintenance of on-site chemical inventories, to comprehensive reporting before and after fracturing a well. Federal law did not – and still does not – require any disclosure of chemicals used to fracture wells.

Two years since the launch of FracFocus, eighteen states require fracturing chemicals disclosure.^{xviii} Of those, eleven states direct or allow well operators and service companies to report chemical use to FracFocus: Colorado; Louisiana; Mississippi; Montana; North Dakota; Ohio; Oklahoma; Pennsylvania; South Dakota; Texas; and Utah.^{xix} Meanwhile, Alaska,^{xx} California,^{xxi} and New York^{xxii} are considering FracFocus for chemical reporting from their states, and the BLM has proposed adopting FracFocus as the disclosure method for unconventional wells on federal and tribal lands.^{xxiii}

At the outset, FracFocus held promise as a positive response to public concern about chemical use, storage, and disposal at well sites. And over time, the IOGCC and the GWPC have worked to improve FracFocus; for instance, by releasing a “FracFocus 2.0” form in late 2012 (all companies will use this form beginning in June 2013).^{xxiv} However, FracFocus still fails as an acceptable regulatory compliance tool. This paper will address three categories of shortcomings, and conclude with recommendations.

In response to public concerns about the chemicals used in the hydraulic fracturing process, industry worked to create a voluntary chemical registry called FracFocus. Two years later, eleven states direct or allow well operators and service companies to report chemical use to FracFocus.

Issue #1: Timing of Disclosures

States require that companies make post-fracturing chemical disclosures by a certain date. The deadline is calculated typically from the date that fracturing begins, or from the date of well completion (when the well begins generating product^{xxv}). Timing varies, but all states seek disclosures within a few months of fracturing or completing a well:

- Mississippi requires reporting within 30 days of fracturing of a well;^{xxvi}
- Utah requires reporting within 60 days of fracturing a well;^{xxvii}
- Oklahoma requires reporting within 60 days of the start of fracturing;^{xxviii}
- Louisiana requires reporting within 20 days of completion of the well;^{xxix}
- Montana,^{xxx} Pennsylvania,^{xxxi} and South Dakota^{xxxii} require reporting within 30 days of well completion;
- Texas requires reporting within 30 days of well completion or within 90 days after drilling is completed, whichever is earlier;^{xxxiii}
- North Dakota^{xxxiv} and Ohio^{xxxv} require reporting within 60 days of well completion; and
- Colorado requires reporting within 60 days of completion, and not more than 120 days from the start of fracturing.^{xxxvi}

State laws attach penalties to a company's late submittal or failure to submit chemical disclosures. A person failing to timely submit a report in Colorado, for instance, may be subject to a civil fine of up to \$1,000 per violation per day, for a total of up to \$10,000.^{xxxvii} Each violation of an oil and gas rule (including requirements to report) in North Dakota is subject to a penalty of up to \$12,500 per day.^{xxxviii} In Ohio, violation of the oil and gas statute may result in civil penalties of up to \$4000 per day;^{xxxix} in addition, if the state has made reasonable attempts to notify the operator, and a report is more than 30 days late, the state may issue a finding that the operator has committed a "material and substantial violation." Such a finding authorizes the state to suspend well activities.^{xl}



However, when state laws direct companies to make disclosures on FracFocus, states cede oversight of these provisions to a non-regulatory third party. FracFocus does not notify a state when the site receives a disclosure form about a well in that state. Nor can most states readily determine when a disclosure is made. Of the states that use FracFocus as a disclosure compliance tool, only Texas requires companies to submit copies of the FracFocus form to the state. Otherwise, to determine if a disclosure has been filed, a state agency must search FracFocus by well number every day until a form appears. When the form does appear, it does not reflect the date it was submitted. As a result, states using FracFocus are not able to enforce timely disclosure requirements.

FracFocus 2.0 may be able to provide notification to states *when desired*.^{xli} However, no state rule requires that FracFocus notify the state when a submission is made. The fact that the registry will not offer this service by default may mean that there are technical (database interface), regulatory, or political barriers to doing so. How those barriers will be overcome has not been made clear. Meanwhile, even if a state were to begin receiving notifications going forward, there may not be a way to reach back to determine when submissions were made over the past two years.

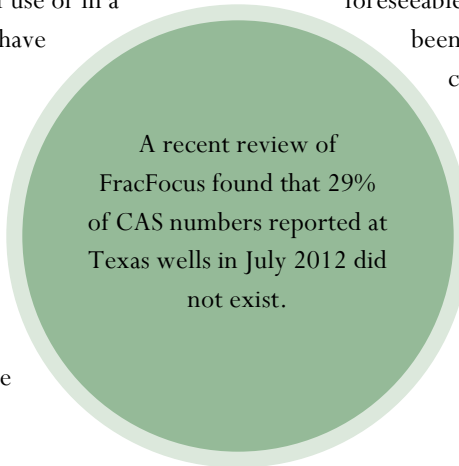
Issue #2: Substance of Disclosures

Regulatory frameworks are more effective when they operate within systems that encourage compliance by “making the undesirable behavior less profitable or more troublesome.”^{xxxlii} For instance, speeding laws by themselves may deter some motorists from driving too fast, but compliance rates improve with construction of speed bumps and traffic circles. Unfortunately, states that use FracFocus as a compliance method for chemical disclosures are relying on a registry that creates barriers to compliance. For instance, FracFocus does not provide state-specific forms, leaving companies to figure out how to account for state requirements not requested by FracFocus. Too often, companies do not provide the additional information.

For instance, some states limit disclosure to chemicals regulated under the Occupational Safety and Health Act (OSHA). However, Colorado,^{xliii} Mississippi,^{xliv} Montana,^{xlv} Ohio,^{xlvi} Oklahoma,^{xlvii} and Texas^{xlviii} require disclosure of all chemicals intentionally added to the fracturing fluid. This is an important distinction. OSHA requires chemical manufacturers to list information about “hazardous chemicals” on Material Safety Data Sheets (MSDS) for placement in work spaces.^{xlix} While the law defines “hazardous chemical” broadly,^l manufacturers rely on existing literature to determine whether a chemical is hazardous; they are not required to test their product.^{li} Moreover, OSHA’s requirements only apply to chemicals “known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.” This further limits “hazardous chemicals” to those that have been studied for workplace exposure. At a

2012 American Chemical Society Environmental Defense Fund said, service company] and others tell chemicals used in fracturing MSDS chemicals.”^{lii}

However, until recently the reporting to OSHA-regulated to the question, “What chemicals are states:



A recent review of FracFocus found that 29% of CAS numbers reported at Texas wells in July 2012 did not exist.

conference, Matthew Watson of “Halliburton [a fracturing chemical me that probably half of the aren’t those OSHA-regulated

FracFocus website appeared to limit chemicals. For instance, in response being disclosed on this site?,” the site

All chemicals that would appear on a Material Safety Data Sheet (MSDS) that are used to hydraulically fracture a well except for those that can be kept proprietary based on the “Trade Secret” provisions related to MSDS found on the Trade Secret link at 1910.1200(i)(1) [reference to OSHA regulations].^{liii}

Moreover, the bottom of the original FracFocus form reads, “All component information listed was obtained from the supplier’s Material Safety Data Sheets (MSDS). . . .” This language might lead a rational operator to disclose only those chemicals regulated by OSHA, even if that operator were reporting on a well located in Colorado (or another state seeking broader disclosures). And in fact, operators have reported non-OSHA chemicals inconsistently on this form. For instance, while TX well operators sometimes report that Clay-Max contains choline chloride,^{liv} at other wells they merely report that Clay-Max contains “no hazardous ingredients per MSDS.”^{lv} When companies do report non-OSHA chemicals, they assert trade secret protection for them at a higher rate than for OSHA chemicals.^{lvi}

FracFocus appears to have amended the disclosure form to address this issue – many FracFocus 2.0 forms contain a heading part-way through the chemicals table that reads, “Additional Ingredients Not Listed on MSDS.” Unfortunately, the bottom of the new form then often reads, “Additional ingredients not listed on MSDS component information were obtained directly from the supplier. As such, the Operator is not responsible for inaccurate and/or

incomplete information.” This statement does not reflect the law in at least six states that rely on FracFocus, where a company is under equal obligation to report *all* chemicals intentionally added to a well.

In several other instances, the FracFocus form likewise does not cover state required information. Louisiana requires that well operators (or their service companies) report the type of base fluid used in hydraulic fracturing.^{lvii} So do Colorado,^{lviii} Mississippi,^{lix} Oklahoma,^{lx} and Texas.^{lxi} While water is typically used, petroleum-based fracturing fluids are used as well and should be reported as such on the form. However, the FracFocus form only provides a place for companies to report the total water volume of a fracturing job. As a result, there is no clear place to identify other base fluids.

Pennsylvania requires a company to report whether recycled water was used in a fracturing job.^{lxii} Ohio requires companies to report the amount and source of any recycled water used.^{lxiii} Re-used fracturing water may contain chemicals; knowing the water source assists landowners, well owners, and regulators in identifying the chemicals present, to assist waste management and emergency response. However, the FracFocus form does not provide a place for companies to describe whether water is fresh or recycled, or to identify the source of water. As a result, compliance has been spotty. For instance, the report for Ohio well #34-067-21075, fractured on January 4, 2013, notes only that “water” was used as the base fluid. Operators reported the amount of fresh and recycled water used at least four other Ohio wells; however, none of these reports identified the source of the recycled water.^{lxiv}

Montana requires companies to report the actual concentrations of chemicals used in the fracturing fluid.^{lxv} However, the FracFocus form only requests maximum concentrations. While Montana operators could list the actual concentrations in the “Comments” field, the form makes it difficult for a company to comply with Montana state law. In some Montana forms, operators appear to have tried to provide actual concentrations on the far right-hand side of the chart, but the numbers have been jumbled in the uploading process.^{lxvi} Other Montana forms do not provide actual concentrations.^{lxvii}

Texas requires well operators to provide the contact information for any business claiming entitlement to trade secret protection.^{lxviii} This information is critical in the event a medical professional or first responder needs to identify the protected chemical in an emergency situation. However, FracFocus provides no specific place for this contact information. While some disclosure forms include contact information for trade secret chemicals,^{lxix} most do not.

In addition, FracFocus has a “deletion default” for forms that need to be corrected. FracFocus enables well operators to pull down forms off the site when they “discover an error in a disclosure but [are] unable to correct the error immediately.”^{lxx} When the operator selects this function, the document is stored for 90 days in a temporary holding container. During this time, the operator can replace the form with a corrected version, or restore the original form. However, if no action is taken, the form is deleted.^{lxxi} It is easy to imagine a busy company pulling down a form to correct later, and forgetting about the form. Therefore, FracFocus appears structurally skewed to discourage corrections and facilitate deletions.

“The Deletion Default”
FracFocus enables well operators to pull down forms when they “discover an error in a disclosure but [are] unable to correct the error immediately.” In this circumstance, the document is stored for 90 days in a “temporary holding container.” During this time, an operator may replace or refresh the form. However, if no action is taken, the entire disclosure is deleted from the site.

FracFocus has limited quality assurance procedures to ensure accuracy. The registry indicates automatically when certain pieces of information on a newly completed form are incorrect; for instance, an invalid date or API well number, or latitude or longitude values that place a well outside of North America.^{lxxxii} However, the registry does not appear to reject incorrect CAS numbers, which help to identify chemicals. A recent review of FracFocus found that 29% of CAS numbers reported at Texas wells in July 2012 did not exist.^{lxxxiii}

FracFocus staff does not review submissions. And of all the states relying on FracFocus, only Texas^{lxxxiv} receives copies of the form. (Pennsylvania requires submission of similar information through a state form, but not the FracFocus form itself.)^{lxxxv} While states can never review every submission they receive, there is a greater chance of state review if the state receives the documentation. Given the near certainty that no one will review the form (either at FracFocus or at the agency that could assess penalties for a failure to disclose), the rational company may conclude that careful reporting is not highly valued by regulators and act accordingly.

Finally, no state sets minimum reporting standards for FracFocus, or requires an alternative method of compliance should FracFocus scale back its site. In fact, were FracFocus to disappear, most states using the registry have not identified a backup disclosure method (Texas^{lxxxvi} is an exception, indicating by law that the Texas Railroad Commission would post disclosures on its own site until a new site was identified by rule).

Issue #3: Nondisclosure of Chemicals

Trade secret protection is critical, to reward development of unique products in the marketplace. Trade secret law is state-based, but 47 states and Washington, DC^{lxxxvii} have adopted the Uniform Trade Secrets Act (UTSA) definition of trade secrets:^{lxxxviii}

[I]nformation, including a formula, pattern, compilation, program device, method, technique, or process that derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.^{lxxxix}

States protect “trade secrets” and other “confidential business information”^{lxxx} from disclosure under public information laws. Federal laws also contain proprietary exemptions to public disclosure requirements, including those set forth in the Occupational Safety and Health Act (OSHA),^{lxxxii} the Toxic Substances Control Act (TSCA),^{lxxxiii} the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA),^{lxxxiii} and the Emergency Planning and Community Right to Know Act (EPCRA).^{lxxxiv} A comparative review of these regimes suggests that three procedures may contribute to higher rates of disclosure, while protecting true trade secrets: substantiation by the company seeing protection; agency verification; and public challenge.

For instance, EPCRA requires substantiation of proprietary claims at the submittal stage.^{lxxxv} Furthermore, any person may challenge a trade secret claim and EPA must review and resolve within nine months.^{lxxxvi} Less than 1% of facilities have filed trade secret claims under EPCRA.^{lxxxvii}

TSCA does not require substantiation of proprietary claims, or provide for public challenges to these claims. A 1992 report commissioned by EPA found that companies made trade secret claims in more than 25% of all “substantial risk” notices submitted under TSCA Section 8(e); more than 20% of all health and safety studies; and about half of all records of significant hazardous reactions.^{lxxxviii} In response, EPA has used its administrative authority to enhance

TSCA procedures. For instance, EPA now requires companies to substantiate trade secret claims in “substantial risk” notices.^{lxxxix} In addition, in 2010 EPA announced it would increase review of TSCA trade secret claims.^{xc} TSCA authorizes EPA to challenge assertions,^{xcii} but without a public challenge process to spur it into action, EPA had not exercised its authority vigorously. As of 2005, EPA was only challenging an annual average of fourteen claims over TSCA health and safety studies, out of thousands of claims. (Almost all challenged claims were withdrawn.)^{xcii} In 2012, EPA began reviewing 16,000 chemical identities protected as trade secrets in TSCA submissions.^{xciii}

Many states have one or more of these procedures – substantiation, verification, and opportunity for challenge – embedded in their general public information laws. For instance, if a company makes a trade secret assertion in Louisiana, it must still file the information with the state (with a cover sheet that warns the submission contains proprietary information). Then, the state verifies whether the information is proprietary within 30 days, or sooner if there is a pending public records request.^{xciv} Any person may request documents, and file a legal action if access is denied.^{xcv} If a company has provided proprietary records to the state of Mississippi, the state must notify the company if anyone requests to see the documents, “but such records shall be released within a reasonable period of time unless the [companies] shall have obtained a court order protecting such records as confidential.”^{xcvi} In North Dakota, “[a]ny interested person” may request an attorney general’s opinion to review a written denial of a request for records, and the attorney general may obtain information claimed to be confidential for the purpose of determining whether it is.^{xcvii} Alternatively, the person may file a civil action.^{xcviii}

FracFocus offers none of these procedures; operators posting on the site have sole discretion to determine whether a chemical is a trade secret.^{xcix} No substantiation is required, and there is no verification process to determine if trade secret claims meet the OSHA standard (which FracFocus directs companies to follow).^c Finally, there is no process for the public to challenge a proprietary claim.^{ci} In fact, the IOGCC and the GWPC hold themselves out as exempt from federal and state public information laws.^{cii}



What’s more, when states permit or direct chemical disclosure to FracFocus, state public information laws may no longer apply. For example, Ohio’s general public information law enables any person to challenge trade secret claims in court.^{ciii} The state’s fracturing chemical disclosure law narrows the universe of persons with standing, but still allows challenges from a property owner, an adjacent property owner, or any interested person or state agency that may be negatively impacted by fracturing chemicals.^{civ} However, Ohio allows operators to disclose to FracFocus instead of the state. If operators submit to FracFocus, appeal to the state agency would be impossible because the agency will not be in possession of the records.^{cv}

Colorado has attempted to address this public challenge disconnect. The state’s hydraulic fracturing rule requires companies making trade secret assertions on FracFocus to file a “claim of entitlement” with the state.^{cvi} The law then empowers people “directly and adversely affected or aggrieved as a result of any violation of any Rule” to challenge trade secret claims.^{cvii} While “directly and adversely affected or aggrieved” is not defined and may set a standard that precludes many challenges,^{cviii} Colorado makes an important attempt to enable challenges to trade secret assertions made on FracFocus.

Otherwise, by directing or allowing companies to report to FracFocus, states have endorsed implicitly a “check-the-box” approach to proprietary assertions, with no meaningful oversight. This approach may encourage companies to make over-broad trade secret claims, a tendency that appears borne out by the many instances of inconsistent disclosures on the registry. About 20% of all hydraulic fracturing chemicals are not disclosed on FracFocus forms.^{cx} However, those chemical constituents withheld from disclosure in one form are often published in other forms. For instance:

- CLA-Web, a clay stabilizer supplied by Halliburton. At well # 35-049-24878, the ingredient column simply says “proprietary.” At well #05-045-16150, the ingredient is identified as an “ammonium salt” with no CAS number provided. However, at well #42-483-33339 and at least 5 other wells,^{cx} CLA-Web is identified as containing Polyepichlorohydrin, trimethyl amine quarternized (CAS # 51838-31-4).
- CX-14, a crosslinker supplied by Universal. At well # 42-127-33846 and many other wells, this product is reported as a “trade secret.”^{cx} However, at well #42-013-34489, this product is identified as containing Hydro-Treated Light Petroleum Distillate (CAS # 64742-47-8).^{cxii}
- S-3, a surfactant supplied by EES. At well # 05-095-06238 and at least nine other wells,^{cxiii} this product is marked as a “trade secret.” However, at well #05-077-09440, six ingredients and their CAS numbers are listed for this product: Sodium Carbonate (497-19-18); Proteolytic Enzyme (9014-01-1); Linear alkyl benzene sulfonate (68081-81-2); Primary C14-15 alcohol sulfate (Mix of 68081-98-1, 68187-50-0); Alcohol Ether Sulfate (68585-34-2); and d-Limonene (94266-47-4).
- S-262, a scale inhibitor supplied by Reef. At well #42-462-38034, the product is marked “proprietary.” At well # 30-015-39086, two ingredients and their CAS numbers are listed for this product: Amino Triethyl Phosphate Ether (68131-71-5) and Methanol (67-56-1). In addition, “inert ingredients” are mentioned.
- SUPERMAX, a surfactant and foamer supplied by Nabors/Superior Well Services.^{cxiv} At well # 37-005-29978 and at least 8 other wells,^{cxv} there is one “proprietary” ingredient noted, and three other ingredients and their CAS numbers listed: Isopropyl Alcohol (67-63-0); Glycol Ether (111-76-2) and Ethyl Hexanol (104-76-7). Similarly, at well # 37-051-24334, the same three ingredients are listed, plus an “other unspecified”. However, at well #37-063-36002 and at least three other wells,^{cxvi} 22 ingredients and their CAS numbers are listed, including Isopropyl Alcohol, Glycol Ether, and 2-Ethylhexanol. There are no proprietary assertions made for the product on these forms.
- TFR-21L, a friction reduction supplied by TES. At well # 35-121-24512, the product is listed as “proprietary.” However, at well # 35-121-24534 and at least 21 other wells^{cxvii}, five ingredients are listed, and a CAS number is provided for four: Ethoxylated C10-16 Alcohols (68002-97-1); Hydrotreated Light Distillate (64742-47-8); Sodium Chloride (7647-14-5); Water (7732-18-5); and an Acrylamide modified polymer (CAS withheld as proprietary).
- TSC-6755, a scale inhibitor supplied by X-Chem. At well #42-103-01856 and at least six other wells,^{cxviii} the product is marked “proprietary.” However, at well # 42-115-33475 and dozens of other wells,^{cxix} two ingredients and their CAS numbers are identified: Phosphonic acid, nitrilotris(methylene)tris-, pentasodium salt (2235-43-0) and Sodium Chloride (7647-14-5).

A company taking reasonable efforts to maintain the secrecy of one or more ingredients of a fracturing fluid additive would consistently shield those ingredients from disclosure on a public website. Indeed, “trade secret” is defined as information that is the subject of reasonable efforts under the circumstances to maintain secrecy.^{cx} Many courts will find that these “reasonable efforts” would include making sure information is not published on a website accessible to the general public and to one’s competitors.^{cxxi}

Well owners, operators, and service companies are disclosing information to FracFocus from different states and at different times. Given this, there are three circumstances that might give rise to inconsistent disclosures. First, some trade secrets may lose their proprietary value over time, leading a company to deliberately disclose ingredients it once protected. That action should moot the trade secret designation for all other entries listing the same product.

Second, a state agency may have determined that one or more chemical ingredients were not “trade secrets” under applicable state rules.^{cxvii} Were this to occur, the company could no longer assert protections over those constituents, under the plain definition of “trade secret.” The information is now easily accessible to others, there are no confidential circumstances surrounding the posting, and there no longer remains any confidential character to the information.

Third, a company may have inadvertently disclosed information about a chemical. Once that occurs, the company may no longer attest that it has taken reasonable efforts to maintain the secrecy of the chemical – the company has abandoned the trade secret by posting it on a public forum accessible to known competitors.^{cxviii} Failure to prevent publication “effectively [destroys] any confidential character it might otherwise have enjoyed as a trade secret.”^{cxviii}

Recommendations

In short, our review suggests that FracFocus prevents states from enforcing timely disclosure requirements, creates obstacles for compliance for reporting companies, and allows inconsistent trade secret assertions. Furthermore, the reliance on FracFocus by numerous states as a de facto regulatory mechanism sends a strong signal to industry that careful reporting and compliance is not a top priority. Thus, it is worth reconsidering reliance on FracFocus as a regulatory compliance tool.

At the very least, agencies should condition reliance on FracFocus on a set of minimum standards. Only two states have required anything of FracFocus – Colorado^{cxv} and Pennsylvania^{cxvi} directed FracFocus to become a searchable database by January 1, 2013 – and the registry failed to comply. Under Colorado law, this failure triggered a requirement that companies begin sending disclosures to FracFocus *and* the state on February 1, 2013; however, a spokesperson for the state Oil and Gas Commission seemed unaware of this requirement.^{cxvii} Pennsylvania’s law states that if FracFocus was not searchable by January 1, 2013, the Department of Environmental Protection “shall investigate the feasibility of making the information . . . available on the department’s Internet website in a manner that will allow the department and the public to search and sort the information.”^{cxviii} As of April 2013, Pennsylvania had not posted disclosures on its site.

This example suggests that any state’s ability to make demands on FracFocus is limited. Therefore, the federal government should step into this void and require minimum standards for the disclosure registry. Specifically, in its upcoming rule, BLM should set forth basic requirements for a third party disclosure registry that must exist for publication on that site to be deemed in compliance with the federal disclosure law. BLM should not mention FracFocus by name, but instead should describe the floor requirements for any eligible disclosure registry. If FracFocus cannot meet the new standards, perhaps a competitor site can.

BLM should require FracFocus to:

- Be searchable across forms and allow for meaningful cross-tabulation of search results;
- Report on the face of each disclosure form the date that form was submitted to FracFocus;

- Provide state/federal agency-specific forms, and/or at least reflect the differences across those forms (for instance, the “maximum concentration” columns could be re-labeled “maximum or actual concentrations”).
- Reject submissions that list non-existent (or non-matching) CAS numbers.

In addition, the following recommendations could enhance reporting:

- States (and BLM, if it chooses to use FracFocus) should require, as Texas does, that companies send copies of their FracFocus disclosure forms to the relevant agency. If a state discovers that a FracFocus form it receives was not published on FracFocus, penalties should apply.
- States and BLM must have an alternative disclosure mechanism in place in the event of the third-party website weakening its standards or folding, as Texas now does.
- States and BLM should adopt the trade secret procedures set forth in the Emergency Planning and Community Right to Know Act, for its hydraulic fracturing chemical disclosure rules. Arkansas already incorporates EPCRA by reference in its hydraulic fracturing disclosure rule.^{cxix}
- States and BLM should require companies to submit a statement to the relevant agency describing and substantiating any trade secret claims made on FracFocus. The statement should include information necessary to trigger the state’s public information laws so that challenges may be made to the assertions. Colorado law provides a useful starting point, although a clearer and broader standard for eligible challengers may be required.
- States and BLM should consider assessing penalties for asserting trade secret over a product that has been fully disclosed elsewhere on FracFocus.
- Congress should debate the implications of submitting reporting requirements to a non-regulatory third party. A number of legal and political issues may not have been considered fully when states began directing companies to disclose to FracFocus, such as the lack of oversight on trade secret claims and the fact that these third-parties are generally not subject to public information laws. A hearing could review these implications and suggest ways to improve public access to information.
- State and federal agencies should attach conditions to government funding of any third-party informational repository. Since 2009, DOE contributed \$3.84 million in grants to GWPC, \$1.5 million of which was used for FracFocus.^{cxix} DOE could condition future funding on FracFocus being made searchable across forms.

Acknowledgements

We wish to acknowledge SkyTruth for creating a searchable database of the information uploaded into FracFocus.org. Their database was a useful first step in a number of the searches we undertook for this report. Visit them at skytruth.org. We also wish to acknowledge Jason Munster for his help navigating the SkyTruth database.

Credit for the “confidential” stamp on page 8 goes to Stuart Miles/123rf.com.

ⁱ Pages 10-11 of this report lists examples of inconsistent trade secret claims. In addition, ingredient lists for the same product differ from form to form. Compare the ingredients for CL-350HT, a product supplied by Frac Tech Services, in the form for well # 17-013-20820 (listing 10 ingredients, with 9 CAS numbers), with the ingredients reported at well # 17-031-25143 (listing 3 ingredients and their CAS numbers), with the ingredients reported at well # 42-127-33868 (listing 5 ingredients, 3 with CAS numbers and two described as “trade secrets”), with the ingredients reported at well # 42-401-35176 (listing 16 ingredients, 10 with CAS numbers and 6 described as “proprietary”).

ⁱⁱ See, e.g., John Kemp, *Fracking Safely and Responsibly*, REUTERS, Mar. 13, 2012.

ⁱⁱⁱ See, e.g., Mike Soraghan, *Hydraulic Fracturing: Public Disclosure Database Kept Private*, ENERGYWIRE, Aug. 13, 2012. The authors may explore the position taken by the FracFocus organizers in a future paper.

^{iv} See, e.g., Daniel Soeder, *Shale Gas Development in the United States*, in *ADVANCES IN NATURAL GAS TECHNOLOGY* 3, 9-13 (Hamid Al-Megren ed., 2012) (describing the U.S. Department of Energy’s Eastern Gas Shales Project, launched in 1975).

^v For instance, the share of shale gas proved reserves relative to total U.S. natural gas proved reserves increased from less than 10% in 2007 to over 30% in 2010. *U.S. Crude Oil, Natural Gas, and NG Liquids Proved Reserves*, U.S. ENERGY INFORMATION ADMINISTRATION (Aug. 1, 2012), <http://www.eia.gov/naturalgas/crudeoilreserves/>.

^{vi} In 2010, shale gas accounted for 23 percent of U.S. natural gas production. Shale gas will comprise 49 percent of total U.S. natural gas production by 2035. *ANNUAL ENERGY OUTLOOK 2012* 93 (2012).

^{vii} See, e.g., Norimitsu Onishi, *Vast Oil Reserve May Now be within Reach, and Battle Heats Up*, NEW YORK TIMES, Feb. 2, 2013.

^{viii} *North Dakota Monthly Bakken Oil Production Statistics*, NORTH DAKOTA DEPARTMENT OF MINERAL RESOURCES, www.dmr.nd.gov/oilgas/stats/historicalbakkenoilstats.pdf (last visited Apr. 9, 2013).

^{ix} Well operators use from 3.8 million gallons to 5.5 million gallons of water to fracture a single well in the Marcellus shale. CORRIE CLARK ET AL., ARGONNE NATIONAL LABORATORY, *LIFE CYCLE ANALYSIS OF SHALE GAS AND NATURAL GAS* 10 (2011).

^x See, e.g., Scott Streater, *Colorado City Passes Fracking Ban Despite Aggressive Oil and Gas Industry Campaign*, ENERGYWIRE, Nov. 7, 2012; Danny Hakim, *Shift by Cuomo on Gas Drilling Prompts both Anger and Praise*, NEW YORK TIMES, Oct. 1, 2012, <http://www.nytimes.com/2012/10/01/nyregion/with-new-delays-a-growing-sense-that-gov-andrew-cuomo-will-not-approve-gas-drilling.html?pagewanted=all>; Carrie Tait & Shawn McCarthy, *Fear of Fracking: How Public Concerns Put an Energy Renaissance at Risk*, GLOBE AND MAIL, Mar. 10, 2012, <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/fear-of-fracking-how-public-concerns-put-an-energy-renaissance-at-risk/article535092/?page=all>.

^{xi} Mike Soraghan, *In Fracking Debate, ‘Disclosure’ Is in the Eye of the Beholder*, NEW YORK 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>.

^{xii} ALA. ADMIN. CODE r. 400-3-8-03 (2007).

^{xiii} ARK. ADMIN. CODE 178.00.1-B-19 (2011) (requiring well operators to notice their intent to perform hydraulic fracturing on applications to drill, and to report within 30 days of well completion the types, volumes of base fluid and additives used).

^{xiv} 2 COLO. CODE REGS. § 404-1:205 (2008) (requiring well operators to maintain Material Safety Data Sheets for chemicals used downhole, and a Chemical Inventory for chemicals exceeding 500 pounds during any quarterly reporting period).

^{xv} PA. CODE § 78.122(b)(6) (2011) (requiring well operators to report within 30 days of well completion the volume of water as base fluid, a list of hydraulic fracturing additives by type and percent by volume, and a list of OSHA-regulated chemicals in those additives, and to provide a list of non-OSHA regulated chemicals to the state upon request).

^{xvi} W. VA. CODE R. § 22-6A (2011).

^{xvii} WYO. ADMIN. CODE OIL GEN Ch. 3 § 45 (2010) (requiring well operators to provide the following on applications to drill: the source of the base stimulation fluid, each additive by type, chemical compounds and CAS numbers, and proposed rate or concentration; further requiring well operators to report after well completion the total volume of fluid, proppant rate or concentration, chemical additive name, type, concentration or rate, and amounts actually used to fracture the well).

^{xviii} Those eighteen states are: Alabama; Arkansas; Colorado; Idaho; Indiana; Louisiana; Michigan; Mississippi; New Mexico; North Dakota; Ohio; Oklahoma; Pennsylvania; South Dakota; Texas; Utah; West Virginia; and Wyoming.

^{xix} Colorado updated its rules in 2012 and began directing companies engaged in hydraulic fracturing to report chemical use on FracFocus. See 2 COLO. CODE REGS. § 404-1:205A(b)(2)(A) (2008). Pennsylvania updated its chemical reporting requirements by statute in 2012; Pennsylvania now requires reporting to FracFocus, see 58 PA. CONS. STAT. § 3222.1(b)(2), and the Commonwealth’s Department of Environmental Protection, see 58 PA. CONS. STAT. § 3222(b)(3), (b.1)(1) (2012).

^{xx} Alaska Oil and Gas Conservation Commission, *Second Revised Notice of Proposed Changes in the Regulations of the Alaska Oil and Gas Conservation Commission* (Jan. 17, 2013), available at <http://doa.alaska.gov/ogc/hear/HydraulicFrac3.pdf>.

^{xxi} California Department of Conservation, *Pre-Rulemaking Discussion Draft: Chapter 4. Development, Regulation, and Conservation of Oil and Gas Resources*, available at http://www.conservation.ca.gov/dog/general_information/Documents/121712DiscussionDraftofHFRRegs.pdf.

- ^{xxii} *High Volume Hydraulic Fracturing Proposed Regulations: 6 NYCRR Parts 52, 190, 550-556, 560, and 750*, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, <http://www.dec.ny.gov/regulations/77353.html> (last visited Mar. 24, 2013).
- ^{xxiii} Proposed Rule: Oil and Gas; Well Stimulation, Including Hydraulic Fracturing, on Federal and Indian Lands, 77 Fed. Reg. 27691 (May 11, 2012); Supplemental Notice of Proposed Rulemaking and Request for Comment, 43 CFR Part 3160, *available at* http://www.eenews.net/assets/2013/02/08/document_ew_01.pdf (last visited Mar. 23, 2013) (leaked updated proposal).
- ^{xxiv} *Important Announcement*, FRAC FOCUS (Jan. 30, 2012), <http://fracfocus.org/node/336>.
- ^{xxv} 30 C.F.R. § 250.501 (2012).
- ^{xxvi} “Report of Shooting or Treating,” Rule 26(6), MISS. OIL AND GAS BD. RULES OF ORDER AND PROCEDURE (2013).
- ^{xxvii} UTAH ADMIN. CODE r. 649-3-39(1.1) (2013).
- ^{xxviii} OKLA. ADMIN. CODE § 165:10-3-10(b) (2013).
- ^{xxix} LA. ADMIN. CODE tit. 43, § XIX.105 (2011).
- ^{xxx} MONT. ADMIN. R. 36.22.1011(1), (2) (2012).
- ^{xxxi} 58 PA. CONS. STAT. § 3222(b)(3) (2012).
- ^{xxxii} S.D. ADMIN. R. 74:12:02:17 (2013).
- ^{xxxiii} 16 TEX. ADMIN. CODE § 3.16(b) (2013).
- ^{xxxiv} N.D. ADMIN. CODE 43-02-03-27.1(1)(g), (2)(i) (2013).
- ^{xxxv} OHIO ADMIN. CODE § 1509.10(A) (2012).
- ^{xxxvi} 2 COLO. CODE REGS. § 404-1:205A(b)(2)(A) (2008).
- ^{xxxvii} 2 COLO. CODE REGS. §404-1:523a(1), (3) (2008).
- ^{xxxviii} N.D. CENT. CODE § 38-08-16 (2011).
- ^{xxxix} OHIO REV. CODE ANN. § 1509.33(A) (2012).
- ^{xl} OHIO REV. CODE ANN. § 1509.04(C) (2012).
- ^{xli} *See, e.g.*, Stan Belieu, NOGCC, FracFocus Chemical Disclosure Registry, Presentation at the 19th IPEC Conference (Oct. 29 – Nov 1, 2012).
- ^{xlii} Edward K. Cheng, *Structural Laws and the Puzzle of Regulating Behavior*, 100 NW. U. L. REV. 657 (2006); *see also* Leandra Lederman, *Statutory Speed Bumps: The Roles Third Parties Play in Tax Compliance*, 60 STAN. L. REV. 695 (2007).
- ^{xliii} *See, e.g.*, 2 COLO. CODE REGS. § 404-1:205A(b)(2)(A) (2008). *See also* 2 COLO. CODE REGS. § 404-1:100 (2008) (defining “chemical” as broader than OSHA-regulated).
- ^{xliv} While Rule 26(6)(G) would appear to limit reporting to OSHA chemicals, Rule 26(6)(F) requires disclosure of “any Additives to be used during the Hydraulic Fracturing process not otherwise disclosed by the person performing such treatment.” “Report of Shooting or Treating,” Rule 26(6), MISS. OIL AND GAS BD. RULES OF ORDER AND PROCEDURE (2013).
- ^{xlv} MONT. ADMIN. R. 36.22.1015(2) (2012).
- ^{xlvi} OHIO REV. CODE ANN. § 1509.10(A)(9)(a) (2012).
- ^{xlvii} OKLA. ADMIN. CODE § 165:10-3-10(b), (c) (2012).
- ^{xlviii} TEX. NAT. RES. CODE § 91.851(a)(1)(E); 16 TEX. ADMIN. CODE § 3.29(c)(2)(A) (2013).
- ^{xlix} 29 C.F.R § 1910.1200(b)(1) (2013).
- ^l 29 C.F.R § 1910.1200(c) (2013).
- ^{li} Edwin G. Foulke, Jr., Assistant Secretary of Labor for Occupational Safety & Health, *Guidance for Hazard Determination – for Compliance with the OSHA Hazard Communication Standard*, U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (2004), *available at* <http://www.osha.gov/dsg/hazcom/ghd053107.html>. This guidance acknowledges that “there may be limited information available on all aspects of a chemical’s effects, particularly in the area of chronic health effects.”
- ^{lii} Rodney White, *Disclosing More Detail About Fracking Chemicals Might be Wise*, THE BARREL: PLATTS, Mar. 2, 2012, *available at* http://blogs.platts.com/2012/03/02/disclosing_more/.
- ^{liii} *Frequently Asked Questions*, FRAC FOCUS, <http://fracfocus.org/faq> (last visited Mar. 26, 2013).
- ^{liv} Well 42-399-35302 (fractured on Mar. 30, 2012); 42-415-31840 (fractured on July 25, 2012).
- ^{lv} Well #42-429-36726 (fractured on Mar. 1, 2012); #42-461-36948 (fractured on Dec. 6, 2012).
- ^{lvi} Scott Anderson, *A Red Flag on Disclosure of Hydraulic Fracturing Chemicals*, EDF: ENERGY EXCHANGE (Dec. 12, 2012), <http://blogs.edf.org/energyexchange/2012/12/12/a-red-flag-on-disclosure-of-hydraulic-fracturing-chemicals/>.
- ^{lvii} LA. ADMIN. CODE tit. 43 § XIX.118C.1 (2011).
- ^{lviii} 2 COLO. CODE REGS. § 404-1:205A(b)(2)(A)(viii) (2008).
- ^{lix} “Report of Shooting or Treating,” Rule 26(6)(B), MISS. OIL AND GAS BD. RULES OF ORDER AND PROCEDURE (2013).
- ^{lxx} OKLA. ADMIN. CODE § 165:10-3-10(b)(1) (2013).
- ^{lxi} 16 TEX. ADMIN. CODE § 3.29(c)(2)(A)(viii) (2013).
- ^{lxii} 58 PA. CONS. STAT. § 3222(b.1)(1)(viii) (2012).

- ^{lxiii} OHIO REV. CODE ANN. § 1509.10(A)(9)(b).
- ^{lxiv} These wells were: 34-067-21073 (fractured on Nov. 9, 2012); 34-029-21737 (fractured on Nov. 14, 2012); 34-019-22156 (fractured on Jan. 31, 2013); and 34-155-24057 (fractured on Mar. 11, 2013).
- ^{lxv} MONT. ADMIN. R. 36.22.1015(2) (2012).
- ^{lxvi} See, e.g., well # 25-033-21162.
- ^{lxvii} See, e.g., well #25-087-21732; 25-03522159.
- ^{lxviii} 16 TEX. ADMIN. CODE § 3.29 (c)(2)(C) (2013).
- ^{lxix} See, e.g., well # 42-317-37273, #42-203-34936.
- ^{lxx} Operator Training Webinar, *FracFocus and the Texas Engineering Extension Service* (Apr. 4, 2012), available at <http://fracfocus.org/node/331> (last visited Mar. 23, 2013), at 28.
- ^{lxxi} *Id.* at 30.
- ^{lxxii} Operator Training Webinar, *supra* note lxxii, at 27.
- ^{lxxiii} See Anderson, *supra* note lvi.
- ^{lxxiv} TEX. NAT.RES. CODE § 91.851(a)(1)(D), (E).
- ^{lxxv} 58 PA. CONS. STAT. § 3222(b)(3), (b.1) (2012) (disclosure requirements to the state); 58 PA. CONS. STAT. § 3222.1(b)(2) (2012) (simultaneous disclosure requirements for unconventional well operators to FracFocus); Telephone Interview with Joseph Lee, Chief of Compliance and Data Management, Office of Oil and Gas Management, Pennsylvania Department of Environmental Protection (April 5, 2013).
- ^{lxxvi} 16 TEX. ADMIN. CODE § 3.29(c)(2)(B) (2013) (as directed by TEX. NAT.RES. CODE § 91.851(a)(1)(C)).
- ^{lxxvii} Those states that have not adopted the UTSA typically rely on common law based on the Restatement of Torts and the Restatement (Third) of Unfair Competition. *Id.* at 798.
- ^{lxxviii} Ryan M. Wiesner, *A State-By-State Analysis of Inevitable Disclosure: A Need for Uniformity and a Workable Standard* 16 INTELL. PROP. L. REV. 211, 215 (2012).
- ^{lxxix} See, e.g., LA. REV. STAT. ANN. § 51:1431(4) (2012).
- ^{lxxx} In most cases, a trade secret is considered a subset of Confidential Business Information (CBI). While a trade secret is, strictly speaking, held to a higher standards, states appear to use these terms interchangeably. The wide variation in the transparency that results under each law seems to have little to do with differing definitions of the terms “trade secret” or “CBI.”
- ^{lxxxi} 29 U.S.C. § 651 et seq.
- ^{lxxxii} 15 U.S.C. § 2601 et seq.
- ^{lxxxiii} 7 U.S.C. § 136 et seq.
- ^{lxxxiv} 46 U.S.C. § 116 et seq.
- ^{lxxxv} 40 C.F.R. 350.5.
- ^{lxxxvi} 40 C.F.R. 350.15.
- ^{lxxxvii} Environmental Protection Agency, *The Emergency Planning and Community Right-to-Know Act*, http://www.iowahomelandsecurity.org/documents/ierc/IERC_EPCRA_FactSheet.pdf.
- ^{lxxxviii} Richard Denison, *Worse Than We Thought: Decades of Out-of-Control CBI Claims under TSCA* (Feb. 12, 2010), <http://blogs.edf.org/nanotechnology/2010/02/12/worse-than-we-thought-decades-of-out-of-control-cbi-claims-under-tsca/> (citing a report commissioned by EPA, SHEILA FERGUSON, ET. AL., INFLUENCE OF CBI REQUIREMENTS ON TSCA IMPLEMENTATION (1992)).
- ^{lxxxix} See 68 Fed. Reg. 33129, 33140 (republishing, with new standards and procedural requirements, the TSCA Section 8(e) Policy and Guidelines); *Toxic Substances Control Act (TSCA) Section 8(e) Notices*, ENVIRONMENTAL PROTECTION AGENCY, <http://www.epa.gov/opptintr/tsca8e/pubs/confidentialbusinessinformation.html> (last updated Sept. 17, 2012).
- ^{xc} 75 Fed. Reg. 29,754 (May 27, 2010), EPA, Claims of Confidentiality: Certain Chemical Identities Contained in Health and Safety studies and Data from Health and Safety Studies Submitted under TSCA, Notice.
- ^{xci} 15 U.S.C. § 2613(e)(2).
- ^{xcii} U.S. GOVERNMENT ACCOUNTABILITY OFFICE, CHEMICAL REGULATION: OPTIONS EXIST TO IMPROVE EPA’S ABILITY TO ASSESS HEALTH RISKS AND MANAGE ITS CHEMICAL REVIEW PROGRAM 33 (2005).
- ^{xciii} See, *Toxic Substances Control Act (TSCA) Section 8(e) Notices*, ENVIRONMENTAL PROTECTION AGENCY, <http://www.epa.gov/opptintr/tsca8e/pubs/confidentialbusinessinformation.html> (last updated Sept. 17, 2012).
- ^{xciv} LA. REV. STAT. ANN. § 44:32 (2012).
- ^{xcv} LA. REV. STAT. ANN. § 44: 35A (2012).
- ^{xcvi} MISS. CODE ANN. § 25-61-9(1) (West 2012).
- ^{xcvii} N. D. CENT. CODE § 44-04-21.1(1) (2011).
- ^{xcviii} *Id.*

^{xcix} Ben Elgin, Benjamin Haas, & Phil Kuntz, *Fracking Secrets by Thousands Keep U.S. Clueless on Wells*, BLOOMBERG NEWS, Nov. 30, 2012, <http://www.bloomberg.com/news/2012-11-30/frack-secrets-by-thousands-keep-u-s-clueless-on-wells.html>.

^c *Id.*

^{ci} *Id.*

^{cii} Soraghan, *supra* note iiiii.

^{ciii} OHIO REV. CODE ANN. § 149.43(C)(1) (2012).

^{civ} OHIO REV. CODE ANN. § 1509.10(I)(2) (2012).

^{cv} OHIO REV. CODE ANN. § 149.43(A)(1) (2012).

^{cvi} 2 COLO. CODE REGS. § 404-1:205A(b)(2)(B) (2008).

^{cvi} Order No. 1R-114, Amendments to 200 Series Rules: Rule 205A, Hydraulic Fracturing Chemical Disclosure, at 12-13 (citing Section 114 of the Oil and Gas Conservation Act and Rule 522(a)(1)).

^{cvi} No matter how courts interpret this phrase, it acts to limit standing in fracturing chemical trade secret challenges. Under Colorado's general public information law, *any person* can ask to review records; seek a written explanation if documents were withheld; and file an action in state court to review any decision not to disclose. COLO. REV. STAT. § 24-72-204(4), (5) (2013).

^{cix} *Id.*

^{cx} Wells #17-031-25829; 17-031-25877; 17-031-25878; 42-317-37042; and 42-317-37309.

^{cx} *See, e.g.*, Wells # 42-127-33853; 42-127-33892; 42-127-34113; 42-479-41131.

^{cxii} Note: This well identifies the supplier as UPPI. This is Universal Pressure Pumping, Inc., the part of Universal that operates in Texas. *See*, "About Universal," www.patenergy.com/pressurepumping/about-us/.

^{cxiii} Wells # 05-095-06362; 05-095-06364; 05-095-06365; 05-095-06368; 05-095-06444; 05-095-06447; 05-095-06448; 05-095-06449; 05-095-06450.

^{cxiv} Krishna Das, *Nabors to Buy Superior Wells Services for \$736 Million*, REUTERS, Aug. 9, 2010, <http://www.reuters.com/article/2010/08/09/us-superior-nabors-idUSTRE6781MH20100809>; SEC Form SCTO-T/A, Sept. 9, 2010, *Tender Offer Statement, Superior Well Servs., Inc., Diamond Acquisition Corp., a wholly-owned subsidiary of Nabors Industries, Ltd.*.

^{cxv} Wells #37-005-30851; 37-005-30855, 37-005-30919; 37-005-30998; 37-005-31027; 37-005-31062; 37-019-21858; 43-047-50736.

^{cxvi} Wells #37-005-30920; 21-079-60357; 21-079-60183.

^{cxvii} Wells #35-029-21206; 35-121-24436; 35-121-24437; 35-121-24462; 35-121-24463; 35-121-24533; 35-121-24552; 35-121-24554; 35-121-24555; 35-121-24568; 35-121-24589; 35-121-24615; 42-203-34936; 42-203-35095; 42-203-35101; 42-211-34858; 42-393-32394; 42-405-30434; 42-405-30459; 42-459-31455; 42-483-31886; 42-483-31918.

^{cxviii} 42-103-10578; 42-103-31803; 42-103-32596; 42-173-34737; 42-173-34759; 42-173-34769.

^{cxix} *See, e.g.*, Wells # 42-115-33491; 42-115-33493; 42-115-33504; 42-115-33505; 42-135-41129; 42-135-41131; 42-135-41132; 42-135-41133; 42-135-41152; 42-135-41154; 42-135-41154; and 42-135-41156.

^{cx} The three states that do not follow the UTSA definition of "trade secret" nonetheless apply a similar "secrecy" standard. *See, e.g., Trilogy Software, Inc. v. Callidus Software, Inc.*, 143 S.W.3d 452, 467-68 (Tex. App.-Austin 2004, pet. denied) (noting that Texas courts require a "substantial element of secrecy" before they will confer trade secret protection over information).

^{cxxi} *See DVD Copy Control Ass'n Inc. v. Bunner*, 116 Cal. App. 4th 241, 251 (6th Dist. Cal. 2004).

^{cxvii} This situation would occur if the state agency required substantiation and determined that the company's claim was invalid.

^{cxviii} *Eli Lilly and Co. v. E.P.A.*, 615 F.Supp. 811, 820 (S.D. Ind. 1985) ("Property rights in a trade secret are extinguished when a company discloses its trade secret to persons not obligated to protect the confidentiality of such information."); *Dep't of Public Utilities of City of Norwich v. Freedom of Information Com'n*, 739 A.2d 328, 533 (Conn. App. Ct. 1999); *Cubic Transp. Systems, Inc. v. Miami-Dade County*, 899 So.2d 453, 454 (Fla. Dist. Ct. App. 3d Dist. 2005); *Awards.com, LLC v. Kinko's, Inc.*, 834 N.Y.S.2d 147, 156 (1st Dep't 2007).

^{cxviii} *Sepro Corp. v. Florida Dept. of Env'tl. Protection*, 839 So.2d 781, 783 (Fla. Dist. Ct. App. 1st Dist. 2003).

^{cxv} 2 COLO. CODE REGS. § 404-1:205A(b)(3)(A) (2008).

^{cxv} 58 PA. CONS. STAT. § 3222.1(b)(6) (2012).

^{cxvii} 2 COLO. CODE REGS. § 404-1:205A(b)(3)(B) (2008); Telephone interview by Alexa Shasteen, J.D. Candidate, Harvard Law School, and Robert J. Frick, Hearing Manager, Colorado Oil & Gas Conservation Commission (Feb. 12, 2013).

^{cxviii} 58 PA. CONS. STAT. § 3222.1(b)(6) (2012).

^{cxix} ARK. ADMIN. CODE 178.00.1-B-19 (l)(8) (2011).

^{cx} Benjamin Haas, et. al., *Fracking Hazards Obscured in Failure to Disclose Wells*, BLOOMBERG NEWS, Aug. 14, 2012, <http://www.bloomberg.com/news/2012-08-14/fracking-hazards-obscured-in-failure-to-disclose-wells.html>.

The views and opinions expressed in this report do not necessarily reflect the views of Harvard Law School or Harvard University.