



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. 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 (EPA 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 Section 4 and Section 8 of the Toxic Substances Control Act (TSCA) for chemical substances and mixtures used in oil and gas exploration or production.

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.

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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.

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.³ 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 Provisions⁴

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.⁵ 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

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*

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

² *Id.* Hydraulic fracturing often is referred to as “fracing” within the industry and as “fracking” by others.

³ 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.

⁴ 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 fracking 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 fracking and related activities, see CRS Report R41760, *Hydraulic Fracturing and Safe Drinking Water Act Regulatory Issues*, by Mary Tiemann and Adam Vann.

⁵ 42 U.S.C. §§300h-300h-5.

*requirements are essential to assure that underground sources of drinking water will not be endangered by such injection.*⁶

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.”⁷ 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.”⁸

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

⁶ 42 U.S.C. §300h(b)(2) (emphasis added).

⁷ 42 U.S.C. §300h(b)(1).

⁸ 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.

programs to the states, provided that the state program meets EPA requirements promulgated under Section 1421 and prohibits any underground injection that is not authorized by a state permit or rule.⁹ 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.¹⁰ 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.¹¹ The state of Alabama had previously been authorized by EPA to administer a UIC program pursuant to the terms of the SDWA.¹² 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.¹³ According to EPA, that term applied only to wells whose "principal function" was the placement of fluids underground.¹⁴ LEAF challenged EPA's denial of its petition in the U.S. Court of Appeals for the Eleventh

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

¹⁰ *Id.* at §300h-4.

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

¹² *Id.* at 1470.

¹³ *Id.* at 1471.

¹⁴ *Id.*

Circuit, arguing that EPA's interpretation of the terms in question was inconsistent with the language of the SDWA.¹⁵

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.¹⁶ 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.¹⁷

The court therefore remanded the decision to EPA for reconsideration of LEAF's petition for withdrawal of Alabama's UIC program approval.¹⁸

Following the *LEAF I* decision, in 1999 Alabama submitted a revised UIC program to EPA.¹⁹ 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."²⁰ 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.²⁰

EPA approved Alabama's revised UIC program in 2000,²¹ and LEAF appealed EPA's decision to approve to the U.S. Court of Appeals for the Eleventh Circuit.²² 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 1425.²³ The court rejected this argument, finding that the

¹⁵ *Id.* at 1472.

¹⁶ *Id.* at 1473-74.

¹⁷ *Id.* at 1474-75.

¹⁸ *Id.* at 1478.

¹⁹ See 64 Fed. Reg. 56986 (October 22, 1999).

²⁰ *Id.* at §300h-1(b)(1)(A).

²¹ 65 Fed. Reg. 2889 (October 2000).

²² *Legal Environmental Assistance Foundation, Inc. v. U.S. Environmental Protection Agency*, 276 F.3d 1253, 1257 (11th Cir. 2001).

²³ *Id.* at 1256.

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.²⁴

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.²⁵ The court agreed 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.²⁶ 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 144.6.²⁷ 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.²⁸

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.²⁹ The court rejected this argument.³⁰

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]”³¹—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

²⁴ *Id.* at 1259-61.

²⁵ *Id.* at 1256.

²⁶ *Id.* at 1262.

²⁷ *Id.* at 1263.

²⁸ *Id.* at 1263-64.

²⁹ *Id.* at 1256 (referring to 5 U.S.C. §706(2)(A)).

³⁰ *Id.* at 1265.

³¹ *LEAF I*, 118 F.3d at 1475.

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.

EPA Guidance on SDWA Regulation of 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 EPA 2005 amendment, and for several years EPA took no official position regarding the regulation of hydraulic fracturing using diesel fuel under the SDWA.³² In May of 2012, EPA issued draft UIC program permitting guidance for hydraulic fracturing injection activities where diesel fuels are used in fluids or propping agents.³³ The proposed guidance is intended for EPA permit writers and is relevant where EPA directly implements the UIC Class II program.

In the proposed guidance, EPA states its interpretation that “oil and gas hydraulic fracturing operations using diesel fuels as a fracturing fluid, or as a component of a fracturing fluid ... are subject to UIC Class II permitting requirements.”³⁴ 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. If this proposed guidance is adopted as “final,” EPA UIC program administrators would be expected to apply it going forward in their permitting of Class II wells. EPA noted in the proposed guidance 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.”³⁵

A key issue regards how EPA may define “diesel fuels” in the final guidance. The draft guidance recommends using six Chemical Abstracts Service Registry Numbers (CASRN) for determining whether diesel fuels are used in hydraulic fracturing operations.³⁶ These six CASRN collectively

³² 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/>

³³ Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels—Draft: Underground Injection Control Program Guidance #84, 77 Fed. Reg. 27,451 (May 10, 2012). The draft describes how UIC Class II requirements may be tailored to address the risks of diesel fuel injections. The comment period deadline is August 23, 2012.

³⁴ *Id.*

³⁵ *Id.* at 27,542.

³⁶ EPA explains that “diesel fuels may be used in hydraulic fracturing operations as a primary base (or carrier) fluid, or (continued...) ”

include various types of diesel fuels, home heating oils, kerosene, crude oil, and a range of other petroleum compounds.³⁷ The draft also includes alternative descriptions of diesel that are broader in scope. Also at issue is whether the final guidance will specify a de minimis amount of diesel fuel content for hydraulic fracturing fluids; the draft guidance does not do so. EPA plans to develop a final guidance document in 2013.

Clean Water Act

Fracking is a water-intensive practice. After a well is hydraulically fractured, a substantial portion of the injected frac 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 trace amounts of naturally occurring radioactive materials (NORM) that may be present in the water produced from the geologic formations. 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, the well service company may not discharge the flowback and other produced water into surface waters (e.g., lakes or streams) unless this is done in compliance with the Clean Water Act (CWA).³⁸ 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.³⁹ Parties seeking to discharge flowback and other produced water would likely apply for a permit under the National Pollutant Discharge Elimination System (NPDES) as authorized under Section 402 of the CWA.⁴⁰ NPDES permits allow for discharges to navigable waters that would otherwise be prohibited by Section 301(a) of the CWA subject to certain limits based on both the technology available to control the pollutants (i.e., technology-based effluent limits) and limits that are protective of the water quality standards of the receiving water (i.e., water-quality-based effluent limits).⁴¹

Rather than dealing with disposal of flowback on their own by obtaining and complying with a NPDES permit, drilling companies may opt to transfer the wastewater to publicly owned

(...continued)

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.

³⁷ *Id.* at 27,453. 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.”

³⁸ 33 U.S.C. §1251 *et seq.*

³⁹ 33 U.S.C. §1311(a).

⁴⁰ 33 U.S.C. §1342(a). Note that EPA usually delegates its NPDES permitting authority to states who choose to assume responsibility for the program under 33 U.S.C. §1342(b).

⁴¹ 33 U.S.C. §1311; 40 CFR 125.3(a). The technology-based requirements for direct discharges from oil and gas extraction facilities into surface waters are found in 40 Code of Federal Regulations (CFR) Part 435.

treatment works (POTW) that discharge to navigable waters. There are some pretreatment requirements for wastewater introduced to a POTW including prohibiting introduction of wastes that interfere with, pass through or are otherwise incompatible with POTW operations.⁴² 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 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.

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 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.⁴³ 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 and other facilities, but also established new standards for emissions from certain types of natural gas operations not covered at all in the existing standards.⁴⁴ Among the new standards were requirements applicable to new hydraulically 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 during the completion process is cleaned and captured for reuse in another process that does not involve direct release into the atmosphere.⁴⁵ In order to allow the industry time to make the needed changes, the rulemaking established two phases for compliance. During Phase 1, which lasts from the effective date of the rulemaking (October 15, 2012) until

⁴² 33 U.S.C. §1317(b)(1); 40 C.F.R. Part 403.

⁴³ 42 U.S.C. §7411(b)(1)(B).

⁴⁴ Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, 77 Fed. Reg. 49,490 (August 16, 2012).

⁴⁵ For a more detailed explanation of the “green completion” technique, see CRS Report R42833, *Air Quality Issues in Natural Gas Systems*, by Richard K. Lattanzio.

January 1, 2015, industry must reduce VOC emissions at new hydraulic fracturing sites either by using a “completion combustion device” in a technique commonly referred to as “flaring,”⁴⁶ or by employing the green completion process.⁴⁷ After January 1, 2015, all hydraulically fractured wells must employ green completion.⁴⁸ These requirements apply both to new hydraulic fracturing operations and to refracturing of existing wells.⁴⁹ The regulations also establish reporting requirements for owners and operators of hydraulically fractured and refractured wells prior to the start of well completion.⁵⁰

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.⁵¹ 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.⁵²

Resource Conservation and Recovery Act⁵³

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).⁵⁴ Subtitle C of RCRA established a framework for EPA, or authorized states, to regulate waste identified as “hazardous.”⁵⁵ 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.⁵⁶ EPA has primary authority to implement the federal hazardous waste program,⁵⁷ but was required to develop procedures for states to become authorized to implement that program.⁵⁸ Most states have chosen to do so.⁵⁹

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.⁶⁰

⁴⁶ This process burns off the gas that would otherwise escape during the well completion process.

⁴⁷ 77 Fed. Reg. at 49,499.

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

⁵³ Linda Luther, Analyst in Environmental Policy, Resources, Science, and Industry Division, contributed to the preparation of this section of the report.

⁵⁴ The 1976 amendments to the Solid Waste Disposal Act were so comprehensive that the law is more commonly referred to as RCRA.

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

⁵⁶ 42 U.S.C. §§6921-25.

⁵⁷ 42 U.S.C. §§6927-28.

⁵⁸ 42 U.S.C. §§6926, 6929.

⁵⁹ See EPA’s “RCRA State Authorization” web page at <http://www.epa.gov/osw/laws-regs/state/index.htm>.

⁶⁰ 42 U.S.C. §§6907 and 6941.

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.⁶¹ 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.⁶² 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.⁶³ The Bentsen amendment required EPA to conduct a study of E&P waste and submit its findings to Congress.⁶⁴ 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.”⁶⁵

In its 1987 report to Congress,⁶⁶ 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,⁶⁷ 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.⁶⁸

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. EPA clarified the Subtitle C exemption.⁶⁹ In 2002, EPA issued guidance regarding the scope of the exemption, including examples of exempt and non-exempt E&P wastes.⁷⁰ EPA listed produced water and drilling fluids as exempt wastes; and unused fracturing fluids or acids as non-exempt waste.⁷¹

⁶¹ 42 U.S.C. §6921.

⁶² Solid Waste Disposal Act Amendments of 1980, P.L. 96-482, §7, 42 U.S.C. §6921(b)(2)(A).

⁶³ S. Rept. 96-172, at 6 (1979).

⁶⁴ The study criteria are specified at 42 U.S.C. §6982(m).

⁶⁵ 42 U.S.C. §6921(b)(2)(C).

⁶⁶ EPA, *Report to Congress: Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy* (December 1987), <http://www.epa.gov/osw/nonhaz/industrial/special/oil/530sw88003a.pdf>

⁶⁷ Regulatory Determination for Oil and Gas and Geothermal Exploration, Development and Production Wastes, 53 Fed. Reg. 25446 (July 6, 1988).

⁶⁸ *Id.*

⁶⁹ 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. 15284 (March 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>.

⁷⁰ EPA October 2002 guidance, at pp. 10-11.

⁷¹ *Id.*

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).⁷²

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).⁷³ 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).

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.⁷⁴ 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.”⁷⁵ 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.”⁷⁶ 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.”⁷⁷

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.⁷⁸ Based on its finding, EPA could possibly review and revise its 1988 regulatory determination.

⁷² A waste may be deemed hazardous based on reactive, ignitable, corrosive or toxic characteristics specified at 40 C.F.R. §261.20-.24.

⁷³ Department of Energy, *Modern Shale Gas Development in the United States: A Primer* 66-71 (2009), http://www.netl.doe.gov/technologies/oil-gas/publications/EPreports/Shale_Gas_Primer_2009.pdf.

⁷⁴ 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* (Sept. 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).

⁷⁵ *NRDC Petition* at 1.

⁷⁶ *Id.* at 5.

⁷⁷ *Id.* at 4.

⁷⁸ 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>.

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.⁷⁹ 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 Act⁸⁰

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),⁸¹ 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 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.⁸² 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.⁸³ The President’s response and enforcement authorities under CERCLA are delegated by Executive Order to the Environmental Protection Agency (EPA) and certain other federal departments and agencies to fulfill various functions under the statute.⁸⁴

Although the sites at which hydraulic fracturing is conducted may not fit the typical mold of Superfund sites, it is possible that hydraulic fracturing operations⁸⁵ could result in the release of hazardous substances into the environment at or under the surface in a manner that may endanger

⁷⁹ 42 U.S.C. §6921(b)(2)(C).

⁸⁰ David M. Bearden, Specialist in Environmental Policy, Resources, Science, and Industry Division, contributed to the preparation of this section of the report.

⁸¹ 42 U.S.C. §§9601-9675.

⁸² 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.

⁸³ 42 U.S.C. §9607(a).

⁸⁴ 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.

⁸⁵ 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.

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.⁸⁶ 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 ... and the term does not include natural gas, natural gas liquids, liquefied natural gas or synthetic gas usable for fuel.”⁸⁷ 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.”⁸⁸ 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.⁸⁹ 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

⁸⁶ See EPA, Substances Covered Under Reporting Requirement, Petroleum Exclusion, http://www.epa.gov/osweroe1/content/reporting/faq_subs.htm.

⁸⁷ 42 U.S.C. §9601(14).

⁸⁸ 42 U.S.C. §9607(j).

⁸⁹ 42 U.S.C. §9601(10).

natural gas, or the reinjection of produced waters.⁹⁰ 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 CERCLA⁹¹ in 2008 that cited concerns of residents about groundwater quality.⁹² EPA issued a draft investigation report for the Pavillion site on December 8, 2011, but the report has not been finalized to date.⁹³ On June 20, 2013, EPA announced that it does not plan to finalize its groundwater investigation report for the Pavillion site.⁹⁴ 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.⁹⁵ The state intends to conclude its investigation and release a final report by September 30, 2014.⁹⁶

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.”⁹⁷ 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.⁹⁸ EPA announced on July 25, 2012 that it had completed its

⁹⁰ 42 U.S.C. §9601(10)(I).

⁹¹ 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.*

⁹² 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.

⁹³ 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 Peter Folger, Mary Tiemann, and David M. Bearden.

⁹⁴ 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>.

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ 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%20001-19-12.PDF>.

⁹⁸ *Id.*

groundwater investigation at the Dimock site and determined that contaminant levels did not warrant further action by the agency.⁹⁹

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 Act¹⁰⁰

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 decision-making process, but does not compel agencies to choose a particular course of action.¹⁰¹ 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.¹⁰² These include some actions related to oil and gas exploration and production on federal lands.¹⁰³

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,¹⁰⁴ 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 three 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.

⁹⁹ Press release: “EPA Completes Drinking Water Sampling in Dimock, PA,” available at <http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/1a6e49d193e1007585257a46005b61ad!opendocument>

¹⁰⁰ Linda Luther, Analyst in Environmental Policy, Resources, Science, and Industry Division, contributed to the preparation of this section of the report.

¹⁰¹ See 42 U.S.C. §4332. For more information on the legal aspects of NEPA, see CRS Report RS20621, *Overview of National Environmental Policy Act (NEPA) Requirements*, by Kristina Alexander. For a discussion of the policy aspects of NEPA, see CRS Report RL33152, *The National Environmental Policy Act (NEPA): Background and Implementation*, by Linda Luther.

¹⁰² 40 C.F.R. §1508.4.

¹⁰³ 42 U.S.C. §15942.

¹⁰⁴ 42 U.S.C. §4332.

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.¹⁰⁵ The shale formation has been 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.¹⁰⁶ 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.¹⁰⁷ 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.¹⁰⁸

During the public comment period for the EA, several parties expressed concerns about the potential environmental effects of hydraulic fracturing.¹⁰⁹ However, BLM declined to analyze these impacts because, in its view, they were “not under the authority or within the jurisdiction of the BLM.”¹¹⁰ After issuing a FONSI, BLM proceeded with the auction.¹¹¹

The Council on Environmental Quality (CEQ) promulgated regulations implementing NEPA that are broadly applicable to all federal agencies.¹¹² 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.¹¹³ To determine what constitutes “significant” effects, CEQ regulations require agencies to consider the context of the action and intensity or severity of its impacts.¹¹⁴ Environmental impacts that must be considered include those identified by CEQ as direct, indirect (reasonably foreseeable future impacts), or cumulative.¹¹⁵

The district court examined the ten factors CEQ regulations identify as requiring consideration when determining the severity of an action’s impacts.¹¹⁶ 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

¹⁰⁵ 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. March 31, 2013).

¹⁰⁶ *Id.* at 2-3.

¹⁰⁷ *Id.* at 12.

¹⁰⁸ *Id.* at 1.

¹⁰⁹ *Id.* at 6-7.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 10. The FONSI discussed potential impacts on protected wildlife and plant species but did not discuss hydraulic fracturing. *Id.* at 27.

¹¹² 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).

¹¹³ 40 C.F.R. §§1501.3-4.

¹¹⁴ 40 C.F.R. §1508.27.

¹¹⁵ 40 C.F.R. §1508.8.

¹¹⁶ Order Re: Cross Motions for Summary Judgment at 20.

are uncertain.¹¹⁷ The court also found that BLM did not properly investigate possible direct or indirect impacts of its decision.¹¹⁸

In March 2013, the district court held that the BLM NEPA review was “erroneous as a matter of law.”¹¹⁹ 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.¹²⁰

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.¹²¹ The compact creates the Delaware River Basin Commission (DRBC) and grants it certain powers to manage the water resources of the basin.¹²² 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 projects.”¹²³ In May 2011, New York Attorney General Eric Schneiderman 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.¹²⁴ In November 2011, the complaint was amended to add the DRBC and its executive director as defendants.¹²⁵ 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.”¹²⁶ 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.¹²⁷ New York alleged that the refusal of the five federal

¹¹⁷ *Id.* at 24-27.

¹¹⁸ *Id.* at 26-28.

¹¹⁹ *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.

¹²⁰ Order Re: Cross Motions for Summary Judgment at 1-2.

¹²¹ Delaware River Basin Compact, 75 Stat. at 689. The text of the compact is contained in the federal law approving the compact.

¹²² Delaware River Basin Compact §§1.3(c), (e); 2.1; 3.1.

¹²³ Delaware River Basin Commission, Draft Natural Gas Development Regulations, <http://www.nj.gov/drbc/programs/natural/draft-regulations.html>.

¹²⁴ 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).

¹²⁵ Amended Complaint at ¶ 1, New York v. U.S. Army Corps of Eng’rs, No. 11-2599 (E.D.N.Y. Nov. 22, 2011).

¹²⁶ 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.

¹²⁷ *Id.* at ¶¶ 37, 95, 99-100, 109-11.

agencies that are represented by the DRBC's federal member¹²⁸ to prepare an EIS was not in accordance with law and was arbitrary, capricious, and an abuse of discretion under the APA.¹²⁹ Because it appears that the Delaware River Basin Compact exempts the DRBC from compliance with the APA,¹³⁰ New York argued that the DRBC's refusal to prepare an EIS was subject to judicial review under the compact itself.¹³¹

The federal defendants moved to dismiss the lawsuit on the grounds that the court lacked subject matter jurisdiction over the plaintiff's claims.¹³² 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."¹³³ The federal defendants argued that no federal action existed because, in their view, the DRBC was not a federal agency.¹³⁴ In addition, the federal defendants argued that they did not exercise enough decision-making power, authority, or control over the DRBC's development of the proposed regulations to render it a federal action.¹³⁵

In September 2012, the United States 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.¹³⁶ 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.¹³⁷ Alternatively, the court held that it lacked subject matter jurisdiction because New York's complaint was not ripe for review.¹³⁸ 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.¹³⁹

¹²⁸ These agencies are the Army Corps of Engineers, Fish and Wildlife Service, National Park Service, Department of the Interior, and Environmental Protection Agency.

¹²⁹ *Id.* at ¶ 106; *see also* 5 U.S.C. § 706(2)(A). NEPA does not contain a private right of action.

¹³⁰ *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.").

¹³¹ Amended Complaint at ¶¶ 11, 115; *see also* Delaware River Basin Compact, § 3.3(c), 75 Stat. 688, 693 ("Any other action of the commission pursuant to this section shall be subject to judicial review in any court of competent jurisdiction.").

¹³² 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).

¹³³ *Id.* at 33.

¹³⁴ *Id.* at 33-34.

¹³⁵ *Id.* at 34-39.

¹³⁶ 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).

¹³⁷ *Id.* at 22.

¹³⁸ *Id.* at 28.

¹³⁹ *Id.* at 23.

USDA Rural Development Agency: Mortgages on Properties with Drilling Leases

The U.S. Department of Agriculture's (USDA) Rural Development agency helps low to moderate income homebuyers purchase single-family homes in rural communities.¹⁴⁰ Rural Development assistance may be provided in the form of grants, direct loans, or loan guarantees to qualified homebuyers. As a federal action, the provision of financial assistance to homebuyers is subject to NEPA. However, that assistance generally requires minimal NEPA review.

While all federal actions are subject to NEPA, CEQ regulations recognize that 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.¹⁴¹ In developing their own procedures to implement NEPA, federal agencies were required to identify agency actions likely processed as categorical exclusions (CEs). In its procedures implementing NEPA,¹⁴² Rural Development identifies CEs for actions associated with its "housing assistance" activities, including "the provision of financial assistance for the purchase of a single family dwelling or a multi-family project serving no more than four families, i.e. units".¹⁴³

In rural communities, property owners sometimes lease subsurface mineral rights to oil and gas companies. Homebuyers seeking assistance from Rural Development may want to purchase a home on property with existing leases for gas and oil exploration. Such property may have ongoing oil and gas drilling operations or have such operations in the future, including hydraulic fracturing. The potential for properties to have ongoing or future oil and gas exploration and development activities has led some, including Rural Development employees, to question whether assistance to purchase properties with existing oil and gas leases should involve the preparation of an EA or EIS.¹⁴⁴

An action normally processed as a CE may require the preparation of an EA or EIS if that action involves "extraordinary circumstances" that may have a significant environmental effect.¹⁴⁵ As required by CEQ, Rural Development's NEPA procedures identify extraordinary circumstances potentially applicable to its actions.¹⁴⁶ In March 2012, Rural Development's Housing and Community Facilities Program issued an Administrative Notice clarifying that the presence of gas exploration leases on a property alone does not constitute the extraordinary circumstances identified in its NEPA procedures or involve policy considerations that would require additional

¹⁴⁰ USDA, Rural Development Housing and Community Facilities Programs, *available at* http://www.rurdev.usda.gov/rhs/common/program_info.htm.

¹⁴¹ 40 C.F.R. §1508.4.

¹⁴² Departmental "Environmental Program" guidelines, including those that implement NEPA, are provided in Rural Development Instruction Part 1940, Subpart G (RD Instruction 1940-G). As required in the CEQ regulations (at 40 C.F.R. §§1507.3 and 1508.4), Rural Development identified CEs under §1940.310; methods to ensure proper implementation of CEs are listed under §1940.317.

¹⁴³ *Id.* §1940.310(b)(1).

¹⁴⁴ Ian Urbina, *Mortgages for Drilling Properties May Face Hurdle*, N.Y. Times, Mar. 18, 2012, *available at* <http://www.nytimes.com/2012/03/19/us/drilling-property-mortgages-may-get-closer-look-from-agriculture-dept.html?pagewanted=all>.

¹⁴⁵ At §1940.317(e); as required under 40 C.F.R. §1507.3(b)(2)(ii).

¹⁴⁶ *Id.* §1940.317(e).

NEPA review.¹⁴⁷ The March 2012 notice also states that security and appraisal requirements applicable to property serving as collateral would continue to apply to properties with existing oil and gas leases.¹⁴⁸

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.¹⁴⁹ A primary function of these chemicals is to assist the movement of the proppant into the fractures made in the formation.¹⁵⁰ Although some of these chemicals may be harmless, others may be hazardous to health and the environment.¹⁵¹ 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.¹⁵²

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.¹⁵³ 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.¹⁵⁴ However, some manufacturers of the additives, as well as others in the industry, remain reluctant to disclose information about the chemicals they use. These parties have expressed concerns that disclosure would reveal proprietary chemical formulas to their competitors, destroying the parties' valuable trade secrets.¹⁵⁵

¹⁴⁷ USDA, Rural Development Administrative Notice No. 4632 (1940-G), "NEPA Compliance for Rural Development Single Family Housing Loan Programs" (March 2012), *available at* <http://www.rurdev.usda.gov/SupportDocuments/an4632.pdf>.

¹⁴⁸ *Id.* Security and appraisal requirements are found at RD Instruction 1980-D, and RD Handbook 3550.

¹⁴⁹ Department of Energy, *Modern Shale Gas Development in the United States: A Primer*, 56, 61-64 (2009) [hereinafter *Department of Energy Primer*], http://www.netl.doe.gov/technologies/oil-gas/publications/epreports/shale_gas_primer_2009.pdf.

¹⁵⁰ *Id.*; Reservoir Stimulation §§7-6.2, 7-6.4 (Michael J. Economides et al. eds, 3d ed. 2000).

¹⁵¹ 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>.

¹⁵² *Minority Report on Fracturing Chemicals* at 5.

¹⁵³ 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.

¹⁵⁴ *See* Lisa Song, *Secrecy Loophole Could Still Weaken BLM's Tougher Fracturing Regs*, InsideClimate News, February 15, 2012.

¹⁵⁵ *See* *Minority Report on Fracturing Chemicals* at 11-12. Some manufacturers of fracturing fluid additives have (continued...)

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.¹⁵⁶ The Shale Gas Production Subcommittee of the Secretary of Energy Advisory Board made several recommendations intended to address these effects.¹⁵⁷ 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.¹⁵⁸ 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.¹⁵⁹ 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.¹⁶⁰

Several states have adopted chemical disclosure requirements in the form of laws, regulations, or administrative interpretations.¹⁶¹ 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.¹⁶²

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.¹⁶³ Under the act, EPA may require manufacturers and processors of chemicals to develop, maintain, and

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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>.

¹⁵⁶ For more on the subcommittee’s work, see *Improving the Safety & Environmental Performance of Hydraulic Fracturing*, <http://www.shalegas.energy.gov/>.

¹⁵⁷ Department of Energy, Shale Gas Production Subcommittee Second Ninety Day Report 1 (2011), http://www.shalegas.energy.gov/resources/111811_final_report.pdf.

¹⁵⁸ *Id.* at 5-6, 17.

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

¹⁶⁰ Earthjustice, Citizen Petition Under Toxic Substances Control Act Regarding the Chemical Substances and Mixtures Used in Oil and Gas Exploration or Production 1, 22, http://earthjustice.org/sites/default/files/fracking_petition.pdf; Earthworks, Petition to Add the Oil and Gas Extraction Industry, Standard Industrial Classification Code 13, to the List of Facilities Required to Report under the Toxics Release Inventory 1, http://www.earthworksaaction.org/library/detail/petition_to_add_oil_gas_extraction_to_TRI.

¹⁶¹ 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.

¹⁶² Interstate Oil and Gas Compact Commission, Hydraulic Fracturing, <http://www.iogcc.state.ok.us/hydraulic-fracturing>.

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

report data on the chemicals' effects on health and the environment.¹⁶⁴ EPA may also place certain restrictions on chemicals when the agency has a reasonable basis to conclude that they present—or will present—an unreasonable risk of injury to health or the environment.¹⁶⁵ However, EPA may regulate the chemicals only “to the extent necessary to protect adequately against such risk using the least burdensome requirements.”¹⁶⁶

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).¹⁶⁷ 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.¹⁶⁸ 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.¹⁶⁹ 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.”¹⁷⁰

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.¹⁷¹ 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.¹⁷² In the petitioners' view, testing was needed to obtain sufficient data on the chemicals' effects because existing federal and state disclosure requirements were inadequate.¹⁷³

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.¹⁷⁴ In a short paragraph, the

¹⁶⁴ *E.g.*, 15 U.S.C. §§2603, 2607.

¹⁶⁵ 15 U.S.C. §2605(a).

¹⁶⁶ *Id.* 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). For more information on FIFRA, see CRS Report RL31921, *Pesticide Law: A Summary of the Statutes*, by Linda-Jo Schierow and Robert Esworthy.

¹⁶⁷ 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.

¹⁶⁸ 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.

¹⁶⁹ 15 U.S.C. §2607.

¹⁷⁰ *Earthjustice Petition* at 1.

¹⁷¹ *Earthjustice Petition* at 13-19.

¹⁷² *Id.* at 19.

¹⁷³ *Id.* at 5-10.

¹⁷⁴ Letter from Assistant Administrator Stephen A. Owens to Deborah Goldberg (Nov. 2, 2011), <http://www.epa.gov/> (continued...)

agency wrote that the petitioners had failed to present sufficient facts for EPA to find that such a rule was necessary.¹⁷⁵ However, in a November 23, 2011, letter, EPA partially granted petitioners' Section 8(a) and Section 8(d) requests.¹⁷⁶ The agency wrote that it would initiate a rulemaking to gather available data on the chemicals used in hydraulic fracturing.¹⁷⁷ However, the agency declined to issue rules for other chemicals in the oil and gas exploration and production sector.¹⁷⁸ 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."¹⁷⁹ As of the date of this report, neither a proposed rule nor an advance notice of proposed rulemaking has been issued.¹⁸⁰

Occupational Safety and Health Act

The Occupational Safety and Health Administration has promulgated a set of regulations under the Occupational Safety and Health Act (OSHA) referred to as the Hazard Communication Standard (HCS).¹⁸¹ 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.¹⁸² Manufacturers and importers must obtain or develop Material Safety Data Sheets (MSDS) for hydraulic fracturing chemicals that are hazardous according to OSHA standards.¹⁸³ 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.¹⁸⁴ The HCS requires operators to maintain MSDS for hazardous chemicals at the job site.¹⁸⁵

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.¹⁸⁶

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oppt/chemtest/pubs/SO.Earthjustice.Response.11.2.pdf.

¹⁷⁵ *Id.*

¹⁷⁶ Letter from Assistant Administrator Stephen A. Owens to Deborah Goldberg (Nov. 23, 2011), http://www.epa.gov/oppt/chemtest/pubs/EPA_Letter_to_Earthjustice_on_TSCA_Petition.pdf.

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ For the current status of the rulemaking, see <http://yosemite.epa.gov/oepi/RuleGate.nsf/byRIN/2070-AJ93>.

¹⁸¹ 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).

¹⁸² *Id.* §1910.1200(a)-(b) (2011).

¹⁸³ *See id.* §1910.1200(d), (g).

¹⁸⁴ *See id.* §1910.1200(g).

¹⁸⁵ *See id.*

¹⁸⁶ *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*, (continued...)

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.¹⁸⁷ 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.¹⁸⁸ 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.¹⁸⁹

The act seeks to induce each state to establish a State Emergency Response Commission (SERC).¹⁹⁰ 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.¹⁹¹ 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.¹⁹² 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.¹⁹³ 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 accidental release of a chemical that is an EHS occurs in an amount in excess of its reportable

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http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1495173/pdf/jgi_01217.pdf.

¹⁸⁷ *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).

¹⁸⁸ H. Rep. No. 99-962, at 281 (1986) (Conf. Rep.). For more on EPCRA, see CRS Report RL32683, *The Emergency Planning and Community Right-to-Know Act (EPCRA): A Summary*, by Linda-Jo Schierow.

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

¹⁹⁰ 42 U.S.C. §11001(a).

¹⁹¹ *Id.* §11001(a)-(c).

¹⁹² *Id.* §11001(c), 11003.

¹⁹³ *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).

quantity from a facility where an EHS is produced, used, or stored.¹⁹⁴ This information must be made available to the public.¹⁹⁵

Section 311 of EPCRA generally requires that facility owners or operators submit an MSDS for each hazardous chemical¹⁹⁶ present that exceeds an EPA-determined threshold level, or a list of such chemicals, to the LEPC, SERC, and the local fire department.¹⁹⁷ For non-proprietary information, the act generally requires a LEPC to provide an MSDS to a member of the public on request.¹⁹⁸ 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.¹⁹⁹ 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.²⁰⁰

However, most states require the submission of "Tier II information."²⁰¹ 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.²⁰² Tier II information for the prior calendar year for a particular facility must be made available to members of the public upon written request.²⁰³ A SERC or LEPC must disclose to the

¹⁹⁴ *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).

¹⁹⁵ *Id.* §11044.

¹⁹⁶ "Hazardous chemical" in this section of EPCRA refers to chemicals that require an MSDS under OSHA Act. It is a more inclusive term than EHS.

¹⁹⁷ *Id.* §11021.

¹⁹⁸ *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.

¹⁹⁹ *Id.* §11022.

²⁰⁰ *Id.* §11022(d).

²⁰¹ Environmental Protection Agency, Tier II Chemical Inventory Reports, <http://www.epa.gov/osweroe1/content/epcra/tier2.htm>.

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

²⁰³ 42 U.S.C. §11022(e).

requester any non-proprietary information it possesses.²⁰⁴ 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.²⁰⁵

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.²⁰⁶ 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.²⁰⁷ 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.²⁰⁸ Facilities used by the oil and gas industry are generally not included in the industry codes required to report under the TRI.²⁰⁹

Section 313(b) allows EPA to add or delete industry codes as needed.²¹⁰ 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.²¹¹

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

²⁰⁴ *Id.*

²⁰⁵ *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.*

²⁰⁶ *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.

²⁰⁷ *Id.* §11023(h), (j). For more information on this website, see <http://www.epa.gov/tri/>.

²⁰⁸ 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.*

²⁰⁹ GAO 12-874, at 184.

²¹⁰ 42 U.S.C. §11023(b).

²¹¹ 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.

pursuant to EPCRA section 313 or to otherwise further the purposes of EPCRA section 313 (information factor).²¹²

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.²¹³ 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.²¹⁴ Finally, petitioners argued that the information factor was satisfied because existing federal and state disclosure laws were “inadequate.”²¹⁵ 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.²¹⁶ Additionally, some worry that the proximity of oil and gas operations to their homes will cause a decline in the values of their properties.²¹⁷ In response to these concerns, many local governments have increased their regulation of hydraulic fracturing and related oil and gas production activities.²¹⁸ Some requirements imposed by local governments appear to be intended to regulate the land use aspects of oil and gas operations.²¹⁹ However, other requirements have tended toward regulation of the technical aspects of oil and gas operations.²²⁰

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.²²¹ 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.²²² In matters of mixed state and local

²¹² Final Rule, Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know, 62 Fed. Reg. 23,834, 23,842 (May 1, 1997).

²¹³ Earthworks Petition at 7.

²¹⁴ *Id.*

²¹⁵ *Id.* at 7-8.

²¹⁶ *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>.

²¹⁷ *Id.*

²¹⁸ *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.

²¹⁹ *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.”).

²²⁰ *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.”).

²²¹ *See, e.g.*, Robinson Twp. v. Commonwealth, 52 A.3d 463, 483 (Pa. Commw. Ct. 2012).

²²² *Id.*

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.²²³

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.²²⁴

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.²²⁵ Two state courts in New York have held that, under that state’s laws, a municipality may generally regulate *where* oil and gas development occurs but not *how* it occurs.²²⁶ In the unusual case of *Robinson Township v. Commonwealth*, a Pennsylvania appeals court considered a state law 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.²²⁷ Pennsylvania had argued that the law would advance the commonwealth’s legitimate interest in the safe and efficient 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.²²⁸ 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 towns substantive due process under the state constitution.²²⁹

A West Virginia case illustrates the doctrine of field preemption in the oil and gas context.²³⁰ 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.²³¹

²²³ 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.”) (citations omitted).

²²⁴ E.g., *Bd. of County Comm’rs of La Plata County v. Bowen/Edwards Assocs., Inc.*, 830 P.2d 1045, 1056-57 (Colo. 1992).

²²⁵ *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).

²²⁶ *Cooperstown Holstein Corp. v. Town of Middlefield*, 943 N.Y.S.2d 722, 729 (N.Y. Sup. Ct. 2012); *Anschutz Exploration Corp. v. Town of Dryden*, 940 N.Y.S.2d 458, 467 (N.Y. Sup. Ct. 2012). The court’s decision in *Anschutz* was upheld on appeal to the New York Supreme Court, Appellate Division. See Opinion and Order at 15, *Norse Energy Corp. USA v. Town of Dryden*, No. 515227 (N.Y. App. Div. May 2, 2013).

²²⁷ *Robinson Twp. v. Commonwealth*, 52 A.3d 463, 485 (Pa. Commw. Ct. 2012). The case is on appeal to the Pennsylvania Supreme Court.

²²⁸ *Id.* at 483.

²²⁹ *Id.* at 485.

²³⁰ Order at 6, *Ne. Natural Energy, LLC, v. City of Morgantown*, No.11-C-411 (W. Va. Cir. Ct. Monongalia County, 2011).

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.²³² 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.²³³ 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.²³⁴ 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.²³⁵

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."²³⁶ The governor created a task force to consider how local governments could coordinate their regulatory efforts with the state to avoid litigation.²³⁷ In April, 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."²³⁸ 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.²³⁹ The task force also suggested that the local governments designate a representative to provide input to operators and the COGCC during the permitting process.²⁴⁰

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.²⁴¹ Plaintiffs have

(...continued)

²³¹ *Id.* at 9.

²³² *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 a court would issue similar decisions today. *See* Jeff Overley, *Oil And Gas Group Sues Colorado Town To Kill Fracking Ban*, Law360 (Dec. 18, 2012). For a New York court case addressing conflict preemption, see *Opinion and Order at 13-15, Norse Energy Corp. USA v. Town of Dryden*, No. 515227 (N.Y. App. Div. May 2, 2013).

²³³ *Id.* at 1060.

²³⁴ *Id.*

²³⁵ *Voss v. Lundvall Bros., Inc.*, 830 P.2d 1061, 1062 (Colo. 1992).

²³⁶ John W. Hickenlooper, Executive Order 2012-002, Creating the Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development (Feb. 29, 2012).

²³⁷ *Id.*

²³⁸ 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).

²³⁹ Task Force on Cooperative Strategies Regarding State and Local Regulation of Oil and Gas Development: Protocols Recommendations 1-2.

²⁴⁰ *Id.*

²⁴¹ *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).

claimed that damages have occurred as a result hydraulic fracturing and related oil and gas operations, including contamination of land from drilling waste placed into pits on the plaintiffs' properties;²⁴² noise and air pollution from natural gas compressor stations;²⁴³ contamination of water supplies;²⁴⁴ damage to a house allegedly caused by vibrations from nearby drilling activity;²⁴⁵ and personal injury.²⁴⁶ Common law causes of action brought under state tort law have included claims for nuisance, trespass, negligence, and strict liability, among others.²⁴⁷ Plaintiffs have sought monetary and, in some cases, injunctive relief, including remediation of contaminated property and medical monitoring.²⁴⁸

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 activities of the defendants caused them harm.²⁴⁹ 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.²⁵⁰ Defendants 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."²⁵¹ However, 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.²⁵²

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

²⁴² *Teel v. Chesapeake Appalachia, LLC*, 2012 U.S. Dist. LEXIS 153509, at *1 (N.D. W. Va. Oct. 25, 2012).

²⁴³ *Ginardi*, 2011 U.S. Dist. LEXIS 89054, at *2.

²⁴⁴ *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).

²⁴⁵ *Hiser v. XTO Energy Inc.*, 2012 U.S. Dist. LEXIS 114084, at *1 (E.D. Ark. Aug. 14, 2012).

²⁴⁶ *Kamuck v. Shell Energy Holdings GP, LLC*, 2012 U.S. Dist. LEXIS 125566, at *5 (M.D. Pa. Sept. 5, 2012).

²⁴⁷ *E.g., Teel*, 2012 U.S. Dist. LEXIS 153509, at *2.

²⁴⁸ *E.g., id.*; *Fiorentino v. Cabot Oil & Gas Corp.*, 750 F. Supp. 2d 506, 510 (M.D. Pa. 2010).

²⁴⁹ *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.").

²⁵⁰ *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. Nov. 18, 1986).

²⁵¹ 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).

²⁵² See, e.g., *Roth*, 287 F.R.D. at 295.

harm.”²⁵³ 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.²⁵⁴

It does not appear that a court has yet decided whether hydraulic fracturing is an abnormally dangerous activity. One court that considered the question wrote that it could not make the determination until a full record had been established at the summary judgment stage of the litigation.²⁵⁵ Another court speculated that it may be difficult for plaintiffs to meet factors (d), (e), and (f) in the Restatement definition at the summary judgment stage.²⁵⁶

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.”²⁵⁷ 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.”²⁵⁸ 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.²⁵⁹ Plaintiffs have also argued that emissions of air pollution over their land constitute a trespass.²⁶⁰

Pending Legislation

On May 9, 2013, the Fracturing Responsibility and Awareness of Chemicals Act of 2013, H.R. 1921, was introduced in the House of Representatives. The bill contains two amendments to the Safe Drinking Water Act (SDWA)—one that would amend the definition of underground injection to include hydraulic fracturing, and another that would create a new disclosure requirement for the chemicals used in hydraulic fracturing. A similar bill, S. 1135, was introduced in the Senate by Senator Robert Casey on June 11, 2013.

²⁵³ Restatement (Second) of Torts §519 (1977).

²⁵⁴ *Id.* §§519-20; *see also* Fiorentino v. Cabot Oil & Gas Corp., 750 F. Supp. 2d 506, 512 (M.D. Pa. 2010).

²⁵⁵ Tucker v. Sw. Energy Co., 2012 U.S. Dist. LEXIS 20697, at *9-10 (E.D. Ark. Feb. 17, 2012).

²⁵⁶ Berish v. Sw. Energy Prod. Co., 763 F. Supp. 2d 702, 706 (M.D. Pa. 2011).

²⁵⁷ Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 4 (Tex. 2008).

²⁵⁸ *Id.* at 12-13.

²⁵⁹ Teel v. Chesapeake Appalachia, LLC, 2012 U.S. Dist. LEXIS 153509, at *2-3, 15 (N.D. W. Va. Oct. 25, 2012).

²⁶⁰ Tucker, 2012 U.S. Dist. LEXIS 20697, at *10-11; *see also* Restatement (Second) of Torts §158 cmt. i (1977).

H.R. 1921 proposes that the definition of “underground injection” that was amended in 2005 to exclude most hydraulic fracturing would be amended once again to include “the underground injection of fluids or propping agents pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities,” excluding injection of natural gas for subsurface storage.²⁶¹ This would not only repeal the amended definition of “underground injection” that was enacted as part of EPAAct 2005, which excluded hydraulic fracturing, but essentially would codify the court’s decision in *LEAF I* and clear up any ambiguity regarding regulation of hydraulic fracturing under the SDWA.

The second amendment to the SDWA in the bill would create a new hydraulic fracturing disclosure requirement. H.R. 1921 would create a new statutory obligation requiring anyone conducting hydraulic fracturing to

disclose to the State (or the Administrator [of the Environmental Protection Agency] if the Administrator has primary enforcement responsibility in the State)—(I) prior to the commencement of any hydraulic fracturing operations at any lease area or portion thereof, a list of chemicals intended for use in any underground injection during such operations, including identification of the chemical constituents of mixtures, Chemical Abstracts Service numbers for each chemical and constituent, material safety data sheets when available, and the anticipated volume of each chemical; and (II) not later than 30 days after the end of any hydraulic fracturing operations the list of chemicals used in each underground injection during such operations, including identification of the chemical constituents of mixtures, Chemical Abstracts Service numbers for each chemical and constituent, material safety data sheets when available, and the volume of each chemical used.²⁶²

The bill would also require that the state or EPA “make the disclosure of chemical constituents ... available to the public, including by posting the information on an appropriate Internet Web site,” and the bill clarifies that the disclosure requirements “do not authorize the State (or the [EPA]) to require the public disclosure of proprietary chemical formulas.”²⁶³ In other words, the disclosure requirements address only the chemicals used, not the manner of their use or the amounts or ratios in which they were used. This language attempts to protect proprietary business information, that is, “secret” formulas or practices that drilling companies may feel they should not be required to disclose to their competitors.

Furthermore, the bill would require operators to disclose proprietary chemical information to medical professionals in cases of medical emergencies.²⁶⁴ Although most state oil and gas rules do not require disclosure of proprietary chemical information to medical professionals, such disclosure broadly parallels federal requirements under the OSHAct.²⁶⁵ Calls for disclosure of hydraulic fracturing chemicals have increased as homeowners and others express concern about the potential presence of unknown chemicals in tainted well water near oil and gas operations.

²⁶¹ H.R. 1921, at §2(a).

²⁶² H.R. 1921, §2(b).

²⁶³ *Id.*

²⁶⁴ *Id.*

²⁶⁵ As described above, the Occupational Safety and Health Administration has promulgated a set of regulations under OSHAct, referred to as the Hazard Communication Standard (29 C.F.R. §1910.1200). Additionally, OSHAct regulations require operators to maintain MSDS for hazardous chemicals at the job site.

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.²⁶⁶ 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.²⁶⁷ Under EPCRA, facilities used by the oil and gas 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.²⁶⁸ In 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.²⁶⁹ 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.²⁷⁰

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.²⁷¹ 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.²⁷² 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.

²⁶⁶ P.L. 109-58 at §322.

²⁶⁷ Solid Waste Disposal Act Amendments of 1980, P.L. 96-482, §7, 42 U.S.C. §6921(b)(2)(A).

²⁶⁸ 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 (Sept. 8, 2010), http://docs.nrdc.org/energy/files/ene_10091301a.pdf.

²⁶⁹ 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.

²⁷⁰ 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.

²⁷¹ See the discussion above under “State Preemption of Municipal Land Use and Zoning Powers.”

²⁷² See the discussion above under “State Tort Law.”

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