Testimony of Robert M. Summers, Ph.D.
Secretary of the Maryland Department of the Environment
House Committee on Science, Space and Technology
Wednesday, May 11, 2011

"Hydraulic Fracturing Technology and Practices"

Chairman Hall, Ranking Member Johnson and honorable members of the Committee, thank you for the opportunity to share Maryland's experience and concerns with hydraulic fracturing.

The Marcellus Shale in Maryland

In these two counties, gas companies have leased the gas rights on more than 100,000 acres. The Department of the Environment is the regulatory agency with responsibility for permitting gas wells in the State. We currently have applications pending for drilling and hydraulic fracturing ("fracking") in the Marcellus Shale from two companies for a total of five wells. An industry representative has estimated that as many as 1,600 wells could be drilled in 128,000 acres in Garrett County and another 637 wells in 51,000 drillable acres in Allegany County. We are mindful of the tremendous benefits that could accrue to the economy by exploring and developing our gas reserves. Lease payments, royalties, and in Garrett County, severance taxes, and the economic activity associated with drilling-related jobs could bring significant economic benefits to these western counties. At the same time, we have observed events in Pennsylvania during the first few years of drilling there, and we are equally alert to potential adverse impacts on public health and the environment. Our paramount concern is protecting our ground and surface waters. As a result, we are proceeding in a cautious and deliberative manner. We have issued no permits, and we do not intend to allow drilling and fracking in Maryland until the issues are resolved to our satisfaction.

Environmental, Public Health and Public Safety Concerns

There are numerous issues that must be addressed before Maryland can conclude whether and how drilling in the Marcellus Shale can be done safely. They include:

- minimum requirements for constructing, casing and cementing wells
- minimum requirements for integrity testing of wells
- minimum requirements for installing and testing blowout prevention equipment
- the potential migration of gas from the well, including migration from induced or naturally occurring faults and fractures
- the toxicity, transport and fate of fracking fluid
- proper handling and disposal of naturally occurring radioactive materials
- best practices for managing and disposing of flowback
- best practices for managing and disposing of drilling mud and drill cuttings
- best practices for containment and management of fuels and other liquids
- air pollution, including greenhouse gas emissions and ozone production
- re-fracturing and its potential effect on well integrity
- habitat fragmentation, introduction or spread of invasive species, and damage to wetlands and streams from access roads, drill pads, gathering lines, and ancillary operations
- other impacts to aquatic ecosystems, including stream sedimentation from damaged roads and dust from truck traffic
- the adequacy and sustainability of regional surface water and ground water supplies needed for fracking
- public safety and emergency response services

Additional research and study is needed in each of these areas in order to be fully protective of public health and safety and the environment.

Maryland Legislation

Public interest and concern brought the issue of Marcellus Shale drilling to the attention of Maryland legislature this year, which recently concluded its 90-day session. One bill was introduced to accelerate the issuance of drilling permits, another to place the

burden on each applicant for a permit to demonstrate the safety of drilling and fracking, and another to require a study before permits could be issued. The Governor and the Department supported a bill to require the State to perform a comprehensive study of short-term, long-term and cumulative effects of hydraulic fracturing, to be paid for by those gas companies holding leases in Maryland. None of the bills passed.

How the Maryland Department of the Environment Proposes to Proceed

We anticipate moving forward in two stages. First, during the next year to 18 months, we will survey existing practices[1] and select "Best Practices" for the drilling and fracking of wells. These Best Practices will cover all aspects of site preparation and design, delivery and management of materials, drilling, casing, cementing and fracking. After we develop this interim "gold standard" the Department will consider issuing permits for a small number of exploratory wells to be drilled and fracked in the Marcellus Shale using these standards. Sites eligible for these exploratory well permits must present minimum risks to human health and the environment. The permits will be conditioned on the company's commitment to collect and share data with the State regarding all aspects of the drilling and fracking process, monitoring of waste produced, monitoring of surface and ground water quality in the zone of influence of the operation and any other information needed to advance our understanding of the risks and the adequacy of the Best Practices.

Second, we will use the data from these exploratory wells, along with the results of other research as it becomes available, to evaluate the environmental viability of gas production from the Marcellus Shale in Maryland. This phase will focus on long-term and cumulative risks, and include landscape level effects like forest fragmentation. If we determine that gas production can be accomplished without unreasonable risk to human health and the environment, the Department could then make decisions on applications for production wells. Permit conditions would be drafted to reflect Best Practices and

[1] We will survey information from other states, but we note that there are regional differences in geology, climate, and formation composition that may limit the applicability of some methods in Maryland. For example, disposal of wastewater in underground injection wells, common in some areas, may not be feasible in Maryland.

avoid environmental harm. At this time, we have not identified a source of funding for this work.

Maryland is also concerned about the impact on its own waters and citizens from drilling and hydraulic fracturing and associated activities in nearby states. Pennsylvania has experienced incidents of well blowouts and releases of flowback. It has been reported that inadequately treated hydraulic fracturing wastewater has been discharged to surface water in Pennsylvania. The potential risk to Maryland of repeated incidents in Pennsylvania, the most recent of which resulted in a release of flowback to a tributary of the Susquehanna River in April, prompted the Attorney General of Maryland to send a notice letter to the companies involved in the April release, asserting Maryland's right to bring a citizen suit for injunctive relief and civil penalties under the provisions of the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA).

The Need for Federal Leadership

We need the federal government to take an active role in studying, providing technical support to States and assisting the States in regulating activities such as deep drilling, horizontal drilling, hydraulic fracturing, and waste disposal. In the absence of a strong federal regulatory program, the burden of assuring that wells can be safely drilled and hydraulically fractured in the Marcellus Shale falls on the states individually.

We commend Congress for directing the Environmental Protection Agency (EPA) to conduct research to examine the relationship between hydraulic fracturing and drinking water resources. EPA's Office of Research and Development has developed a solid, comprehensive plan for this study; however, we note that some important issues are beyond the scope of the study, including re-fracturing, and impacts to air quality and terrestrial and aquatic ecosystems. These issues also need to be studied.

At EPA's request, the Science Advisory Board (SAB) is reviewing the study plan. Preliminary indications are that the SAB recognizes the importance of the study, as well as the challenges posed by the limited budget and time frame. It may suggest a narrowing of the focus of the study, but also additional research activities. Among those mentioned that Maryland considers to be of critical importance are: identifying best practices for well construction and whether those practices protect public water supply;

and evaluating the potential release of contaminants to underground sources of drinking water through naturally occurring or induced faults.

While the states should retain the authority to enact more stringent requirements, a federal regulatory "floor" would ensure at least basic protection of the environment and public health. Federal regulation is particularly important given the interstate nature of surface and ground waters and the fact that states do not have jurisdiction over out-of-state drilling and fracking activities, even when those activities could have significant impacts on water quality in neighboring states. Interstate waters such as the Susquehanna and Potomac Rivers and the Chesapeake Bay, are critical resources to all of the jurisdictions in the region.

Existing regulatory exemptions for oil and gas drilling activities should be re-examined. For example, gas and oil exploration and production wastes are currently excluded from RCRA Subtitle C regulation. The Clean Water Act was amended to expand the regulatory exemption for stormwater runoff to cover all oil and gas field activities and operations, not just uncontaminated stormwater runoff from certain operations. The injection of hydraulic fracturing fluids is excluded from the Safe Drinking Water Act's Underground Injection Program. In this regard, we support the Fracturing Responsibility and Awareness of Chemicals Act, H.R. 1084, which was introduced on March 15, 2011, by Representative DeGette and co-sponsored by Representatives Sarbanes, Tonko and Woolsey, among others. The Bill would reinstate regulation of hydraulic fracturing under the Safe Drinking Water Act and require the person conducting hydraulic fracturing operations to disclose to the government all of the chemical constituents used in hydraulic fracturing. This is a positive step forward. Under the bill, however, proprietary chemical formulas could still be protected from public disclosure, and we encourage a reexamination of the scope of protection for proprietary information. The public has an important interest in knowing what chemicals are being injected underground.

We note also that Region III of the EPA has recently taken a more active role in overseeing drilling operations in the Marcellus Shale. It provided guidance on important issues, such as the need to reopen the discharge permits of facilities that treat Marcellus Shale fracking wastewater, and to initiate monitoring to ensure that drinking water

supplies are not being impacted by the discharge of the treated wastewater. More recently, following a release of fracking fluid at the Chesapeake Energy gas well in Bradford County, Pennsylvania, EPA Region III used its authority under the Clean Water Act, the Comprehensive Environmental Response, Compensation and Liability Act (commonly called Superfund), and the Resource Conservation and Recovery Act to require Chesapeake Energy to provide information and documents regarding the release, including the exact chemical identity of each constituent in the fracking fluid.

We are also encouraged by President Obama's "Blueprint for a Secure Energy Future," which he announced on March 30. In particular, we welcome the plan to have the Energy Advisory Board establish a subcommittee to identify immediate steps that can be taken to improve the safety and environmental performance of fracking and to develop consensus recommendations for federal agencies on practices that will ensure the protection of public health and the environment. Secretary of Energy Chu named the group on May 5. The planned establishment by DOE and EPA of a mechanism to provide technical assistance to states to assess the adequacy of existing state regulations is also welcome.

The states need the federal government to provide guidance and to lend its resources to the effort. We need a strong state-federal partnership. Timing and other factors probably preclude using an exploratory well in Maryland for one of the prospective case studies planned for the EPA study, but we hope that EPA will provide expanded guidance on the study plan for the prospective case study so that Maryland can gather the most relevant data, if a permit is issued for an exploratory well. We would also welcome the technical assistance of the US Geological Survey in determining what to monitor in the process of drilling and fracking wells for exploration, and in analyzing the data we obtain. A compilation of Best Practices and, until the EPA study can better delineate the subsurface zone that is potentially impacted by hydraulic fracturing activities, preliminary guidance on the proper spatial area for monitoring, would also be helpful. Lastly, we urge EPA to develop water quality criteria for conductivity (specific to chemical species), dissolved solids and salinity in freshwater, as well as pretreatment standards for fracking flowback that is protective of drinking water supplies and the health of the citizens who rely upon those supplies.

The Chesapeake Bay Foundation and other groups have filed a petition with the federal government for a Programmatic Environmental Impact Statement to address the risks and cumulative impacts of the extraction of natural gas from the Marcellus Shale formation in the Chesapeake Bay watershed. We support the goal of a comprehensive assessment, and we note that portions of the Marcellus Shale lie to the west of the Eastern Continental Divide, and that the environment outside the Chesapeake Bay watershed deserves protection, too.

Thank you for taking the initiative to inquire into this important issue and for the opportunity to share Maryland's perspective.