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ENVIRONMENTAL HEALTH – HYDRAULIC FRACTURING

Fact Sheet

Summary of Federal Regulations, Regulatory Gaps and Proposed Legislation

The oil and gas extraction industry is subject to several federal regulatory programs. The purpose of this section is to briefly describe the federal regulations and requirements that apply to this sector, as well as to identify regulatory gaps or exemptions extended to oil and gas extraction. Finally, the fact sheet presents proposed legislation impacting this sector.

Clean Air Act

Overview

The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from stationary and mobile sources. The goal of the CAA is to "protect and enhance the nation's air resources so as to promote public health and welfare and the productive capacity of the population." CAA § 101(b). To achieve this goal, the Act requires the Environmental Protection Agency (EPA) to establish national standards for ambient air quality (NAAQS) and to implement, maintain and enforce such standards with the states.

Relevant Regulatory Provisions

CAA § 108-110: National Ambient Air Quality Standards (NAAQS)

- Under Title I, EPA is required to adopt NAAQS for "criteria pollutants," including ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. For these criteria pollutants, primary and secondary NAAQS are set to protect public health with an adequate margin of safety and to protect public welfare, respectively. § 109.
- Each state must submit a State Implementation Plan (SIP) specifying sources of air pollution and identifying the reductions necessary to assure compliance with the NAAQS. § 110.

CAA § 112: National Emission Standards for Hazardous Air Pollutants (NESHAPs)

- EPA is required to establish national uniform standards for each category or subcategory of "**major sources**" and "**area sources**" of hazardous air pollutants (HAPs) that reflect the maximum achievable control technology with more stringent standards being imposed if necessary to protect the public. § 112(d).

- Major sources are stationary sources, or groups of stationary sources, located in a contiguous area under common control that emits, ***in the aggregate***, more than **10 tons/yr** of any HAP or **25 tons/yr** of any combination of HAPs.
- Area sources are any stationary sources of HAPs that are not major sources.

CAA § 111: New Source Performance Standards (NSPS)

- Under § 111, EPA is required to establish nationally uniform, technology-based standards for new or modified ***major*** stationary sources (major buildings, structures, facilities or installations that emit ***any*** air pollutant) that cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare.

CAA § 160-169: Prevention of Significant Deterioration (PSD) of Air Quality

- The PSD provisions establish a national permitting program to limit the extent to which new sources, or the major modification of existing sources, deteriorate air quality in attainment areas (areas in which air quality already meets the level required by the NAAQS).
- The PSD program prevents the construction of any petroleum refinery, fuel conversion plant or petroleum storage and transfer facility that emits more than ***100 tons/yr*** of ***any*** pollutant unless a PSD permit is issued. § 165(a). For other sources, a PSD permit is required if the emissions of ***any*** air pollutant exceed ***250 tons/yr***.

CAA § 171-179B: Requirements for Nonattainment Areas

- Nonattainment provisions impose more stringent requirements to control pollution in nonattainment areas (areas that failed to meet the NAAQS), including the use of all reasonably available control technology by existing sources and a preconstruction permit program requiring new or modified major stationary sources to obtain offsetting emission reductions. § 172(c)(5); § 173(a)(1)(A).

Regulatory Gaps and Exemptions

CAA § 112: National Emission Standards for Hazardous Air Pollutants (NESHAPs)

- Under § 112(n)(4)(A), emissions from ***any*** **oil and gas** well, pipeline compressor, or pump station ***shall not be aggregated*** with emissions from other similar units when defining ***major sources***, nor are such emissions aggregated for any purpose under § 112.
- Under § 112(n)(4)(B), **oil and gas wells** may not be listed as an ***area source*** category ***unless*** the wells are "located in a metropolitan statistical area or consolidated metropolitan statistical area with over a million people," and EPA determines that emissions of HAPs from such wells present "more than a negligible risk of adverse effects to public health."
- Section 112(n)(5) initially required EPA to assess the hazards to public health and the environment resulting from the emission of hydrogen sulfide associated with the extraction of oil and natural gas resources. Although originally listed as an HAP, hydrogen sulfide was later removed by a joint resolution stating that the original listing was a clerical error.[1]

CAA § 111: New Source Performance Standards (NSPS)

- Currently, EPA does not list wells or well fields as a category subject to NSPS.

CAA § 160-169: Prevention of Significant Deterioration (PSD) of Air Quality

- At this time, wells and well fields are not a source category subject to permitting requirements.

CAA § 171-179B: Requirements for Nonattainment Areas

- Under the 1990 Amendments (specifically § 819 of Pub.L. 101-548), the nonattainment provisions do not apply to the production of and the equipment used in the exploration, production, development, storage or processing of

oil or natural gas from a stripper well property unless in a serious nonattainment area with a population exceeding 350,000 or areas in severe or extreme nonattainment. § 181 (note).

- Stripper wells are wells that produce up to 10 barrels of oil or 60,000 cubic feet of natural gas per day. Currently, stripper wells account for 17.8% and 9% of domestic oil and gas production, respectively.[2]

Proposed Legislation

The BREATHE (Bringing Reductions to Energy's Airborne Toxic Health Effects) Act

- H.R. 1204, introduced into the House on March 17, 2011, seeks to relist hydrogen sulfide as an HAP subject to regulation under CAA § 112. The House Committee on Energy and Commerce referred H.R. 1204 to the Subcommittee on Energy and Power on March 28, 2011.
- In addition, H.R. 1204 seeks to repeal the exemption under § 112(n)(4) that prevents oil and gas wells, pipelines, or pump stations under common control from being aggregated for purposes of defining major or area sources, which are subject to regulation.

Safe Drinking Water Act

Overview

The Safe Drinking Water Act (SDWA) establishes a national program to ensure the safety of drinking water supplied by public water supply systems; hence, ***the Act does not apply to individual wells that supply homes with water for human use and consumption***. Under the Act, EPA promulgates regulations ***for each contaminant*** that may have any adverse effect on health and that is known or anticipated to occur in such systems. SDWA § 300g-1. EPA is authorized to delegate primary enforcement responsibility to states that have drinking water regulations at least as stringent as the federal standards and adequate procedures for enforcement. SDWA § 300g-2. Finally, the Act establishes an underground injection control program to prevent danger to drinking water sources.

Relevant Regulatory Provisions

SWDA § 300h-300h-8: Underground Injection Control Program

- EPA is required to establish minimum requirements for state programs to prevent underground injections that endanger drinking water sources. § 300h(b)(1).
    - Underground injection is defined as the subsurface emplacement of fluids by well injection. § 300h(d)(1).
    - An underground injection is considered to endanger drinking water sources if it may result in the presence of any contaminant in underground waters that supply, or can reasonably be expected to supply, any public water system, and the presence of such contaminant may result in noncompliance with the national primary drinking water regulation or may otherwise adversely affect human health. § 300h(d)(2).

Regulatory Gaps and Exemptions

SDWA § 300h(b): Prohibition on Interfering or Impeding Regulations

- Unless requirements are ***essential*** to ensure underground sources of drinking water will not be endangered by injections, state underground injection control programs ***preclude*** EPA from prescribing requirements that interfere with or impede: 1) the underground injection of brine or other fluids that are brought to the surface **in connection with oil or natural gas production**, or 2) any underground injection for secondary or tertiary recovery of **oil or natural gas**. § 300h(b)(2).

SDWA § 300h(d): Exclusion from Underground Injection Definition

- The term "underground injection" expressly excludes the underground injection of fluids or propping agents (other than diesel fuels) pursuant to ***hydraulic fracturing operations*** for oil, gas or geothermal production. § 300h(d)(2).

Proposed Legislation

The FRAC (Fracturing Responsibility and Awareness of Chemicals) Act of 2011

- H.R. 1084 and S. 587, introduced into the House and Senate on March 15, 2011, seek to amend the definition of underground injection to expressly include the underground injection of fluids or propping agents pursuant to hydraulic fracturing operations relating to oil and gas production. This amendment would exclude the underground injection of natural gas for storage purposes.
- H.R. 1084 and S. 587 also seek to compel the disclosure of all chemicals intended for use in any underground injection operation before the commencement of the operation. An additional disclosure of the chemicals actually used would also be required after completion of the hydraulic fracturing operation.
- H.R. 1084 was referred to the Subcommittee on Environment and the Economy on March 21, 2011; S. 587 was referred to the Committee on Environment and Public Works and hearings were held with the Subcommittee on Water and Wildlife on April 12, 2011.

Clean Water Act

Overview

The Clean Water Act (CWA) is a comprehensive regulatory program to restore and maintain the chemical, physical and biological integrity of the nation's waters. CWA § 101(a). The goals of the CWA include eliminating the discharge of pollutants into navigable waters, prohibiting the discharge of toxic pollutants in toxic amounts, developing waste treatment management plans and developing programs to control nonpoint sources of water pollution. *Id.*

Relevant Regulatory Provisions

CWA § 301: Effluent Limitations

- Under § 301, "the discharge of any pollutant by any person shall be unlawful" unless in compliance with the Act's permit requirements including § 402 (discharge of pollutants) and § 404 (discharge of dredged or fill material).
    - "Discharge" is defined as "any addition of ***any pollutant*** to ***navigable*** waters from any ***point*** source." § 502(12).
    - "Navigable waters" is defined as "the waters of the United States, including the territorial seas." § 502(7).
    - "Point source" is defined as "any discernible, confined and discrete conveyance … from which pollutants are or may be discharged." § 502(14).

CWA § 402: National Pollutant Discharge Elimination System (NPDES)

- CWA § 402 establishes a national permit system to govern the discharge of pollutants into navigable waters. Under the Act, EPA may delegate NPDES permitting to the States.
- **Direct Discharge:** A facility that proposes to discharge into the nation's waters must obtain a permit prior to initiating a discharge. The permittee must identify the pollutants present in the facility's effluent. § 401.
- **Indirect Discharge:** CWA § 307 controls the indirect discharge by "industrial users" to publicly owned treatment works (POTW). Under § 307(b), EPA must establish pretreatment standards for the introduction of pollutants that are ***not susceptible to treatment*** or that would ***interfere with the operation*** of treatment by publicly owned treatment works.

Regulatory Gaps and Exemptions

CWA § 402(l): NPDES Exemption

- Under § 402(l), neither EPA nor the States shall require NPDES permits for uncontaminated storm water discharges from ***oil and gas*** exploration, production, processing or treatment operations, or transmission facilities.
    - The Energy Policy Act of 2005 expanded the definition of "**oil and gas** exploration and production" to include "***all*** field activities or operations associated with exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement of drilling equipment, whether or not such field activities or operations may be considered to be construction activity." § 502(24).
    - In *NRDC v. EPA*, 526 F.3d 591 (9th Cir. 2008), the court vacated an EPA rule that would have broadened this exemption to include sediment from construction.

CWA § 502(6)(b): Exemption from the Definition of Pollutant

- Under CWA § 502(6)(b), the term "pollutant" does not include water, gas or ***other material*** which is injected into a well to facilitate production of **oil or gas**, ***or water derived in association*** with **oil or gas** production and disposed of in a well so long as the well is approved by the state and the state determines that such injection or disposal will not result in the degradation of ground or surface waters.

Proposed Legislation

Implementing the Recommendations of the BP Oil Spill Commission Act of 2011

- Section 628 of H.R.501, introduced into the House on January 26, 2011, seeks to eliminate the definition of "oil and gas production" under § 502(24). The bill was referred to the House Education and the Workforce Committee, which referred it to the Subcommittee on Workforce Protections on February 25, 2011.

§ 307(b): Indirect Discharges of Pollutants

- There are no pending proposals to amend the pretreatment requirements. However, at a congressional hearing held on March 3, 2011, EPA Administrator Lisa Jackson stated, "EPA can at any time set additional standards for what we call pretreatment, for waste that may go to a treatment plant."[3] This statement was made in response to a growing concern over the inability of publicly owned treatment works to treat radioactive waste.

§ 502(6)(b): Definition of Pollutant

- There are no pending proposals to amend the definition of "pollutant" under § 502(6)(b).

Resource Conservation and Recovery Act

Overview

The Resource Conservation and Recovery Act (RCRA) is a comprehensive amendment to the Solid Waste Disposal Act (SWDA) and is designed to: promote the protection of health and the environment, conserve valuable material and energy resources, reduce the amount of waste generated and ensure generated waste is managed in a manner to minimize the threat to human health and the environment. § 1003. Subtitle C of RCRA establishes a "cradle to grave" system that governs ***hazardous waste*** from generation to disposal. Subtitle D focuses on the management of ***nonhazardous waste*** and requires EPA to establish guidelines for state solid waste management plans.

Relevant Regulatory Provisions

SWDA § 1004: Definition of Solid Waste

- Under § 1004, "solid waste means any garbage, refuse, sludge … and any other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations …."

SWDA § 3001: Identification and Listing of Hazardous Waste

- Under § 3001, EPA is authorized to develop the criteria for identifying characteristics of hazardous waste. Under the Act, hazardous waste is a subset of solid waste.
    - "Hazardous waste" means ***solid waste***, which because of its quantity, concentration or physical, chemical or infectious characteristics may cause or significantly contribute to an increase in mortality or serious illness, or poses a substantial hazard to human health or the environment if improperly managed. § 1004(5).

SWDA § 3006: Authorized State Hazardous Waste Programs

- EPA is authorized to delegate the administration and enforcement of a hazardous waste program to states that meet the minimum federal standards. § 3006(b).

SWDA § 7003: Imminent Hazard

- Under § 7003, upon evidence that past or present handling, storage, treatment, transportation or disposal of any solid or hazardous waste may present an imminent and substantial threat to health or the environment, EPA is authorized to file suit against any person (past or present) who has contributed or is contributing to such handling, storage, treatment, transportation or disposal to restrain such person from that action and to order other action as necessary.

Regulatory Gaps and Exemptions

SWDA § 3001: Exemption from Identification and Listing of Hazardous Waste

- Originally, in 1978, "drilling fluids, produced waters, and ***other wastes associated with*** the exploration, development, or production [E&P] of **crude oil or natural gas**" were exempt from being listed as hazardous wastes pending completion of an EPA study.
- In 1988, EPA issued a regulatory determination stating that wastes associated with oil and gas E&P operations were exempt from Subtitle C, as distinguished from wastes associated with transportation and manufacturing operations.[4]
    - EPA's simple rule of thumb for identifying such exempt wastes is whether the wastes came from down-hole (brought to the surface during oil and gas E&P operations) or otherwise were generated in contact with the oil or gas production stream for the purpose of removing water or other contaminants from the well or the product. If yes to either, the wastes are exempt from Subtitle C.[5]
    - However, the RCRA Subtitle C exemption does not preclude these wastes from control under state regulations, under the less stringent RCRA Subtitle D ***solid waste regulations***, or under other federal regulations.

Proposed Legislation

- There are currently no proposals to amend RCRA provisions pertaining to oil and gas E&P.

Comprehensive Environmental Response, Compensation and Liability Act

Overview

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) was enacted in 1980. CERCLA created a Superfund, funded by a tax on feedstock chemicals, and authorized EPA to respond directly to releases or threatened releases of "***hazardous substances***" that may endanger public health or the environment. CERCLA imposes strict, joint and several liabilities for the costs of responding to the release of "hazardous substances" and established a trust fund to provide for cleanup when no responsible party could be identified. However, if a substance is not a "hazardous substance," the provisions of CERCLA are not triggered.

Relevant Regulatory Provisions

CERCLA § 101: Definition of Hazardous Substance

- Hazardous substance means … any element, compound, mixture, solution or substance designated under … ***CERCLA § 102***, any hazardous waste under ***SWDA § 3001***, any toxic pollutant listed under ***CWA § 307(a)*** and any hazardous air pollutant listed under ***CAA § 112***. CERCLA § 101(14).

CERCLA § 102: Designation of Hazardous Pollutants and Reportable Quantities

- Under CERCLA § 102, EPA must list elements, compounds, mixtures, solutions and substances which, when released into the environment, may present a substantial danger to the public health or welfare or the environment, and promulgate the release quantities that must be reported under § 103.

CERCLA § 103: Notification Requirement

- The release of "hazardous substances" must be reported to the National Response Center if the release equals or exceeds "reportable quantities." § 103.

CERCLA § 107: Liability

- CERCLA § 107 imposes strict, joint and several liability on 1) current owners and operators of facilities where a hazardous substance is released or threatened to be released; 2) owners and operators at the time the substances were disposed; 3) persons that arranged for disposal or treatment of such substances; and, 4) persons who accepted such substances for transport, disposal or treatment.
- Liability extends to all costs of removal or remedial action incurred by the government and any other necessary response costs that are consistent with the national contingency plan, damages for injury to natural resources and costs of health assessment.

Regulatory Gaps and Exemptions

CERCLA § 101: Exemption from Definition

- Section 101(14) ***expressly excludes*** **petroleum, including crude oil or any fraction thereof** that is not otherwise specifically listed or designated as hazardous under CERCLA § 102, RCRA § 3001, CWA § 307(a) and CAA § 112. Also excluded are natural gas, natural gas liquids, liquefied natural gas and synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).
    - As discussed in more detail above, the referenced statutes also have express exemptions relating to oil and gas production and extraction. As a result, the exemptions carry through to the CERCLA notification and liability requirements.
- An EPA memorandum addressing the scope of the petroleum exemption states that the exclusion extends to hazardous substances, such as benzene, which are indigenous to petroleum substances. Secondly, the exemption includes hazardous substances that are normally mixed with or added to oil during the refining

process, even if the levels of the hazardous substances are increased. This exclusion does not include hazardous substances that are added to or increase the concentration solely as a result of contamination during use. [6]

Proposed Legislation

- Currently, there are no proposed amendments to CERCLA's petroleum exemption under § 101(14).
- However, H.R. 1204, introduced into the House on March 17, 2011, seeks to relist hydrogen sulfide as a HAP subject to regulation under CAA § 112. If passed, hydrogen sulfide would be subject to CERCLA's reporting and liability provisions. H.R. 1204 was referred to the House Committee on Energy and Commerce, which referred the bill to the Subcommittee on Energy and Power on March 28, 2011.

National Environmental Policy Act

Overview

The National Environmental Policy Act (NEPA) was enacted in 1969. The congressional intent behind NEPA is to ensure the continuing policy of the Federal Government to use all practicable means and measures to create and maintain conditions under which man and nature can exist in productive harmony. NEPA § 101.

Relevant Regulatory Provisions

NEPA § 102: Environmental Impact Assessment and Alternative Considerations

- NEPA requires that ***federal agencies*** prepare and consider an environmental impact statement (EIS) that includes a detailed statement of the environmental impacts, proposed alternatives and any irretrievable commitment of resources before undertaking any major federal action likely to have a significant effect on the environment. NEPA § 102.

Regulatory Gaps and Exemptions

42 U.S.C. § 15942: NEPA Review

- The Energy Policy Act of 2005 added § 15942 to create a rebuttable presumption that a categorical exclusion under NEPA would apply if the activity is conducted pursuant to the Mineral Leasing Act for the purpose of ***exploration or development of oil or gas*** for the following activities:
    - surface disturbances of **less than 5 acres** if the total disturbance is less than 150 acres;
    - drilling a well at a location where drilling occurred in the previous 5 years;
    - drilling a well within a developed field that had an approved land use plan or any environmental document prepared pursuant to NEPA in the previous 5 years;
    - pipelines placed in an approved right-of-way corridor, so long as the corridor was approved in the previous 5 years; and,
    - maintenance of a minor activity. § 15942(b)(1)-(5).

Proposed Legislation

- Section 708 of H.R. 501, introduced into the House on January 26, 2011, proposes repealing 42 U.S.C. 15942. H.R. 501 was referred to the House Education and the Workforce committee, which referred the bill to the Subcommittee on Workforce Protections on February 25, 2011.

SUPPORTERS

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[1]EPA, *Modifications to the 112(b)1 Hazardous Air Pollutants*, http://www.epa.gov/ttn/atw/pollutants/atwsmod.html (last visited April 22, 2011).

[2] Oklahoma Marginal Well Commission, *Marginal Well Quick Facts*, http://www.ok.gov/marginalwells/About_MWC/Quick_Facts/index.html (last visited April 22, 2011).

[3] Ryan Tracy, *EPA Chief Grilled on Safety of Hydraulic Fracturing*, Wall St. J., March 3, 2011, http://online.wsj.com/article/SB10001424052748703300904576178782959682282.html.

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[5]*Id.*

[6] Memorandum from Francis S. Blake, EPA General Counsel, to J. Winston Porter, *Scope of the CERCLA Petroleum Exclusion Under Sections 101(14) and 104(a)(2)*, (July 31, 1987), *available at* http://www.epa.gov/compliance/resources/policies/cleanup/superfund/petro-exclu-mem.pdf.