

Department of Legislative Services
Maryland General Assembly
2015 Session

FISCAL AND POLICY NOTE

House Bill 458 (Delegate S. Robinson, *et al.*)
Environment and Transportation

Environment - Exploration and Production Waste and Waste From Hydraulic Fracturing

This bill prohibits a person from accepting, receiving, collecting, storing, treating, transferring, or disposing of, in the State, waste from hydraulic fracturing; the bill establishes definitions for “store,” “treat,” “transfer,” “dispose,” “hydraulic fracturing,” “natural gas,” and “waste from hydraulic fracturing.” The bill also deems exploration and production waste as a controlled hazardous substance, subject to existing regulation as such, if the waste exhibits characteristics of ignitibility, corrosivity, reactivity, toxicity, or radioactivity; the bill defines “exploration and production waste.” Finally, the bill prohibits the Maryland Department of the Environment (MDE) from exempting exploration and production waste from requirements concerning the identification, generation, handling, transportation, or disposal of controlled hazardous substances in the State.

Fiscal Summary

State Effect: General/special fund revenues associated with general economic activity decrease to the extent that the bill prevents the development of natural gas resources that would occur in the absence of the bill, as discussed below. MDE can likely implement the bill with existing resources.

Local Effect: Local severance tax revenues and other revenues associated with general economic activity decrease for Allegany and Garrett counties to the extent that the bill results in less development of gas resources than would occur in the absence of the bill, as discussed below. Local revenues may also be minimally affected to the extent that fewer tipping fees are collected, particularly by Allegany or Garrett counties for the acceptance of mining wastes. Expenditures are not directly affected.

Small Business Effect: Potential meaningful.

Analysis

Current Law/Background:

Hazardous Waste Regulation

In Maryland, hazardous waste is regulated from generation through disposal. Generators that ship hazardous wastes must ensure that it is hauled to a permitted facility using a hauler certified by MDE. Furthermore, the waste must be accompanied by a manifest to allow for tracking of the waste until its ultimate disposal. State regulations also establish standards for the storage of the waste and other controls to prevent a release of the hazardous materials into the environment. However, drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy are excluded from the definition of hazardous waste.

The federal Resource Conservation and Recovery Act (RCRA) generally regulates the disposal of solid and hazardous wastes. Generally, wastes that are identified as hazardous are subject to separate specified standards and controls. However, certain wastes that might otherwise be characterized as hazardous (showing hazardous characteristics) have long been exempt from hazardous waste regulation. For example, waste associated with the exploration or production of oil or gas are categorically exempt from the generally applicable federal hazardous waste provisions in RCRA. Nevertheless, such wastes *may* be regulated under state laws. As noted above, however, Maryland also exempts wastes from gas production from regulation as hazardous waste.

General Regulation of the Oil and Gas Industry

A person must obtain a permit from MDE before drilling a well for the exploration, production, or underground storage of gas or oil in Maryland. A permit is also required for the disposal of any product of a gas or oil well. An applicant that wants to extract gas from the Marcellus Shale may also be required to apply for a number of other State environmental permits.

MDE regulates gas exploration and production and has broad authority to impose conditions on permits to protect the State's natural resources and to provide for public safety. Further, MDE may deny a permit based on a substantial threat to public safety or a risk of significant adverse environmental impact. However, the MDE oil and gas regulations were written prior to the use of high-volume hydraulic fracturing and, as of February 2015, have not been revised since 1993. These regulations apply to all gas wells in Maryland, are not specific to the practice of hydraulic fracturing and, in some cases, are incompatible with modern industry practices.

Chapter 383 of 2010 established an Oil and Gas Fund to support MDE's administration of a regulatory program that oversees the drilling, development, production, and storage of oil and gas wells in the State. Under Chapter 383, MDE is required to set and collect permit and production fees at a rate necessary to, among other things, develop and implement regulations to address the risks to public safety, human health, and the environment from oil and gas well drilling and development.

MDE has recently developed regulations governing oil and gas exploration and production, which were published in the *Maryland Register* for public notice and comment on January 9, 2015. MDE advises that it has received more than 100 public comments and is currently reviewing the comments.

Proposed Oil and Gas Regulations

Under the proposed regulations, all drilling fluids, cuttings, and flow back are required to be managed in a closed loop system. Any spills must be recorded, immediately cleaned up, and reported to MDE within two hours after detection. Wastes and wastewater must be handled in accordance with applicable federal, State, and local laws; no drilling fluids, hydraulic fracturing fluid, flow back, produced water, or other wastewater may be delivered to a wastewater treatment facility that discharges to the waters of the State unless the discharge permit for the facility specifically allows it to accept such wastewater. Operators must keep records of wastes and wastewater generated on site, the amount treated or recycled on site, each shipment off site, and a confirmation that the amount of waste shipped was received at the designated facility (transport vehicles must also be equipped with GPS). The regulations require flow back and produced water to be recycled to the maximum extent practicable (generally, at least 90%) on the well pad. Finally, the regulations prohibit any flow back or produced brine from being applied to land or used for de-icing.

Treatment, Storage, and Disposal of Flow Back

According to the U.S. Environmental Protection Agency (EPA), after fracturing is completed, the internal pressure of the geologic formation causes the injected fracturing fluid to rise to the surface where it may be stored in tanks or pits prior to disposal or recycling. This recovered fluid, or flow back, can contain high levels of total dissolved solids, fracturing fluid additives, metals, and naturally occurring radioactive materials.

EPA is examining the different disposal methods used by the industry to ensure that the regulatory process sufficiently protects public health, safety, and the environment. EPA is also examining the substances contained within flow back. As of December 2012, EPA had identified more than 1,000 chemicals contained in flow back but had not made any judgment about the extent of exposure to these chemicals when found in hydraulic

fracturing wastewater, or their potential impacts on drinking water resources. A full draft report was expected to be released for peer review and public comment in 2014, but has not been finalized as of February 2015.

The disposition of flow back varies significantly based on the geology and extracted resource, the chemical composition and other constituents of the flow back for each well, state regulations, and availability of infrastructure. According to EPA, the industry generally uses the following methods to dispose of flow back resulting from hydraulic fracturing:

- wastewater discharges to treatment facilities, which is regulated by the federal Clean Water Act (CWA);
- underground injection of waste disposal fluids, which is regulated by the federal Safe Drinking Water Act (SDWA), even though hydraulic fracturing itself is exempt from SDWA underground injection requirements;
- use of surface impoundments (pits or ponds) for storage or disposal, regulated by the states; and
- recycling of wastewater.

Under CWA, effluent guidelines for oil and gas extraction prohibit the on-site, direct discharge of wastewater from shale gas extraction into waters of the United States. Surface water discharges are regulated by the National Pollutant Discharge Elimination System program, which requires flow back to be treated prior to discharge into surface water.

According to EPA, because no comprehensive set of national standards exists for the disposal of wastewater discharged from natural gas extraction activities, some shale gas wastewater is transported to treatment plants, many of which are not properly equipped to treat this type of wastewater. MDE advises that it has notified publicly owned wastewater treatment plants that the acceptance of flow back will require a permit modification.

More information on the practice of hydraulic fracturing, the Marcellus Shale, and the Marcellus Shale Safe Drilling Initiative may be found in the **Appendix – High-volume Hydraulic Fracturing in the Marcellus Shale**.

State/Local Fiscal Effect:

Future Development of the Marcellus Shale Formation in Maryland

The bill broadly defines “dispose,” “store,” “treat,” and “transfer” and prohibits any of these actions with respect to waste from hydraulic fracturing in the State. To the extent that the bill is interpreted to prohibit any of the common or more cost-effective methods of

handling, transporting, or disposing of waste from hydraulic fracturing, it likely results in the elimination of future hydraulic fracturing activities in the State. For example, the bill prohibits the storage (including temporary storage) of hydraulic fracturing waste. MDE and Garrett County both advise that this likely results in a prohibition of hydraulic fracturing activities in the State, at least for the near future. Additionally, the bill's repeal of the longstanding exemption of mining wastes from regulation as hazardous waste presents a further (and substantial) disincentive to the exploration and production of natural gas from the Marcellus Shale formation in the State.

A prohibition on the extraction of shale gas resources in the State through the use of hydraulic fracturing may directly affect future severance tax revenues in Allegany County, and to a greater extent, Garrett County; other sources of State and local revenue from general economic activity may also be indirectly impacted. The State does not currently impose a severance tax on gas production.

As noted above, current oil and gas exploration and development regulations are generally inconsistent, and in some cases, incompatible with modern industry practices. Thus, it is unlikely that high-volume hydraulic fracturing occurs in Maryland under current law until the regulations are updated. Even if current regulations are revised, it is unclear whether and when future development may occur, which is dependent on the relative stringency of the final regulatory provisions (including any baseline monitoring periods or similar provisions that prohibit extraction for a certain period of time), as well as future price levels. Currently, there are no permit applications related to hydraulic fracturing pending before MDE.

Effect on Existing Wells

According to MDE, existing gas production and storage wells generate *relatively* minimal volumes of produced water and other mining wastes. Most mining wastes from these wells are unlikely to exhibit the characteristics necessary to be classified as hazardous, but some waste may require treatment as hazardous. Assuming a relatively minimal volume of hazardous waste is generated by existing wells, the MDE mining and hazardous waste programs can implement the bill with existing resources. Similarly, assuming the volume of waste is minimal, the bill's impact on local government landfills and other waste disposal infrastructure is likely minimal. Garrett County advises that some nonhazardous mining wastes can be accepted at county waste disposal facilities; any reduction in wastes accepted at a county owned landfill results in a reduction in fees collected by county facilities.

Finally, it should also be noted that the bill's significant restrictions affecting the practice of hydraulic fracturing may also impact existing gas storage wells. Although rare, vertical hydraulic fractures are occasionally conducted on existing storage wells in Garrett County.

Small Business Effect: The bill may have a meaningful adverse impact on small businesses engaged in providing services related to hydraulic fracturing and the development of natural gas resources to the extent the bill prevents such development that would otherwise occur in the absence of the bill. The bill may also have a meaningful adverse impact on any small business that owns or services existing gas wells to the extent that any produced water or other mining waste from the well is classified as hazardous.

The bill may have a meaningful beneficial impact on small businesses in Western Maryland reliant upon tourism to the extent that the development of natural gas resources would impact the levels of tourism in the area; however, any such impact is unclear. The bill may also have a less significant beneficial impact on small businesses that transport, store, or dispose of hazardous wastes in Maryland as a result of the bill's potential classification of produced water and other mining wastes as hazardous materials.

Additional Information

Prior Introductions: A bill with similar provisions, HB 409 of 2014, received an unfavorable report from the House Environmental Matters Committee. Another bill with similar provisions, HB 341 of 2013, received an unfavorable report from the House Environmental Matters Committee. Its cross file, SB 513, received a hearing in the Senate Judicial Proceedings Committee but was subsequently withdrawn. Another bill with similar provisions, HB 296 of 2012, received an unfavorable report from the House Environmental Matters Committee.

Cross File: None.

Information Source(s): Allegany and Garrett counties; Maryland Department of the Environment; Department of Labor, Licensing, and Regulation; U.S. Environmental Protection Agency; Department of Legislative Services

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min/lgc

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Appendix – High-volume Hydraulic Fracturing in the Marcellus Shale

The Marcellus Shale formation is a geologic feature that has attracted significant attention from the energy industry for its rich natural gas and liquids resources contained within seven states. In Maryland, the only anticipated areas of potential gas production are in Garrett and western Allegany counties. Applications for permits to produce natural gas in Maryland using horizontal drilling and high-volume hydraulic fracturing were first filed with the Maryland Department of the Environment (MDE) in 2010, but were subsequently withdrawn.

Concerns Regarding High-volume Hydraulic Fracturing

As the use of hydraulic fracturing has increased, so has concern about its potential impacts. MDE has advised that, although accidents are relatively rare, exploration for and production of natural gas in nearby states have resulted in injuries, well blowouts, releases of fracturing fluids, releases of methane, spills, fires, forest fragmentation, road damage, and evidence of water contamination.

In 2010, the U.S. Environmental Protection Agency (EPA) raised several concerns regarding the impact of hydraulic fracturing on water supplies, water quality, and air quality, among other issues, and is currently examining the practice more closely. In April 2012, EPA adopted a final rule to address air emissions from hydraulic fracturing, and in December 2012, EPA released a progress report on its comprehensive study of hydraulic fracturing impacts on water resources; a full draft report is expected to be released for public comment and peer review in 2015, although a series of peer-reviewed studies of various aspects of hydraulic fracturing have been published and are publicly available on the agency's website. Other states, academic and environmental organizations, and the oil and gas industry are also conducting research into the impacts of hydraulic fracturing on public health, safety, and the environment. On December 17, 2014, Governor Andrew M. Cuomo of New York prohibited the practice of high-volume hydraulic fracturing in New York State following the release of a multi-year study conducted by the State's Department of Health that recommended a ban until sufficient information on the risks of the practice became available.

Marcellus Shale Safe Drilling Initiative

Governor Martin O'Malley established the Marcellus Shale Safe Drilling Initiative by executive order in June 2011 to ensure that, if drilling for natural gas from the Marcellus Shale proceeds in Maryland, it is done in a way that protects public health, safety, natural resources, and the environment. The executive order directed MDE and the Department of Natural Resources (DNR) to assemble and consult with an advisory commission.

Specifically, the executive order tasked MDE and DNR, in consultation with the advisory commission, with conducting a three-part study and reporting recommendations.

Part I of the study, a report on findings and recommendations regarding sources of revenue and standards of liability for damages caused by gas exploration and production, was released in December 2011. The findings and recommendations of the report led to the introduction of several bills during the 2012 legislative session; the General Assembly passed only one of the bills, however. Chapter 703 of 2012 (House Bill 1123) established a presumptive impact area applicable to areas around a well for which MDE has issued a gas exploration or production permit. In a presumptive impact area, it is presumed that the contamination of a “water supply” was caused by the activities of gas exploration or production; this presumption may be rebutted.

Part II of the study – a report on best practices – was completed in August 2013 and reflected changes made after consideration of more than 4,000 public comments. This report was based upon work conducted by two experts at the University of Maryland Center for Environmental Science, Appalachian Laboratory. The experts provided MDE and DNR with a suite of recommendations that have been used or studied in other states. The departments considered each recommended best practice and decided, in consultation with the advisory commission, which practices to accept. While the report contained many recommendations, the centerpiece was the use of a Comprehensive Gas Development Plan (CDP), which a drilling applicant would be required to submit as a prerequisite to an individual well permit. A CDP would address, before any well is drilled, the broad and cumulative issues associated with the completion of numerous wells and the effects that the well construction and resource extraction and transportation would have on a large scale.

The third and final report required by the executive order was scheduled to be released by August 1, 2014. However, the departments released a draft report on July 11, 2014, and announced that public comments would be accepted through November 17, 2014. A draft of the final report of the Marcellus Shale Safe Drilling Initiative Study was released on November 25, 2014, and contained information from a risk assessment, a public health study, and an economic impact study commissioned by the departments. The final report contained all final findings and recommendations and addressed all remaining issues identified by the executive order.

The report incorporated findings from the risk assessment, including several impacts that were characterized as high, moderate, or low risks. Impacts identified as high-risk include (1) road repair costs; (2) disruptive noise and vibrations from truck traffic; (3) temporary and localized air emissions during the drilling process (under a “high-extraction” development scenario only); and (4) ecosystem fragmentation from pipeline development (high-extraction scenario only). The report also identified several moderate risks,

including (1) air emissions from combustion equipment, well pads, pipelines, and trucks; (2) ecological and agricultural impacts from land clearing; (3) community health and safety impacts from a significant increase in truck traffic; (4) the effect on aquatic ecosystems from large water withdrawals; (5) land fragmentation from the construction of natural gas gathering lines; and (6) exposure of dissolved methane to drinking water wells and groundwater. The characterization of a risk as “low,” “moderate,” or “high” results from a weighing of both the probability of an event’s occurrence and its severity. Ultimately, the departments concluded that the risks to public health and the environment can be adequately managed under a stringent regulatory regime that relies on the best practices identified in their report. MDE subsequently developed such regulations, which were published in the *Maryland Register* on January 9, 2015.