



Unfinished business in the regulation of shale gas production in the United States



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HIGHLIGHTS

- Negative externalities from shale gas production affect property owners and others living nearby.
- Governments have a range of regulatory options for addressing risks and harms.
- Governmental agencies often lack information for effective enforcement of regulations.
- The non-disclosure of fracturing fluids adversely affects emergency responders.
- Regulators can become more supportive of public health through greater oversight of extraction.

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ABSTRACT

With increased drilling for natural gas, toxic chemicals used to fracture wells have been introduced into the environment accompanied by allegations of injuries. This article evaluates laws and regulations governing shale gas production to disclose ideas for offering further protection to people and the environment. The aim of the study is to offer state governments ideas for addressing contractual obligations of drilling operators, discerning health risks, disclosing toxic chemicals, and reporting sufficient information to detect problems and enforce regulations. The discussion suggests opportunities for state regulators to become more supportive of public health through greater oversight of shale gas extraction.

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1. Introduction

North America's embracement of jobs and domestic energy production from its shale gas plays has been controversial. Over the years, the petroleum industry convinced Congress that several laws addressing environmental concerns were inimical to the development of domestic petroleum preserves and were not needed to oversee petroleum extraction. Through legislative and regulatory exceptions, the industry was granted special dispensation from requirements of the Clean Air Act of 1970, Clean Water Act of 1972, Safe Drinking Water Act of 1974, Resource Conservation and Recovery Act of 1976, Comprehensive Environmental Response, Compensation and Liability Act of 1980, and the Emergency Planning and Community Right-to-Know Act of 1986. With the commencement of drilling more than 11,000 new wells a year (US EPA, 2012a) and the use of hydraulic

fracturing (fracking), people are worried that the exceptions are allowing their air and water resources to become contaminated and cause health problems.

The federal government has laws and regulations that address releases of some contaminants into water and air, but otherwise offers scant protection against many of the risks of injuries that accompany shale gas production. There are no comprehensive federal provisions addressing items such as water testing prior to well drilling, controls over drilling, inspections of hydraulic fracturing, disclosure of toxics used in fracturing, wastewater storage, and releases of many gasses (US GAO, 2012b). This means that federal law does not preclude the imposition of pollutants and associated damages from shale gas production on property owners, neighbors, and others (Corman, 2012; Goldman, 2012; McKay et al., 2011; Obold, 2012; Wiseman, 2012a).

In the absence of sufficient federal safeguards, the protection of the public and the environment has fallen to state governments (e.g., Arkansas Code Annotated, 2012; Colorado Code of Regulations, 2012; Pennsylvania Administrative Code, 2013; Texas Administrative Code, 2012c). As might be expected, individual states have addressed risks

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and problems of shale gas production differently (Spence, 2013). Some focus more on the protection of persons and property while others are more interested in economic development and business interests. For example, Pennsylvania allowed horizontal fracking to start in 2007 whereas neighboring New York issued a moratorium on hydraulic fracking until a study could be conducted on its safety (New York Governor, 2010; Kieman, 2012). Other distinctions among state actions involve the protection of private property interests, sustainability of resources, and the degree of governmental interference. States also decide whether to delegate powers to local governments including cities, villages, towns, and counties.

Regulatory evaluations for shale gas production suggest that state governments are engaged in the development and implementation of reporting and permitting requirements for shale gas wells and associated activities (Rahm, 2011; Wiseman, 2012a; Wiseman, 2013). The industry contends that additional regulations will impede economic activity to the detriment of local communities where the wells are located (American Petroleum Institute, 2009). With the economic clout of shale gas production, the petroleum industry has had a major influence on the legislative and regulatory agendas of states that are important natural gas producers (Allen, 2012; Bunch, 2013; Rahm, 2011).

Yet alleged injuries and damages to persons and property pose questions of whether governments are doing enough to address the risks accompanying hydraulic fracturing and shale gas extraction activities (Abbott and Bagnell, 2011; Corman, 2012; McKay et al., 2011). Due to the lack of information on chemicals being used and fluids being produced, claimants of health problems caused by toxic chemicals released during shale gas production are unable to learn whether their maladies are related to fracturing. Furthermore, there is a lack of information on low-dose cumulative health effects of contaminants from gas wells (Colborn et al., 2012; Jenner and Lamadrid, 2013; Vandenberg et al., 2012). Given these limitations, claimants have difficulties in establishing whether they were exposed to toxic chemicals in sufficient quantities to cause injuries.

American jurisprudence generally is not structured to recognize that causal exposure to toxic chemicals resulting in the aggravation of a health condition or a premature death should be compensated. Science is not exact enough to assign damages for multiple exposure events that contribute to health problems (Vandenberg et al., 2012). While some research shows that adverse health effects from air emissions from gas extraction are more likely to occur to nearby residents (McKenzie et al., 2012), it remains unclear whether particular maladies are related to shale gas extraction. Injured persons are unable to establish that a causal connection exists between released toxic chemicals and health damages so that their lawsuits for damages fail (Corman, 2012; McKay et al., 2011).

In the first part of the paper, a review of the state regulatory responses governing various aspects of shale gas production shows an evolution and progression in the regulatory framework overseeing the risks accompanying drilling and fracturing wells (Baizel, 2013; Degenhardt, 2012; Texas Railroad Commission, 2012). An evaluation of regulations considered and enacted by state governments suggests that they have not fully appreciated the public health dangers posed by shale gas production (Goldstein et al., 2012; Lauver, 2012; Roberson, 2012). Current practices and regulations often do not adequately consider long-term and compounding health effects. The second part of this paper addresses four issues confronting US state governments in responding to risks of damages from shale gas production.

Several ideas appropriate for providing greater property and health protection may be identified from analyses of notable issues facing governments and their regulatory responses. Governments have responsibilities in protecting the health of their citizens. Society has vested interests in keeping people healthy and in maintaining water, land, and air resources for use by future generations. A legal regime that provides inadequate attention to future risks and

damages may not provide an optional resolution for the damages being imposed by shale gas production. Moreover, the lack of incentives for testing and investing in safer practices, recycling, and adopting procedures that would reduce greenhouse gas emissions is costly (Adair et al., 2012; Jefferies, 2012; US GAO, 2012a). Balancing multiple interests – local and regional economic benefits, property protection, public health, sustainability, and long-term environmental quality – is difficult (Birol, 2012).

2. Regulatory options and limitations

Governments have a range of regulatory options for addressing risks and harms. Disclosure-based regulations make information available to the public to reduce risks and damages. Operational requirements provide records that expose lapses that may be related to problems and damages. Outright restrictions are appropriate for prohibiting known activities or releases that markedly detract from public welfare. Economic-based regulations can help encourage the reduction of conduct resulting in negative externalities and provide funding for governmental oversight. Most of the legislative actions to protect the public from damages associated with shale gas production involve the first two categories, although all four categories are represented in state regulations.

The least intrusive category of regulatory options is disclosure-based regulations under which information is reported to the government. Disclosure is important in providing the public the location of wells and facilities used to transform extracted liquids and gasses into usable products. For shale gas production, states have enacted reporting requirements providing regulators and the public considerable information that serves to document production practices and activities. Yet the disclosure-based regulations contain exceptions for proprietary information and trade secrets (Adair et al., 2012; Furlow and Hays, 2011; Wiseman, 2011b). The exceptions are being used to preclude the disclosure of toxic chemicals used in hydraulic fracturing (NY DEC, 2011; Soraghan, 2012).

For many polluting activities, governments enact further operational requirements concerning monitoring, record-keeping, and self-reporting information. Operational requirements such as the Clean Water Act's permitting system require permittees to secure approval and report information including violations but does not necessarily involve surveillance or inspections by government officials (US Code of Federal Regulations, 2012, tit. 40, § 122.41). Reporting requirements also include submitting information on accidents and releases of pollutants (e.g., US Code, 2012, tit. 42, § 9603). Operational regulations thereby facilitate a record of violations that may form the basis for corrective actions and citations. However, if governments decline to meaningfully address violations, operational requirements may not achieve their objectives.

A third category of regulations provides restrictions under which certain conduct is not allowed. Restrictions on hydraulic fracturing include outright prohibitions on the use of certain substances in fracturing, releases of contaminants into waters, and releases of too many contaminants into the air. While federal regulations provide some of these restrictions, states are able to enact further regulations deemed necessary to protect public health and the environment. For example, since the Emergency Planning and Community Right-to-Know Act fails to give the public full access to chemicals on sites, states have responded with their own requirements (Wiseman, 2013). The success of restrictions is connected to governmental enforcement practices. In the absence of inspections and prosecutions of violators, restrictions may fail to protect public health and the environment. Concern has been expressed that states are not adequately enforcing existing regulations governing the extraction of natural gas (Fershee, 2011).

Governments may also use economic-based regulations to augment oversight of shale gas production and remediation of contaminated sites. The most common are well permit fees that raise funds for

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