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Hydraulic Fracturing: Selected Legal Issues

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Summary

Hydraulic fracturing is a technique used to recover oil and natural gas from underground low permeability rock formations, such as shales and other unconventional formations. Its use along with horizontal drilling has been responsible for an increase in estimated U.S. oil and natural gas reserves. Hydraulic fracturing and related oil and gas production activities have been controversial because of their potential effects on public health and the environment. Several environmental statutes have implications for the regulation of hydraulic fracturing by the federal government and states.

An amendment to the Safe Drinking Water Act (SDWA) passed as a part of the Energy Policy Act of 2005 (EPAct 2005) clarified that the Underground Injection Control (UIC) requirements found in the SDWA do not apply to hydraulic fracturing, although the exclusion does not extend to the use of diesel fuel in hydraulic fracturing operations. The underground injection of wastewater generated during oil and gas production (including hydraulic fracturing) does require a UIC permit under the SDWA, as do injections for enhanced oil and gas recovery operations. Under the Clean Water Act (CWA), parties seeking to discharge produced water may have to apply for a permit under the National Pollutant Discharge Elimination System. Under the Clean Air Act (CAA), the Environmental Protection Agency (EPA) has issued new rules covering emissions of volatile organic compounds from hydraulic fracturing operations.

Provisions of the Resource Conservation and Recovery Act (RCRA) exempt drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy from regulation as hazardous wastes under Subtitle C of RCRA. However, these wastes are subject to other federal laws (such as the SDWA and the CWA), as well as to state requirements. Facility owners and operators and other potentially responsible parties could potentially face liability under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for cleanup costs, natural resource damages, and the costs of federal public health studies, if hydraulic fracturing results in the release of hazardous substances at or under the surface in a manner that may endanger public health or the environment.

The National Environmental Policy Act (NEPA) requires federal agencies to consider the environmental impacts of proposed federal actions before proceeding with them. An agency would be obligated to consider the impacts of an action that involves hydraulic fracturing if that action takes place on federal lands or when there is otherwise a sufficient federal nexus to hydraulic fracturing.

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 storage reporting requirements. In August 2011, environmental groups petitioned EPA to promulgate rules under the Toxic Substances Control Act (TSCA) for chemical substances and mixtures used in oil and gas exploration or production.

While the federal government's oversight of hydraulic fracturing generally is limited to protection of the environment and public health pursuant to the aforementioned statutes, it does have some authority to regulate oil and natural gas exploration and production on federal lands. Whether this authority extends to particular regulations governing hydraulic fracturing is currently in dispute. The Bureau of Land Management published a rule on hydraulic fracturing on federal and Indian lands in March 2015; however, the rule was struck down by a U.S. District Court in June 2016. The matter is currently on appeal.

At the state level, hydraulic fracturing tort litigation has raised questions about causation; whether hydraulic fracturing is an abnormally dangerous activity; and whether hydraulic fracturing may constitute a subsurface trespass to land. Also, several municipalities have attempted to ban hydraulic fracturing through zoning restrictions and other local laws, creating potential conflicts with oil and gas industry regulation at the state level.

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Introduction

Hydraulic fracturing is a technique used to recover oil and natural gas from underground low permeability rock formations.[1] Hydraulic fracturing involves pumping fluids (primarily water and a small portion of chemicals, along with sand or other proppant) under high pressure into rock formations to crack them and allow the resources inside to flow to a production well.[2] The technique has been the subject of controversy because of the potential effects that hydraulic fracturing and related oil and gas production activities may have on the environment and health.[3]

This report focuses on selected legal issues related to the use of hydraulic fracturing. It examines some of the requirements for hydraulic fracturing contained in major federal environmental laws.[4] It also provides an overview of issues involving state preemption of local zoning authority, as well as state tort law.

The Safe Drinking Water Act and the Federal Role in Regulation of Underground Injection

Review of Relevant SDWA UIC Provisions[5]

The Safe Drinking Water Act (SDWA), among other things, directs EPA to regulate the underground injection of fluids (including solids, liquids, and gases) to protect underground sources of drinking water.[6] Part C of the SDWA establishes the national regulatory program for the protection of underground sources of drinking water, including the oversight and limitation of underground injections that could affect aquifers, through the establishment of underground injection control regulations. Section 1421 of the SDWA directs the EPA Administrator to promulgate regulations for state underground injection control (UIC) programs, and mandates that the EPA regulations "contain minimum requirements for programs to prevent underground injection that endangers drinking water sources." Section 1421(b)(2) specifies that EPA

[1] National Energy Technology Laboratory, *Modern Shale Gas Development in the United States: An Update*, U.S. Department of Energy, September 2013, http://www.netl.doe.gov/research/oil-and-gas/natural-gas-resources.

[2] *Id.* Hydraulic fracturing often is referred to as "fracing" within the industry and as "fracking" by others.

[3] For a review of the literature on potential environmental impacts associated with unconventional oil and gas production and hydraulic fracturing and related state and federal measures, *see* National Energy Technology Laboratory, *Environmental Impacts of Unconventional Natural Gas Development and Production*, U.S. Department of Energy, DOE/NETL-2-14/1651, May 29, 2014, http://www.netl.doe.gov/research/oil-and-gas/publications.

[4] This report does not provide an overview of additional requirements that may apply on federal lands. The report also does not address in detail tribal, state, or local requirements pertaining to the use of hydraulic fracturing. For an overview of selected state and federal regulatory actions, including the Bureau of Land Management (BLM) proposed hydraulic fracturing rule, *see* CRS Report R43148, *An Overview of Unconventional Oil and Natural Gas: Resources and Federal Actions*, by Michael Ratner and Mary Tiemann.

[5] This brief review of relevant sections of Part C of the SDWA is intended to provide the necessary background for discussion of legal issues associated with regulation of hydraulic fracturing under the act. For further discussion of the SDWA generally, *see* CRS Report RL31243, *Safe Drinking Water Act (SDWA): A Summary of the Act and Its Major Requirements*, by Mary Tiemann. For a more detailed review of Part C of the SDWA, UIC program, and its application to hydraulic fracturing and related activities, *see* CRS Report R41760, *Hydraulic Fracturing and Safe Drinking Water Act Regulatory Issues*, by Mary Tiemann and Adam Vann.

[6] 42 U.S.C. §§300h-300h-5.

> may not prescribe requirements for state UIC programs which interfere with or impede—(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or (B) any underground injection for the secondary or tertiary recovery of oil or natural gas, *unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection*.[7]

As noted, Section 1421 of the SDWA states that UIC regulations must "contain minimum requirements for effective programs to prevent underground injection which endangers drinking water sources."[8] Known as the "endangerment standard," this statutory standard is a major driving force in EPA regulation of underground injection. This endangerment language focuses on protecting groundwater that is used or may be used to supply public water systems. This focus parallels the general scope of the statute, which addresses the quality of water provided by public water systems and does not address private, residential wells. The endangerment language has raised questions as to whether EPA regulations can reach underground injection activities to protect groundwater that is not used by public water systems.

The SDWA directs EPA to protect against endangerment of an "underground source of drinking water" (USDW). The regulations define a USDW to mean an aquifer or part of an aquifer that either:

- supplies a public water system; or
- contains a sufficient quantity of groundwater to supply a public water system; and
- currently supplies drinking water for human consumption; or
- contains fewer than 10,000 milligrams per liter (mg/L) total dissolved solids; and
- is not an "exempted aquifer."[9]

To implement the UIC program as mandated by the provisions of the SDWA described above, EPA has established six classes of underground injection wells based on categories of materials that are injected into the ground by each class. In addition to the similarity of fluids injected in each class of wells, each class shares similar construction, injection depth, design, and operating techniques. The wells within a class are required to meet a set of appropriate performance criteria for protecting underground sources of drinking water. Class II wells feature the injection of brines and other fluids associated with oil and gas production, and hydrocarbons for storage. The wells inject fluids beneath the lowermost USDW. If hydraulic fracturing were to be regulated under the SDWA, it is likely that most hydraulic fracturing operations would be characterized as Class II wells.

Under the SDWA, states may take on primary responsibility for administration and enforcement. Section 1422 of the SDWA authorizes EPA to delegate primary enforcement authority for UIC programs to the states, provided that the state program meets EPA requirements promulgated

[7] 42 U.S.C. §300h(b)(2) (emphasis added).

[8] 42 U.S.C. §300h(b)(1).

[9] 40 C.F.R. §144.3. According to EPA regulations, an exempted aquifer is an aquifer, or a portion of an aquifer, that meets the criteria for a USDW, for which protection has been waived under the UIC program. Under 40 C.F.R. Part 146.4, an aquifer may be exempted if it is not currently being used—and will not be used in the future—as a drinking water source, or it is not reasonably expected to supply a public water system due to a high total dissolved solids content. The SDWA does not mention aquifer exemption, but EPA explains that without aquifer exemptions, certain types of energy production, mining, or waste disposal into USDWs would be prohibited. EPA, typically at the Region level, makes the final determination on granting all exemptions.

under Section 1421 and prohibits any underground injection that is not authorized by a state permit or rule.[10] If a state's UIC program plan is not approved, or the state has chosen not to assume program responsibility, then EPA must implement the UIC program in that state. Alternatively, Section 1425 authorizes EPA to approve the portion of a state's UIC program that relates to "any underground injection for the secondary or tertiary recovery of oil or natural gas" if the state program meets certain requirements of Section 1421 and represents an effective program to prevent underground injection which endangers drinking water sources.[11] Under this provision, states may demonstrate to EPA that their existing programs for oil and gas injection wells are effective in preventing endangerment of underground sources of drinking water. This provides states with an alternative to meeting the specific requirements contained in EPA regulations promulgated under Section 1421.

The Debate over Regulation of Hydraulic Fracturing Under the SDWA

From the date of the SDWA's enactment in 1974 until the late 1990s, hydraulic fracturing was not regulated under the act by either EPA or any of the states who had chosen to take on responsibility for administration of the SDWA. However, in the last 15 years a number of developments called into question the extent to which hydraulic fracturing would be considered an "underground injection" to be regulated under the SDWA. One trigger for this debate was a challenge to the Alabama UIC program brought by the Legal Environmental Assistance Foundation (LEAF).

The LEAF Challenge to the Alabama UIC Program and EPA's Interpretation of the SDWA

In 1994, LEAF petitioned EPA to initiate proceedings to have the agency withdraw its approval of the Alabama UIC program because the program did not regulate hydraulic fracturing operations in the state associated with production of methane gas from coalbed formations.[12] The State of Alabama had previously been authorized by EPA to administer a UIC program pursuant to the terms of the SDWA.[13] EPA denied the LEAF petition in 1995 based on a finding that hydraulic fracturing did not fall within the definition of "underground injection" as the term was used in the SDWA and the EPA regulations promulgated under that act.[14] According to EPA, that term applied only to wells whose "principal function" was the placement of fluids underground.[15] LEAF challenged EPA's denial of its petition in the U.S. Court of Appeals for the Eleventh Circuit, arguing that EPA's interpretation of the terms in question was inconsistent with the language of the SDWA.[16]

[10] 42 U.S.C. §300h-1. The minimum requirements for a state UIC program can be found at 40 C.F.R. Part 145.

[11] 42 U.S.C. §300h-4.

[12] Legal Environmental Assistance Foundation, Inc. v. U.S. Environmental Protection Agency, 118 F.3d 1467, 1471 (11th Cir. 1997) ("*LEAF I*").

[13] *Id.* at 1470.

[14] *Id*. at 1471.

[15] *Id*.

[16] *Id*. at 1472.

The court rejected EPA's claim that the language of the SDWA allowed it to regulate only those wells whose "principal function" was the injection of fluids into the ground. EPA based this claim on what it perceived as "ambiguity" in the SDWA regarding the definition of "underground injection" as well as a perceived congressional intent to exclude wells with primarily non-injection functions.[17] The court held that there was no ambiguity in the SDWA's definition of "underground injection" as "the subsurface emplacement of fluids by well injection," noting that the words have a clear meaning and that:

> The process of hydraulic fracturing obviously falls within this definition, as it involves the subsurface emplacement of fluids by forcing them into cracks in the ground through a well. Nothing in the statutory definition suggests that EPA has the authority to exclude from the reach of the regulations an activity (i.e. hydraulic fracturing) which unquestionably falls within the plain meaning of the definition, on the basis that the well that is used to achieve that activity is also used—even primarily used—for another activity (i.e. methane gas production) that does not constitute underground injection.[18]

The court therefore remanded the decision to EPA for reconsideration of LEAF's petition for withdrawal of Alabama's UIC program approval.[19]

Following the *LEAF I* decision, in 1999 Alabama submitted a revised UIC program to EPA.[20] Alabama sought approval for the revised UIC program under Section 1425 of the SDWA rather than Section 1422(b). As mentioned above, Section 1425 differs from Section 1422(b) in that approval under Section 1425 is based on a showing by the state that the program meets the generic requirements found in Section 1421(b)(1)(A)-(D) of the SDWA and that the program "represents an effective program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources." In contrast, approval of a state program under Section 1422(b) requires a showing that the state's program satisfies the requirements of the UIC regulations promulgated by EPA.[21]

EPA approved Alabama's revised UIC program in 2000,[22] and LEAF appealed EPA's decision to approve to the U.S. Court of Appeals for the Eleventh Circuit.[23] In its challenge, LEAF made three arguments. First, LEAF claimed that EPA should not have approved state regulation of hydraulic fracturing under Section 1425 of the SDWA because it does not "relate to ... underground injection for the secondary or tertiary recovery of oil or natural gas," one of the requirements for approval under Section 1425.[24] The court rejected this argument, finding that the phrase "relates to" was broad and ambiguous enough to include regulation of hydraulic fracturing as being related to secondary or tertiary recovery of oil or natural gas.[25]

Second, LEAF challenged the Alabama program's regulation of hydraulic fracturing as "Class II-like" wells not subject to the same regulatory requirements as Class II wells.[26] The court agreed

[17] *Id*. at 1473-74.

[18] *Id*. at 1474-75.

[19] *Id*. at 1478.

[20] *See* 64 Fed. Reg. 56986 (Oct. 22, 1999).

[21] 42 U.S.C. at §300h-1(b)(1)(A).

[22] 65 Fed. Reg. 2889 (Jan 19, 2000).

[23] Legal Environmental Assistance Foundation, Inc. v. U.S. Environmental Protection Agency, 276 F.3d 1253, 1257 (11th Cir. 2001).

[24] *Id*. at 1256.

[25] *Id*. at 1259-61.

[26] *Id*. at 1256.

with LEAF on this point, noting that in its decision in *LEAF I*, it had held that methane gas production wells used for hydraulic fracturing are "wells" within the meaning of the statute.[27] As a result, the court found that wells used for hydraulic fracturing must fall under one of the five classes set forth in the EPA regulations at 40 C.F.R. Section 144.6.[28] Specifically, the court found that the injection of hydraulic fracturing fluids for recovery of coalbed methane "fit squarely within the definition of Class II wells," and as a result the court remanded the matter to EPA for a determination of whether Alabama's updated UIC program complied with the requirements for Class II wells.[29]

Finally, LEAF alleged that even if Alabama's revised UIC program was eligible for approval under Section 1425 of the SDWA, EPA's decision to approve it was "arbitrary and capricious" and therefore a violation of the Administrative Procedure Act.[30] The court rejected this argument.[31]

Energy Policy Act of 2005: A Legislative Exemption for Hydraulic Fracturing

The decision by the U.S. Court of Appeals for the Eleventh Circuit in *LEAF I* highlighted a debate over whether the SDWA, as it read at the time, required EPA to regulate hydraulic fracturing. Although the Eleventh Circuit's decision applied only to hydraulic fracturing for coalbed methane production in Alabama, the court's reasoning—in particular, its finding that hydraulic fracturing "unquestionably falls within the plain meaning of the definition [of underground injection]"[32]—raised the issue of whether EPA could be required to regulate hydraulic fracturing generally under the SDWA.

Before this question was resolved through agency action or litigation, Congress passed an amendment to the SDWA as a part of the Energy Policy Act of 2005 (EPAct 2005; P.L. 109-58) that addressed this issue. Section 322 of EPAct 2005 amended the definition of "underground injection" in the SDWA as follows:

> The term "underground injection"—(A) means the subsurface emplacement of fluids by well injection; and (B) excludes—(i) the underground injection of natural gas for purposes of storage; and (ii) the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.

This amendment clarified that the UIC requirements found in the SDWA do not apply to hydraulic fracturing, although the exclusion does not extend to the use of diesel fuel in hydraulic fracturing operations. This amended language is the definition of "underground injection" found in the SDWA as of the date of this report.[33]

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[27] *Id*. at 1262.

[28] *Id*. at 1263.

[29] *Id*. at 1263-64.

[30] *Id*. at 1256 (referring to 5 U.S.C. §706(2)(A)).

[31] *Id*. at 1265.

[32] *LEAF I*, 118 F.3d at 1475.

[33] 42 U.S.C. §300h.

EPA Guidance for Permitting Hydraulic Fracturing Using Diesel Fuels

As noted above, the 2005 amendment to the definition of "underground injection" in the SDWA excluded injections as part of hydraulic fracturing operations, but such injections involving the use of diesel fuels were not made part of the exclusion, meaning that injections for purposes of hydraulic fracturing involving the use of diesel fuel might still be made subject to regulation under the SDWA. It was not clear to states or the regulated community how EPA would address the EPAct 2005 amendment, and for several years EPA took no official position regarding the regulation of hydraulic fracturing using diesel fuel under the SDWA.[34]

In February 2014, EPA issued final diesel permitting guidance, which states that "under the 2005 amendments to the SDWA, a UIC Class II permit must be obtained prior to conducting the underground injection of diesel fuels for hydraulic fracturing."[35] As described earlier in this report, injections subject to UIC Class II requirements must comply with a number of regulatory requirements. These include permitting requirements, and testing and monitoring obligations with respect to the well.[36] The guidance is intended for EPA permit writers and is relevant where EPA directly implements the UIC Class II program. EPA notes that "[t]o the extent that states may choose to follow some aspects of EPA guidance in implementing their own programs, it may also be relevant in areas where EPA is not the permitting authority."[37]

There had been considerable debate regarding how EPA would define "diesel fuels" in the final guidance. The draft guidance recommends using six Chemical Abstracts Service Registry Numbers (CASRNs) for determining whether diesel fuels are used in hydraulic fracturing operations.[38] These six CASRNs collectively include various types of diesel fuels, home heating oils, kerosene, crude oil, and a range of other petroleum compounds.[39] Also at issue was whether the final guidance would specify a de minimis amount of diesel fuel content for hydraulic fracturing fluids; the draft guidance did not do so. The final document covers five of the six

[34] In January 2011, an investigation led by Representatives Waxman, Markey, and DeGette of the House Committee on Energy and Commerce found that "oil and gas service companies have injected over 32 million gallons of diesel fuel or hydraulic fracturing fluids containing diesel fuel in wells in 19 states between 2005 and 2009." http://democrats.energycommerce.house.gov/index.php?q=news/waxman-markey-and-degette-investigation-finds-continued-use-of-diesel-in-hydraulic-fracturing-f/.

[35] U.S. Environmental Protection Agency, Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels: Underground Injection Control Program Guidance #84, EPA 816-R-14-001, February 2014, p. 1, http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/hydraulic-fracturing.cfm.

[36] 40 C.F.R. §124 and §§144-147.

[37] "Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels—Draft," 77 Fed. Reg. 27,541 (May 10, 2012).

[38] EPA explains that "diesel fuels may be used in hydraulic fracturing operations as a primary base (or carrier) fluid, or added to hydraulic fracturing fluids as a component of a chemical additive to adjust fluid properties (e.g., viscosity and lubricity) or act as a solvent to aid in the delivery of gelling agents. Some chemicals of concern often occur in diesel fuels as impurities or additives. Benzene, toluene, ethylbenzene, and xylene compounds (BTEX) are highly mobile in ground water and are regulated under national primary drinking water regulations because of the risks they pose to human health." Source: *FACT SHEET: Underground Injection Control (UIC) Program Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels, UIC Program Guidance #84—Draft*, EPA 816-K-12-001.

[39] 77 Fed. Reg.27,453 (May 10, 2012). EPA explains that these CASRNs were selected "because either their primary name, or their common synonyms contained the term "diesel fuel" and they meet the chemical and physical properties of "diesel fuel" as provided in the Toxic Substances Control Act (TSCA) Inventory.

proposed CASRNs (no longer including crude oil), and does not establish a de minimis concentration of "diesel" in fracturing fluid that would be exempt from permitting requirements.

Clean Water Act

Hydraulic fracturing is a water-intensive practice. After a well is hydraulically fractured, a substantial portion of the injected fluid returns to the surface as "flowback." This flowback typically contains proppant (sand) and chemical residues from the frac fluid, as well as salts, metals, and potentially significant amounts of naturally occurring radioactive materials (NORM) that may be present in the water produced from the geologic formations.[40] Additionally, oil and gas wells generally continue to produce formation water throughout their production lives. Flowback water and production brine that are not reused will require proper disposal, either through underground injection or treatment and surface discharge.

Often this flowback is injected into wells for disposal. However, if underground injection is not feasible or not employed for other reasons, drilling companies may opt to transfer the wastewater to publicly owned treatment works (POTW) that discharge into navigable waters in compliance with the Clean Water Act (CWA).[41] Section 301(a) of the CWA prohibits "the discharge of any pollutant" into "navigable waters" except as permitted pursuant to other sections of the CWA.[42] Under Section 304(m), EPA sets national standards for discharges of industrial wastewater based on best available technologies that are economically achievable. States incorporate these limits into discharge permits. Current effluent limitation guidelines (ELGs) and standards for the Oil and Gas Extraction Point Source Category prohibit direct discharges of onshore oil and gas wastewater into surface waters. However, current ELGs do not include standards for "indirect discharges" of these wastewaters to POTWs.

On June 28, 2016, EPA promulgated final regulations establishing a "zero discharge" pretreatment standard to prohibit discharges to POTWs of wastewater resulting from unconventional oil and gas production.[43] In the proposed regulations, EPA had noted that, while states are not approving requests for such discharges to POTWs, the proposed zero discharge

[40] See, for example, E.L. Rowan, M.A. Kirby, and C.S. Kirby et al., *Radium Content of Oil- and Gas-Field Produced Waters in the Northern Appalachian Basin—Summary and Discussion of Data*, U.S Geological Survey, USGS Scientific Investigations Report 2011-5135, 2011, 31 p., available at http://energy.usgs.gov/HealthEnvironment/EnergyProductionUse/ProducedWaters.aspx.

[41] 33 U.S.C. §§1251 *et seq*.

[42] 33 U.S.C. §1311(a).

[43] *Effluent Limitations Guidelines and Standards for the Oil and Gas Extraction Point Source Category, Final Rule*, 81 *Federal Register* 41,845 (June 28, 2016). For purposes of this rule, the term "unconventional oil and gas" refers to oil and gas produced from low permeability formations (e.g., shale gas and tight oil). The rule does not apply to the coalbed methane extraction industry. Because of the salinity of oil and gas production wastewater, discharge to POTWs generally is not available, as most municipal POTWs are not designed and engineered to handle the high levels of total dissolved solids (TDS), fracturing fluid additives, metals, and naturally occurring radioactive materials (NORMs) in the wastewater. To minimize the need for wastewater disposal, many companies are employing on-site treatment technologies to reuse or recycle a portion of the flowback and produced water.

EPA also had been considering regulatory options to control direct discharges of coalbed methane (CBM) wastewaters. On August 7, 2013, EPA proposed to delist CBM from the ELG rulemaking plan, having determined that no economically achievable technology was currently available. Preliminary 2012 Effluent Guidelines Program Plan and 2011 Annual Effluent Guidelines Review Report, 78 *Federal Register* 48159.

standard would "provide regulatory certainty and would eliminate the burden on POTWs to analyze such requests."[44]

Clean Air Act

As this report has explained, the definition of "underground injection" found in the SDWA prevents regulation of hydraulic fracturing pursuant to that statute unless the fracking fluid contains diesel fuel. However, other federal environmental statutes do not contain similar reservations of jurisdiction, and EPA has sought to regulate certain environmental impacts of hydraulic fracturing pursuant to these statutes. One such avenue is regulation of emissions associated with the hydraulic fracturing process via the Clean Air Act (CAA). On August 16, 2012, EPA issued new regulations covering, among other things, emissions of volatile organic compounds (VOCs) from onshore natural gas hydraulic fracturing operations.

The impetus for the new regulations was a legal challenge filed by environmental organizations. In 2009, WildEarth Guardians and the San Juan Citizens Alliance filed a petition in the U.S. District Court for the District of Columbia alleging that EPA had failed to review and revise its New Source Performance Standards (NSPSs) for oil and gas operations every eight years as required by Section 111(b)(1)(B) of the CAA.[45] Specifically, the environmental groups alleged that EPA had failed to update existing standards and adopt new standards for emissions from oil and natural gas production as well as natural gas transmission and storage.

The challenge and subsequent settlement triggered a new rulemaking by EPA in which it not only updated existing standards for certain natural gas processing plants, but also established new standards for emissions from certain types of natural gas operations not covered at all in the existing standards.[46] Among the new standards were requirements applicable to new onshore natural gas hydraulic fracturing operations as well as refracturing operations.

The new regulations direct the industry to adopt a process known as "green completions" or "reduced emissions completions" for hydraulically fractured gas wells. (Hydraulically fractured oil wells are exempt from the 2012 NSPS requirements.) In a "green completion," the natural gas that would otherwise be vented or flared during the completion process is captured and cleaned for reuse in another process that does not involve direct release into the atmosphere. In order to allow the industry time to make the needed changes, the rulemaking established two phases for compliance. During Phase 1, which lasted from the effective date of the rulemaking (October 15, 2012) until January 1, 2015, industry had to reduce VOC emissions at new hydraulic fracturing sites either by using a "completion combustion device" in a technique commonly referred to as "flaring,"[47] or by employing the green completion process.[48] As of January 1, 2015, all hydraulically fractured wells had to employ a green completion.[49] These requirements apply both

[44] *Effluent Limitations Guidelines and Standards for the Oil and Gas Extraction Point Source Category, Proposed Rule*, 80 Fed. Reg. 18,561 (April 7, 2015).

[45] 42 U.S.C. §7411(b)(1)(B).

[46] Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, 77 Fed. Reg. 49,490 (Aug. 16, 2012).

[47] This process burns off the gas that would otherwise escape during the well completion process.

[48] 77 *Federal Register* at 49,499.

[49] *Id*.

to new hydraulic fracturing operations and to refracturing of existing wells.[50] The regulations also establish reporting requirements for owners and operators of hydraulically fractured and refractured wells prior to the start of well completion.[51]

There are some exceptions in these regulations for certain types of wells. Exploratory or "wildcat" drilling operations and "delineation wells" used to determine the borders of a reservoir, and low-pressure wells do not need to employ green completions.[52] The 2012 NSPS requires operators of these types of wells to use completion combustion devices unless hazardous or prohibited under state or local law or regulations.[53]

On June 3, 2016, EPA promulgated several CAA rules affecting the oil and natural gas production industry, including amendments to the NSPS standards for the oil and natural gas source category to establish new emissions standards for methane (a short-lived greenhouse gas) and VOCs.[54]

Briefly, the rules do the following:[55]

1. Build on the 2012 NSPS "to set first-ever controls for methane emissions and extend controls for VOC emissions beyond the existing requirements to include new or modified hydraulically fractured oil wells, pneumatic pumps, compressor stations, and leak detection and repair at well sites, gathering and boosting stations, and processing plants." The final rule also includes the issuance for public comment of an Information Collection Request (ICR) that would require companies to provide extensive information that is instrumental for developing comprehensive regulations to reduce methane emissions from existing oil and gas sources.[56] EPA notes the new NSPS does not add requirements for operations covered by the 2012 rule but it expands coverage to include other sources.[57]
2. Revise permitting requirements applicable to stationary sources in the oil and natural gas sector.[58] The rule establishes in regulation a specific meaning of the term "adjacent" for this sector, which was previously defined in guidance documents.
3. Limit emissions from oil and gas production in Indian country.[59]

Further, EPA has issued rules or guidelines to strengthen the Greenhouse Gas Reporting Program to require reporting in all segments of the industry (promulgated on October 22, 2015)[60] and

[50] *Id*.

[51] *Id*.

[52] *Id*.

[53] *Id*.

[54] EPA, "Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources; Final Rule," 81 Fed. Reg. 35,824 (June 3, 2016).

[55] *See* CRS Report R42986, *An Overview of Air Quality Issues in Natural Gas Systems*, by Richard K. Lattanzio.

[56] EPA, "Proposed Information Collection Request; Comment Request; Information Collection Effort for Oil and Gas Facilities," 81 Fed. Reg. 35,763 (June 3, 2016).

[57] *Id.*

[58] EPA, "Source Determination for Certain Emission Units in the Oil and Natural Gas Sector; Final Rule," 81 Fed. Reg. 35622 (June 3, 2016).

[59] EPA, "Federal Implementation Plan for True Minor Sources in Indian Country in the Oil and Natural Gas Production and Natural Gas Processing Segments of the Oil and Natural Gas Sector; Amendments to the Federal Minor New Source Review Program in Indian Country to Address Requirements for True Minor Sources in the Oil and Natural Gas Sector; Final Rule," 81 Fed. Reg. 35,944 (June 3, 2016).

[60] EPA, "Greenhouse Gas Reporting Rule: 2015 Revisions and Confidentiality Determinations for Petroleum and

extend VOC reduction requirements to existing oil and gas sources in ozone nonattainment areas and states in the Ozone Transport Region (released on August 18, 2015).[61]

Resource Conservation and Recovery Act[62]

Federal and state authorities to regulate wastes are established under the Solid Waste Disposal Act of 1965, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA).[63] Subtitle C of RCRA established a framework for EPA, or authorized states, to regulate waste identified as "hazardous."[64] Specifically, EPA was required to develop criteria necessary to identify hazardous wastes and to promulgate regulations applicable to hazardous waste generators and transporters and to facilities that treat, store, and dispose of such wastes.[65] EPA has primary authority to implement the federal hazardous waste program,[66] but was required to develop procedures for states to become authorized to implement that program.[67] Most states have chosen to do so.[68]

Under RCRA Subtitle D, state and local governments were established as the primary planning, regulating, and implementing entities responsible for managing non-hazardous solid waste, including waste explicitly exempt from regulation under Subtitle C. EPA's primary role under Subtitle D is to provide state and local agencies with information, guidance, and policy.[69]

The Bentsen Amendment and EPA's 1988 Regulatory Determination

The Solid Waste Disposal Act Amendments of 1980 (P.L. 96-482) included amendments to Subtitle C requirements regarding the identification of hazardous waste.[70] Provisions commonly referred to as the "Bentsen" amendment temporarily excluded "drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy" (E&P wastes) from regulation as hazardous wastes under Subtitle C of RCRA.[71] The exemption was motivated in part by a concern about the economic impact that comprehensive regulation of E&P wastes under Subtitle C would have on the oil and gas industry.[72] The Bentsen amendment required EPA to conduct a study of E&P waste and submit its

Natural Gas Systems; Final Rule," 80 Fed. Reg. 64,262 (October 22, 2015).

[61] EPA, "Control Techniques Guidelines for the Oil and Natural Gas Industry (Draft)," EPA-453/P-15-001, August 2015, http://www.epa.gov/airquality/oilandgas/pdfs/og_ctg_draft_081815.pdf.

[62] Linda Luther, Analyst in Environmental Policy, Resources, Science, and Industry Division, contributed to the preparation of this section of the report.

[63] The 1976 amendments to the Solid Waste Disposal Act were so comprehensive that the law is more commonly referred to as RCRA.

[64] 42 U.S.C. §§6921-29; H.Rept. 94-1491 (1976), at 5-7.

[65] 42 U.S.C. §§6921-25.

[66] 42 U.S.C. §§6927-28.

[67] 42 U.S.C. §§6926, 6929.

[68] *See* EPA's "RCRA State Authorization" web page at http://www.epa.gov/osw/laws-regs/state/index.htm.

[69] 42 U.S.C. §§6907 and 6941.

[70] 42 U.S.C. §6921.

[71] Solid Waste Disposal Act Amendments of 1980, P.L. 96-482, §7, 42 U.S.C. §6921(b)(2)(A).

[72] S.Rept. 96-172, at 6 (1979).

findings to Congress.[73] If EPA determined that E&P wastes warranted regulation under Subtitle C, the agency was required to submit proposed regulations to both houses of Congress. Those regulations could "take effect only when authorized by Act of Congress."[74]

In its 1987 report to Congress,[75] EPA found, in part, that existing state and federal regulations were generally adequate to regulate E&P wastes, although there were regulatory gaps in certain states. EPA further found that regulating E&P wastes under RCRA Subtitle C would have a substantial impact on the U.S. economy and would be unnecessary and impracticable. In its 1988 regulatory determination,[76] EPA determined that the management of E&P wastes under Subtitle C was not warranted, but that the agency would pursue the following three-pronged approach to addressing adverse effects of the waste: improve existing federal regulatory programs under RCRA Subtitle D and augment the Safe Drinking Water Act and/or Clean Water Act requirements; work with states to improve their waste management programs; and work with Congress on any additional legislation that might be needed.[77]

In the 25 years since EPA made its regulatory determination, the agency has chosen not to develop regulations under RCRA Subtitle D or pursue additional RCRA legislation. However, EPA has previously sought to clarify the Subtitle C exemption.[78] In 2002, EPA issued guidance regarding the scope of the exemption, including examples of exempt and non-exempt E&P wastes.[79] EPA listed produced water and drilling fluids as exempt wastes; and unused fracturing fluids or acids as non-exempt waste.[80] That is, unused fracturing fluids may be subject to Subtitle C requirements if the fluid exhibits characteristics that make a waste "hazardous" (e.g., exceed regulatory levels for toxicity).[81]

Depending on the chemicals in the drilling fluid and the geologic formations in which it is injected, produced hydraulic fracturing fluids may contain hazardous constituents (e.g., heavy metals).[82] Regardless of whether those fluids exhibit the regulatory characteristics of hazardous waste (e.g., exceed regulatory levels of toxicity), such fluids are exempt from federal Subtitle C regulation. E&P waste disposal is, however, subject to state waste management requirements, as well as requirements applicable to the disposal of liquid waste implemented under federal laws other than RCRA (e.g., UIC Program requirements applicable to the injection of oil and gas-related wastes into Class II wells).

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[73] The study criteria are specified at 42 U.S.C. §6982(m).

[74] 42 U.S.C. §6921(b)(2)(C).

[75] EPA, *Report to Congress: Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy* (Dec. 1987), http://www.epa.gov/osw/nonhaz/industrial/special/oil/530sw88003a.pdf.

[76] Regulatory Determination for Oil and Gas and Geothermal Exploration, Development and Production Wastes, 53 *Fed. Reg.* 25,446 (July 6, 1988).

[77] *Id.*

[78] *See* EPA's "Clarification of the Regulatory Determination for Wastes From, the Exploration, Development and Production of Crude Oil, Natural Gas and Geothermal Energy," 58 Fed. Reg. 15,284 (Mar. 22, 1993) and "Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations" (October 2002), both available at http://www.epa.gov/osw/nonhaz/industrial/special/oil/index.htm.

[79] EPA October 2002 guidance, at pp. 10-11.

[80] *Id.*

[81] A waste may be deemed hazardous based on reactive, ignitable, corrosive or toxic characteristics specified at 40 C.F.R. §261.20-.24.

[82] Department of Energy, *Modern Shale Gas Development in the United States: A Primer* 66-71 (2009), http://energy.gov/sites/prod/files/2013/03/f0/ShaleGasPrimer_Online_4-2009.pdf.

Natural Resources Defense Council Petition to Regulate E&P Wastes Under Subtitle C

In September 2010, the Natural Resources Defense Council (NRDC), an environmental advocacy group, petitioned EPA to initiate a rulemaking under RCRA to regulate E&P wastes as hazardous wastes under Subtitle C.[83] In support of their petition, NRDC identified reports and data prepared since 1988 that they assert "quantify the waste's toxicity, threats to human health and the environment, inadequate state regulatory programs, and readily available solutions."[84] In addition, NRDC asserted that "both the oil and gas industry and the risks associated with E&P wastes have expanded dramatically, making EPA's 1988 Regulatory Determination unjustified."[85] The NRDC sought to have EPA promulgate regulations that subject E&P wastes to Subtitle C to "ensure safe management of these wastes throughout their life cycle from cradle to grave, including generation, transportation, treatment, storage and disposal."[86]

EPA has not yet formally responded to the NRDC petition. However, in 2011, EPA indicated that in response to the petition, the Office of Solid Waste and Emergency Response was reviewing incidents alleged by the petitioner; regulations in states with natural gas activities; and best management practices for E&P wastes developed by industry, federal, and state associations.[87] Based on its finding, EPA could possibly review and revise its 1988 regulatory determination. However, as discussed above, the Bentsen amendment specifies that, if EPA determined that Subtitle C regulation was warranted, proposed regulations could not take effect until authorized by act of Congress.[88] Thus, if EPA were to review its 1988 regulatory determination and find that regulation under Subtitle C is necessary, the agency could arguably promulgate such regulations, but could not implement them unless explicitly authorized by Congress to do so.

Comprehensive Environmental Response, Compensation, and Liability Act[89]

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),[90] often referred to as Superfund, provides broad authority for the federal government to respond to releases or threatened releases of hazardous substances into the environment, in order to protect

[83] Natural Resources Defense Council, Re: Petition for Rulemaking Pursuant to Section 6974(a) of the Resource Conservation and Recovery Act Concerning the Regulation of Wastes Associated with the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy 1 (September 8, 2010) (hereinafter NRDC Petition), http://docs.nrdc.org/energy/files/ene_10091301a.pdf. Section 7004(a) of RCRA permits "any person" to petition EPA for promulgation of a regulation under RCRA. 42 U.S.C. §6974(a).

[84] NRDC Petition at 1.

[85] *Id.* at 5.

[86] *Id.* at 4.

[87] *See* EPA Special Litigation and Projects Division presentation to the American State and Tribal Solid Waste Management Organization on "EPA's Energy Extraction Enforcement Initiative," (October 2011), including presentation materials for Sandra Connors, Deputy Director, EPA Office of Resource Conservation and Recovery on "Exploration & Production Waste and RCRA," p. 31, available at http://www.astswmo.org/Files/Meetings/2011/2011-Annual/Presentations/EPA-Hydro-Fracturing.pdf.

[88] 42 U.S.C. §6921(b)(2)(C).

[89] David M. Bearden, Specialist in Environmental Policy, Resources, Science, and Industry Division, contributed to the preparation of this section of the report.

[90] 42 U.S.C. §§9601-9675.

public health or welfare, or the environment. Federal resources to carry out response actions under CERCLA are subject to the availability of appropriations. To minimize the burden of the costs on the taxpayer, CERCLA established a liability scheme to hold persons responsible for a release or threatened release liable for response costs (i.e., cleanup costs), natural resource damages, and the costs of federal public health studies that may be carried out at a site to assess potential hazards.[91] The categories of "potentially responsible parties" who may be held liable under CERCLA include past and current owners and operators of facilities from which there is a release or threatened release of a hazardous substance, persons who arranged for disposal or treatment of hazardous substances (often referred to as generators of wastes), and persons who transported hazardous substances and selected the site for disposal or treatment.[92] The President's response and enforcement authorities under CERCLA are delegated by Executive Order to the EPA and certain other federal departments and agencies to fulfill various functions under the statute.[93]

Although the sites at which hydraulic fracturing is conducted may not fit the typical mold of Superfund sites, it is possible that hydraulic fracturing operations[94] could result in the release of hazardous substances into the environment at or under the surface in a manner that may endanger public health or the environment. If a release were to occur as a result of hydraulic fracturing, the facility owner and operator and other potentially responsible parties could face liability under CERCLA. However, certain exclusions or exemptions from the statute potentially could limit liability in such instances, including the petroleum and natural gas exclusion and the exemption from liability for federally permitted releases, discussed below.

Petroleum and Natural Gas Exclusion

Although releases of petroleum and natural gas generally are excluded from the authorities of CERCLA, this exclusion does not constitute a broader facility or industry exclusion, but is a substance exclusion alone. Therefore, CERCLA may apply to hazardous substances released into the environment from a petroleum or natural gas facility.[95] Similarly, CERCLA also potentially could apply to releases of hazardous substances resulting from oil or natural gas production, but not releases of petroleum or natural gas itself.

The petroleum and natural gas exclusion is found in the CERCLA definition of a "hazardous substance," where the statute provides that the term "does not include petroleum, including crude oil or any fraction thereof which is not specifically listed or designated as a hazardous substance

[91] CERCLA also authorizes the federal government to respond to releases, or threatened releases, of pollutants or contaminants into the environment that may present an imminent and substantial danger to public health or welfare, but liability under the statute only extends to releases or threatened releases of hazardous substances.

[92] 42 U.S.C. §9607(a).

[93] For further discussion of the scope and authorities of CERCLA, *see* CRS Report R41039, *Comprehensive Environmental Response, Compensation, and Liability Act: A Summary of Superfund Cleanup Authorities and Related Provisions of the Act*, by David M. Bearden.

[94] With respect to potential contamination, releases of hazardous substances possibly could occur as a result of many different aspects of oil and gas production that involve hydraulic fracturing as an extraction technique. Various stakeholders have used the term hydraulic fracturing in differing ways to reflect a varying scope of activities. In the oil and gas industry, the term refers to a specific technique to stimulate oil or gas production from a formation, whereas others may use the term to refer broadly to unconventional oil and gas production and related activities. For more background on the variety of activities associated with shale gas production in particular, *see* CRS Report R42333, *Marcellus Shale Gas: Development Potential and Water Management Issues and Laws*, by Mary Tiemann et al.

[95] *See* EPA, Substances Covered Under Reporting Requirement, Petroleum Exclusion, http://www.epa.gov/osweroe1/content/reporting/faq_subs.htm.

... and the term does not include natural gas, natural gas liquids, liquefied natural gas or synthetic gas usable for fuel."[96] Therefore, while CERCLA would not apply to leaked petroleum products at a fracking site, contamination of a site by any substance that does satisfy the definition of a "hazardous substance" could result in liability under the statute. For example, if fracking fluid contained components (i.e., constituents) that are considered hazardous substances under CERCLA, and such fluids were released into the environment at a site in a way that could endanger public health or the environment, the release could warrant cleanup actions, the costs of which the potentially responsible parties would be liable for under CERCLA. Liability similarly could arise from releases of hazardous substances that may be present in produced wastewaters from hydraulic fracturing.

Exemption for Federally Permitted Releases

Whether a release of hazardous substances that may result from hydraulic fracturing operations would be in compliance with a federal permit (including permits issued by states under delegated federal authorities) or a state-authorized permit would be a critical factor in determining liability. CERCLA exempts persons from liability for response costs or damages under the statute resulting from a "federally permitted release."[97] This exemption provides relief from liability under CERCLA, but does not preclude liability under other federal or state law, including common law. CERCLA defines a federally permitted release to include any underground injection of fluids authorized under the Safe Drinking Water Act, any discharges of wastewater authorized under the Clean Water Act, and other discharges or emissions authorized under certain other federal statutes.[98] This definition also includes any underground injection of fluids or other materials authorized under applicable state law for the production or enhanced recovery of crude oil or natural gas, or the reinjection of produced waters.[99] The exemption from liability under CERCLA for a federally permitted release therefore may include a state permitted release in such instances.

Examples of Application of CERCLA Response Authority

EPA has used the response authorities of CERCLA to investigate potential contamination in groundwater in at least two instances that have received prominent attention at locations where natural gas extraction using hydraulic fracturing has been conducted. One such instance occurred in Dimock, PA, and another has occurred in Pavillion, WY. EPA initiated the Pavillion groundwater investigation in response to a public petition submitted under CERCLA[100] in 2008 that cited concerns of residents about groundwater quality.[101] EPA issued a draft investigation report for the Pavillion site on December 8, 2011.[102] On June 20, 2013, EPA announced that it

[96] 42 U.S.C. §9601(14).

[97] 42 U.S.C. §9607(j).

[98] 42 U.S.C. §9601(10).

[99] 42 U.S.C. §9601(10)(I).

[100] 42 U.S.C. §9605(d). CERCLA authorizes any person who is or may be affected by a release or threatened release of a hazardous substance, pollutant, or contaminant to petition the President (as delegated to EPA and other federal departments and agencies) to assess potential hazards to public health and the environment. *Id.*

[101] EPA, Region 8 and Office of Research and Development, National Risk Management Research Laboratory, (Draft) Investigation of Ground Water Contamination near Pavillion, Wyoming, at 1 (December 2011), http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf.

[102] For information on the status of the Pavillion groundwater investigation, *see* EPA's Region 8 website: http://www2.epa.gov/region8/pavillion. For additional background information, *see* CRS Report R42327, *The EPA Draft Report of Groundwater Contamination Near Pavillion, Wyoming: Main Findings and Stakeholder Responses*, by

does not plan to finalize its groundwater investigation report for the Pavillion site.[103] EPA indicated that it would defer to the state of Wyoming to assume the lead in investigating drinking water quality in the area, and that its continuing role would focus on providing technical support to the state.[104] The state intended to conclude its investigation and release a final report by September 30, 2014.[105] However, the EPA's website states that, as of March 2016, the agency continues to provide technical assistance to the State of Wyoming during the state's ongoing investigation of Pavillion groundwater issues.[106] The EPA has submitted comments on the state's draft final report examining these issues.[107]

On January 19, 2012, EPA issued an Action Memorandum for the Dimock site to "request and document approval of an emergency removal action to prevent, limit, or mitigate the threats posed by the presence of hazardous substances at the Dimock Residential Groundwater Site ... pursuant to Section 104(a) of the Comprehensive Environmental Response, Compensation and Liability Act."[108] The Action Memorandum noted that "[h]istoric drilling activities in the Dimock area have used materials containing hazardous substances" and that there was "reason to believe that a release of hazardous substances has occurred" that may have contaminated groundwater used by residents in the area.[109] EPA announced on July 25, 2012, that it had completed its groundwater investigation at the Dimock site and determined that contaminant levels did not warrant further action by the agency.[110]

Although the Dimock and Pavillion sites differ in terms of their geophysical characteristics and other site-specific conditions, they offer examples of the use of the authorities of CERCLA to investigate potential contamination at locations where hydraulic fracturing has been conducted. In both cases, EPA has not confirmed a definitive link between a release of hazardous substances and hydraulic fracturing, and no potentially responsible parties have been identified at either site who would be liable under CERCLA.

National Environmental Policy Act[111]

The National Environmental Policy Act (NEPA) requires federal agencies to consider the potential environmental consequences of proposed federal actions and to involve the public in the federal decisionmaking process, but does not compel agencies to choose a particular course of

Peter Folger, Mary Tiemann, and David M. Bearden.

[103] Press Release, Wyoming to Lead Further Investigation of Water Quality Concerns Outside of Pavillion with Support of EPA (June 20, 2013), http://yosemite.epa.gov/opa/admpress.nsf/20ed1dfa1751192c8525735900400c30/dc7dcdb471dcfe1785257b90007377bf!OpenDocument.

[104] *Id.*

[105] *Id.*

[106] See https://www.epa.gov/region8/pavillion.

[107] *Id.*

[108] Action Memorandum-Request for Funding for a Removal Action at the Dimock Residential Groundwater Site, Intersection of PA Routes 29 and 2024 Dimock Township, Susquehanna County, Pennsylvania (Jan 19, 2012), available at http://www.epaosc.org/sites/7555/files/Dimock%20Action%20Memo%2001-19-12.PDF.

[109] *Id.*

[110] Press release: "*EPA Completes Drinking Water Sampling in Dimock, PA*," available at http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/1a6e49d193e1007585257a46005b61ad.

[111] Linda Luther, Analyst in Environmental Policy, Resources, Science, and Industry Division, contributed to the preparation of this section of the report.

action.[112] If the action is anticipated to affect significantly the quality of the human environment, the agency must document its consideration of those effects in an environmental impact statement (EIS). If the degree of impacts is uncertain, an agency may prepare an environmental assessment (EA) to determine whether a finding of no significant impact (FONSI) could be made or whether an EIS is necessary. There are certain categories of action that do not individually or cumulatively have a significant effect on the human environment and, thus, do not require the preparation of an EIS or EA.[113]

In contrast to the other environmental statutes discussed in this report, NEPA is a procedural statute. It requires that agencies assess the environmental consequences of an action. If the adverse environmental effects of the proposed action are adequately identified and evaluated, an agency is not constrained by NEPA from deciding that other benefits outweigh the environmental costs and moving forward with the action. Because the requirements of NEPA apply only to federal actions,[114] NEPA applies to hydraulic fracturing activities only when such activities take place on federal lands or when there is otherwise a sufficient federal nexus to hydraulic fracturing. The following sections discuss two case studies involving a potential federal role in the production of oil or natural gas resources that may potentially require the preparation of a NEPA document.

Drilling in the Monterey Shale: Federal Oil and Gas Leases

Oil and gas companies have shown interest in drilling in the Monterey Shale in Central California.[115] The shale formation was at one time estimated to contain billions of barrels of oil, most of which may be economically recovered only through the use of hydraulic fracturing and horizontal drilling.[116] In 2011, the Bureau of Land Management (BLM) sold leases in four parcels, which accounted for about 2,700 acres of public land, to private parties.[117] Environmental groups sued BLM, claiming that the agency had violated the Administrative Procedure Act (APA) and NEPA when it prepared an EA, resulting in a FONSI, instead of an EIS for the proposed lease sale.[118]

During the public comment period for the EA, several parties expressed concerns about the potential environmental effects of hydraulic fracturing.[119] However, BLM declined to analyze these impacts because, in its view, they were "not under the authority or within the jurisdiction of the BLM."[120] After issuing a FONSI, BLM proceeded with the auction.[121]

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[112] *See* 42 U.S.C. §4332. For further discussion of NEPA, *see* CRS Report RL33152, *The National Environmental Policy Act (NEPA): Background and Implementation*, by Linda Luther.

[113] 40 C.F.R. §1508.4. By statute, there is a rebuttable presumption that the use of a categorical exclusion under NEPA applies if certain actions related to oil and gas exploration or development on federal lands are conducted pursuant to the Mineral Leasing Act. 42 U.S.C. §15942.

[114] 42 U.S.C. §4332.

[115] Order Re: Cross Motions for Summary Judgment at 1-2, Ctr. for Biological Diversity v. Bureau of Land Mgmt., No. 11-06174 (N.D. Cal. Mar. 31, 2013).

[116] *Id.* at 2-3.

[117] *Id.* at 12.

[118] *Id.* at 1.

[119] *Id.* at 6-7.

[120] *Id.*

[121] *Id.* at 10. The FONSI discussed potential impacts on protected wildlife and plant species but did not discuss hydraulic fracturing. *Id.* at 27.

The Council on Environmental Quality (CEQ) promulgated regulations implementing NEPA that are broadly applicable to all federal agencies.[122] Those regulations specify what agencies must do to determine whether a proposed action will significantly affect the environment and, therefore, require preparation of an EIS.[123] To determine what constitutes "significant" effects, CEQ regulations require agencies to consider the context of the action and intensity or severity of its impacts.[124] Environmental impacts that must be considered include those identified by CEQ as direct, indirect (reasonably foreseeable future impacts), or cumulative.[125]

The district court examined the 10 factors CEQ regulations identify as requiring consideration when determining the severity of an action's impacts.[126] Consistent with those factors, the court identified three factors that it believed required BLM to prepare an EIS. According to the court, these were: (1) hydraulic fracturing is highly controversial because of its potential effects on health and the environment; (2) the proposed lease sale would affect public health and safety because of the risk of water pollution; and (3) the environmental impacts of hydraulic fracturing are uncertain.[127] The court also found that BLM did not properly investigate possible direct or indirect impacts of its decision.[128]

In March 2013, the district court held that the BLM NEPA review was "erroneous as a matter of law."[129] The court held that BLM unreasonably relied on an environmental analysis that (1) assumed only one exploratory well would be drilled on the leased acres when it was reasonably foreseeable that more wells would be drilled; and (2) did not contain a detailed assessment of the environmental impacts of hydraulic fracturing and horizontal drilling.[130]

Delaware River Basin Commission: Proposed Regulations on Natural Gas Development

The Delaware River Basin Compact is an agreement among the federal government, Delaware, New Jersey, New York, and Pennsylvania.[131] The compact creates the Delaware River Basin Commission (DRBC) and grants it certain powers to manage the water resources of the basin.[132] In December 2010, the commission published draft regulations "to protect the water resources of the Delaware River Basin during the construction and operation of natural gas development

[122] 40 C.F.R. §§1500-1508. CEQ directed all federal agencies to adopt procedures to supplement the CEQ regulations to include detail specific to the classes of action implemented by that agency (40 C.F.R. §1507.3).

[123] 40 C.F.R. §1501.3-.4.

[124] 40 C.F.R. §1508.27.

[125] 40 C.F.R. §1508.8.

[126] Order Re: Cross Motions for Summary Judgment at 20.

[127] *Id.* at 24-27.

[128] *Id.* at 26-28.

[129] *Id.* at 2. The court also held that BLM had an obligation to prepare a NEPA document *prior to* the sale of leases that did not contain No Surface Occupancy (NSO) provisions rather than *during* the Application for Permit to Drill (APD) process. *Id.* at 15-18. This was because once non-NSO leases had been issued, BLM retained limited authority to deny a lessee drilling rights during the APD process, and thus an "irretrievable commitment of resources" under NEPA had occurred. *Id.*; *see also* 42 U.S.C. §4332(C)(v); 40 C.F.R. §§1501.2, 1502.5.

[130] Order Re: Cross Motions for Summary Judgment at 1-2.

[131] Delaware River Basin Compact, 75 Stat. at 689. The text of the compact is contained in the federal law approving the compact.

[132] Delaware River Basin Compact §§1.3(c), (e); 2.1; 3.1.

projects."[133] In May 2011, the New York Attorney General brought a federal lawsuit on behalf of the State of New York alleging that five federal agencies and their officers were in violation of NEPA.[134] In November 2011, the complaint was amended to add the DRBC and its executive director as defendants.[135] The plaintiffs asked the court to compel the defendants to prepare an EIS "before proceeding to adopt federal regulations to be administered by DRBC that would authorize natural gas development within the Delaware River Basin."[136] New York alleged that the approval of the DRBC regulations was a major federal action requiring at least one of the defendants to prepare an EIS.[137] New York alleged that the refusal of the five federal agencies that are represented by the DRBC's federal member[138] to prepare an EIS was not in accordance with law and was arbitrary, capricious, and an abuse of discretion under the APA.[139] Because it appears that the Delaware River Basin Compact exempts the DRBC from compliance with the APA,[140] New York argued that the DRBC's refusal to prepare an EIS was subject to judicial review under the compact itself.[141]

The federal defendants moved to dismiss the lawsuit on the grounds that the court lacked subject matter jurisdiction over the plaintiff's claims.[142] In addition to procedural arguments, the federal defendants maintained that NEPA did not apply because the DRBC's development of proposed regulations was not a "major federal action."[143] The federal defendants argued that no federal action existed because, in their view, the DRBC was not a federal agency.[144] In addition, the federal defendants argued that they did not exercise enough decisionmaking power, authority, or control over the DRBC's development of the proposed regulations to render it a federal action.[145]

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[133] Delaware River Basin Commission, Draft Natural Gas Development Regulations, http://www.nj.gov/drbc/programs/natural/draft-regulations.html.

[134] Initial Complaint at ¶¶ 1, 95, New York v. U.S. Army Corps of Eng'rs, No. 11-2599 (E.D.N.Y. May 31, 2011).

[135] Amended Complaint at ¶ 1, New York v. U.S. Army Corps of Eng'rs, No. 11-2599 (E.D.N.Y. Nov. 22, 2011).

[136] Amended Complaint at ¶ 1 (abbreviations omitted). According to the complaint, if the DRBC approved the regulations, "between 15,000 and 18,000 natural gas wells" would be developed within the Delaware River Basin using high-volume hydraulic fracturing. *Id.* at ¶ 4. High-volume hydraulic fracturing has raised concerns among some groups because of its potential effects on water resources and the environment. For more information on this issue, *see* CRS Report R41760, *Hydraulic Fracturing and Safe Drinking Water Act Regulatory Issues*, by Mary Tiemann and Adam Vann.

[137] *Id.* at ¶¶ 37, 95, 99-100, 109-11.

[138] These agencies are the Army Corps of Engineers, Fish and Wildlife Service, National Park Service, Department of the Interior, and Environmental Protection Agency.

[139] *Id.* at ¶ 106; *see also* 5 U.S.C. §706(2)(A). NEPA does not contain a private right of action.

[140] *See* Delaware River Basin Compact, P.L. 87-328, §15.1(m), 75 Stat. 688, 715 (1961) ("For purposes of ... the Act of June 11, 1946, 60 Stat. 237, as amended ... the Commission shall not be considered a Federal agency.").

[141] Amended Complaint at ¶¶ 11, 115; *see also* Delaware River Basin Compact, §3.3(c), 75 Stat. 688, 693 (1961) ("Any other action of the commission pursuant to this section shall be subject to judicial review in any court of competent jurisdiction.").

[142] Memorandum of Law in Support of Motion to Dismiss at 1, New York v. U.S. Army Corps of Eng'rs, No. 11-2599 (E.D.N.Y. June 4, 2012). The DRBC and its executive director also filed a motion to dismiss the complaint. *See* Delaware River Basin Commission and Carol R. Collier's Memorandum of Law in Support of Their Motion To Dismiss the Amended Complaint of New York State, New York v. U.S. Army Corps of Eng'rs, No. 11-2599 (E.D.N.Y. Jan. 12, 2011).

[143] *Id.* at 33.

[144] *Id.* at 33-34.

[145] *Id.* at 34-39.

In September 2012, the U.S. District Court for the Eastern District of New York granted the defendants' motions to dismiss New York's complaint for lack of subject matter jurisdiction.[146] The court held that it lacked subject matter jurisdiction for two reasons. First, the court held that New York lacked standing because it could not show an immediate threat of injury to its interests from the proposed regulations.[147] Alternatively, the court held that it lacked subject matter jurisdiction because New York's complaint was not ripe for review.[148] Because the court dismissed the plaintiffs' complaint on procedural grounds, it did not reach the merits of the plaintiffs' claims. However, because the court dismissed the suit without prejudice, the plaintiffs may file it again in the future if final regulations are adopted.[149]

The Debate over Public Disclosure of the Chemical Composition of Hydraulic Fracturing Fluids

The composition of the fluid used in hydraulic fracturing 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 chemicals.[150] A primary function of these chemicals is to assist the movement of the proppant into the fractures made in the formation.[151] Although some of these chemicals may be harmless, others may be hazardous to health and the environment.[152] 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 chemical products in fracturing fluids.[153]

Calls for public disclosure of information about chemicals used in hydraulic fracturing have increased as homeowners and others express concerns about the potential presence of unknown chemicals in tainted well water near oil and gas operations.[154] 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.[155] 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

[146] Memorandum and Order at 4, New York v. U.S. Army Corps of Eng'rs, No. 11-2599 (E.D.N.Y. Sept. 24, 2012).

[147] *Id.* at 22.

[148] *Id.* at 28.

[149] *Id.* at 23.

[150] Department of Energy, Modern Shale Gas Development in the United States: A Primer, 56, 61-64 (2009) (hereinafter Department of Energy Primer), http://energy.gov/sites/prod/files/2013/03/f0/ShaleGasPrimer_Online_4-2009.pdf.

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

[152] Department of Energy Primer at 62. *See also* Minority Staff of House Committee on Energy and Commerce, 112th Congress, Chemicals Used in Hydraulic Fracturing 5, 9 (2011) (hereinafter Minority Report on Fracturing Chemicals), http://democrats.energycommerce.house.gov/sites/default/files/documents/Hydraulic%20Fracturing%20Report%204.18.11.pdf.

[153] Minority Report on Fracturing Chemicals at 5.

[154] For more information on this issue, *see* CRS Report R41760, *Hydraulic Fracturing and Safe Drinking Water Act Regulatory Issues*, by Mary Tiemann and Adam Vann.

[155] *See* Lisa Song, *Secrecy Loophole Could Still Weaken BLM's Tougher Fracturing Regs*, InsideClimate News, Feb. 15, 2012.

have expressed concerns that disclosure would reveal proprietary chemical formulas to their competitors, destroying the parties' valuable trade secrets.[156]

In 2011, President Barack Obama directed Secretary of Energy Steven Chu to convene a panel to study the effects of shale gas production on health and the environment.[157] The Shale Gas Production Subcommittee of the Secretary of Energy Advisory Board made several recommendations intended to address these effects.[158] One recommendation calls for the public disclosure, on a "well-by-well basis," of all of the chemicals added to fracturing fluids, with some protection for trade secrets.[159] 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 storage reporting requirements.[160] In addition, environmental advocacy groups have petitioned EPA to collect and share health and environmental effect information for 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 EPCRA Section 313, which established EPA's Toxics Release Inventory.[161]

Several states have adopted chemical disclosure requirements in the form of laws, regulations, or administrative interpretations.[162] The Interstate Oil and Gas Compact Commission (IOGCC), an organization with members that include state regulators and industry representatives, has argued that current regulation of hydraulic fracturing by the states is sufficient.[163]

Toxic Substances Control Act

A main goal of the Toxic Substances Control Act (TSCA) is to protect human health and the environment from unreasonable risks associated with toxic chemicals in U.S. commerce.[164] Under

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

[157] For more on the subcommittee's work, *see Improving the Safety & Environmental Performance of Hydraulic Fracturing*, http://www.shalegas.energy.gov/.

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

[159] *Id.* at 5-6, 17.

[160] 42 U.S.C. §§11002, 11004, 11021, 11022.

[161] 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.earthworksaction.org/library/detail/petition_to_add_oil_gas_extraction_to_TRI.

[162] For an overview of state requirements of this type and other federal proposals, *see* CRS Report R42461, *Hydraulic Fracturing: Chemical Disclosure Requirements*, by Brandon J. Murrill and Adam Vann.

[163] Interstate Oil and Gas Compact Commission, Hydraulic Fracturing, http://www.iogcc.state.ok.us/hydraulic-fracturing.

[164] 15 U.S.C. §2601; S. Rept. 94-1302, at 56 (1976) (Conf. Rep.). On June 22, 2016, the President signed into law amendments to TSCA (P.L. 114-182). For more information on TSCA as amended, *see* CRS Report R44434, *Proposed Amendments to the Toxic Substances Control Act (TSCA) in the 114th Congress: H.R. 2576 Compared with the Senate Substitute Amendment*, by Jerry H. Yen and Alexandra M. Wyatt.

the act, EPA may require manufacturers and processors of chemicals to develop, maintain, and report data on the chemicals' effects on health and the environment.[165] EPA may also place certain restrictions on chemicals when the agency has determined that they warrant regulation based on unreasonable risk of injury to health or the environment or other criteria delineated in the statute.[166,167]

On August 4, 2011, Earthjustice and more than 100 other environmental advocacy organizations petitioned EPA to promulgate rules under Section 4 and Section 8 of TSCA for chemical substances and mixtures used in oil and gas exploration or production (E&P Chemicals).[168] Section 4 of TSCA authorizes 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.[169] Section 8 of TSCA generally authorizes 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.[170] The petition stated that 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."[171]

Earthjustice and the other petitioners further 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.[172] 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.[173] In the petitioners' view, testing was needed to obtain sufficient data on the chemicals' effects because existing federal and state disclosure requirements were inadequate.[174]

EPA's response to the petitioners was mixed. In a November 2, 2011, letter, EPA denied the petitioners' request for promulgation of a TSCA Section 4 test rule.[175] In a short paragraph, the agency wrote that the petitioners had failed to present sufficient facts for EPA to find that such a

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[165] *E.g.*, 15 U.S.C. §§2603, 2607.

[166] 15 U.S.C. §2605(a). EPA must consider the benefits of the chemical product or process when considering how, if at all, to regulate it. 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). CRS Report RL31921, *Pesticide Law: A Summary of the Statutes*, by Jerry H. Yen and Robert Esworthy.

[167] *Id*

[168] 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 EPA to adopt a new rule under certain sections of the act. 15 U.S.C. §2620.

[169] 15 U.S.C. §2603; *see also* 40 C.F.R. §790.1. The petitioners also asked EPA to require manufacturers and processors to disclose the identities of the chemicals they were required to test. Earthjustice Petition at 18.

[170] 15 U.S.C. §2607.

[171] Earthjustice Petition at 1.

[172] Earthjustice Petition at 13-19.

[173] *Id.* at 19.

[174] *Id.* at 5-10.

[175] Letter from Assistant Administrator Stephen A. Owens to Deborah Goldberg (November 2, 2011), http://www.epa.gov/oppt/chemtest/pubs/SO.Earthjustice.Response.11.2.pdf.

rule was necessary.[176] However, in a November 23, 2011, letter, EPA partially granted petitioners' Section 8(a) and Section 8(d) requests.[177] The agency wrote that it would initiate a rulemaking to gather available data on the chemicals used in hydraulic fracturing.[178] However, the agency declined to issue rules for other chemicals in the oil and gas exploration and production sector.[179] 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."[180] On July 11, 2013, EPA published an explanation of the reasons for the agency's response to the petition.[181]

In May 2014, EPA issued an advance notice of proposed rulemaking "to develop an approach to obtain information on chemical substances and mixtures used in hydraulic fracturing."[182] EPA indicated that it had not yet determined whether to mandate disclosure of the chemical information under TSCA, provide incentives for voluntary reporting, or use an approach combining aspects of both mandatory and voluntary disclosure.[183]

Occupational Safety and Health Act

The Occupational Safety and Health Administration has promulgated a set of regulations under the Occupational Safety and Health Act (OSHAct) referred to as the Hazard Communication Standard (HCS).[184] A primary purpose of the HCS is to ensure that employees who may be exposed to hazardous chemicals in the workplace are aware of the chemicals' potential dangers.[185] Manufacturers and importers must obtain or develop Material Safety Data Sheets (MSDS) for hydraulic fracturing chemicals that are hazardous according to OSHA standards.[186] 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.[187] The HCS requires operators to maintain MSDS for hazardous chemicals at the job site.[188]

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[176] *Id.*

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

[178] *Id.*

[179] *Id.*

[180] *Id.*

[181] U.S. Environmental Protection Agency, "Chemical Substances and Mixtures Used in Oil and Gas Exploration or Production; TSCA Section 21 Petition; Reasons for Agency Response," 78 Fed. Reg. 41,768 (July 11, 2013).

[182] EPA, Advance Notice of Proposed Rulemaking, Hydraulic Fracturing Chemicals and Mixtures, 79 Fed. Reg. 28664 (May 19, 2014).

[183] *Id.* For the current status of the rulemaking, *see* http://yosemite.epa.gov/opei/RuleGate.nsf/byRIN/2070-AJ93.

[184] 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 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).

[185] *Id.* §1910.1200(a)-(b) (2011).

[186] *Id.*at §1910.1200(d), (g).

[187] *Id.*at §1910.1200(g).

[188] *d.*

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.[189] 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.[190] 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.[191] 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.[192]

The act seeks to induce each state to establish a State Emergency Response Commission (SERC).[193] 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.[194] 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.[195] Generally, a facility is subject to EPCRA's emergency planning requirements if there is a substance on EPA's list of extremely hazardous substances (EHS) present at the facility in excess of its EPA-determined threshold planning quantity.[196] Whether a well site where hydraulic fracturing occurs would be subject to EPCRA's planning 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

[189] *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/jgi_01217.pdf.

[190] *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).

[191] H. Rept. 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 David M. Bearden.

[192] 42 U.S.C. §11001; H. Rept. 99-962, at 281 (1986) (Conf. Rep.).

[193] 42 U.S.C. §11001(a).

[194] *Id.* §11001(a)-(c).

[195] *Id.* §§11001(c), 11003.

[196] *Id.* §11002. 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).

accidental release of a chemical that is an EHS occurs in an amount in excess of its reportable quantity from a facility where an EHS is produced, used, or stored.[197] This information must be made available to the public.[198]

Section 311 of EPCRA generally requires that facility owners or operators submit an MSDS for each hazardous chemical[199] present that exceeds an EPA-determined threshold level, or a list of such chemicals, to the LEPC, SERC, and the local fire department.[200] For non-proprietary information, the act generally requires a LEPC to provide an MSDS to a member of the public on request.[201] Again, 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.

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.[202] 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 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.[203]

However, most states require the submission of "Tier II information."[204] 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.[205] Tier II information for the prior calendar year for a particular facility must be made available to members of the public upon written request.[206] A SERC or LEPC must disclose to the

[197] *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.

In addition, the notification provision "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).

[198] *Id.* §11044.

[199] "Hazardous chemical" in this section of EPCRA refers to chemicals that require an MSDS under OSHAct. It is a more inclusive term than EHS.

[200] *Id.* §11021.

[201] *Id.* §11021(c). Regulations promulgated under EPCRA set forth procedures for EPA to follow when reviewing a claim that information submitted to EPA is a trade secret. 40 C.F.R. Part 350.

[202] *Id.* §11022.

[203] *Id.* §11022(d).

[204] Environmental Protection Agency, Tier II Chemical Inventory Reports, http://www.epa.gov/osweroe1/content/epcra/tier2.htm.

[205] 42 U.S.C. §11022(d). The owner may withhold proprietary information from disclosure in some circumstances. *Id.* §11042.

[206] 42 U.S.C. §11022(e).

requester any non-proprietary information it possesses.[207] 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.[208]

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.[209] 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.[210] 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.[211] Facilities used by the oil and gas extraction industry are generally not included in the industry codes required to report under the TRI.[212]

Section 313(b) allows EPA to add or delete industry codes as needed.[213] In October 2012, Earthworks and several other environmental advocacy organizations asked EPA to require the oil and gas extraction industry to report the toxic chemicals it releases under the TRI program.[214]

When determining whether to add new industry groups, 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).[215]

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[207] *Id.*

[208] *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.*

[209] *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.

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

[211] 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.* 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.*

[212] 42 U.S.C. §11023(c).

[213] 42 U.S.C. §11023(b).

[214] 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.

[215] Final Rule, Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic

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.[216] 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.[217] Finally, petitioners argued that the information factor was satisfied because existing federal and state disclosure laws were "inadequate."[218] The petition is still under review.

State Preemption of Municipal Land Use and Zoning Powers

As the use of hydraulic fracturing and horizontal drilling to initiate production from oil and gas wells has increased, owners of property located near oil and gas operations have expressed concerns about the potential effects of these activities on the environment.[219] Additionally, some worry that the proximity of oil and gas operations to their homes will cause a decline in the values of their properties.[220] In response to these concerns, many local governments have increased their regulation of hydraulic fracturing and related oil and gas production activities.[221] Some requirements imposed by local governments appear to be intended to regulate the land use aspects of oil and gas operations.[222] However, other requirements have tended toward regulation of the technical aspects of oil and gas operations.[223]

In addition to raising questions about the relationship between federal and state authority, the increase in local regulation of hydraulic fracturing has led to questions about the relationship between state and local authority. Regulation of oil and gas operations is an area of mixed state and local concern.[224] It implicates the state's interest in the safe and efficient development of its natural resources and the local government's interest in regulating land uses to protect the public from harm to property values, health, and the environment.[225] In matters of mixed state and local concern, states retain authority over local governments, even when municipalities enjoy some degree of independence from the state as a result of "home rule" provisions.[226] However, the

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Release Inventory Reporting; Community Right-to-Know, 62 Fed. Reg. 23,834, 23,842 (May 1, 1997).

[216] Earthworks Petition at 7.

[217] *Id.*

[218] *Id.* at 7-8.

[219] *See, e.g.*, Water Pollution from Shale Wells Is Major Concern for Pennsylvania Homeowners – Study, E&E News (November 8, 2012), http://www.eenews.net/energywire/2012/11/08/8.

[220] *Id.*

[221] *E.g.*, City of Longmont, Colorado, Ordinance O-2012-25, Amending Chapters 15.04, 15.05, 15.07, 15.10 and Appendix B of Title 15 of the Longmont Municipal Code Regarding Oil and Gas Well Operations and Facilities (July 24, 2012), http://www.ci.longmont.co.us/pwwu/oil_gas/documents/CA_20120724_125237.pdf.

[222] *Id.* at 3 (stating, with some exceptions, that "City oil and gas well permits may be issued for sites within the City excluding oil and gas well surface operations and facilities in residential zoning districts.").

[223] *Id.* at 26 ("The operator shall make reasonable efforts to minimize methane emissions by using all feasible 'green completion' techniques ... and the installation of 'low-bleed' pneumatic instrumentation and closed loop systems.").

[224] *See, e.g.*, Robinson Twp. v. Commonwealth, 52 A.3d 463, 483 (Pa. Commw. Ct. 2012).

[225] *Id.*

[226] *See, e.g.*, Webb v. City of Black Hawk, 295 P.3d 480, 486 (Colo. 2013) ("For matters that involve mixed state and local concerns, a home-rule regulation may coexist with a state regulation only as long as there is no conflict. However, in the event of a conflict, the state statute supersedes the conflicting local regulation to the extent of the conflict.")

Pennsylvania Supreme Court held that the state could not preempt municipal zoning restrictions when it would violate guarantees contained in the state's constitution.[227]

The question of state preemption of municipal land use and zoning powers arises when both state and local governments seek to regulate oil and gas production. Although the doctrine of preemption may differ among the states, most jurisdictions recognize three types of preemption: (1) express preemption, in which the express language of the state statute or regulation shows that the state intended to preempt all local control over regulation of a particular subject matter; (2) occupation of the field, in which the state's regulatory scheme is so comprehensive that it leaves the locality no room in which to regulate; and (3) conflict preemption, in which a local law is preempted to the extent that it conflicts with the application of the state law.[228]

State Court Cases

When a state law expressly preempts requirements imposed on oil and gas operations by localities, state courts have engaged in statutory interpretation to determine the scope of the preemption.[229] For example, in 2014 the New York Court of Appeals issued a decision finding that zoning restrictions enacted by two municipalities did not conflict with the state's mineral resource laws.[230] The municipalities claimed that the zoning restrictions were valid exercises of the state's Home Rule law, which empowers local governments to pass laws for the "protection and enhancement of [their] physical and visual environment" and for the "government, protection, order, conduct, safety, health and well-being of persons or property therein,"[231] and that their exercise of this authority to restrict certain drilling practices was not preempted by the state's oil and gas law.[232] The court agreed, finding that the preemption language in the state oil and gas law limited "only local laws that purport to regulate the actual operations of oil and gas activities, not zoning ordinances that restrict or prohibit certain land uses within town boundaries."[233] In the court's opinion, the new zoning restrictions "are directed at regulating land use generally and do not attempt to govern the details, procedures or operations of the oil and gas industries." As a result the court found that the local zoning restriction did not preempt the state's oil and gas laws.[234]

In the case of *Robinson Township v. Commonwealth*, a Pennsylvania appeals court considered a state law (Act 13) that expressly preempted local zoning laws. The court held that towns' substantive due process rights were violated by the state when Pennsylvania passed a law that required local governments to allow certain oil and gas facilities in all of their zoning districts, subject only to minor limitations such as setback requirements.[235] Pennsylvania had argued that the law would advance the commonwealth's legitimate interest in the safe and efficient

(citations omitted).

[228] *E.g.*, Bd. of County Comm'rs of La Plata County v. Bowen/Edwards Assocs., Inc., 830 P.2d 1045, 1056-57 (Colo. 1992).

[229] Cooperstown Holstein Corp. v. Town of Middlefield, 943 N.Y.S.2d 722, 724 (N.Y. Sup. Ct. 2012); Anschutz Exploration Corp. v. Town of Dryden, 940 N.Y.S.2d 458, 466 (N.Y. Sup. Ct. 2012).

[230] Wallach v. Town of Dryden, 23 N.Y.3d 728, 739 (June 30, 2014).

[231] N.Y. CLS Mun. Home Rule §10.

[232] *Wallach*, 2014 NY LEXIS at *5, *7.

[233] *Id.* at *17.

[234] *Id.* at *35.

[235] Robinson Twp. v. Commonwealth, 52 A.3d 463, 485 (Pa. Commw. Ct. 2012).

development of its oil and gas resources by eliminating differences in local zoning ordinances that had burdened the industry and its investors with expense and uncertainty.[236] However, the court held that this mandate was irrational and an improper exercise of the state's police power because it allowed incompatible uses in zoning districts, and thus denied the town's substantive due process under the state constitution.[237] The Pennsylvania Supreme Court subsequently affirmed the appeals court's holding that provisions of Act 13 preempting certain municipal zoning restrictions on oil and gas facilities were invalid under the Pennsylvania constitution.[238]

A West Virginia case illustrates the doctrine of field preemption in the oil and gas context.[239] In *Northeast Natural Energy, LLC v. City of Morgantown*, a state court held that state law left no room for local regulation of oil and gas development and production.[240]

With regard to conflict preemption, state courts have considered whether the local requirement interferes with the state's regulatory scheme governing oil and gas development so as to result in an "operational conflict" with the state's objectives.[241] Courts considering whether a particular local regulation is preempted under this test generally evaluate each requirement imposed by the regulation on a case-by-case basis to determine whether there is a conflict.[242] In some instances, courts must examine not only what the local regulation requires on its face but also how the regulation is applied in practice by the local government.[243] Under the operational conflicts test, the Colorado Supreme Court held that state law preempted a home rule city's total ban on oil and gas *drilling*.[244] In July 2014, a Colorado district court held that state law preempted the city of Longmont's ban on hydraulic fracturing, stating that, "The operational conflict in this case is obvious. The [Colorado Oil and Gas Conservation] Commission permits hydraulic fracturing and Longmont prohibits it."[245]

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[236] *Id.* at 483.

[237] *Id.* at 485.

[238] Robinson Township v. Commonwealth, 83 A.3d 901, 985 (Pa. 2013). Three of the justices in the majority held that the provision violated the state constitution's Environmental Rights Amendment because it was "incompatible with the Commonwealth's duty as trustee of Pennsylvania's public natural resources." *Id.* The other justice in the majority concurred but would have grounded the decision in the Act 13 provision's violation of substantive due process guarantees. *Id.* at 1001.

[239] Order at 6, Ne. Natural Energy, LLC, v. City of Morgantown, No.11-C-411 (W. Va. Cir. Ct. Monongalia County, 2011).

[240] *Id.* at 9; Order Granting Plaintiff's Motion for Summary Judgment on First Claim for Relief at 7, No. 13CV31385, Colorado Oil and Gas Association v. City of Fort Collins (Colo. Dist. Ct. Larimer County, Aug. 7, 2014) ("The Court finds that the City's Ordinance banning all hydraulic fracturing for five years is impliedly preempted by the [Colorado Oil and Gas Conservation Act].").

[241] Bd. of County Comm'rs of La Plata County v. Bowen/Edwards Assocs., Inc., 830 P.2d 1045, 1059 (Colo. 1992). The Colorado cases outlining the operational conflict test were decided before the widespread use of hydraulic fracturing in combination with horizontal drilling, and thus it is unclear whether the Colorado Supreme Court would issue similar decisions today. *See* Jeff Overley, Oil And Gas Group Sues Colorado Town To Kill Fracking Ban, Law360 (December 18, 2012).

[242] *Bowen/Edwards* at 1060.

[243] *Id.*

[244] Voss v. Lundvall Bros., Inc., 830 P.2d 1061, 1062 (Colo. 1992).

[245] Order Granting Motions for Summary Judgment at 14, No. 13CV63, Colorado Oil and Gas Association v. City of Longmont (Colo. Dist. Ct. Boulder County, July 24, 2014).

Alternatives to Preemption

Some states have tried to use alternative methods of accommodating joint state and local regulatory authority over oil and gas operations. Colorado offers one example. In a February 2012 executive order, Colorado Governor John Hickenlooper wrote that "proving operational conflict is an adversarial, cumbersome, time consuming, and expensive process."[246] The governor created a task force to consider how local governments could coordinate their regulatory efforts with the state to avoid litigation.[247] In April 2012, the task force issued a letter in which it wrote that its members had "determined that drawing bright lines between state and local jurisdictional authority was neither realistic nor productive."[248] Members of the task force recommended that local governments enter into memoranda of understanding with operators and intergovernmental agreements with the Colorado Oil and Gas Conservation Commission (COGCC) to address local concerns.[249] The task force also suggested that the local governments designate a representative to provide input to operators and the COGCC during the permitting process.[250]

State Tort Law

Owners of property located near oil and gas operations have brought common law tort claims against companies that operate oil and gas wells and related infrastructure.[251] Plaintiffs have claimed that damages have occurred as a result of hydraulic fracturing and related oil and gas operations, including contamination of land from drilling waste placed into pits on the plaintiffs' properties;[252] noise and air pollution from natural gas compressor stations;[253] contamination of water supplies;[254] damage to a house allegedly caused by vibrations from nearby drilling activity;[255] and personal injury.[256] Common law causes of action brought under state tort law have included claims for nuisance, trespass, negligence, and strict liability, among others.[257] Plaintiffs have sought monetary and, in some cases, injunctive relief, including remediation of contaminated property and medical monitoring.[258]

Often in these cases, some of the damages are alleged to have occurred underground or in the air above a plaintiff's property. As a result, plaintiffs may have difficulty demonstrating that the

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[246] John W. Hickenlooper, Executive Order 2012-002, Creating the Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development (February 29, 2012).

[247] *Id.*

[248] Recommendations from the Task Force Established by Executive Order 2012-002 Regarding Mechanisms to Work Collaboratively and Coordinate State and Local Oil and Gas Regulatory Structures (April 18, 2012).

[249] Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development: Protocols Recommendations 1-2.

[250] *Id.*

[251] Tucker v. Sw. Energy Co., 2012 U.S. Dist. LEXIS 20697, at *4 (E.D. Ark. Feb. 17, 2012); Ginardi v. Frontier Gas Servs. LLC, 2011 U.S. Dist. LEXIS 89054, at *2 (E.D. Ark. Aug. 10, 2011).

[252] Teel v. Chesapeake Appalachia, LLC, 906 F. Supp.2d 519,520 (N.D. W.Va. 2012).(N.D. W. Va. October 25, 2012).

[253] *Ginardi*, 2011 U.S. Dist. LEXIS 89054, at *2.

[254] *Tucker*, 2012 U.S. Dist. LEXIS 20697, at *4; Berish v. Sw. Energy Prod. Co., 763 F. Supp. 2d 702, 704 (M.D. Pa. 2011).

[255] Hiser v. XTO Energy Inc., 2012 U.S. Dist. LEXIS 114084, at *1 (E.D. Ark. Aug. 14, 2012).

[256] Kamuck v. Shell Energy Holdings GP, LLC, 2012 U.S. Dist. LEXIS 125566, at *5 (M.D. Pa. Sept.r 5, 2012).

[257] *E.g.*, *Teel*, 906 F.Supp.2d at 520.

[258] *E.g.*, *id.*; Fiorentino v. Cabot Oil & Gas Corp., 750 F. Supp. 2d 506, 510 (M.D. Pa. 2010).

activities of the defendants caused them harm.[259] In some cases, defendants have requested that courts enter modified case management orders (MCMOs) requiring plaintiffs to specifically make a prima facie showing of exposure, injury, and causation prior to the full discovery process by submitting expert opinions regarding the nature of the substances to which the plaintiffs were allegedly exposed; allowing access to the plaintiffs' medical records; and providing other supporting data.[260] In Colorado, defendants initially succeeded in having one case dismissed after entry of such an order because the plaintiffs failed to "produce sufficient information and expert opinions upon which to establish the prima facie elements of their claims."[261] However, a Colorado appeals court later reversed the trial court's entry of the order.[262] In some cases courts have declined to enter MCMOs when there are a limited number of parties to the litigation and the claims are relatively simple.[263]

One question that arises when a court considers whether defendants are subject to strict liability for their operations is whether hydraulic fracturing and related oil and gas production activities are abnormally dangerous as a matter of law. Section 519 of the Restatement (Second) of Torts states that "[o]ne who carries on an abnormally dangerous activity is subject to liability for harm ... of another resulting from the activity, although he has exercised the utmost care to prevent the harm."[264] In determining whether an activity is abnormally dangerous, courts generally consider six factors:

> (a) existence of a high degree of risk of some harm to the person, land or chattels of others;
>
> (b) likelihood that the harm that results from it will be great;
>
> (c) inability to eliminate the risk by the exercise of reasonable care;
>
> (d) extent to which the activity is not a matter of common usage;
>
> (e) inappropriateness of the activity to the place where it is carried on; and
>
> (f) extent to which its value to the community is outweighed by its dangerous attributes.[265]

It appears that few courts have considered the issue. In an April 2014 summary judgment order, a federal district court judge wrote that "based on an analysis of the six factors set forth in the Restatement (Second) of Torts ... hydraulic fracturing does not legally qualify as an ultra-hazardous activity giving rise to strict tort liability."[266] In another case, a court speculated that it

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[259] *E.g.*, *Tucker*, 2012 U.S. Dist. LEXIS 20697, at *6-7 ("Missing are particular facts about particular fracking operations by particular fracking companies using particular substances that allegedly caused the Berrys' air problems and the Tuckers' water problems. General statements about the many dangerous substances used in fracking, and conclusory statements about the migration of those substances will not suffice.").

[260] Roth v. Cabot Oil & Gas Corp., 287 F.R.D. 293, 295 (M.D. Pa. 2012); *Kamuck*, 2012 U.S. Dist. LEXIS 125566, at *1-2; Order Re: Defendants' Motion to Dismiss or, in the Alternative, for Summary Judgment at 2-3, Strudley v. Antero Resources Corp., No. 2011CV2218 (May 9, 2012). These orders are commonly referred to as "Lone Pine" orders. *See* Lore v. Lone Pine Corp., 1986 N.J. Super. LEXIS 1626 (N.J. Super. Ct. Law Div. November 18, 1986).

[261] Order Re: Defendants' Motion to Dismiss or, in the Alternative, for Summary Judgment at 3, Strudley v. Antero Resources Corp., No. 2011CV2218 (May 9, 2012).

[262] Strudley v. Antero Res. Corp., 2013 Colo. App. LEXIS 1090, *30 (Colo. App. 2013). In April 2014, the Colorado Supreme Court agreed to hear the defendants' appeal of the intermediate court's decision regarding the MCMO. Antero Res. Corp. v. Strudley, 2014 Colo. LEXIS 239, *1 (Colo. April 7, 2014).

[263] *See, e.g.*, *Roth*, 287 F.R.D. at 295.

[264] Restatement (Second) of Torts §519 (1977).

[265] *Id.* §§519-20.

[266] Order at 1-2 & n.2, No. 3:09-cv-2284, Ely v. Cabot Oil & Gas Corp. (M.D. Pa. April 23, 2014). The district court judge adopted the report and recommendation of the magistrate judge and granted summary judgment to the defendants

may be difficult for plaintiffs to meet factors (d), (e), and (f) in the Restatement definition at the summary judgment stage.[267]

With respect to trespass claims, the Texas Supreme Court considered whether the subsurface hydraulic fracturing of a natural gas well that extended into an adjacent property was a trespass "for which the value of gas drained as a result may be recovered as damages."[268] The court held that such damages could not be recovered because of the rule of capture, which "gives a mineral rights owner title to the oil and gas produced from a lawful well bottomed on the property, even if the oil and gas flowed to the well from beneath another owner's tract."[269] In another case, plaintiffs argued that the defendant committed a trespass when it engaged in acts that were not necessary to the extraction of minerals on the plaintiff's surface property.[270] Plaintiffs have also argued that emissions of air pollution over their land constitute a trespass.[271]

Hydraulic Fracturing on Federal Lands

As discussed previously, regulation of practices associated with oil and gas exploration and production is primarily left to the states and municipalities that have overseen the practice for decades. Federal regulation of these practices is usually limited to the realm of environmental impacts. This, however, is not the case when it comes to oil and gas exploration and production on federal lands. The Bureau of Land Management (BLM), an agency within the Department of the Interior, oversees leasing and permitting for oil and gas on federal lands.

BLM Final Rule

On March 26, 2015, BLM promulgated a hydraulic fracturing rule applicable to oil and gas operations on federal and Indian lands.[272] However, the final rule was set aside by the U.S. District Court for the District of Wyoming, and this decision is currently under appeal (see below). The rule revised BLM's oil and gas rules related to hydraulic fracturing, which were promulgated in 1982 and last revised in 1988, before the widespread use of hydraulic fracturing and horizontal drilling. BLM estimated that the rule would affect roughly 2,800 hydraulic fracturing operations each year; however, based on previous levels of activity on federal lands, the rule could affect as many as 3,800 operations annually, and total compliance costs could reach $45 million annually.[273]

The rule would require operators that plan to employ fracking as part of an oil or natural gas drilling operation on federal or Indian land to document to BLM compliance with the following requirements:

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on plaintiffs' Pennsylvania law strict liability claim. *Id.*

[267] Berish v. Sw. Energy Prod. Co., 763 F. Supp. 2d 702, 706 (M.D. Pa. 2011).

[268] Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 4 (Tex. 2008).

[269] *Id.* at 12-13.

[270] Teel v. Chesapeake Appalachia, LLC, 906 F. Supp.2d 519, 520-21 (N.D. W.Va. 2012).(N.D. W. Va. October 25, 2012); *see also* Whiteman v. Chesapeake Appalachia, LLC, 729 F.3d 381, 394 (4th Cir. 2013) (rejecting a similar trespass claim).

[271] Tucker v. Sw. Energy Co., 2012 U.S. Dist. LEXIS 20697, at *10-11 (E.D. Ark. Feb. 17, 2012); *see also* Restatement (Second) of Torts §158 cmt. i (1977).

[272] *Oil and Gas; Hydraulic Fracturing on Federal and Indian Lands: Final Rule,* 80 Fed Reg. 16,128 (Mar. 26, 2015).

[273] *Id*. at 16195. BLM estimates that compliance could cost $11,400 per hydraulic fracturing operation (roughly 0.13 to 0.21% of the cost of drilling a well).

- Submit a plan with detailed information about the proposed operation, including wellbore geology, the location of faults and fractures, the depths of all usable water, estimated volume of fluid to be used, and estimated direction and length of fractures;
- Design and implement a casing and cementing program that follows best practices and meets performance standards to protect and isolate usable water, monitor the cementing operations during well construction, and take remedial action if there are indications that the cementing is inadequate;
- Perform a successful Mechanical Integrity Test prior to the fracking operation;
- Monitor well pressure during the fracking operation and cease operations if it exceeds 500 pounds per square inch;
- Manage the recovered "flowback" fluids in above-ground storage tanks that meet certain specifications; and
- Disclose the chemicals used in the fracking operation to the BLM and to the public (with limited exceptions for trade secrets as demonstrated through an affidavit).[274]

The Final Rule also would authorize states and tribes to work with BLM to craft variances from specific regulatory provisions that would allow compliance with state or tribal requirements to be accepted as compliance with the BLM rule if the state or tribal provision is at least as protective as the pertinent BLM provision.[275]

Final Rule Set Aside in *Wyoming v U.S. Dep't of the Interior*

After publication of the Final Rule, a number of states and organizations brought an action in the U.S. District Court for the District of Wyoming seeking to enjoin its enforcement. These petitioners argued that BLM lacked statutory authority to regulate hydraulic fracturing, citing the 2005 amendments to the SDWA discussed above as evidence of congressional intent to exclude hydraulic fracturing from federal oversight unless diesel fuels are involved.[276] The court found that the petitioners had demonstrated the likelihood of success on the merits, and thus enjoined enforcement of the BLM Final Rule.[277] Nine months later the court ruled on the merits and set aside the BLM Final Rule.[278]

The federal government appealed the decision to the U.S. Court of Appeals for the Tenth Circuit.[279] The government will likely argue that its broad authority to regulate activities on federal lands under the Federal Land Policy and Management Act,[280] including the power to "take any action necessary to prevent unnecessary or undue degradation of the lands,"[281] provides

[274] *Id.* at 16,130-31.

[275] *Id*. at 16,130.

[276] Wyoming v U.S. Dept. of the Interior, 136 F.Supp. 1317 (D. Wyo. 2015).

[277] *Id*.

[278] Wyoming v U.S. Dept. of the Interior, Nos. 2:15-CV-043-SWS and 2:15-CV-041-SWS, 2016 WL 3509415 (D. Wyo. June 21, 2016).

[279] Notice of Appeal, Wyoming v U.S. Dep't of the Interior, (D. Wyo. 2016) (No. 15-Cv-43-SWS).

[280] 43 U.S.C, §§1701 *et seq*.

[281] 43 U.S.C, §1732.

sufficient basis for the promulgation of the BLM Final Rule. The government also will likely cite its authority under Section 226(g) of the Mineral Leasing Act to "regulate all surface-disturbing activities conducted pursuant to any lease issued under this chapter."[282] The Tenth Circuit's decision on this matter will set an important precedent with respect to the federal government's ability to regulate hydraulic fracturing and potentially other environmental concerns related to oil and natural gas exploration and production on federal lands.

BLM Venting and Flaring Rule

On February 8, 2016, the BLM proposed a rule to update standards to reduce venting and flaring from oil and gas production activities on onshore federal and Indian leases.[283] The proposal would clarify when produced gas lost through venting, flaring, or leaks is subject to royalties and would replace provisions governing venting, flaring, and royalty-free use of gas issued in 1980. The proposed rule would limit natural gas venting to specified circumstances and also limit the rate of routine flaring of natural gas associated with oil well development. BLM expects to issue a final venting and flaring rule in late 2016.[284]

Legislation in the 114th Congress

In the 114th Congress, several bills propose to expand federal regulation of hydraulic fracturing activities, while others would limit federal involvement. This section discusses some of this legislation.

The Fracturing Responsibility and Awareness of Chemicals Act of 2015 (FRAC Act) has been introduced in the House (H.R. 1482) and the Senate (S. 785). The bills would amend the SDWA to (1) require disclosure of the chemicals used in the fracturing process, and (2) repeal the hydraulic fracturing exemption established in EPAct 2005, and amend the term "underground injection" to include the injection of fluids used in hydraulic fracturing operations, thus authorizing EPA to regulate this process under the SDWA. Additionally, S. 785 would authorize states to seek primary enforcement authority for hydraulic fracturing operations, regardless of whether the state had obtained primacy for other types of UIC wells, including Class II wells.

The Safe Hydration is An American Right in Energy Development Act of 2015 (H.R. 1515) also would amend the SDWA to create a new prohibition on fracking unless the party conducting the fracking operations agrees to comply with new testing and data reporting requirements.

Legislation also has been introduced to require baseline and follow-up testing of potable groundwater in the vicinity of hydraulic fracturing operations. H.R. 1515, the Safe Hydration is an American Right in Energy Development Act of 2015, would amend the SDWA to prohibit hydraulic fracturing unless the person proposing to conduct the fracturing operations agreed to testing and reporting requirements regarding underground sources of drinking water. H.R. 1515

[282] 30 U.S.C, §226(g).

[283] BLM, "Waste Prevention, Production Subject to Royalties, and Resource Conservation: Proposed Rule," 81 Fed. Reg. 6616, Feb. 8, 2016. Venting is the release of natural gas (largely methane) into the air without being burned. Flaring is the burning of natural gas, with the main byproduct being carbon dioxide. Flaring is preferred to venting for safety reasons but also because methane is several times more potent than carbon dioxide as a greenhouse gas (although more short-lived in the atmosphere). Flaring also reduces emissions of ozone-forming pollutants compared to venting.

[284] Office of Management and Budget, Unified Regulatory Agenda, BLM, "Waste Prevention, Production Subject to Royalties, and Resource Conservation," 1004-AE14, http://www.reginfo.gov/public/do/eAgendaViewRule?pubId=201604&RIN=1004-AE14.

would require testing prior to, during, and after hydraulic fracturing operations. Testing would be required for any substance EPA determines would indicate damage associated with hydraulic fracturing operations. The bill also would require EPA to post on its website all test results, searchable by zip code.

H.R. 1647 and S. 15, the Protecting States' Rights to Promote American Energy Security Act, would amend the Mineral Leasing Act[285] to prohibit the Department of the Interior from enforcing any federal regulation, guidance, or permit requirement regarding hydraulic fracturing relating to oil, gas, or geothermal production activities on or under any land in any state that has regulations, guidance, or permit requirements for hydraulic fracturing. Although this language is broadly applicable to any federal regulation, guidance, and permit requirements "regarding hydraulic fracturing," the prohibition on enforcement applies only to the Department of the Interior, and therefore would presumably impact only hydraulic fracturing operations on lands managed by the department. The bill also would require the Department of the Interior to defer to state regulations, permitting, and guidance for all activities related to hydraulic fracturing relating to oil, gas, or geothermal production activities on federal land regardless of whether those rules were duplicative, more or less restrictive, or did not meet federal guidelines. The House version of the bill also would direct the Comptroller General to conduct a study "examining the economic benefits of domestic shale oil and gas production resulting from the process of hydraulic fracturing."[286] Other legislation has also been introduced in the 114th Congress to limit the authority of the Department of the Interior to regulate hydraulic fracturing on federal and Indian lands.[287]

Conclusion

Environmental statutes enforced by EPA contain several key exemptions for hydraulic fracturing and related oil and gas production activities. For example, an amendment to the SDWA passed as a part of the Energy Policy Act of 2005 clarified that the underground injection control requirements found in the SDWA do not apply to hydraulic fracturing, although the exclusion does not extend to the use of diesel fuel in hydraulic fracturing operations.[288] In addition, drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy are exempt from regulation as hazardous wastes under Subtitle C of RCRA.[289] Under EPCRA, facilities used by the oil and gas extraction industry are generally not included in the industry codes required to report under the Toxics Release Inventory (TRI).

Environmental groups have filed petitions seeking regulation of hydraulic fracturing and related activities under various environmental laws enforced by EPA. In September 2010, an environmental advocacy group filed a petition seeking to have EPA regulate drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy as hazardous waste under Subtitle C of RCRA.[290] In

[285] 30 U.S.C. §§181 *et seq*.

[286] H.R. 1647 §3.

[287] *See. e.g.,* H.R. 538 at §9 (providing that any Interior rules related to hydraulic fracturing do not apply on "land held in trust for Indians or on restricted Indian land"), H.R. 2822 at §439 (appropriations legislation barring use of funds to administer the BLM Final Rule on hydraulic fracturing on federal lands discussed above).

[288] P.L. 109-58 at §322.

[289] Solid Waste Disposal Act Amendments of 1980, P.L. 96-482, §7, 42 U.S.C. §6921(b)(2)(A).

[290] Natural Resources Defense Council, Re: Petition for Rulemaking Pursuant to Section 6974(a) of the Resource

August 2011, environmental advocacy organizations petitioned EPA to promulgate rules under Section 4 and Section 8 of TSCA for chemical substances and mixtures used in oil and gas exploration or production.[291] In October 2012, several environmental advocacy organizations asked EPA to require the oil and gas extraction industry to report the toxic chemicals it releases under the TRI program.[292]

Regulation of hydraulic fracturing by local governments has raised questions about state preemption of municipal land use and zoning powers. Courts in a few states have ruled that local governments may regulate *where* drilling occurs but not *how* it occurs.[293] In addition, owners of property located near oil and gas operations have brought common law state tort claims against operators, including claims for negligence, strict liability, nuisance, and trespass to land.[294] Although this litigation is still in its early stages, it appears that courts have already faced questions about causation; whether hydraulic fracturing is an abnormally dangerous activity; and whether hydraulic fracturing may constitute a subsurface trespass to land. A recent federal district court decision invalidated BLM's adoption of safety and disclosure requirements for hydraulic fracturing on federal lands, although an appeal of that decision is pending.

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Conservation and Recovery Act Concerning the Regulation of Wastes Associated with the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy 1 (September 8, 2010), http://docs.nrdc.org/energy/files/ene_10091301a.pdf.

[291] 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.

[292] 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.earthworksaction.org/library/detail/petition_to_add_oil_gas_extraction_to_TRI.

[293] See the discussion above under "State Preemption of Municipal Land Use and Zoning Powers."

[294] See the discussion above under "State Tort Law."

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