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Shale Gas—Global Environmental Law and Regulation

This newsletter outlines key environmental regulatory and litigation issues impacting the shale oil and gas and hydraulic fracturing industry around the world.

Bureau of Land Management Unveils Draft Rules

Stakeholder opinion still mixed as many groups express caution and disappointment with the new revisions.

On May 16, the U.S. Department of the Interior's Bureau of Land Management ("BLM") unveiled a revised set of draft rules for hydraulic fracturing operations on federal and Indian lands. BLM has previously established basic regulations for oil and gas drilling and production, including hydraulic fracturing, but decided in 2012 to amend these regulations in response to heightened public concerns about hydraulic fracturing. BLM's initial 2012 proposal was met with criticism from industry, state officials, lawmakers, and environmental groups alike. The agency retracted the proposal to make changes and finally issued a revised proposed rule last month.

Among other objections in the more than 170,000 comments BLM received on the initial draft rules, there was significant industry concern that the rules would be duplicative of evolving state requirements to the extent fracturing operators with leases on federal lands would be required to comply with both BLM requirements and applicable state requirements. In response to this concern, BLM states in the May 16 proposal that it has tried to "streamline and minimize" the efforts that will be required to comply with the new federal requirements.

While the new proposal addresses several trade secret and technical concerns raised in response to the initial proposal, environmental groups remain extremely dissatisfied with the revisions and industry groups remain wary of the need for a federal layer of regulation (similar to that which already exists in many states) simply because drilling is occurring on federal lands. Most recently, in response to a request from leaders of both parties on the House Committee on Natural Resources, BLM agreed to extend the extremely short 30-day comment period initially provided on the revised proposal until August 23.

The opposition and attention the BLM proposals have encountered is illustrative of broader problems with federal policy on hydraulic fracturing to date. Overt public concern about the drilling method has led to a haphazard effort to regulate in advance of any comprehensive federal effort to understand what specific regulations, if any, may actually be required as an overlay to rapidly developing state regulations. The resulting situation is one in which environmental groups are consistently dissatisfied with federal efforts—suggesting the government is not doing enough to address the risks these groups perceive as inherent to any and all hydraulic fracturing—while industry groups remain skeptical of the need for any federal overlay at all on existing state oil and gas rules, particularly given that these rules have been augmented in many states in recent years to address hydraulic fracturing.

The BLM proposal is less onerous for operators than its 2012 iteration, but continues to lack either the justification for additional regulation or the stringency that stakeholders on opposing sides of this issue are seeking.

Summary of the Revised Proposal

The revised draft rules retain the three main components of the initial proposal, including requirements related to (i) disclosure of fracturing fluid constituents; (ii) well construction; and (iii) management of flowback waters.

In general, the rule requires BLM approval of all proposals for hydraulic fracturing or refracturing activity on public land. Operators are required to submit notice of a new fracturing proposal for BLM approval before any fracturing activity begins.

One of the key revisions intended to streamline requirements in the new proposal is to allow operators to submit a single notice for a "type well" if operations will include a group of wells that share substantially similar geological characteristics. By constructing and monitoring a type well, including running a CEL (discussed below) on casing that encounters usable water, the operator can demonstrate to BLM's satisfaction that it will not impact aquifers with usable water in the field. The same operator can then replicate the type well for each of the wells in the approved group for the same field without running a new CEL on each well.

1. Disclosure

Operators would be required to disclose the chemicals that they use in fracturing operations on public lands, although not until after the fracturing process is complete. The rules would allow drillers to disclose their chemical usage to BLM or to the voluntary chemical disclosure website FracFocus.org. To receive trade secret protection for their fracturing chemicals, drillers must provide affidavits affirming that these undisclosed chemicals should be exempt from disclosure. Both the option to disclose to FracFocus and the trade secret exemption affidavit represent an attempt by BLM to align its rules more closely with state requirements.

In another change from the initial proposal, the revised rules would no longer require operators to provide estimates of the chemical composition of their flowback fluids. BLM noted that this

requirement would have effectively required operators to reveal (and accurately predict) the total chemical constituents of their fracturing fluids prior to operations. The agency concluded that the composition of flowback fluids could be more accurately determined from post-operational chemical disclosures.

2. Construction Requirements

The revised proposed rule would require use of cement evaluation logs ("CELs") in place of the originally proposed cement bond logs ("CBL"). The use of the broader term of CEL is intended to allow a variety of logging methods other than CBL to be used to show the adequacy of cementing to protect usable water in the vicinity of a well. A CEL may be an ultrasonic log, variable density log, microseismogram or standard CBL. In addition, operators would be required to submit estimates of the total fluids to be used, the maximum injection pressure, the volume of fluid to be recovered, and the estimated fracture direction, length, and height, including the projected fracture propagation on a map.

3. Flowback Management

Finally, the proposed rules require operators to develop water management plans to handle well flowback fluids. The management plans would be used to demonstrate how surface and groundwater would be protected from contamination by recovered drilling fluids. Flowback fluids would also be required to be stored in lined pits.

In another attempt at deference to existing state regulations (and the unique geology in certain well fields and basins), the revised draft rules provide an opportunity for operators to request a variance from the BLM requirements. BLM would grant the variance only where the requested variance would meet or exceed the objectives of the federal requirements. The proposed rules would also allow the variance to be rescinded by BLM at any time.

Areas for Focus in Potential Comments on the Proposal

While stakeholders may comment on any aspect of the new proposal, commenters may wish to focus on the following areas where BLM has specifically requested input:

- practical enforcement challenges that might arise if the BLM incorporates or defers to State or tribal laws or procedures;
- whether the rule should require flowback fluids to be stored only in closed tanks, and not allow them to be stored in lined pits;
- whether, if a State (for Federal lands) or a tribe (for Indian lands) requires submission of the same or more information about the chemical constituents of hydraulic fracturing fluids, and provides that the information will be publicly available (except for trade secrets protected under State or tribal law), BLM should deem compliance with those disclosure requirements to satisfy BLM's own disclosure requirements.

[Draft Rules]

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Update: Outline of Key Developments

North America—United States

1. Federal Regulatory Developments

1.1. Environmental Protection Agency

1.1.1. ***Agency Reduces Estimates on Methane Leakage from Fracturing Operations***. In its annual Inventory of U.S. Greenhouse Gas Emissions and Sinks released on April 12, 2013, the Environmental Protection Agency ("EPA") reduced its estimate of fugitive methane leaks from natural gas systems by about 20 percent per year. The Agency has been under increasing pressure over the past year to directly regulate methane emissions from the industry. The new estimate suggests the problem of methane leakage is less widespread than the Agency previously believed. *[GHG Inventory]*

1.1.2. ***States in Conflict over Potential EPA Regulation of Methane Emissions.*** Several state attorneys general from energy-producing U.S. states urged EPA to resist a push from Northeastern states for EPA to regulate methane emissions from hydraulic fracturing operations. The attorneys general fear that EPA will agree to regulate methane to avoid a threatened lawsuit from the Northeastern states, which they allege is based on faulty data and flawed methodology. *[Letter]*

1.1.3. ***Proposed Changes to the 2012 Oil and Gas Air Rules.*** On March 28, 2013, EPA proposed updates to its 2012 VOC performance standards for storage tanks used in oil and natural gas production to facilitate compliance with the standards and clarify requirements. The proposed changes reflect recent information showing that more high-volume storage tanks will be coming on line than the Agency originally estimated. The proposed updates respond to issues raised in several petitions for reconsideration of the 2012 standards. *[Proposed Rule]*

1.1.4. ***Agency Rules Out FIFRA Authority.*** EPA will not use its Federal Insecticide, Fungicide & Rodenticide Act ("FIFRA") authority to regulate hydraulic fracturing beyond its mandated role in registering pesticide ingredients, according to the Deputy Director of EPA's Antimicrobials Division. This statement followed increasing concern that the Agency would use its FIFRA authority to ramp up federal oversight of fracturing operations and to bring related enforcement actions, particularly because FIFRA does not include exemptions for the oil and gas industry.

1.1.5. ***Study Workshops Focus on EPA Methodologies.*** At a series of workshops on its ongoing study of the impacts of hydraulic fracturing on drinking water, EPA took suggestions for improving methodologies to analyze chemical compounds in fracturing fluid, flowback and produced water generated from the fracturing process. The study will analyze the phases of the water cycle associated with fracturing, by conducting before-and-after testing of

groundwater and aquifers at selected hydraulic fracturing sites to examine potential impacts against a known baseline.

Participants at EPA's February 25, 2013 workshop noted, in particular, the importance of baseline sampling to understand the quality of formation water and produced water, including concentrations of organic matter and methane. Participants also highlighted the need for a robust dataset because of variability (e.g., seasonal variations, natural variability, and issues related to construction of private water supply wells). It was suggested that guidance on baseline sampling (e.g., where, when, questions to ask about well operating conditions) would be helpful. *[Related Documents]*

1.1.6. ***EPA Forms Hydraulic Fracturing Research Advisory Panel.*** EPA's independent Science Advisory Board ("SAB") formed a Hydraulic Fracturing Research Advisory Panel of academics, government employees, and private sector representatives that will review EPA's progress on its study assessing the impacts of hydraulic fracturing on drinking water. The Panel will also peer-review EPA's 2014 draft report of study results. *[Press Release]*

1.1.7. ***EAB Remands UIC Permit for Failure to Consider Seismic Risk.*** EPA's Environmental Appeals Board ("EAB") recently remanded an Underground Injection Control ("UIC") permit issued by EPA for a brine disposal well in Pennsylvania after finding the Agency failed to adequately consider possible seismic impacts on the disposal well. The EAB found that the Agency has a regulatory obligation to consider whether geological conditions may allow the movement of any contaminant to underground sources of drinking water. In this case, the Region's conclusory assertion that the risk of contaminant movement in the event of an earthquake was minimal because there was no evidence of seismic activity in the well area was insufficient to respond to concerns raised in public comments on the permit. *[In Re Stonehaven Energy Management, LLC, UIC Appeal No. 12-02 (Mar. 26, 2013)]*

1.1.8. ***Action Plan Approved to Track Gas Production Emissions.*** EPA's Inspector General has approved the Agency's action plan to address problems related to tracking of emissions from onshore oil and gas production. EPA issued the plan in response to an audit finding that EPA's National Emissions Inventory has underestimated air pollution relating to oil and gas production due to data gaps. The three-prong plan will involve (i) coordination between the Office of Air and Radiation and the Office of Research and Development to develop a strategy to identify gaps and limitations in oil and gas emissions data and measurement techniques; (ii) prioritizing an update of related emissions factors that are in greatest need of improvement and development of emissions factors for oil and gas production processes that do not already have them; and (iii) a plan to monitor data submissions from states, including methods for calculating default non-point emissions estimates if states do not submit this data and guidance for states to conduct their own emissions estimates. The first and third tasks should be completed by the third quarter of fiscal year 2014, and the second task is expected to be finished by the end of fiscal year 2019. *[Action Plan]*

1.2. Bureau of Land Management

1.2.1. ***District Court Finds BLM Violated NEPA***. In a ruling on March 21, 2013, a U.S. District Court for the Northern District of California found that BLM violated the National Environmental Policy Act ("NEPA") when it issued oil and gas leases on 2,700 acres of the oil-rich Monterrey Shale without first adequately analyzing the impacts of horizontal drilling and hydraulic fracturing.

BLM prepared an environmental assessment ("EA") to examine the effects of the proposed leases and found no significant environmental impacts requiring further analysis at the leasing stage. This conclusion was based on a 2006 resource management projection for the area, which, according to BLM, suggested that no more than a single exploratory well would be drilled on the parcels at issue, resulting in very little disturbance to the environment.

The District Court found, with respect to the issued leases over which BLM would have limited control after the leasing stage, that BLM had unreasonably limited its analysis to a one well scenario and failed to take the required "hard look" under NEPA at issues posed by advances in drilling technology that may unlock more of the previously inaccessible Monterrey Shale.

No appeal was filed in the case and the parties are currently briefing the District Court on the issue of an appropriate remedy in the case. *[Center for Biological Diversity v. Bureau of Land Management, No. C 11-06174 PSG (N.D. Cal. Mar. 31, 2013)]*

1.3. Other Federal Agencies

1.3.1 ***Federal Research Agencies to Study Air Quality and Greenhouse Gas Emissions.*** The National Energy Technology Laboratory ("NETL") and the National Institute for Occupational Safety and Health ("NIOSH") have entered into a memorandum of understanding to perform collaborative research related to airborne emissions and air quality at natural gas drilling sites. Their research will focus on development of modeling tools to predict and quantify potential risks associated with hydraulic fracturing and to assist researchers in analyzing greenhouse gas lifecycle emissions. *[Press Release]*

1.4. Congress

1.4.1. ***New Bills Focus on Existing Exemptions for the Oil and Gas Industry.*** Two recent bills introduced in the U.S. House of Representatives would remove certain existing exemptions for the oil and gas industry under the Clean Air Act and Clean Water Act.

The "Bringing Reductions to Energy's Airborne Toxic Health Effect (BREATHE) Act" *[H.R. 1154]* would end the exemption for the oil and gas industry under the Clear Air Act's aggregation provisions for hazardous air pollutants ("HAPs"),[1] which requires small sources of HAPs located within a contiguous area and under common control to be aggregated for permitting purposes. The bill would also add hydrogen sulfide to the Clean Air Act's list of hazardous air pollutants.

The "Focused Reduction of Effluence and Stormwater runoff through Hydraulic Environmental Regulation (FRESHER) Act" *[H.R. 1175]* would end exemptions from industrial stormwater permitting requirements under the Clean Water Act for the oil and gas industry

and require EPA to conduct a study of areas that have been impacted by stormwater runoff from oil or gas operations.

1.4.2. ***House Republicans Hold Hearing to Discuss Ongoing Federal Research on Hydraulic Fracturing.*** On April 26, 2013, House Subcommittees on Energy and Environment held a hearing to review federal hydraulic fracturing research activities pursuant to an inter-agency agreement signed by EPA, the Department of Energy and the Department of Interior in April of 2012. House Republicans remain extremely skeptical of the Administration's efforts to study risks associated with fracturing, noting that the interagency working group committed to release a draft of their research plan by October 2012 and complete the final plan by January 2013, but still has yet to release a draft for public comment. *[Related Documents]*

1.5. Other National Developments

1.5.1. ***Center for Sustainable Shale Development Releases Performance Standards.*** A group of environmental organizations, philanthropic foundations and industry companies announced the creation of a collaborative Pittsburgh-based Center for Sustainable Shale Development ("CSSD"). This unique center will craft performance standards and issue a certification to operators that meet the standards, with the goal of minimizing pollution caused by fracturing in the Appalachian Basin. The standards will address air and water quality concerns important to oil, gas and shale development, including flaring, seismic impacts, and wastewater disposal, and will apply to the Marcellus and Utica Shale states, including Pennsylvania, New York, and Ohio. The Center has already established 15 initial performance standards, which will later be expanded to include safety as well. The CSSD also plans to develop a platform for companies seeking certification to share best practices. *[Performance Standards]*

The CSSD was formed in response to a series of 2011 recommendations from the U.S. Department of Energy's Secretary of Energy Advisory Board shale gas panel, which encouraged the establishment of "best industry practices" regional centers for hydraulic fracturing and other aspects of shale development.

1.5.2. ***FracFocus.org Website under Fire.*** A recent report by Harvard Law School's Environmental Law and Policy Program criticized use of the website FracFocus.org as a regulatory compliance tool. The website was launched two years ago by the Ground Water Protection Council ("GWPC") and Interstate Oil & Gas Conservation Commission ("IOGCC") as a database to house reported information on fracturing chemicals used by oil and gas companies. Since its launch, numerous states have passed laws or adopted rules that either require drillers to disclose their chemical usage to the database or that permit disclosure to FracFocus.org, in lieu of or in addition to disclosure to the state. BLM also intends to use FracFocus.org as an option for companies to disclose the chemicals that they use to fracture wells on public lands. The study suggested that the site fails as a regulatory compliance tool for several reasons: it does not account for different state disclosure requirements in its one-size-fits-all reporting form; it provides limited functionality because its information is stored via non-searchable PDFs; and it requires that states proactively check the website to see which companies have missed deadlines for filing their

disclosure reports, rather than through a direct notification process.

Although the GWPC has noted that the site was never intended to be a wide-ranging analytical tool, the GWPC and IOGCC launched an enhanced version of the website in response to these criticisms. The improved website includes expanded search criteria enabling the public to search by chemical name, date ranges, and chemical identification numbers; improved accessibility for state regulatory agencies; options to disclose non-water based fluids used in fracturing operations, such as nitrogen foam substance or propane; options to search for wells using Google maps; and improved data quality verification. *[Report]*

2. Selected US State and Local Regulatory Developments

2.1. Alaska

2.1.1. Alaska held its first public hearings on the Alaska Oil and Gas Conservation Commission's proposed regulations on hydraulic fracturing. The regulations would address pre-fracturing landowner notification, water testing, and well construction standards. The most contentious aspect of the new regulations is the lack of trade secret protections for fracturing fluid disclosures. At hearings on the proposal, oil and gas industry representatives argued that all other states that have regulated this type of disclosure have provided trade secret exemptions. *[Proposed Regulations]*

2.2. California

2.2.1. Ten (10) different proposals to halt or limit hydraulic fracturing in California's resource-rich Monterrey Shale have been moving through the state's legislature. Several of these measures failed to pass the state Assembly by May 31, the statutory deadline to clear the chamber where the bills originated this session. The Senate did pass *S.B. 4,* which is now pending in the Assembly and would require stricter notification, monitoring, and enforcement requirements in the regulations proposed by California's Department of Conservation/Division of Oil, Gas, and Geothermal Resources ("DOGGR") last year. *S.B. 4* would also require full disclosure of fracturing chemicals, while providing trade secret protection, and would require DOGGR to develop and maintain its own website on fracturing activities in the state.

Among the bills rejected in the Assembly was *A.B. 1323*, which would have specified that a state moratorium on hydraulic fracturing would be lifted once the state implements oversight regulations, such as those anticipated from DOGGR. Additionally, *A.B. 7*, which failed in the Assembly on June 12, would have mandated disclosure of non-proprietary information on hydraulic fracturing chemical and operations. Two bills never made it to the floor for a vote by the full Assembly: *A.B. 649*, which would have restricted fracturing temporarily until further studies are completed, and *A.B. 1301*, which would have banned fracturing near aquifers until a determination is made that drilling would not endanger public health. Other current Assembly bills include *A.B. 669*, which would require oil and gas drilling operators to submit proof of regional water quality control board approval for the proposed method of wastewater disposal for a fracturing well. *A.B. 669* will now be merged with *A.B. 982*, which would mandate groundwater monitoring before and after any

hydraulic fracturing operations. *A.B. 288* would extend the time for permits to be approved for new drilling operations. In the Senate, *S.B 395* would classify and regulate hydraulic fracturing wastewater as hazardous; and finally *S.B. 665* would change bonding requirements for operators of oil or natural gas wells.

Meanwhile, DOGGR continues to piece together the state's first regulations to address hydraulic fracturing. Last year, DOGGR released comprehensive draft regulations on well construction, wastewater management, and chemical disclosure. Industry groups argue that DOGGR should be allowed to finish its work on state regulations before the legislature takes action on any bills. *[Draft Regulations]*

2.2.2. California's South Coast Air Quality Management District will begin requiring operators to give notice to the District before starting hydraulic fracturing and other drilling activities in the region and to disclose chemicals used in fracturing fluids. Companies must now provide information about the well operator, location, and type of activity to be conducted, which will then be posted on the District's website. Operators and chemical suppliers must also disclose all fracturing chemicals used, including trade secret chemicals; however, only non-trade secret chemicals will be posted on the District's website. *[Rule]*

2.1.3. The University of California, Berkeley, School of Law released a study that outlines weaknesses in current California oil and gas policy and recommends a host of measures to regulate hydraulic fracturing. The study recommends that the state require public notice thirty days before fracturing operations begin, disclosure of fracturing chemicals before a well is stimulated, baseline water testing around oil formations and disposal areas, detailed records of the locations of wastewater disposal, the use of tracers in fracturing fluid to identify potential contamination, greater attention to abandoned wells, and a ban for injection near high-risk fault lines. The authors see the study as part of the ongoing process of piecing together statewide regulations for hydraulic fracturing, contributing to existing efforts by DOGGR and the state legislature. *[Study]*

2.1.4. The California State Water Resources Control Board released an online interactive map that shows water supply wells compared with fractured oil and gas wells across the state. The map represents the most comprehensive attempt thus far to chart fracturing activities statewide. *[Map]*

2.3. Colorado

2.3.1. The Fort Collins City Council overturned its citywide ban on hydraulic fracturing, while Boulder County Commissioners voted against extending the county's 17-month moratorium for at least two years. Both local bodies cited potential legal battles with industry groups and the Colorado Oil and Gas Conservation Commission (“COGCC”) if they continued the bans.

2.4. Illinois

2.4.1. Illinois has enacted comprehensive legislation to address hydraulic fracturing in the state's New Albany shale. Local environmental groups have referred to the new legislation as the

most comprehensive fracturing rules in the country. Significant features include: strict setback rules for drilling activities near water sources; well construction standards; waste fluid management rules; water monitoring requirements; presumption of liability for companies engaged in fracturing; chemical disclosure requirements; allowances for energy companies to preserve trade secrets; notice, comment, and hearing rules; and citizen rights of action. The bill would also create a fee structure linked to fracturing, where companies seeking a well permit would be required to pay a nonrefundable fee to the state, as well as a 3 percent state tax on the value of any oil or gas removed from earth or water during the first twenty-four months of well operations. This tax would increase as the well became more productive. After the state House voted overwhelmingly in favor of the bill at the end of May, the Senate followed up with a quick approval. Governor Pat Quinn signed the bill into law on June 17, 2013. *[S.B. 1715]*

2.5. New York

2.5.1. A New York appellate court recently upheld the Town of Dryden's ban on hydraulic fracturing in a case that continues to set precedent on the legality of municipal fracturing bans in the state. The plaintiffs in the case, Norse Energy Corp., are now seeking review by the state's highest court. *[Norse Energy Corp. v. Town of Dryden]*

2.5.2. An anticipated report by New York's health commissioner, Dr. Nirav Shah, on the safety of hydraulic fracturing activities in New York remains outstanding. Governor Cuomo put the state's massive effort to develop new regulations for fracturing activities on hold last year just as new rules were about to be finalized by the Department of Environmental Conservation ("DEC"). Gov. Cuomo has stated that he will not lift the current moratorium on hydraulic fracturing in the state until he has reviewed Dr. Shah's report. The report was initially expected to be finished several months ago. *[DEC Regulations]*

2.6. Ohio

2.6.1. Ohio House Democrats proposed a measure that would ban the practice of injecting fracturing wastewater into wells in the state as a form of disposal. Ohio wells receive a high proportion of the wastewater generated on the Marcellus Shale. *[H.B. 148]*

2.7. Pennsylvania

2.7.1. A Pennsylvania wastewater treatment company reached a settlement with EPA and the Pennsylvania Department of Environmental Protection ("DEP") that resolves discharge permit violations associated with the treatment of wastewater generated from fracturing activities at several of the company's facilities around the state. Under the settlement, the treatment plant must seek renewal of their Clean Water Act discharge permits from DEP and include the state's discharge standard of 500 milligrams per liter for total dissolved solids for treatment plants that receive wastewater from oil and gas operations. EPA estimates the plant will pay as much as $30 million in upgrades in order to meet the stringent discharge standard. *[Press Release]*

2.8. Texas

2.8.1. Texas House Democrats advanced three bills to encourage in-state drillers to use recycled flowback or produced water in fracturing operations. The first bill would direct the Railroad Commission of Texas to create rules that would require recycling or reuse of flowback and produced water from hydraulically fractured wells. *[H.B. 3537]*. The second bill would ban companies from injecting produced and flowback waters into the state's injection wells, unless the wells are capable of being treated to standards allowable for reuse or safe discharge. *[H.B. 2992].* The third bill would establish a 20-cent-per-gallon fee on water use, to incentivize companies to move away from freshwater use to reusable wastewater alternatives. *[H.B. 3595].* Texas environmental groups strongly support the bills, in light of concerns over predicted drought and dropping water tables.

2.9. West Virginia

2.9.1. The Northern District of West Virginia found that a subsidiary of Schlumberger Technology Corp. was not liable for a contract worker's range of health problems, allegedly caused by his exposure to the chemicals and silica mixed with water and pumped underground to enhance the hydraulic fracturing process. *[Bombardiere v. SOS Staffing, et al, No. 1:11-cv-00050-JPB (N.D.W.V.)]*

2.10. Wyoming

2.10.1. A Wyoming state court judge upheld the Wyoming Oil and Gas Conservation Commission's ("OGCC") chemical disclosure rule for hydraulic fracturing, finding that the OGCC acted properly when it refused to disclose hydraulic fracturing chemical ingredients to environmentalists that petitioned the OGCC to reveal the ingredients as public information. Environmentalists had argued that the OGCC wrongfully classified the chemical ingredients as trade secrets. The court found that the OGCC was required to weigh competing interests when the public records request was made and that the OGCC had met its duty. Environmental and public interest groups have filed an appeal with the state's Supreme Court. *[Appeal]*

3. Recent Studies and Reports

3.1. A U.S. Geological Survey and Duke University report found no evidence linking hydraulic fracturing to contaminated groundwater in Arkansas. After measuring 127 drinking water wells atop the resource-rich Fayettesville Shale, researchers found that groundwater quality was not impaired in areas associated with hydraulic fracturing and that any methane found in the samples originated from natural sources. According to one of the study's authors from Duke University, the Arkansas study does not contradict previous studies by Duke scientists that suggest a link between methane contamination near well sites in the Marcellus Shale and fracturing operations. Rather, the new study "suggests that variations in local and regional geology play major roles in determining the possible risk of groundwater impacts from shale gas development." *[Press Release]*

3.2. A report released by the Western Organization of Resource Councils warns that current levels of water consumption by the oil and gas industry for the hydraulic fracturing process cannot be

sustained and estimates that the process consumes at least 7 billion gallons of water a year in four Western states, all of which are experiencing drought conditions. Industry trade groups strongly criticized the conclusions in the report, noting that it reflects a lack of understanding of industry reporting requirements, state water laws, and basic hydrology. Critics also noted that water use by fracturing operations accounts for far less than agricultural, municipal, or industrial uses, although demand for fracturing water is expected to rise over the next few years. *[Report]*

3.3. Ceres, an organization that advocates for sustainable business practices, released a report aimed at oil and gas investors that noted that nearly half of fractured gas and oil wells in the United States are in areas where water is already in short supply. Specifically, researchers overlaid a map of the country's water-stressed areas with data from 25,450 wells and found that about 47 percent of the wells are in areas classified by the World Resources Institute as having more than 80 percent of the annual available water drawn by municipal, industrial, and agricultural users. The report's authors noted that although water use for hydraulic fracturing is often less than 1 or 2 percent of a state's overall use, it can be much higher at the local level, increasing competition for scarce supplies. They urged oil and gas companies to disclose to investors exactly how they obtain their water and how they plan to in the future, to avoid hurting local municipalities or farmers. *[Map]*

3.4. A report by the Hudson Institute suggests primary regulation of hydraulic fracturing should remain at the state level. The report targets bills recently introduced in Congress that give the U.S. EPA greater control over hydraulic fracturing and that aim to repeal the exemption for hydraulic fracturing included under the Safe Drinking Water Act. The report argues that, in order to justify a federal role in the regulation of hydraulic fracturing, any resulting contamination would have to cross state boundaries, state level regulation would have to disrupt industry's ability to scale up across states, and federal actions would have to be closer to the public interest. Thus far, there have been no documented cases where contamination had a major interstate effect, and state regulations have been sufficient to handle any surface spills, all of which led to the report's conclusion that the oil and gas industry does not need a one-size-fits-all federal regime. *[Report]*

3.5. World Resources Institute released a report on reducing upstream greenhouse gas emissions from natural gas systems. The report suggests that cutting methane leakage rates from natural gas systems to less than 1 percent of total production would ensure that the climate impacts of natural gas are lower than coal or diesel fuel over any time horizon. *[Report]*

3.6. Resources for the Future surveyed shale gas development experts and found consensus on a multitude of public health or environmental risks for which action by government, industry, or both is needed now, either voluntarily or through regulations. Specific risks found to be inadequately addressed by industry or the government included air pollution, groundwater (aquifer) contamination, and surface water pollution. Of greatest concern was the possible failure of cement collars or barriers that are installed at critical points in wells to prevent methane or fracturing fluids from contaminating aquifers or escaping into the environment. Other risks included failures of well bore steel casings, failures of

surface ponds or impoundments containing drilling and waste fluids, surface well blowouts that release methane and fluids, storage tank spills, and truck accidents. *[Report]*

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[1] Note that statutory aggregation requirements for HAPs are distinct from aggregation requirements applicable to criteria pollutants under the Clean Air Act. *See* our November 2012 SG-ELR for a discussion of recent developments related to aggregation under the Clean Air Act's New Source Review Program.

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North America—Canada

1. Selected Provincial Developments

1.1. Quebec

1.1.1. Quebec's Environment Minister and leading member of the left-leaning Parti Québécois introduced a bill that would suspend the issuance of licenses for hydraulic fracturing for 52 municipalities in the St. Lawrence River Valley and prevent any exploration until the government passes new legislation or for a maximum of five years. Under the new Bill 37, the provincial government could also extend the moratorium to other municipalities adjoining those already listed. The bill would not, however, prevent holders of authorizations or licenses from repairing, maintaining, or closing existing wells. The moratorium will provide time for Quebec's environmental review agency to complete its review of shale gas exploration and hydraulic fracturing and would take effect upon passage of the bill. Since Parti Québécois does not command a majority of seats in the province's Legislature, the controversial bill would need endorsement from a major opposition party to take effect.

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Europe

1. European Union

1.1. The European Union plans to take up the debate over hydraulic fracturing in 2013 and will examine the issues and implications associated with the technique employing a "cautiously optimistic" approach.

2. Germany

2.1. The German legislature will not hold a vote on amendments proposed earlier this year to the Ordinance on Environmental Impact Assessments Concerning Mining Projects and the Federal Resources Water Act to address fracturing. The proposed changes to the mining ordinance would have made an environmental impact assessment mandatory for deep drilling for gas or oil involving fracturing. The amendments encountered opposition from environmental groups and the federal states who argued that the proposed requirements were merely cosmetic and designed to

conceal a “green light” for the technique. *[Amendments]*

3. Poland

3.1. The country's delay in enacting a law on hydrocarbons, bureaucratic obstacles with obtaining a large number of permits for shale gas production, and a proposed 40 percent tax on oil, natural gas, and shale gas production gross profits are discouraging investment, as shown by recent decisions by two major U.S. companies to withdraw from prospecting for shale gas in Poland. Nonetheless, the country’s draft law to address hydraulic fracturing made progress this month when it was sent on to a government advisory panel for final review before the measure is forwarded to Parliament for approval.

4. United Kingdom

4.1. The Committee on Climate Change delivered a report stating that domestic hydraulic fracturing may have a smaller carbon footprint than importing natural gas. According to the Committee, while shale gas should not be regarded as a low-carbon fuel source, it can produce lower emissions than imported liquefied natural gas if regulatory arrangements are established to manage methane released during production. Although mineral rights below ground are owned by the state, members of Parliament have cautioned that the government needs to create tangible material benefits for local communities before it approves hydraulic fracturing projects, since otherwise landowners have little financial incentive to let drillers onto their property.
Additionally, Parliament and the Committee noted that Britain's higher population density, difficult geology and wide public opposition will hinder a rapid British shale revolution. *[Report]*

4.2. UK-based Durham University's Energy Institute released a study that concluded that hydraulic fracturing is not likely to cause major earthquakes. The study noted that, while fracturing can reactivate dormant geological faults, the process rarely causes any tremors that can be felt on the earth's surface and that other industrial activities, such as mining, reservoir filling, and waste disposal, are much more likely to cause earthquakes. *[Study]*

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Asia-Pacific

1. Australia

1.1. The Australian government introduced a bill that would require coal seam gas developments and large coal mining projects to obtain approval under the Environment Protection and Biodiversity Conservation Act if they are likely to have a significant impact on groundwater or surface waters. The requirement would apply to all projects that are currently in the process of being approved, such as those specified by state governments, as well as to new projects. Environmental groups argued that already approved projects should also be made subject to the new requirements.

Abbreviations

BLM	Bureau of Land Management
COGCC	Colorado Oil and Gas Conversation Commission
CSSD	Center for Sustainable Shale Development
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
DOGGR	Division of Oil, Gas and Geothermal Resources
EAB	Environmental Appeals Board
EHB	Environmental Hearing Board
EPA	Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide & Rodenticide Act
GWPC	Ground Water Protection Council
IOGCC	Interstate Oil and Gas Conservation Commission
NEPA	National Environmental Policy Act
NSO	No Surface Occupancy
OGCC	Oil and Gas Conservation Commission

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