



Hydraulic Fracturing: Chemical Disclosure Requirements

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Summary

Hydraulic fracturing is a technique used to free oil and natural gas trapped underground in low-permeability rock formations by injecting a fluid under high pressure in order to crack the formations. The composition of a fracturing fluid varies with the nature of the formation, but typically contains mostly water; a proppant to keep the fractures open, such as sand; and a small percentage of chemical additives. Some of these additives may be hazardous to health and the environment.

The Shale Gas Production Subcommittee of the Secretary of Energy Advisory Board has recommended public disclosure, on a well-by-well basis, of all of the chemical ingredients added to fracturing fluids, with some protection for trade secrets. Although a few provisions of federal law require some disclosure of information about the chemicals used in hydraulic fracturing, none of them requires that detailed information about the chemical composition of a fracturing fluid be provided. In August 2011, environmental groups petitioned the Environmental Protection Agency (EPA) to promulgate rules under sections 4 and 8 of the Toxic Substances Control Act (TSCA) for chemical substances and mixtures used in oil and gas exploration or production. In October 2012, environmental groups asked the EPA to require the oil and gas extraction industry to report the toxic chemicals it releases under the Toxics Release Inventory.

In his 2012 State of the Union Address, President Barack Obama said he would obligate “all companies that drill for gas on public lands to disclose the chemicals they use,” citing health and safety concerns. In May 2012, the Bureau of Land Management (BLM) published a proposed rule that would require companies employing hydraulic fracturing on lands managed by BLM to disclose the content of the fracturing fluid. In addition, there were legislative efforts in the 112th Congress. H.R. 1084 and S. 587, the Fracturing Responsibility and Awareness of Chemicals Act (FRAC Act), would have created more broadly applicable disclosure requirements for parties engaged in hydraulic fracturing.

Chemical disclosure laws at the state level vary widely. Of the 15 laws examined in this report, fewer than half require direct public disclosure of chemical information by mandating that parties post the information on the FracFocus chemical disclosure website. The level of detail required to be disclosed often depends on how states protect trade secrets, as these protections may allow submitting parties to withhold information from disclosure at their discretion or to submit fewer details about proprietary chemicals, except, perhaps, in emergencies. Even if a disclosure law does not protect information from public disclosure, other state laws, such as an exemption in an open records law, may do so. States also have varying laws regarding the timing of these disclosure requirements.

This report provides an overview of current and proposed laws and regulations at the state and federal levels that require the disclosure of the chemicals added to the fluid used in hydraulic fracturing. **Appendix A** provides a glossary of many of the terms used in this report. **Appendix B** contains a table summarizing some of the fracturing chemical disclosure requirements described in this report. For an overview of the relationship between hydraulic fracturing and the Safe Drinking Water Act (SDWA), see CRS Report R41760, *Hydraulic Fracturing and Safe Drinking Water Act Regulatory Issues*, by (name redacted) and (name redacted).

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Introduction

Hydraulic fracturing is a technique used to free oil and natural gas trapped underground in low-permeability rock formations by pumping a fracturing fluid under high pressure in order to crack the formations.¹ The composition of a fracturing fluid varies with the nature of the formation, but typically contains mostly water; a proppant to keep the fractures open, such as sand; and a small percentage of chemical additives.² A primary function of these additives is to assist the movement of the proppant into the fractures made in the formation by reducing friction between the fracturing fluid and the pipe used to pump the fluid into the formation.³ Although some of these chemical additives may be harmless, others may be hazardous to health and the environment.⁴ A report by the minority staff of the House Committee on Energy and Commerce found that between 2005 and 2009, the 14 leading oil and gas service companies used “780 million gallons of hydraulic fracturing products” in fracturing fluids, with “95 of the products containing 13 different carcinogens.”⁵

In 2011, President Barack Obama directed Secretary of Energy Steven Chu to form a panel to study the effects of shale gas production on health and the environment.⁶ The Shale Gas Production Subcommittee of the Secretary of Energy Advisory Board has made several recommendations intended to address these effects.⁷ One recommendation calls for the public disclosure, on a “well-by-well basis,” of all of the chemical ingredients—“not just those that appear on Material Safety Data Sheets”—added to fracturing fluids, with some protection for trade secrets.⁸ Proponents of chemical disclosure laws maintain that public disclosure of the chemicals used in each well would allow for health professionals to better respond to medical emergencies involving human exposure to the chemicals; assist researchers in conducting health studies on shale gas production; and permit regulators and others to perform baseline testing of water sources to track potential groundwater contamination if it occurs.⁹ However, some manufacturers of the additives, as well as others in the industry, remain reluctant to disclose information about the chemicals they use. These parties have expressed concerns that disclosure

¹ Department of Energy, *Modern Shale Gas Development in the United States: A Primer*, ES-4 (2009) [hereinafter *Department of Energy Primer*], available at http://www.netl.doe.gov/technologies/oil-gas/publications/epreports/shale_gas_primer_2009.pdf.

² See *id.* at 56, 61-64.

³ *Id.*; Reservoir Stimulation §§7-6.2, 7-6.4 (Michael J. Economides et al. eds, 3d ed. 2000).

⁴ Department of Energy Primer, *supra* note 1, at 62.

⁵ Minority Staff of H. Comm. on Energy and Commerce, 112th Cong., *Chemicals Used in Hydraulic Fracturing* 5, 9 (2011) [hereinafter *Minority Report on Fracturing Chemicals*], available at <http://democrats.energycommerce.house.gov/sites/default/files/documents/Hydraulic%20Fracturing%20Report%204.18.11.pdf>.

⁶ For more on the panel’s work, see *Improving the Safety & Environmental Performance of Hydraulic Fracturing*, <http://www.shalegas.energy.gov/>.

⁷ Department of Energy, *Shale Gas Production Subcommittee Second Ninety Day Report 1* (2011), available at http://www.shalegas.energy.gov/resources/111811_final_report.pdf.

⁸ *Id.* at 5-6, 17. Employers are required to use Material Safety Data Sheets to warn employees of certain hazardous chemicals in the workplace under the Occupational Safety and Health Act. See 29 C.F.R. §1910.1200.

⁹ See Lisa Song, *Secrecy Loophole Could Still Weaken BLM’s Tougher Fracturing Regs*, InsideClimate News, February 15, 2012.

would reveal proprietary chemical formulas to their competitors, destroying the parties' valuable trade secrets.¹⁰

This report provides an overview of current and proposed laws and regulations at the state and federal levels that require the disclosure of the chemicals added to the fluid used in hydraulic fracturing. Although a few provisions of federal law require some disclosure of information about the chemicals used in hydraulic fracturing, none of them requires that detailed information about the chemical composition of a fracturing fluid be provided.

In his 2012 State of the Union Address, President Barack Obama said he would obligate "all companies that drill for gas on public lands to disclose the chemicals they use," citing health and safety concerns.¹¹ In May 2012, the Bureau of Land Management (BLM) published a proposed rule that would require disclosure of the content of fracturing fluids used on lands managed by the agency. In addition, there were legislative efforts in the 112th Congress. H.R. 1084 and S. 587, the Fracturing Responsibility and Awareness of Chemicals Act (FRAC Act), would have created more broadly applicable disclosure requirements for parties engaged in hydraulic fracturing.

At the state level, the Interstate Oil and Gas Compact Commission, an organization with members that include state regulators and industry representatives, has argued that current regulation of hydraulic fracturing by the states is sufficient.¹² At least 15 states already have some form of chemical disclosure requirements. These provisions vary widely, but generally indicate (1) which parties must disclose information about chemical additives and whether these disclosures must be made to the public or a state agency; (2) what information about chemicals added to a fracturing fluid must be disclosed, including how specifically parties must describe the chemical makeup of the fracturing fluid and the additives that are combined with it; (3) what protections, if any, will be given to trade secrets; and (4) at what time disclosure must be made in relation to when fracturing takes place. Others states are in the process of considering disclosure laws or regulations.

For a glossary of some of the terms used in this report, see **Appendix A**. For a table summarizing some of the hydraulic fracturing fluid chemical disclosure laws and proposals described in this report, see **Appendix B**.

Federal Laws

No federal law currently requires parties to submit detailed information about the chemical composition of a hydraulic fracturing fluid. Under the Emergency Planning and Community Right-to-Know Act (EPCRA), owners or operators of facilities where certain hazardous hydraulic fracturing chemicals are present above certain thresholds may have to comply with emergency planning requirements; emergency release notification obligations; and hazardous chemical

¹⁰ See Minority Report on Fracturing Chemicals, *supra* note 5, at 11-12. Some manufacturers of hydraulic fracturing fluid additives have claimed that developing the additives costs millions of dollars and takes several years. Mike Soraghan, *Two-thirds of Frack Disclosures Omit 'Secrets,'* <http://www.eenews.net/public/energywire/2012/09/26/1>.

¹¹ President Barack Obama, 2012 State of the Union Address (January 24, 2012), *available at* <http://www.whitehouse.gov/photos-and-video/video/2012/01/25/2012-state-union-address-enhanced-version#transcript>.

¹² See, e.g., Interstate Oil and Gas Compact Commission, Hydraulic Fracturing, *available at* <http://www.iogcc.state.ok.us/hydraulic-fracturing>.

storage reporting requirements.¹³ In addition, environmental advocacy groups have petitioned the Environmental Protection Agency (EPA) to regulate hydraulic fracturing chemicals under the Toxic Substances Control Act and to require the oil and gas extraction industry to report the toxic chemicals it releases under the EPA's Toxics Release Inventory.¹⁴

Toxic Substances Control Act

A main goal of the Toxic Substances Control Act (TSCA) is to protect human health and the environment from risks associated with toxic chemicals in U.S. commerce.¹⁵ Under the act, the EPA may require manufacturers and processors of chemicals to develop, maintain, and report data on the chemicals' effects on health and the environment.¹⁶ The EPA may also place certain restrictions on chemicals when the agency has a reasonable basis to conclude that they present—or will present—an unreasonable risk of injury to health or the environment.¹⁷ However, the EPA may regulate the chemicals only “to the extent necessary to protect adequately against such risk using the least burdensome requirements.”¹⁸

On August 4, 2011, Earthjustice and more than 100 other environmental advocacy organizations petitioned the EPA to promulgate rules under sections 4 and 8 of TSCA for chemical substances and mixtures used in oil and gas exploration or production (E&P Chemicals).¹⁹ The petition stated that the EPA and the public “lack adequate information about the health and environmental effects of E&P Chemicals, which are used in increasing amounts to facilitate the rapid expansion of oil and gas development throughout the United States.”²⁰

¹³ 42 U.S.C. §§11002, 11004, 11021, 11022.

¹⁴ Earthjustice, Citizen Petition Under Toxic Substances Control Act Regarding the Chemical Substances and Mixtures Used in Oil and Gas Exploration or Production 1, 22, http://earthjustice.org/sites/default/files/fracking_petition.pdf; Earthworks, Petition to Add the Oil and Gas Extraction Industry, Standard Industrial Classification Code 13, to the List of Facilities Required to Report under the Toxics Release Inventory 1, http://www.earthworksaaction.org/library/detail/petition_to_add_oil_gas_extraction_to_TRI.

¹⁵ 15 U.S.C. §2601; S. Rep. No. 94-1302, at 56 (1976) (Conf. Rep.). For more information on TSCA, see CRS Report RL31905, *The Toxic Substances Control Act (TSCA): A Summary of the Act and Its Major Requirements*, by (name redacted).

¹⁶ *E.g.*, 15 U.S.C. §§2603, 2607. Not all of the chemicals used in hydraulic fracturing are necessarily subject to regulation under TSCA. For example, biocides, which are often used in a fracturing fluid to kill bacteria, may be subject to regulation as pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). *See id.* §2602. *See also* Gayathri Vaidyanathan, *Official Urges EPA Review, Labeling of Fracking Substances*, E&E News (Oct. 24, 2012). For more information on FIFRA, see CRS Report RL31921, *Pesticide Law: A Summary of the Statutes*, by (name redacted) and (name redacted).

¹⁷ 15 U.S.C. §2605(a).

¹⁸ *Id.* EPA must consider the benefits of the chemical product or process when considering how, if at all, to regulate it.

¹⁹ Earthjustice, Citizen Petition Under Toxic Substances Control Act Regarding the Chemical Substances and Mixtures Used in Oil and Gas Exploration or Production 1, 22, [hereinafter Earthjustice Petition], http://earthjustice.org/sites/default/files/fracking_petition.pdf. Section 21 of TSCA allows any person to petition the EPA to adopt a new rule under certain sections of the act. 15 U.S.C. §2620.

²⁰ *Id.* at 1.

Earthjustice Petitioners' Request for a Section 4 Test Rule

Section 4 authorizes the EPA to issue rules requiring manufacturers or processors of chemicals to test the chemicals in order to obtain data on their health and environmental effects.²¹ Under the statute, the EPA may require testing when it finds that (1) the manufacture, distribution, processing, use, or disposal of a chemical may present an unreasonable risk of injury to health or the environment; or (2) a chemical is or will be produced in substantial quantities, and (A) it enters or may reasonably be anticipated to enter the environment in substantial quantities, or (B) there is or may be significant or substantial human exposure to such chemical.²² There must also be insufficient data to determine or predict the chemical's impact on people or the environment.²³ Testing must be necessary to develop this data.²⁴

Earthjustice and the other petitioners argued that E&P Chemicals may present an unreasonable risk of injury to health and the environment for several reasons. Petitioners maintained that, for example, leaks and spills of the chemicals may cause harm to people and animals, as well as the quality of air, water, and soil.²⁵ The petitioners also argued that the large volume of chemicals used in hydraulic fracturing of wells in the United States could result in substantial human exposure to the chemicals, as well as a substantial release of the chemicals into the environment.²⁶ In the petitioners' view, testing was needed to obtain sufficient data on the chemicals' effects because existing federal and state disclosure requirements were inadequate.²⁷

In a November 2, 2011 letter, the EPA denied the petitioners' request for promulgation of a TSCA section 4 test rule.²⁸ In a short paragraph, the agency wrote that the petitioners had failed to present sufficient facts for the EPA to find that such a rule was necessary.²⁹

Earthjustice Petitioners' Request for Section 8 Recordkeeping and Reporting Rules

Section 8 of TSCA generally authorizes the EPA to require manufacturers, processors, and distributors of chemicals in U.S. commerce to maintain and report certain data on the health and environmental effects of the chemicals.³⁰ In their petition, Earthjustice and other advocacy groups asked the EPA to take the following actions pursuant to section 8 so that the agency and the

²¹ 15 U.S.C. §2603. *See also* 40 C.F.R. §790.1. The petitioners also asked the EPA to require manufacturers and processors to disclose the identities of the chemicals they were required to test. Earthjustice Petition at 18.

²² 15 U.S.C. §2603(a)(1).

²³ *Id.* Before the EPA may require testing of a mixture, the agency must find that the mixture's effects on health or the environment "may not be reasonably and more efficiently determined or predicted by testing the chemical substances which comprise the mixture." *Id.* §2603(a)(2).

²⁴ *Id.* §2603(a)(1).

²⁵ Earthjustice Petition at 13-19.

²⁶ *Id.* at 19.

²⁷ *Id.* at 5-10.

²⁸ Letter from Assistant Administrator Stephen A. Owens to Deborah Goldberg (Nov. 2, 2011), <http://www.epa.gov/oppt/chemtest/pubs/SO.Earthjustice.Response.11.2.pdf>.

²⁹ *Id.*

³⁰ 15 U.S.C. §2607.

public could better understand the impact of E&P Chemicals on human health and the environment:

- Adopt a rule pursuant to TSCA section 8(a) requiring manufacturers and processors of E&P Chemicals to maintain records and submit reports to EPA disclosing the identities, categories, and quantities of E&P Chemicals, as well as descriptions of their byproducts; all existing data on their potential or demonstrated environmental and health effects; and the number of individuals potentially exposed to the chemicals.
- Call in all records of allegations of significant adverse reactions received and maintained by manufacturers, processors, and distributors of E&P Chemicals pursuant to TSCA section 8(c) and 40 C.F.R. section 717.
- Adopt a rule pursuant to TSCA section 8(d) to require submittal of all existing, not previously reported health and safety studies related to the health and/or environmental effects of E&P Chemicals.³¹

In a November 23, 2011, letter, the EPA partially granted petitioners' section 8(a) and section 8(d) requests.³² The agency wrote that it would initiate a rulemaking to gather data on the chemicals used in hydraulic fracturing.³³ However, the agency declined to issue rules for other chemicals in the oil and gas exploration and production sector.³⁴ The EPA intends to discuss potential section 8 reporting requirements with the states, industry, and public interest groups to "minimize reporting burdens and costs, take advantage of existing information, and avoid duplication of efforts."³⁵ As of the date of this report, neither a proposed rule nor an advance notice of proposed rulemaking has been issued.³⁶

Questions have been raised about whether rules promulgated by the EPA pursuant to TSCA sections 8(a) and 8(d) might duplicate disclosure requirements contained in state laws or regulations. As described below, several states require operators, service companies, or other entities involved in hydraulic fracturing to report information about the identities, categories of use, and volumes of the chemicals used in the fluid at a particular well site. A rule under TSCA sections 8(a) and 8(d) could potentially require manufacturers and processors of the chemicals to report similar information. It might also require manufacturers, processors, and distributors of the chemicals to submit studies on the chemicals' health and safety effects.³⁷

Rules that the EPA promulgates under sections 4, 5, and 6 of TSCA may preempt state or local requirements in some circumstances unless EPA exempts each requirement from preemption by

³¹ Earthjustice Petition at 18. A "significant adverse reaction" for purposes of TSCA section 8(c) is a reaction that "may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment." 40 C.F.R. §717.3(i). *See also* Earthjustice Petition at 20.

³² Letter from Assistant Administrator Stephen A. Owens to Deborah Goldberg (Nov. 23, 2011), http://www.epa.gov/oppt/chemtest/pubs/EPA_Letter_to_Earthjustice_on_TSCA_Petition.pdf.

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

³⁶ For the current status of the rulemaking, see <http://yosemite.epa.gov/opei/RuleGate.nsf/byRIN/2070-AJ93>.

³⁷ Some service companies that are subject to state disclosure requirements may also manufacture, process, or distribute fracturing chemicals, potentially subjecting them to federal reporting requirements under a TSCA section 8 rule.

promulgating a rule.³⁸ However, it does not appear that recordkeeping and reporting rules issued under section 8 of TSCA may expressly preempt state laws.³⁹ Thus, it is possible that state and federal disclosure requirements could both apply. The EPA has written that a TSCA rule would “not duplicate, but instead complement, the well-by-well disclosure programs of states” by providing “aggregate pictures of the chemical substances and mixtures used in hydraulic fracturing.”⁴⁰

EPA’s promulgation of section 8 rules may also raise concerns that they will overlap with any future federal chemical disclosure rule issued by the Bureau of Land Management, Department of the Interior, for holders of oil and gas leases on federal lands managed by the agency.⁴¹ TSCA section 9 states that “[i]n administering [TSCA], the Administrator shall consult and coordinate with ... the heads of any other appropriate Federal executive department or agency, any relevant independent regulatory agency, and any other appropriate instrumentality of the Federal Government for the purpose of achieving the maximum enforcement of [TSCA] while imposing the least burdens of duplicative requirements on those subject to [TSCA] and for other purposes.”⁴²

Additional issues may arise with respect to the EPA’s handling of trade secrets submitted to it under section 8 rules. TSCA provides the EPA with discretion to disclose trade secret information in some circumstances.⁴³ However, public disclosure may destroy a property interest that a party has in its trade secrets, potentially leading to a regulatory taking of property under the Fifth Amendment.⁴⁴ Further complications may occur if information protected from public disclosure by state law is disclosed by the EPA.⁴⁵

Occupational Safety and Health Act

The Occupational Safety and Health Administration has promulgated a set of regulations under the Occupational Safety and Health Act (OSHA) referred to as the Hazard Communication Standard (HCS).⁴⁶ A primary purpose of the HCS is to ensure that employees who may be

³⁸ 15 U.S.C. §2617. Rules issued under these sections generally pertain to testing of chemicals; premanufacture notification of new chemicals; and restrictions placed on chemicals.

³⁹ See *id.* See also Lawrence E. Culleen & Shailesh R. Sahay, *EPA’s Additional Fracking Rules May Bring Confusion*, Law360 (Nov. 7, 2012), <http://www.law360.com/m/articles/391908/epa-s-additional-fracking-rules-may-bring-confusion>.

⁴⁰ Letter from Assistant Administrator Stephen A. Owens to Deborah Goldberg (Nov. 23, 2011).

⁴¹ Oil and Gas; Well Stimulation, Including Hydraulic Fracturing, on Federal and Indian Lands, 77 Fed. Reg. 27,691 (May 11, 2012). See also Culleen & Sahay, *supra* note 37.

⁴² 15 U.S.C. §2608.

⁴³ *Id.* §2613.

⁴⁴ U.S. Const. amend. V. See generally *Ruckelshaus v. Monsanto*, 467 U.S. 986 (1984) (holding that when the government discloses trade secrets that a party has been required to submit to the government by law, a taking could result in some circumstances); *Philip Morris v. Reilly*, 312 F.3d 24 (1st Cir. 2002) (en banc) (holding that a law that compels disclosure of a party’s trade secrets may effect a taking).

⁴⁵ Culleen & Sahay, *supra* note 37. For more on the trade secret protections contained in state chemical disclosure laws, see “Trade Secret Protections” below.

⁴⁶ 29 C.F.R. §1910.1200. See also 29 U.S.C. §655. OSHA recently modified its Hazard Communication Standard, effective May 25, 2012. The regulation now requires that by June 1, 2015, employers communicate workplace hazards to employees by using Safety Data Sheets that are consistent with the United Nations Globally Harmonized System of Classification and Labeling of Chemicals. 29 C.F.R. §1910.1200(a), (j). In addition to other information, the data sheets (continued...)

exposed to hazardous chemicals in the workplace are aware of the chemicals' potential dangers.⁴⁷ Manufacturers and importers must obtain or develop Material Safety Data Sheets (MSDS) for hydraulic fracturing chemicals that are hazardous according to OSHA standards.⁴⁸ MSDS must list basic information about the identity of the chemicals; the chemicals' potential hazards; and safety precautions for their handling and use, among other things.⁴⁹ The HCS requires operators to maintain MSDS for hazardous chemicals at the job site.⁵⁰

MSDS may provide limited information about hydraulic fracturing chemicals. Currently, the most specific details about chemical identities that must be listed on the data sheets are the common or chemical names of substances that are considered to be hazardous under OSHA regulations.⁵¹ Chemical Abstract Service Registry Numbers (CASRNs) for substances or mixtures do not have to be listed. In addition, parties that prepare MSDS may withhold chemical identity information from the data sheets at their discretion in some circumstances.⁵² However, the regulations do not prevent parties from voluntarily submitting data sheets with more detailed information.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA) establishes programs to provide members of the public with information about hazardous chemicals located in their communities.⁵³ It also requires that representatives from different levels of government coordinate their efforts with communities and industry to prepare response plans for emergencies involving the accidental release of hazardous chemicals.⁵⁴

The act seeks to induce each state to establish a State Emergency Response Commission (SERC).⁵⁵ Each SERC appoints and coordinates the activities of a Local Emergency Planning Committee (LEPC) for each emergency planning district created within a state or across multiple states.⁵⁶ A LEPC is responsible for developing an emergency response plan for an accidental chemical release with input from stakeholders and submitting it to the SERC.⁵⁷ Generally, a

(...continued)

will be required to contain a more specific description of certain chemical substances and mixtures, provided that this information does not qualify for trade secret protection under the regulations. *Id.* §1910.1200(g), (i), app. D. During the transition period, parties may comply with the new regulations, the previous version of the regulations, or both. *Id.* §1910.1200(j)(3).

⁴⁷*Id.* §1910.1200(a)-(b) (2011).

⁴⁸ *See id.* §1910.1200(d), (g).

⁴⁹ *See id.* §1910.1200(g).

⁵⁰ *See id.*

⁵¹ *Id.* §1910.1200(g)(2). For more information on the limitations of MSDS, see Clifford S. Mitchell & Brian S. Schwartz, *Limitations of Information About Health Effects of Chemicals*, *Journal of General Internal Medicine*, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1495173/pdf/jg_i_01217.pdf.

⁵² *Id.* §1910.1200(i)(1) (2011). *See also* Mike Soraghan, *In Fracking Debate, 'Disclosure' Is in the Eye of the Beholder*, *New York Times* (June 21, 2010).

⁵³ H. Rep. No. 99-962, at 281 (1986) (Conf. Rep.). For more on EPCRA, see CRS Report RL32683, *The Emergency Planning and Community Right-to-Know Act (EPCRA): A Summary*, by (name redacted).

⁵⁴ 42 U.S.C. §11001; H. Rep. No. 99-962, at 281 (1986) (Conf. Rep.).

⁵⁵ 42 U.S.C. §11001(a).

⁵⁶ *Id.* §11001(a)-(c).

⁵⁷ *Id.* §11001(c), 11003.

facility is subject to EPCRA's emergency planning requirements if there is a substance on the EPA's list of extremely hazardous substances (EHS) present at the facility in excess of its EPA-determined threshold planning quantity.⁵⁸ Whether a well site where hydraulic fracturing occurs would be subject to EPCRA's requirements would depend on the identities and quantities of the chemicals present, among other things.

Emergency Release Notification and Hazardous Chemical Storage Reporting Requirements

Under section 304 of EPCRA, an owner or operator of a facility must immediately notify the SERC and the community emergency coordinator for the LEPC in the affected area if an accidental release of a chemical that is an EHS occurs in an amount in excess of its reportable quantity from a facility where a hazardous chemical is produced, used, or stored.⁵⁹ This information must be made available to the public.⁶⁰

Section 311 of EPCRA generally requires that facility owners or operators submit an MSDS for each hazardous chemical present that exceeds an EPA-determined threshold level, or a list of such chemicals, to the LEPC, SERC, and the local fire department.⁶¹ For non-proprietary information, the act generally requires a LEPC to provide an MSDS to a member of the public on request.⁶²

Under Section 312 of EPCRA, facility owners or operators must submit annual chemical inventory information for hazardous chemicals present at the facility in excess of an EPA-determined threshold level to the LEPC, SERC, and the local fire department.⁶³ There are two types of information that may have to be submitted. If the facility owner or operator is required to report "Tier I information," then the inventory form must contain information about the

⁵⁸ *Id.* §11002. The EPA's list of EHS and their threshold planning quantities is located at 40 C.F.R. Part 355 appendixes A and B. A state governor or SERC may designate additional facilities as subject to EPCRA, provided that the designation is made after public notice and opportunity for comment. 42 U.S.C. §11002(b)(2).

⁵⁹ *Id.* §11004. If the release of an EHS is not required to be reported to the National Response Center under section 103(a) of CERCLA, then the notification must be made only if (1) the release is not a federally permitted release under CERCLA; (2) it exceeds the relevant minimal reportable quantity established by EPA regulation, or if none has been established, one pound; and (3) it "occurs in a manner which would require notification under section 103(a) of CERCLA." *Id.* If the release is required to be reported to the National Response Center, but it is not a release of an EHS, then notice must be given if the release is of a substance with a reportable quantity established under CERCLA, or, if no reportable quantity has been established, if the release exceeds one pound. *Id.* A list of designated CERCLA hazardous substances and their reportable quantities is located at 40 C.F.R. §302.4.

"This section does not apply to any release which results in exposure to persons solely within the site or sites on which a facility is located." 42 U.S.C. §11004. The release notification requirements are in addition to those under CERCLA. 40 C.F.R. §355.60. Different notification requirements apply when a release involves transportation of a substance or storage of a substance incident to its transportation. 42 U.S.C. §11004(b).

⁶⁰ *Id.* §11044.

⁶¹ *Id.* §11021.

⁶² *Id.* §11021(c). Regulations promulgated under EPCRA set forth procedures for the EPA to follow when reviewing a claim that information submitted to the EPA is a trade secret. 40 C.F.R. Part 350. Public disclosure of trade secrets by the EPA may potentially result in a regulatory taking of property. *See generally* Ruckelshaus v. Monsanto, 467 U.S. 986 (1984) (holding that when the government discloses trade secrets that a party has been required to submit to the government by law, a taking could result in some circumstances); Philip Morris v. Reilly, 312 F.3d 24 (1st Cir. 2002) (en banc) (holding that a law that compels disclosure of a party's trade secrets may effect a taking).

⁶³ *Id.* §11022.

maximum and average daily aggregate amounts of chemicals in each hazard category present at the facility during the prior year, as well as the general location of chemicals in each category.⁶⁴

However, most states at least require the submission of “Tier II information.”⁶⁵ This information includes “Tier I information,” as well as the chemical or common name of each hazardous chemical as listed on its MSDS and the location and manner of storage of the chemical at the facility.⁶⁶ Tier II information for the prior calendar year for a particular facility must be made available to members of the public upon written request.⁶⁷ A SERC or LEPC must disclose to the requester any non-proprietary information it possesses.⁶⁸ If the SERC or LEPC lacks the information for a hazardous chemical, then it must request the information from the facility owner or operator and disclose the non-proprietary portions of it to the requester.⁶⁹

Earthworks Petitioners’ Request for the Oil and Gas Extraction Industry to Report Under the Toxics Release Inventory

Section 313 of EPCRA requires owners or operators of certain facilities to report information about the release into the environment of certain “toxic” chemicals from the facilities.⁷⁰ This information must be disclosed to federal and state officials, who in turn disclose the non-proprietary details to the public via the Toxics Release Inventory (TRI) website.⁷¹ Generally, the reporting requirements apply to owners or operators of facilities with 10 or more full-time employees when the facilities fall under certain Standard Industrial Classification or North American Industry Classification System codes and manufactured, processed, or otherwise used a listed toxic chemical in excess of its threshold reporting amount during the applicable calendar year.⁷² Facilities used by the oil and gas industry are generally not included in the industry codes required to report under the TRI.⁷³

⁶⁴ *Id.* §11022(d).

⁶⁵ Environmental Protection Agency, Tier II Chemical Inventory Reports, <http://www.epa.gov/osweroe1/content/epcra/tier2.htm>.

⁶⁶ 42 U.S.C. §11022(d). The owner may withhold proprietary information from disclosure in some circumstances. *Id.* §11042.

⁶⁷ 42 U.S.C. §11022(e).

⁶⁸ *Id.*

⁶⁹ *Id.* If the SERC or LEPC lacks the information for a hazardous chemical stored in an amount of less than 10,000 pounds during the prior year, the requester must state the general need for the information. *Id.*

⁷⁰ *Id.* §11023(a), (b). The list of applicable toxic chemicals and chemical categories is located at 40 C.F.R. §372.65. Under the Pollution Prevention Act, facility owners or operators covered by EPCRA requirements must also report information about toxic chemical source reduction and recycling. 42 U.S.C. §13106.

⁷¹ *Id.* §11023(h), (j). For more information on this website, see <http://www.epa.gov/tri/>.

⁷² 42 U.S.C. §11023(b). “Manufacture” means “to produce, prepare, import, or compound a toxic chemical.” *Id.* “Process” means “the preparation of a toxic chemical, after its manufacture, for distribution in commerce.” *Id.* The EPA may also subject owners or operators of facilities with fewer than 10 employees and/or in other industry codes to the requirements in certain circumstances if those facilities manufacture, process, or use any of certain “toxic” chemicals. *Id.*

⁷³ GAO 12-874, at 184.

Section 313(b) allows the EPA to add or delete industry codes as needed.⁷⁴ In October 2012, Earthworks and several other environmental advocacy organizations asked the EPA to require the oil and gas extraction industry to report the toxic chemicals it releases under the TRI program.⁷⁵

When determining whether to add new industry groups, the EPA has previously considered three factors:

(1) Whether one or more listed toxic chemicals are reasonably anticipated to be present at facilities in that industry (chemical factor); (2) whether facilities within the candidate industry group ‘manufacture,’ ‘process,’ or ‘otherwise use’ EPCRA section 313 listed toxic chemicals (activity factor); and (3) whether addition of facilities within the candidate industry group reasonably can be anticipated to increase the information made available pursuant to EPCRA section 313 or to otherwise further the purposes of EPCRA section 313 (information factor).⁷⁶

The Earthworks petitioners argued that the oil and gas extraction industry met the chemical factor because drilling, well development, and hydraulic fracturing at well sites use many chemicals listed on the TRI.⁷⁷ With respect to the activity factor, the petitioners maintained that the industry manufactured, processed, and otherwise used TRI chemicals via well completions, well development, and hydraulic fracturing, among other processes.⁷⁸ Finally, petitioners argued that the information factor was satisfied because existing federal and state disclosure laws were “inadequate.”⁷⁹

In 1997, the EPA considered adding the oil and gas exploration and production industry group to the list of industries required to report under the TRI.⁸⁰ However, it decided not to add the industry at that time, partly because of questions about how “facility” would be defined under EPCRA section 313 for the purpose of determining whether the employee and chemical thresholds for release reporting were met.⁸¹ At issue was whether this definition would encompass individual wells involved in “related activities located over significantly large geographic areas.”⁸²

⁷⁴ 42 U.S.C. §11023(b).

⁷⁵ Earthworks, Petition to Add the Oil and Gas Extraction Industry, Standard Industrial Classification Code 13, to the List of Facilities Required to Report under the Toxics Release Inventory 1 [hereinafter Earthworks Petition], http://www.earthworkSACTION.org/library/detail/petition_to_add_oil_gas_extraction_to_TRI.

⁷⁶ Final Rule, Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know, 62 Fed. Reg. 23,834, 23,842 (May 1, 1997).

⁷⁷ Earthworks Petition at 7.

⁷⁸ *Id.*

⁷⁹ *Id.* at 7-8.

⁸⁰ Proposed Rule, Addition of Facilities in Certain Industry Sectors; Toxic Chemical Release Reporting; Community Right-to-Know, 61 Fed. Reg. 33,588, 33,592 (June 27, 1996). *See also* Expediting Community Right-to-Know Initiatives, Memorandum for the Administrator of the Environmental Protection Agency and the Heads of Executive Departments and Agencies, 60 Fed. Reg. 41,791 (Aug. 8, 1995).

⁸¹ Final Rule, Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know, 62 Fed. Reg. 23,834, 23,855 (May 1, 1997); Proposed Rule, Addition of Facilities in Certain Industry Sectors; Toxic Chemical Release Reporting; Community Right-to-Know, 61 Fed. Reg. 33,588, 33,592 (June 27, 1996).

⁸² Final Rule, Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know, 62 Fed. Reg. 23,834, 23,855 (May 1, 1997); Proposed Rule, Addition of Facilities in Certain Industry Sectors; Toxic Chemical Release Reporting; Community Right-to-Know, 61 (continued...)

EPCRA defines “facility” as “all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with, such person).”⁸³

In *Sierra Club, Inc. v. Tyson Foods, Inc.*, the plaintiffs sued the defendants for allegedly neglecting to report releases of ammonia into the environment from chicken production operations.⁸⁴ The plaintiffs alleged that this conduct violated EPCRA section 304.⁸⁵ The district court considered whether the definition of “facility” encompassed multiple chicken houses owned by the same person that were situated on single or adjacent sites within a concentrated area.⁸⁶ The court held that it did.⁸⁷ Thus, it is possible that a court could find that multiple adjacent well sites under the same ownership or management were a single “facility” under section 313 of EPCRA.

Federal Proposals That Would Require Disclosure of Information About Hydraulic Fracturing Fluid Composition

Bureau of Land Management Proposed Rule

In May 2012, BLM published proposed regulations governing the use of hydraulic fracturing technology by holders of oil and gas leases on federal lands managed by BLM.⁸⁸ The proposed rule established a number of disclosure and filing requirements for “well stimulation activities” on BLM-managed land. Prior to the initiation of the well stimulation activity, the lessee must obtain BLM approval for the well stimulation and must provide BLM with, among other things, a detailed description of the well stimulation engineering design, an estimate of the total volume of fluid to be used, the maximum injection pressure anticipated, and information about the anticipated volume and handling of the flowback.⁸⁹

There do not appear to be disclosure requirements related to the chemical makeup of the fracturing fluid that the lessee plans to use prior to the well stimulation activity. However, after the completion of the activity, the proposed rule would require the lessee to “identify to the BLM the stimulation fluid by additive trade name and additive purpose, the Chemical Abstracts Service

(...continued)

Fed. Reg. 33,588, 33,592 (June 27, 1996).

⁸³ 42 U.S.C. §11049. The pertinent regulations establish a similar definition but also provide that a “facility may contain more than one establishment.” 40 C.F.R. §372.3. “Establishment” is defined as “an economic unit, generally at a single physical location, where business is conducted or where services or industrial operations are performed.” *Id.*

⁸⁴ 299 F. Supp. 2d 693, 699 (W.D. Ky. 2003).

⁸⁵ *Id.* at 701.

⁸⁶ *Id.* at 701, 711.

⁸⁷ *Id.* at 711.

⁸⁸ Oil and Gas; Well Stimulation, Including Hydraulic Fracturing, on Federal and Indian Lands, 77 Fed. Reg. 27,691 (May 11, 2012).

⁸⁹ *Id.* at 27,696.

Registry Number, and the percent mass of each ingredient used in the stimulation operation.”⁹⁰ BLM noted in the proposed rule that “[t]his information is needed in order for the BLM to maintain a record of the stimulation operation as performed. The information is being required in a format that does not link additives ... to chemical composition of the materials to minimize the risk of disclosure of any formulas of additives.”⁹¹ According to BLM, “[t]his approach is similar to the one the State of Colorado adopted in 2011.”⁹² The proposed rule also sets forth a number of other reporting requirements regarding the well stimulation operation upon completion of the operation.⁹³

Legislation in the 112th Congress: The FRAC Act

On March 15, 2011, the Fracturing Responsibility and Awareness of Chemicals Act of 2011 (FRAC Act), H.R. 1084 and S. 587, was introduced in both the Senate and the House of Representatives. The bills had some minor language differences, but were substantially similar. Each contained two amendments to the Safe Drinking Water Act (SDWA)—one that would have amended the definition of underground injection to include hydraulic fracturing, and another that would have created a new disclosure requirement for the chemicals used in hydraulic fracturing.

The second amendment to the SDWA in the FRAC Act would have created a new hydraulic fracturing disclosure requirement. H.R. 1084 would have created a new statutory obligation requiring anyone conducting hydraulic fracturing to

disclose to the State (or the Administrator [of the Environmental Protection Agency] if the Administrator has primary enforcement responsibility in the State)—(I) prior to the commencement of any hydraulic fracturing operations at any lease area or portion thereof, a list of chemicals intended for use in any underground injection during such operations, including identification of the chemical constituents of mixtures, Chemical Abstracts Service numbers for each chemical and constituent, material safety data sheets when available, and the anticipated volume of each chemical; and (II) not later than 30 days after the end of any hydraulic fracturing operations the list of chemicals used in each underground injection during such operations, including identification of the chemical constituents of mixtures, Chemical Abstracts Service numbers for each chemical and constituent, material safety data sheets when available, and the volume of each chemical used.⁹⁴

The bill would also have required that the state or the Environmental Protection Agency (EPA) “make the disclosure of chemical constituents ... available to the public, including by posting the information on an appropriate Internet Web site,” and the bill clarified that the disclosure requirements “do not authorize the State (or the [EPA]) to require the public disclosure of proprietary chemical formulas.”⁹⁵ In other words, the disclosure requirements addressed only the chemicals used, not the manner of their use or the amounts or ratios in which they were used. This language attempted to protect proprietary business information, that is, “secret” formulas or

⁹⁰ *Id.* at 27,698.

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ H.R. 1084, §2(b).

⁹⁵ *Id.*

practices that drilling companies may feel they should not be required to disclose to their competitors.

Furthermore, the FRAC Act would have required operators to disclose proprietary chemical information to medical professionals in cases of medical emergencies.⁹⁶ Although most state oil and gas rules do not require disclosure of proprietary chemical information to medical professionals, such disclosure broadly parallels federal requirements under the OSHAct.⁹⁷ Calls for disclosure of hydraulic fracturing chemicals have increased as homeowners and others express concern about the potential presence of unknown chemicals in tainted well water near oil and gas operations.

State Laws Requiring Disclosure of Information About Hydraulic Fracturing Fluid Composition

Of the states that produce oil, natural gas, or both, at least 15 require some disclosure of information about the chemicals added to the hydraulic fracturing fluid used to stimulate a particular well. State requirements, which take the form of laws, regulations, and administrative interpretations, vary widely. Generally, they fall into four overlapping categories: (1) which parties must disclose information about chemical additives and whether these disclosures must be made to the public or a state agency; (2) what information about chemicals added to a fracturing fluid must be disclosed, including how specifically parties must describe the chemical makeup of the fracturing fluid and the additives that are combined with it; (3) what protections, if any, will be given to trade secrets; and (4) at what time disclosure must be made in relation to when fracturing takes place. States update their laws on fracturing chemical disclosure frequently, and thus this section is designed to show trends in how states structure these provisions rather than to describe the current status of the law in any particular state. **Appendix A** provides a glossary of some of the terms used in this section. **Appendix B** contains a table summarizing the chemical disclosure requirements discussed in this section.

Who Must Make Disclosures and to Whom

State disclosure laws require at least one party involved in the hydraulic fracturing of a specific well to divulge information about the chemicals added to the fluid used to fracture that well. Under these laws, parties that must make disclosures include well owners, well operators, drilling permit holders, or “persons” that perform a fracturing treatment, such as service companies.⁹⁸ Parties typically must divulge chemical information to the public, a state agency, or both. States that require public disclosure often mandate that parties post the information on an Internet

⁹⁶ *Id.*

⁹⁷ As described above, the Occupational Safety and Health Administration has promulgated a set of regulations under OSHAct, referred to as the Hazard Communication Standard (29 C.F.R. §1910.1200). Additionally, OSHAct regulations require operators to maintain MSDS for hazardous chemicals at the job site.

⁹⁸ Some states specifically provide for an intermediate stage of disclosure before the information is submitted to regulators or the public. *See, e.g.*, 178-00 Ark. Code R. §001:B-19(k), (1)(4) (person fracturing the well to permit holder); Colo. Code Regs. §404-1:205A(b)(1), (2) (certain service providers and vendors to operator); 58 Pa. Cons. Stat. §3222.1(b)(1), (2) (certain service providers and vendors to operator); 16 Tex. Admin. Code §3.29(c)(1)(A), (2)(A) (supplier or service company to operator).

website such as the FracFocus Chemical Disclosure Registry run by the Groundwater Protection Council and the Interstate Oil and Gas Compact Commission.⁹⁹ Some state laws do not require direct public disclosure of fracturing chemicals. However, some state agencies may choose to post the information they receive on their own websites. Additionally, state open records laws may allow a person to obtain chemical information submitted to a state agency upon request, provided that the information is not shielded from disclosure by an exception, such as an exemption for trade secrets.¹⁰⁰

Disclosure laws in at least four states require that chemical information be submitted directly to the public via posting of the information on the FracFocus Chemical Disclosure Registry or a comparable website.¹⁰¹ By contrast, at least a couple of states give disclosing parties a choice as to whether they will submit the information to a state agency or post it on a website accessible to the public.¹⁰² Several states where commercial natural gas exploration and production occur do not specifically provide for public disclosure, choosing instead to have parties submit details on chemical additives solely to state agencies, some of which may opt to post these disclosures to their websites.¹⁰³

The particular parties involved in the fracturing of a well that must disclose chemical information to regulators or the public vary by state. In about half of the states with these laws, the operator of the well must disclose information about the chemicals used.¹⁰⁴ State laws that require disclosure by either the owner or operator of the well include Idaho¹⁰⁵ and Montana (after fracturing).¹⁰⁶ The operator, well owner, or service company must divulge chemical information in North Dakota¹⁰⁷

⁹⁹ The website is located at <http://fracfocus.org/>.

¹⁰⁰ See, e.g., Idaho Admin. Code r. 20.07.02.006 (providing for public disclosure of information submitted to the state unless it is exempt); Wyo. Code Rules and Regs. Oil Gen. §45(f) (stating that fracturing chemical information will be protected to the extent of the Wyoming Public Records Act's exemption for "trade secrets, privileged information and confidential commercial, financial, geological or geophysical data furnished by or obtained from any person.").

¹⁰¹ Colo. Code Regs. §404-1:205A(b)(2); N.D. Admin. Code 43-02-03-27.1(1)(g), (2)(h); 58 Pa. Cons. Stat. §3222.1(b)(2) (for "unconventional" wells); Texas Admin. Code §3.29(c)(2)(A).

¹⁰² Louisiana's regulation states that the operator must make disclosures to the state agency or "furnish a statement signifying that the required information has been submitted" to the FracFocus site or a comparable registry, so long as "all information is accessible to the public free of charge." La. Admin. Code tit. 43, §118(C)(1), (C)(4). For disclosures made after fracturing, the Montana Board of Oil and Gas may waive disclosure to the state if the owner or operator of the well "demonstrates that it has posted the required information" to FracFocus or another website that can be accessed by the public and meets with the state agency's approval. Mont. Admin. R. 36.22.1015(4).

¹⁰³ See, e.g., 178-00 Ark. Code R. §001:B-19(k), (l)(3); Idaho Admin. Code r. 20.07.02.056; N.M. Admin. Code §19.15.16.19(B); W. Va. Code §22-6A-7(a)-(b), (e)(5); Wyo. Code Rules and Regs. Oil Gen. §45(d), (h); Michigan Department of Environmental Quality, Supervisor of Wells Instruction 1-2011, High Volume Hydraulic Fracturing Well Completions 3 (2011) [hereinafter Michigan Fracturing Instruction], available at http://www.michigan.gov/documents/deq/SI_1-2011_353936_7.pdf. For an example of a state's posting of chemical information to its website, see State of Arkansas Oil and Gas Commission, Well Fracture Information, http://www.aogc.state.ar.us/Well_Fracture_Companies.htm.

¹⁰⁴ See, e.g., Colo. Code Regs. §404-1:205A(b)(2); La. Admin. Code tit. 43, §118(C)(1), (C)(4); N.M. Admin. Code §19.15.16.19(B); 58 Pa. Cons. Stat. §3222.1(b)(2); 16 Tex. Admin. Code §3.29(c)(2)(A); Michigan Fracturing Instruction, *supra* note 101, at 3.

¹⁰⁵ Idaho Admin. Code r. 20.07.02.056.

¹⁰⁶ See Mont. Admin. R. 36.22.1015(1), (4). The state also requires certain disclosures to be made by the operator before fracturing either in the drilling permit application or, in some circumstances, in a Sundry Notice. Mont. Admin. R. 36.22.608(1)-(2).

¹⁰⁷ N.D. Admin. Code 43-02-03-27.1(1)(g), (2)(h).

and Wyoming.¹⁰⁸ In Arkansas, any “person” fracturing a well in the state must disclose chemical information before fracturing, and the permit holder must divulge more detailed information afterward.¹⁰⁹

What Must Be Disclosed

State disclosure laws require parties to provide various levels of detail about the chemical makeup of the fluid used in hydraulic fracturing. Because some states contain protections for trade secrets that may allow parties to withhold chemical information from regulators or the public, it may be difficult to compare the *actual* level of disclosure required.¹¹⁰ Moreover, in a few states, decisions about what details are trade secrets exempt from disclosure are made by the state attorney general or a state agency. These decision makers may shield information from public disclosure at their discretion, typically subject to judicial review.¹¹¹ This section provides a few examples of state laws that require different levels of disclosure, but does not take into account the trade secret protections in those states. For a table showing the level of disclosure required on a state-by-state basis, see **Appendix B**.

The level of disclosure required by a particular law depends on how specifically parties must describe the chemical composition of the fracturing fluid and the additives that are combined with it. Some states require a relatively high level of disclosure, at least before trade secret protections are taken into account. For example, Colorado requires parties to identify each chemical ingredient in the overall fracturing fluid by its CASRN¹¹² and to provide the maximum concentration of each ingredient within the fluid.¹¹³ Other states require fewer details about the composition of a fracturing fluid. For example, West Virginia requires only that a list of additives be provided.¹¹⁴ Between these two ends of the spectrum are rules such as Louisiana’s, which obligates parties to provide the CASRNs and maximum concentrations of hazardous ingredients present in the fluid, but not nonhazardous ingredients.¹¹⁵ At least four states require disclosures to

¹⁰⁸ Wyo. Code Rules and Regs. Oil Gen. §45(d), (h).

¹⁰⁹ 178-00 Ark. Code R. §001:B-19(k), (l)(3). In West Virginia, the permit applicant must make the disclosures before fracturing, and the operator must make them after fracturing. W. Va. Code §22-6A-7(a)-(b), (e)(5).

¹¹⁰ For a discussion of these protections, see “Trade Secret Protections,” *infra*. These protections may be contained in a state’s disclosure law or, for disclosures made to state agencies, an exemption for trade secrets contained in a state’s open records law.

¹¹¹ *See, e.g.*, 178-00 Ark. Code R. §001:B-19(k)(8), (l)(3)(C) (director of state agency); Texas Admin. Code §3.29(f) (state attorney general); Wyo. Code Rules and Regs. Oil Gen. §45(f) (state agency).

¹¹² For more about these numbers, see CAS Registry Numbers, <http://www.cas.org/expertise/cascontent/registry/regsys.html>.

¹¹³ Colo. Code Regs. §404-1:205A(b)(2)(A)(ix)-(xii). It does not require parties to link the ingredients to the additive of which they are a part.

¹¹⁴ *See, e.g.*, W. Va. Code §22-6A-7(e)(5). Other information that may provide a relatively low level of disclosure includes information such as additive type (for example, acid, biocide, or breaker); trade name or vendor of an additive; or volume of an additive. *See, e.g.*, La. Admin. Code tit. 43, §118(C)(1)(a)-(c) (requiring some of these characteristics but also requiring a higher level of disclosure for hazardous ingredients).

¹¹⁵ La. Admin. Code tit. 43, §118(C)(1)(d)-(e). The Louisiana rule states that this information must be provided for “ingredients contained in the hydraulic fracturing fluid that are subject to the requirements of 29 CFR Section 1910.1200(g)(2).” In other words, the information must be provided for those ingredients that are hazardous according to OSHA’s regulation on workplace hazard communication.

be made before and after fracturing. In these states, the level of disclosure differs depending on whether the information is submitted before or after treatment of the well.¹¹⁶

Some states require that parties submit MSDS for additives or chemical ingredients in a fracturing fluid.¹¹⁷ Employers are required to use MSDS to warn employees of hazardous chemicals in the workplace under the OSHAct.¹¹⁸ Because MSDS provide data only on chemicals considered to be hazardous under OSHA regulations, they may offer a relatively low level of disclosure.¹¹⁹ The most specific details that parties must include on MSDS are the common or chemical names of certain hazardous ingredients, assuming that the names do not qualify for trade secret protection.¹²⁰ Thus, under the regulations, CASRNs or the concentrations of ingredients within an additive do not have to be listed.¹²¹ This does not mean, however, that some parties would not voluntarily submit data sheets with more information.

A few states specifically exempt certain information from disclosure. In Colorado, a party is not required to

(1) disclose chemicals that are not disclosed to it by the manufacturer, vendor, or service provider; (2) disclose chemicals that were not intentionally added to the hydraulic fracturing fluid; or (3) disclose chemicals that occur incidentally or are otherwise unintentionally present in trace amounts, may be the incidental result of a chemical reaction or chemical process, or may be constituents of naturally occurring materials that become part of a hydraulic fracturing fluid.¹²²

Laws in Pennsylvania¹²³ and Texas¹²⁴ contain similar language.

Trade Secret Protections

Closely related to *what* must be submitted under a particular disclosure law are the protections provided for trade secrets. More than half of the disclosure laws examined contain trade secret

¹¹⁶ These states include Arkansas (more detail afterward), Idaho (less detail afterward), Montana (more detail afterward), and Wyoming (less detail afterward). See 178-00 Ark. Code R. §001:B-19(k)(7)-(8), (l)(3)(C); Idaho Admin. Code r. 20.07.02.056; Mont. Admin. R. 36.22.608, 36.22.1015; Wyo. Code Rules and Regs. Oil Gen. §45(d), (h).

¹¹⁷ See, e.g., Michigan Fracturing Instruction, *supra* note 101, at 3. See also N.M. Admin. Code §19.15.16.19(B) (stating that the operator does not have to report any more information than is required to be reported on MSDS under OSHA regulations on hazard communication in the workplace).

¹¹⁸ See 29 C.F.R. §1910.1200(a)(1).

¹¹⁹ OSHA recently modified its Hazard Communication Standard, effective May 25, 2012. The regulation now requires that by June 1, 2015, employers communicate workplace hazards to employees by using “safety data sheets” that are consistent with the United Nations Globally Harmonized System of Classification and Labeling of Chemicals. 29 C.F.R. §1910.1200(a), (j). In addition to other information, the data sheets will be required to contain a more specific description of certain chemical substances and mixtures, provided that this information does not qualify for trade secret protection under the regulations. 29 C.F.R. §1910.1200(g), (i), app. D. During the transition period, parties may comply with the new regulations, the previous version of the regulations, or both. 29 C.F.R. §1910.1200(j)(3).

¹²⁰ See *id.* §1910.1200(g)(2), (i) (2011).

¹²¹ See *id.*

¹²² Colo. Code Regs. §404-1:205A(c).

¹²³ 58 Pa. Cons. Stat. §3222.1(c).

¹²⁴ 16 Tex. Admin. Code §3.29(d).

protections. A state may require detailed disclosure of chemical information, but if it also provides a high degree of protection for trade secrets, parties may be able to avoid making significant disclosures to a state agency or the public. Although the definition of a “trade secret” may differ under various states’ laws, this section assumes that a trade secret is (a) information valuable to its owner because others who could obtain value from it do not know the information and cannot easily discover it; and (b) information that is subject to reasonable measures to protect it from disclosure.¹²⁵ Whether a particular law requires the public disclosure of trade secrets may have implications for whether a court would find that the law effects a taking of property under the Takings Clause of the Fifth Amendment—a finding that could potentially require that just compensation be made to the owner of the trade secrets.¹²⁶

A couple of disclosure laws lack trade secret protections. These include Michigan’s and West Virginia’s. States may not provide trade secret protections because the information required to be disclosed under their laws is not detailed enough to be considered a trade secret, perhaps because it is knowledge that is generally known or easily discoverable.¹²⁷ Or, in some instances, trade secret protections may be provided in another state law, such as an exemption for trade secrets contained in an open records law that could allow a state agency that had received chemical information to prevent it from being disclosed to the public.¹²⁸

At least one state allows parties to withhold all details about fracturing additives that the parties consider to be trade secrets. New Mexico’s rule states: “The division does not require the reporting or disclosure of proprietary, trade secret or confidential business information,” apparently leaving the determination of what may be excluded to the discretion of the submitter.¹²⁹ In contrast, a few states allow withholding only if parties provide alternative information about chemical ingredients to regulators or the public for disclosure, such as the chemical family for the ingredients. For example, Montana asks that, for withheld trade secret chemicals, parties provide the “trade name, inventory name, chemical family name, or other unique name and the quantity of such constituent(s) used.”¹³⁰ In Montana,¹³¹ as well as in Colorado¹³² and Louisiana,¹³³ when parties withhold information and provide a less detailed description of chemical additives, it does not appear that regulators have the authority to compel

¹²⁵ See U.T.S.A. §1(4) (1985). A few states continue to rely on the definition provided in the Restatement of Torts, §757 cmt. b (1939). Texas provides a definition of “trade secret” within its chemical disclosure law that is based on the Restatement definition. 16 Tex. Admin. Code §3.29(a)(26).

¹²⁶ See generally *Ruckelshaus v. Monsanto*, 467 U.S. 986 (1984) (holding that when the government discloses trade secrets that a party has been required to submit to the government by law, a taking could result in some circumstances); *Philip Morris v. Reilly*, 312 F.3d 24 (1st Cir. 2002) (en banc) (holding that a law that compels disclosure of a party’s trade secrets may effect a taking).

¹²⁷ See *supra* sources cited note 123; see also *Philip Morris*, 312 F.3d at 27 (lead opinion) (discussing how companies challenging a disclosure law feared that the disclosure of the relative amounts of ingredients in their products would allow competitors to reverse engineer the chemical formulas for them).

¹²⁸ See, e.g., Wyo. Code Rules and Regs. Oil Gen. §45(f).

¹²⁹ N.M. Admin. Code §19.15.16.19(B).

¹³⁰ Mont. Admin. R. 36.22.1016.

¹³¹ *Id.*

¹³² Colo. Code Regs. §404-1:205A(b)(2)(B)-(C), (d).

¹³³ La. Admin. Code tit. 43, §118(C)(2)(a).

further disclosure in ordinary circumstances.¹³⁴ However, as described below, some states make an exception and require disclosure in special circumstances like spills or medical emergencies.

Some disclosure laws give the state attorney general or a state agency the authority to approve or deny an exemption for trade secrets. These laws vary as to whether parties may withhold the information prior to the decision or must first submit it to the state. For example, the Texas rule, which allows parties to withhold information initially, allows landowners and others to challenge a claim of trade secret protection and lists procedures to be used by the state attorney general to decide whether to exempt the information from disclosure.¹³⁵ Arkansas's rule states that parties may withhold the information and submit a claim for a trade secret exemption to the state agency.¹³⁶ The agency decides whether information qualifies for protection under the criteria provided in the federal Emergency Planning and Community Right-to-Know Act.¹³⁷ In Wyoming, the state oil and gas commission decides whether information that has been submitted to it is exempt from public disclosure under the Wyoming Public Records Act.¹³⁸

At least seven disclosure laws make an exception to trade secret protections for situations in which a health care professional needs the information in order to provide medical care. Typically, the professional must execute a confidentiality agreement before or after disclosure occurs.¹³⁹ For example, Colorado's rule states the following:

Vendors, service companies, and operators shall identify the specific identity and amount of any chemicals claimed to be a trade secret to any health professional who requests such information in writing if the health professional provides a written statement of need for the information and executes a confidentiality agreement, Form 35. The written statement of need shall be a statement that the health professional has a reasonable basis to believe that (1) the information is needed for purposes of diagnosis or treatment of an individual, (2) the individual being diagnosed or treated may have been exposed to the chemical concerned, and (3) knowledge of the information will assist in such diagnosis or treatment.¹⁴⁰

In addition, Colorado's rule provides that in immediate medical emergencies, trade secret information must be provided to the health professional "upon a verbal acknowledgement by the health professional that such information shall not be used for purposes other than the health needs asserted and that the health professional shall otherwise maintain the information as

¹³⁴ It is possible that another state law or regulation may provide an avenue for some parties to compel disclosure. For example, the Colorado Oil and Gas Conservation Commission maintains that a party wishing to challenge a trade secret claim could bring a lawsuit under a provision in the state's Oil and Gas Conservation Act or file a complaint under a certain commission rule. The agency would then decide whether to "receive, investigate, assess and determine claims that a vendor, service company or operator has improperly claimed a trade secret" or whether to allow a court to decide the issue. *See* COGCC, Proposed Statement of Basis, Specific Statutory Authority, and Purpose, http://cogcc.state.co.us/RR_HF2011/Order1R-114FinalFracingDisclosureRule.pdf (see pages 12-13).

¹³⁵ 16 Tex. Admin. Code §3.29(e)-(f).

¹³⁶ 178-00 Ark. Code R. §001:B-19(k)(8), (l)(3)(C).

¹³⁷ *Id.*; *see also* 42 U.S.C. § 11042(a)(2).

¹³⁸ Wyo. Code Rules and Regs. Oil Gen. §45(f) (referring to a provision in the Wyoming Public Records Act). The party claiming trade secret protection must justify and document the "nature and extent of the proprietary information." Idaho provides a similar kind of protection to trade secrets. *See* Idaho Admin. Code r. 20.07.02.006.

¹³⁹ This may be intended to ensure that a disclosing party preserves any trade secrets disclosed, as trade secrets may be destroyed if revealed to a third party without a confidentiality agreement. *See* sources cited *supra* note 123.

¹⁴⁰ Colo. Code Regs. §404-1:205A(b)(5).

confidential.”¹⁴¹ A written confidentiality agreement may be requested “as soon as circumstances permit.”¹⁴² Other states with some form of medical emergency exception include Arkansas (confidentiality agreement not required in rule),¹⁴³ Idaho (confidentiality agreement not required in rule),¹⁴⁴ Louisiana (confidentiality agreement not required in rule),¹⁴⁵ Montana (confidentiality agreement may be required in non-emergencies; may be requested in emergencies),¹⁴⁶ Pennsylvania (written confidentiality agreement required in non-emergencies; may be requested in emergencies when circumstances permit),¹⁴⁷ and Texas (information must be held confidential).¹⁴⁸ Colorado’s rule provides a similar kind of exception for disclosures provided to state agency employees responding to a spill or release, with provisions for confidentiality,¹⁴⁹ as do similar provisions in states such as Montana¹⁵⁰ and Pennsylvania.¹⁵¹

When Disclosures Must Be Made

A few states mandate disclosures both before and after each fracturing treatment. For example, prior to fracturing in Wyoming, a party must disclose “for each stage of the well stimulation program, the chemical additives, compounds and concentrations or rates *proposed* to be mixed and injected.”¹⁵² After the procedure, at least one of the applicable parties must disclose information about the *actual* chemicals used.¹⁵³ Similar rules exist in states such as Arkansas,¹⁵⁴ Idaho,¹⁵⁵ and Montana,¹⁵⁶ which require that disclosures made after fracturing contain a different level of detail than those made before fracturing.

Disclosures made prior to fracturing that specifically identify the chemicals that will be used potentially give parties with access to the data the opportunity to perform baseline testing on water sources near the drilling site for those particular chemicals.¹⁵⁷ Baseline testing results can

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ 178-00 Ark. Code R. §001:B-19(k)(9), (l)(5). A couple of states’ exceptions provide that trade secrets must be disclosed in emergencies when state or federal law requires disclosure. *See, e.g.*, 178-00 Ark. Code R. §001:B-19(k)(9), (l)(5); La. Admin. Code tit. 43, §118(C)(3).

¹⁴⁴ Idaho Admin. Code r. 20.07.02.200.

¹⁴⁵ La. Admin. Code tit. 43, §118(C)(3).

¹⁴⁶ Mont. Admin. R. 36.22.1016(3)-(4).

¹⁴⁷ Pa. Cons. Stat. §3222.1(b)(10)-(11). If a confidentiality agreement is requested, the health professional must provide one.

¹⁴⁸ 16 Tex. Admin. Code §3.29(c)(4), (g). The Texas rule borrows some of its confidentiality procedures from OSHA’s regulations on hazard communication at 29 C.F.R. §1910.1200(i). 16 Tex. Admin. Code §3.29(c)(4).

¹⁴⁹ Colo. Code Regs. §404-1:205A(d).

¹⁵⁰ Mont. Admin. R. 36.22.1016(2).

¹⁵¹ Pa. Cons. Stat. §3222.1(d)(2).

¹⁵² Wyo. Code Rules and Regs. Oil Gen. §45(d).

¹⁵³ *Id.* §45(h).

¹⁵⁴ 178-00 Ark. Code R. §001:B-19(k), (l)(3).

¹⁵⁵ Idaho Admin. Code r. 20.07.02.056.

¹⁵⁶ Mont. Admin. R. 36.22.608, 36.22.1015.

¹⁵⁷ American Petroleum Institute, Hydraulic Fracturing Operations—Well Construction and Integrity Guidelines §10.2 (2009), available at http://www.api.org/~media/Files/Policy/Exploration/API_HF1.ashx. For more information on this issue, see CRS Report R41760, *Hydraulic Fracturing and Safe Drinking Water Act Regulatory Issues*, by (name redacted) and (name redacted).

then be compared with results from post-well stimulation testing to see if any groundwater contamination has occurred and, if it has, to possibly locate its source.¹⁵⁸ Proponents of pre-fracturing disclosure have argued that, among other things, it would (1) provide landowners with the identities of the chemicals they should test for when they collect baseline water samples prior to drilling; and (2) assist emergency personnel and health professionals in responding to a spill or release by providing them with information about the identities of the chemicals that were used in the fluid.¹⁵⁹

However, some in the industry have argued that requiring an operator to disclose chemical information prior to hydraulic fracturing is of questionable value and does not comport with realities in the field. Arguments to this effect include (1) the chemical composition of the fracturing fluid is often continually adjusted prior to treatment of the well, and so disclosures made prior to fracturing may not accurately reflect the actual chemicals that will be used; and (2) requiring the operator to gather chemical information from its contractors and report the information to regulators may slow down production.¹⁶⁰

Other state disclosure laws require parties to submit information about the chemicals used to fracture a well at a single time following the drilling, fracturing, or completion of the well. States with laws that require disclosure after completion of a well that has been fractured include Louisiana (within 20 days),¹⁶¹ New Mexico (within 45 days),¹⁶² and Texas (timeframe varies).¹⁶³ Ohio law mandates disclosures within 60 days after completion of the drilling of the well to the “proposed total depth” or “after a determination that a well is a dry or lost hole.”¹⁶⁴ Colorado,¹⁶⁵ North Dakota,¹⁶⁶ Oklahoma,¹⁶⁷ and Pennsylvania¹⁶⁸ require disclosure within 60 days after a fracturing treatment ends.

¹⁵⁸ See sources cited *supra* note 155.

¹⁵⁹ See, e.g., Western Colorado Congress Prehearing Statement p. 3, http://cogcc.state.co.us/RR_HF2011/PrehearingStatements/WesternColoradoCongress_PHS.pdf. See also Katarzyna Klimasinska, *Drillers May Frack First, Disclose Later Under Draft Plan*, <http://www.bloomberg.com/news/2012-05-01/drillers-may-frack-first-disclose-later-under-draft-plan.html>.

¹⁶⁰ Some of these arguments were raised during the Colorado rulemaking. See, e.g., Joint Rebuttal Statement of the Colorado Petroleum Association and Colorado Oil & Gas Association p. 7, http://cogcc.state.co.us/RR_HF2011/RebuttalStatements/ColoradoPetroleumAssoc-ColoradoOilGassAssoc_Joint_RS.PDF; Western Colorado Congress Rebuttal Statement pp. 7-9, http://cogcc.state.co.us/RR_HF2011/RebuttalStatements/WesternColoradoCongress_RS.PDF.

¹⁶¹ La. Admin. Code tit. 43, §118(C)(1) (referring to La. Admin. Code tit. 43, §105 for the timeframe).

¹⁶² N.M. Admin. Code §19.15.16.19(B).

¹⁶³ In Texas, the operator must divulge chemicals to the public “on or before the date the well completion report” is sent to the state agency. 16 Tex. Admin. Code §3.29(c)(2)(A). Well completion reports are due on the earlier date of 30 days after well completion or 90 days after drilling is finished. *Id.* §3.16(b).

¹⁶⁴ Ohio Rev. Code §1509.10(A). “If a well is not completed within sixty days after the completion of drilling operations,” the owner must file a “supplemental well completion record” with the pertinent information “within sixty days after the completion of the well.” *Id.* §1509.10(B)(2). West Virginia requires disclosures to be made with a report that must be filed within a “reasonable time” after drilling. W. Va. Code §22-6A-7(e)(5); see also *id.* §22-6-22(a).

¹⁶⁵ Colo. Code Regs. §404-1:205A(b)(2). However, Colorado’s rule also specifies that disclosure must be made no later than 120 days after fracturing begins.

¹⁶⁶ N.D. Admin. Code 43-02-03-27.1(1)(g), (2)(h).

¹⁶⁷ Okla. Admin. Code § 165: 10-3-10(b).

¹⁶⁸ 58 Pa. Cons. Stat. §3222.1(b)(2).

Conclusion

Many federal and state legislators and regulatory authorities have adopted or proposed measures that would create new disclosure requirements applicable to the practice of hydraulic fracturing, a natural resource recovery technique that is widely used in the recovery of natural gas from shale formations. The Shale Gas Production Subcommittee of the Secretary of Energy Advisory Board has recommended the public disclosure, on a well-by-well basis, of all of the chemical ingredients added to fracturing fluids—even those ingredients that do not meet OSHA’s standards for hazardous chemicals requiring MSDSs. The subcommittee recommended that some protection for trade secrets be provided.

At the federal level, a few existing laws require some disclosure of information about the chemicals used in hydraulic fracturing. However, none of these laws requires disclosure of detailed information about the chemical composition of a hydraulic fracturing fluid. BLM has proposed disclosure requirements that would be applicable for hydraulic fracturing on all lands managed by the agency. Legislation was introduced in the 112th Congress that would have created disclosure requirements for all hydraulic fracturing operations nationally.

Chemical disclosure laws at the state level vary widely. Of the 15 laws examined in this report, fewer than half require direct public disclosure of chemical information by mandating that parties post the information on the FracFocus chemical disclosure website. The level of detail required to be disclosed often depends on how states protect trade secrets, as these protections may allow submitting parties to withhold information from disclosure at their discretion or to submit fewer details about proprietary chemicals, except, perhaps, in emergencies. Even if a disclosure law does not protect information from public disclosure, other state laws, such as an exemption in an open records law, may do so. A few states require the submission of MSDS for certain chemicals. MSDS may offer a relatively low level of disclosure, as the most specific details that parties currently must include on the data sheets under OSHA regulations are the chemical or common names of certain hazardous ingredients. With regard to the timing of disclosure, a few state laws require at least some disclosure of information about fracturing fluid chemical composition before fracturing is performed, but these states typically require less detailed information to be provided before fracturing than afterward.

Appendix A. Glossary of Terms

Additive	A product composed of one or more chemical constituents that is added to a primary carrier fluid to modify its properties in order to form hydraulic fracturing fluid
Chemical Abstracts Service (CAS) Number	The unique identification number assigned to a chemical by the division of the American Chemical Society that is the globally recognized authority for information on chemical substances
Chemical Constituent/Ingredient	A discrete chemical with its own specific name or identity, such as a CAS number, that is contained in an additive
Chemical Family	A group of chemicals that share certain physical and chemical characteristics and have a common general name
Completion	The activities and methods used to prepare a well for production after drilling
FracFocus.org	The chemical disclosure registry website developed by the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission
Hydraulic Fracturing	The treatment of a well by the application of hydraulic fracturing fluid under pressure for the express purpose of initiating or propagating fractures in a target geologic formation to enhance production of oil and/or natural gas
Hydraulic Fracturing Fluid	The primary carrier fluid and all applicable additives
Material Safety Data Sheet (MSDS)	A written or printed document that is prepared for a chemical mixture or ingredient considered to be hazardous under OSHA standards according to OSHA's regulations on hazard communication at 29 C.F.R. §1910.1200(g)(2)
Operator	A person who assumes responsibility for the physical operation and control of a well
Owner	A person who owns, manages, leases, controls, or possesses a well property
Primary Carrier Fluid	The base fluid, such as water, into which additives are mixed to form the hydraulic fracturing fluid that transports proppant
Product	A hydraulic fracturing additive that is manufactured using precise amounts of specific chemical constituents and is assigned a commercial name under which the substance is sold or utilized
Proppant	Sand or any natural or man-made material that is used in a hydraulic fracturing treatment to prop open the artificially created or enhanced fractures once the treatment is completed
Service Company	An entity that performs hydraulic fracturing treatments on a well
Supplier	A company that sells or provides an additive for use in a hydraulic fracturing treatment
Trade Secret	Any formula, pattern, device, or compilation of information that is used in a person's business, and that gives the person an opportunity to obtain an advantage over competitors who do not know or use it

Source: Compiled by the Congressional Research Service from definitions contained in the Department of Energy's primer on shale gas development; the Arkansas, Pennsylvania, and Texas disclosure laws or regulations; and New York's proposed disclosure rule.

Note: This glossary provides common definitions for terms found in the report. A particular law may define these terms differently.

Appendix B. Summary of Chemical Disclosure Laws

Table B-1. Hydraulic Fracturing Fluid Composition Disclosure Requirements

Laws and Proposals at the State and Federal Levels as of June 19, 2012

Law (or Proposal)	Who Must Disclose and To Whom ^a	What Must Be Disclosed ^b	Trade Secret Protections ^c	When Disclosures Must Be Made
Proposed Bureau of Land Management Rule (would apply on lands managed by BLM)	Operator discloses to BLM. The agency intends to have the information posted on the FracFocus website.	Total volume of fluid; trade name and purpose of additive products; and CAS numbers of chemical ingredients and their concentrations (% by mass) in the entire fluid.	Operator could claim that a federal law or regulation protected information from disclosure but must explain why information is exempt. BLM would evaluate operator's claim.	Within 30 days after fracturing in the Subsequent Report Sundry Notice.
112 th Congress: FRAC Act (S. 587; H.R. 1084)	Person conducting fracturing operations discloses to state (or EPA, if it has primary enforcement responsibility in the state), which posts on Internet.	Before and after fracturing: CAS numbers of ingredients in fracturing fluid; Material Safety Data Sheets when available; and "chemical" volumes.	No public disclosure of chemical formulas. Disclosure to state (or EPA) or health professional upon request in a medical emergency. Fracturing party may require confidentiality agreement after disclosure.	S. 587: before and after fracturing (same level of disclosure); deadlines set by state (or EPA). H.R. 1084: before fracturing and within 30 days after the end of fracturing (same level of disclosure).
Arkansas	Disclosures are made to state agency. Any "person" fracturing a well in the state makes less detailed disclosures before fracturing, and the permit holder makes more detailed disclosures after fracturing.	Before fracturing: disclosures include a list of additives; and names and CAS numbers of ingredients in fracture fluid. After fracturing: disclosures include the "types and volumes" of fluid and proppant used for each stage; additive names and types; names and CAS numbers of ingredients added to the fracture fluid by any person fracturing the well and the permit holder; and actual additive rates or concentrations (% by volume) in the fluid.	Chemical families must be provided when ingredient identities are withheld. A person fracturing a well and/or the permit holder may submit claim of protection to state agency for decision. Exceptions provided for situations in which state or federal law requires disclosure to a health professional.	Some disclosures before fracturing. More detailed disclosures must be made within 30 days of completion of a fractured well.

Law (or Proposal)	Who Must Disclose and To Whom^a	What Must Be Disclosed^b	Trade Secret Protections^c	When Disclosures Must Be Made
Colorado	Operator discloses to the public by posting on the FracFocus website.	Total volume of water or other base fluid used during all stages of the operation; trade name, vendor, and purpose of each additive product used; the identity, CAS number, and maximum concentration (% by mass) of each ingredient intentionally added to the fluid.	Operator may designate information as a trade secret and withhold it but must submit the chemical family or similar descriptor. Claim submitted to state agency by vendor, service provider, or operator. Rule does not provide for evaluation of claims. Exceptions for medical emergencies and spills (with confidentiality protections).	Within 60 days after fracturing ends but no later than 120 days after it begins.
Idaho	<p>Before fracturing: owner or operator discloses to state in Application for Permit to Drill.</p> <p>After fracturing: owner or operator discloses to state in post-treatment report.</p>	<p>Before fracturing: disclosures include, for each stage, “chemical additives and proppant(s) and concentrations or rates proposed to be mixed and injected,” including type, name, and CAS number of “additives” from Material Safety Data Sheets and “the formulary disclosure of the chemical compounds used in the well stimulation(s).”</p> <p>After fracturing: disclosures include concentrations (% by volume) of the base treatment fluid, individual “additives,” and proppant(s) in the entire fracturing fluid.</p>	<p>Party may claim trade secret protection when it discloses to the state. Information is protected from public disclosure to the extent of the state’s public records law’s exemption for trade secrets. Exception for when state or federal law requires disclosure to health professional.</p>	<p>Before fracturing in the Application for Permit to Drill.</p> <p>Within 30 days of fracturing in post-treatment report.</p>

Law (or Proposal)	Who Must Disclose and To Whom^a	What Must Be Disclosed^b	Trade Secret Protections^c	When Disclosures Must Be Made
Indiana (emergency instruction for coal bed methane wells)	<p>Before fracturing: well permit applicant discloses to state.</p> <p>After fracturing: operator discloses to state.</p>	<p>Before fracturing: disclosures include proposed volume of base stimulation fluid; “proposed rate or concentration” of each additive product and a Material Safety Data Sheet for each product, if one exists.</p> <p>After fracturing: disclosures include volume of “base stimulation fluids” used; trade name and “rate or concentration” of each additive product; and Material Safety Data Sheets for products if not already submitted.</p>	None in the emergency rule.	<p>Before fracturing in the well permit application.</p> <p>After fracturing in the well completion or recompletion report.</p>
Louisiana	Operator makes disclosures to state agency or submits statement that it has disclosed information to the public via FracFocus or a comparable website that is accessible to the public and free of charge.	Disclosures include: CAS numbers of ingredients and maximum ingredient concentrations within additives (% by mass) and within the fracture fluid (% by mass of total volume) of hazardous ingredients (under OSHA standards). Operator is not required to disclose information not disclosed to it by an entity claiming trade secret protection.	Chemical identities and CAS numbers may be withheld if claimed to be trade secrets or found to be trade secrets under 29 C.F.R. §1910.1200(i). Chemical family must still be provided. Exception in medical emergencies when state or federal law requires disclosure.	Within 20 days after well completion.
Michigan	Operator makes disclosures to state agency when it conducts a high-volume fracturing well completion.	Material Safety Data Sheets that are provided by service company for “additives” used; and volumes of additives.	None in the instruction.	Filed with record of well completion operations, which is due within 60 days of well completion.

Law (or Proposal)	Who Must Disclose and To Whom ^a	What Must Be Disclosed ^b	Trade Secret Protections ^c	When Disclosures Must Be Made
Montana	<p>Before fracturing: operator discloses to state agency in drilling permit application or notice.</p> <p>After fracturing: owner or operator discloses to the state agency or public. Public disclosure occurs on FracFocus or other publicly accessible website approved by the state agency.</p>	<p>Before fracturing: disclosures include “estimated total volume of treatment to be used”; trade name or generic name of “principal components or chemicals”; and the “estimated amount or volume of the principal components.”</p> <p>After fracturing: types of additives used and their “rates or concentrations” in the fluid; and names and CAS numbers of the additives’ chemical ingredients.</p>	<p>Owner, operator, or service contractor may withhold trade secret chemical and identify it by trade name, inventory name, chemical family, etc. and provide the quantity used. Exceptions for medical emergencies and spills (with confidentiality protections).</p>	<p>Less specific disclosures made before fracturing in drilling permit application or notice.</p> <p>More specific disclosures made after fracturing upon completion of the well.</p>
New Mexico	<p>Operator discloses to state agency. Operator must certify that disclosures are true and complete to the best of its knowledge and belief.</p>	<p>Total volume of fluid; trade name, supplier, purpose, and CAS numbers of ingredients in fluid; and maximum concentrations of ingredients in additives and fluid (% by mass). However, no more disclosure must be made than would be included on a Material Safety Data Sheet under 29 C.F.R. §1910.1200.</p>	<p>“The division does not require the reporting or disclosure of proprietary, trade secret, or confidential business information.”</p>	<p>Within 45 days after well completion.</p>
North Dakota	<p>Owner, operator, or service company discloses to the public on the FracFocus website.</p>	<p>“All elements made viewable by the FracFocus website.”</p>	<p>Viewable elements on the FracFocus site do not include chemical information that submitting parties have withheld because it qualifies for trade secret protection under 29 C.F.R. §1910.1200(i)(1).</p>	<p>Within 60 days after fracturing.</p>

Law (or Proposal)	Who Must Disclose and To Whom^a	What Must Be Disclosed^b	Trade Secret Protections^c	When Disclosures Must Be Made
Ohio	Well owner makes disclosures in well completion record submitted to state agency or by posting information on FracFocus. State agency posts certain submitted chemical information on its website.	Disclosures include: the trade name and volume of all “products, fluids, and substances”; maximum concentrations of additives in the fluid; and CAS numbers and maximum concentrations of ingredients intentionally added to the fluid.	Owner (or party that discloses to owner) may withhold information considered to be trade secret information and pursue remedies for its misappropriation. Trade secret challenge is available in court to some parties. Exceptions exist for medical emergencies, spills, and investigations (with confidentiality protections).	Within 60 days after the end of drilling operations or after determination that well is a dry or lost hole. If the well is not completed within 60 days of drilling, owner must file a supplement with the information required within 60 days after well completion.
Oklahoma (applies to the fracturing of horizontal wells beginning in 2013 and other wells in 2014)	Operator discloses to FracFocus or the state agency. If submitted to state, the agency posts on FracFocus.	Disclosures include: total volume and type of base fluid; and CAS numbers and maximum concentrations (% by mass in fluid) of ingredients intentionally added.	Parties may “in good faith” withhold chemical information. Chemical family or similar descriptor must be provided if identity and CAS number are withheld. Parties may have to explain claim to state.	Within 60 days after fracturing.
Pennsylvania (requirements specific to “unconventional” wells)	Operator discloses to public on FracFocus. By Jan. 1, 2013, state agency determines whether FracFocus can be searched or sorted by CAS number, operator, geographic area, etc. If not, then agency must consider posting data on its website so data can be searched and sorted.	Operators make the disclosures required to be made on the FracFocus chemical disclosure form. Ingredients cannot be linked to additives. Disclosures not required are chemicals not disclosed by vendor, service provider, or operator; and chemicals not intentionally added to fracture fluid, etc.	Vendor, service provider, or operator may withhold trade secrets from public. Operator discloses chemical family or similar descriptor. Medical emergency/spill exceptions (with confidentiality protections) provided.	Within 60 days after fracturing.

Law (or Proposal)	Who Must Disclose and To Whom ^a	What Must Be Disclosed ^b	Trade Secret Protections ^c	When Disclosures Must Be Made
Texas	Operator discloses to public on FracFocus website.	Disclosures include: CAS numbers and actual/maximum concentrations (% by mass) of hazardous ingredients (according to OSHA standards) in fracture fluid. Also, CAS numbers for nonhazardous ingredients intentionally put in fracture fluid must be disclosed. Disclosures not required include chemicals not disclosed by manufacturer, supplier, or service company; and chemicals naturally occurring in fluid.	Supplier, service company, or operator may claim trade secret protection. Chemical family or similar description must be provided for chemicals withheld. Certain landowners and others may challenge trade secret claims. State attorney general decides if information is protected, subject to appeal. Exceptions for emergencies; borrows some confidentiality procedures from 29 C.F.R. §1910.1200(i).	On or before the date the well completion report is due (timeframe varies).
West Virginia	Horizontal well work: permit applicant (before fracturing) and operator (after fracturing) disclose to state agency.	Before fracturing: list of anticipated “additives” that may be used. After fracturing: list of “additives” actually used submitted with well completion log.	None in the disclosure law.	Before fracturing: list of anticipated “additives” that may be used. After fracturing: list of “additives” actually used submitted with well completion log.
Wyoming	Owner, operator, or service company discloses to state agency.	Before fracturing: for each stage pumped, disclosures must include “the chemical additives, compounds and concentrations or rates proposed to be mixed and injected.” After fracturing: disclosures must include the total volume of fluid pumped and, for each stage, the “actual chemical additive name, type, concentration or rate, and amounts.”	Claim made to state agency. Trade secrets protected to extent of state open records law’s exemption for trade secrets. Agency decides whether information is exempt from public disclosure.	Before and after fracturing.

Source: Compiled by the Congressional Research Service from the BLM proposed rule, FRAC Act, and state regulations.

Note: States update their laws on fracturing chemical disclosure frequently, and thus this table is designed to show trends in how states structure these provisions rather than to describe the current status of the law in any particular state.

- a. This category does not include intermediate disclosures required to be made in some states, including Arkansas (person fracturing the well to permit holder), Colorado (certain service providers and vendors to operator), Pennsylvania (certain service providers and vendors to operator), and Texas (supplier or service company to operator). When disclosures are made to a government agency, some agencies may choose to disclose information to the public, for example by posting the information on their websites.
- b. To determine the actual level of disclosure required, trade secret protections must be considered, as these protections may allow parties to prevent the disclosure of information to regulators or the public.
- c. This category refers only to trade secret protections contained in the disclosure law itself and not in other laws that may provide protections, such as open records laws.

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