

**The Great Lakes
Environmental Law Center**

*Protecting the world's greatest freshwater resource
and the communities that depend upon it*

440 Burroughs Street, Box 70
Detroit, Michigan 48202
www.glelc.org

Re: *What is the potential in Michigan for non-renewable generation from Michigan energy sources?*

As of 2011, the state of Michigan burned coal for 54% of its net electricity generation, with natural gas and nuclear sources largely making up for the remainder.¹ Since Michigan does not have any coal reserves, utilities must import 100% of their coal from states such as Wyoming, Pennsylvania, West Virginia and Kentucky.² The transportation and burning of coal is both dirty and costly and must be reduced in the coming years. Michigan's best non-renewable alternative for base load plants appears to be natural gas, as it is inexpensive and abundant within the state.³

In 2011, Michigan ranked 16th in the nation in natural gas production, with a marketed production of approximately 138,000 million cubic feet.⁴ The Antrim Shale formation, which sits under most of the Lower Peninsula, was recently ranked 15th in the nation in proven wet gas reserves, with an estimated 20 trillion cubic feet of recoverable gas.⁵ Moreover, it was estimated in 2010 that Michigan has more natural gas storage capacity than any other state in the country.

¹ A relatively small percentage of Michigan's energy production comes from renewables, hydro power and oil-fired plants. United States Energy Information Administration. Report available at: <http://www.eia.gov/beta/state/?sid=MI>.

² Michigan Public Service Commission. Available at: <http://www.dleg.state.mi.us/mpsc/reports/energy/energyoverview/>.

³ Fermi 3 is currently on the table for a new metro-Detroit base load nuclear reactor. However, the development of a nuclear power plant is extremely costly and time-consuming, suggesting that this option may not come to fruition for many years.

⁴ See footnote 1.

⁵ United States Energy Information Administration. Available at: <http://www.eia.gov/analysis/studies/usshalegas/>.

These facts suggest that Michigan has the capability of expanding its natural gas market for energy production.

Since the natural gas reserves within the state are largely within the shale formation, drilling can be a challenge. However, with the increase in the use of a drilling technique called hydraulic fracturing, or fracking, shale formations previously thought to be unviable for production are now becoming available. This has substantial economic potential. Moreover, the use of natural gas as a source of energy for base load power plants is a cleaner option than coal and can serve to bridge the gap between the use of dirtier fossil fuels and cleaner renewable sources of energy in the coming years.

Fracking can provide tremendous benefits in the natural gas market, but it must be done responsibly. This paper is meant to encourage the state of Michigan to adopt guideless more stringent than those in place at the federal level so that natural gas can be produced in a manner that is both economically efficient and environmentally friendly.

Environmental Concerns

Fracking is a method of drilling that involves the injection of pressurized fluids into wells that lay horizontally within shale formations. These fluids, which in many cases are exempt from disclosure requirements,⁶ can include toxic substances such as benzene, toluene, xylene, methanol, formaldehyde, ethylene glycol, glycol ethers, hydrochloric acid, and sodium hydroxide.⁷ When a mixture of these fluids is pumped into the wells, along with millions of

⁶ Oil and gas companies are exempt from the disclosure requirements under the Emergency Planning and Community Right to Know Act, which would otherwise force them to make public the composition of fracking fluids. (Spence, see footnote 23).

⁷ Barclay Nicholson and Kdian Blanson, *Tracking Fracking Case Law: Hydraulic Fracturing Litigation*, Natural Resources and Environment (Fall 2011). See: Formaldehyde and benzene are both known carcinogens. See also: <http://www.epa.gov/ttnatw01/hlthef/formalde.html>. See also: <http://www.epa.gov/ttnatw01/hlthef/benzene.html>.

gallons of water, much of it returns to the surface. This so-called “flowback water” may be held in large ponds on-site, in frack tanks, or recycled for future use.⁸

One of the greatest environmental concerns associated with fracking is the use of toxic chemicals in fracking fluids and the contamination of water wells by methane. When the flowback water is stored in ponds, a malfunction in the lining (or total lack of lining) can lead to the contamination of nearby waterways or water sources. Similarly, if a storm passes through the area and an inadequate level of freeboard is left between the surface of the pond water and the top of the pond walls, overflow could pollute nearby water sources. Further, the pressure from fracking operations can force methane out of the shale formation, thereby polluting aquifers and even causing homes to explode.⁹

Such contamination has already been alleged in a number of tort actions, primarily in Pennsylvania and Texas. In one case, a group of nineteen plaintiffs filed suit against Cabot Oil & Gas, claiming that the company released gas into their wells and groundwater sources.¹⁰ Other cases have alleged that drilling companies released diesel, barium, manganese, strontium, methane, ethane, sulfur dioxide, benzene, lead, arsenic, copper, magnesium and numerous other chemicals into the water sources of those living near natural gas wells.¹¹

These instances of pollution as a result of fracking are of serious concern to environmentalists and effected citizens alike. While fracking and the use of natural gas as a fuel source can provide substantial economic benefits to the state of Michigan, it must be done in a

⁸ Swartz, *supra*.

⁹ Rachel Ehrenberg, *The Facts Behind the Frack*, Science News (September 8, 2012).

¹⁰ *Fiorentino v. Cabot Oil & Gas Corp.*, 750 F.Supp.2d 506, 509 (M.D. Pa 2010).

¹¹ *Berish v. Southwestern Energy Prod. Co.*, 763 F.Supp.2d 702 (M.D. Pa 2011). See also: *Armstrong v. Chesapeake Appalachia, LLC*, No. 3:10-cv-02453 (M.D. Pa 2010); *Scoma v. Chesapeake Energy Corp.*, No. 3:10-cv-01385 (N.D. Tex 2010); *Sizelove v. Williams Prod. Co., LLC*, No. 2010-50355-367 (367th Dist. Ct. 2010); *Heinkel-Wolfe v. Williams Prod. Co.*, No. 2010-40355-362 (362nd Dist. Ct. 2010). See also: Abrahm Lustgarten, *Dimock, PA Fracking: EPA Water Samples Contained ‘Dangerous’ Levels of Methane*, Huffington Post (March 20, 2012). See also: Reuters, *Report Links Fracking to Tainted Drinking Water* (May 9, 2011). See also: Brad Johnson, *Maryland to Sue Chesapeake Energy for PA Fracking Blowout*, thinkprogress.org (May 3, 2011).

manner that minimizes externalities. If loose regulation of fracking continues to be the status quo, it is not unreasonable to expect more serious and widespread adverse environmental impacts in areas with large natural gas reserves. Therefore, Michigan must make up for the federal oversight shortcomings in areas where it has not already done so.

Overview of the Safe Drinking Water Act

The Safe Drinking Water Act was enacted in 1974 in order to “protect the public health by regulating the nation’s public drinking water supply.”¹² Several steps are taken pursuant to the SDWA in order to ensure that the goal of the act is met. Generally, the EPA identifies contaminants that necessitate further review for health effects. Then, once the appropriate studies are complete, a goal is set for the maximum level of a particular contaminant that is acceptable in a water system. This goal is then reviewed for technological feasibility and a final, enforceable standard is set as close to the original goal as possible.¹³

Enforcement of a contaminant standard under the SDWA is then conducted through both state and federal action. States can apply for primacy, or the implementation of the SDWA within their jurisdiction, so long as they can demonstrate that their own standards will be at least as stringent as those set by the EPA.¹⁴ Then, the enforcement of the contaminant standards is achieved through state and federal water quality sampling, and EPA oversight of state programs.

The Safe Drinking Water Act and Fracking

In addition to setting contaminant standards, the SDWA establishes a framework for the Underground Injection Control (UIC) program.¹⁵ This program is meant to control the injection of waste into groundwater so as to protect underground aquifers from contamination. The

¹² Environmental Protection Agency, *Understanding the Safe Drinking Water Act*.

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

regulations that implement the UIC state that “No owner or operator shall...conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may...adversely affect the health of persons.”¹⁶ Ordinarily, the practice of injecting fracking fluids into wells would fit well within the authority of the UIC program, especially since there have been instances of the fracking injections affecting “the health of persons.” However, the Energy Policy Act of 2005 added a provision to the SDWA which states that the term “underground injection” excludes “(i) the underground injection of natural gas for purposes of storage; and (ii) the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities.”¹⁷

Operations that fall within the regulatory bounds of the UIC program must first submit a permit application to EPA officials, who shall not issue a permit before receiving a complete application for such permit.¹⁸ Since the issuance of a permit by the federal government would likely constitute a federal action “significantly affecting the quality of the human environment,” the preparation of an environmental assessment or environmental impact statement could be necessary.¹⁹ However, due to the exclusion that fracking enjoys under the SDWA, oil and gas companies need not apply for a permit before injecting fracking fluids into wells and, therefore, the federal government does not analyze the environmental impacts of such operations.

State Regulations Must Fill the SDWA’s Gap

¹⁶ 40 C.F.R. § 144.12(a).

¹⁷ 42 U.S.C.A. § 300h(d)(1).

¹⁸ 40 C.F.R. §144.31(d).

¹⁹ National Environmental Policy Act, 42 U.S.C.A. § 4332(C)(i).

In 2004, the EPA released a study stating that fracking posed no threat to drinking water sources.²⁰ This study, combined with the prospect of a booming natural gas industry, prompted Congress and the Bush Administration to ease the regulatory burden on gas companies. As a result the Energy Policy Act of 2005 contained the exemption in the SDWA for fracking operations, without so much as an environmental “safety net” attached to it. The failure to leave some sort of EPA oversight authority in place was a miscalculation at the time, said one former EPA official, and it is likely part of the reason water contamination is still largely escaping federal attention.²¹ Since the release of the study and the passage of the Act, numerous instances of groundwater contamination and other adverse impacts have been discovered in areas where fracking is popular. All of the aforementioned problems listed in this paper occurred after 2005, therefore making the reconsideration of the fracking exemption absolutely critical. However, until such modifications to federal law are made, states must ensure that their own regulations fill the gap in the SDWA.

Conclusion

The boom in the American natural gas industry has the potential to provide substantial economic benefits. However, as with many industrial activities, the extraction of natural gas must be conducted in a responsible manner so as to minimize the external costs imposed on citizens living near fracking operations. The exemption within the SDWA is a primary example of a regulatory shortcoming that must be addressed in order to ensure proper oversight of public drinking water sources. As the natural gas industry progresses, so too must Michigan’s environmental regulations in order to protect the public health.

²⁰ EPA, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs Study (2004)*. Available at: http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/wells_coalbedmethanestudy.cfm.

²¹ Abrahm Lustgarten, *Former Bush EPA Official Says Fracking Exemption Went Too Far; Congress Should Revisit*, ProPublica. (March 9, 2011).

Respectfully submitted,

Kyle M. Peczynski
Legal Fellow
Great Lakes Environmental Law Center
440 Burroughs Street, Box 70
Detroit, MI 48202