

**TESTIMONY SUBMITTED TO
THE HOUSE COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT HEARING ON
“REVIEW OF HYDRAULIC FRACTURING TECHNOLOGY AND PRACTICES”**

**BY HAROLD R. FITCH, DIRECTOR, OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
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Good morning Chairman Hall and members of the Subcommittee. My name is Harold Fitch. I am here today representing the State of Michigan and the Groundwater Protection Council, or GWPC. I am the Director of the Office of Geological Survey (OGS) of the Michigan Department of Environmental Quality and have served in that capacity for the past 15 years. The OGS is charged with regulating oil, gas, and mineral exploration and production operations in Michigan. The Ground Water Protection Council is a national association of state ground water and underground injection control agencies whose mission is to promote the protection and conservation of ground water resources. I am a member of the Board of Directors of the GWPC.

I am also involved in two other organizations that play prominent roles in hydraulic fracturing issues: the Interstate Oil and Gas Compact Commission, or IOGCC, and State Review of Oil and Natural Gas Environmental Regulations, Inc., or STRONGER.

The IOGCC is an organization chartered by Congress that represents the governors of more than 30 oil and gas producing states. Its mission is to conserve domestic oil and gas resources while ensuring environmental protection. I am Michigan's Official Representative to the IOGCC, and I serve as Chair of the IOGCC Shale Gas Directors' Task Force.

STRONGER is a non-profit organization representing states, industry, and public interest groups whose purpose is evaluate state oil and gas regulatory programs against a set of established guidelines. I serve on the Board of Directors of STRONGER. Over the past year we have conducted focused reviews of state hydraulic fracturing requirements for Pennsylvania, Ohio, Oklahoma, and Louisiana.

I appreciate this opportunity to address you on the important issue of hydraulic fracturing. I want to talk briefly about the experience in regulating hydraulic fracturing in Michigan as well as other states, the GWPC's role in addressing some of the controversies surrounding the technique, and the study that is underway by the U.S. Environmental Protection Agency (EPA).

Regulation of Hydraulic Fracturing by the States

Hydraulic fracturing has been utilized throughout the United States for more than 60 years, and the states have a long history of successful regulation of the practice. In Michigan more than 12,000 wells have been hydraulically fractured, beginning in the 1970s. Most of these are relatively shallow shale gas wells in the northern Lower

Peninsula. More recently, there has been interest in a deeper shale formation that requires the drilling of long horizontal holes and larger volumes of fracturing fluid for effective development. It is this type of development that has raised concerns over hydraulic fracturing in Michigan and other states. The concerns center on five issues: (1) migration of gas or fracture fluids, (2) water use, (3) management of produced water, (4) surface spills, and (5) disclosure of chemical additives. Let me address each of those issues in turn.

Migration of gas or fracture fluids. Whenever an oil and gas well is drilled through a fresh water aquifer there is a potential for migration of gas or other fluids up the well bore and into the aquifer, whether or not the oil and gas well is hydraulically fractured. There have been a few recent incidents of gas migration in other states, but the cause has been well construction problems and not hydraulic fracturing itself. Because of rock characteristics and the physics of the fracturing process, it is virtually impossible for an induced fracture to propagate upward into fresh water zones. The key to preventing migration of gas or fluids is installation of steel pipe, or "casing," encased in cement. In addition, it is important to assure there are no abandoned and inadequately plugged wells in the vicinity that could constitute a conduit for movement of fluids or gas during a hydraulic fracturing operation or during subsequent production operations. The states have the regulatory tools to address these issues.

Water use. A fracture treatment of a typical deep shale gas well may require three million gallons of water or more. To put this in perspective, three million gallons is the volume of water typically used by five to six acres of corn during a growing season. While water withdrawal regulations vary across the U.S., the states again have the regulatory tools to address the issue in a manner tailored to their specific needs and legal structures. In Michigan we require evaluation of large water withdrawals for hydraulic fracturing using the same methodology required of other large water users.

Management of flowback water. After fractures are induced in the reservoir rock, pressure is released and a portion of the fracturing fluids is recovered from the well. The recovered fluid is termed "flowback." It typically constitutes 25 to 75 percent of the fracturing fluid originally injected. The remainder stays in the reservoir rock or is produced gradually along with the natural gas as "produced water." In Michigan, flowback water must be contained in steel tanks and transported to licensed disposal wells where it is injected into deep rock layers that are isolated from fresh water supplies. That is at least an option in many other states. In some states flowback water may be hauled to wastewater treatment plants where it is treated and discharged into surface waters. This has raised issues with water quality because treatment plants may not be capable of removing some constituents of the flowback water—particularly dissolved salts that may be in the native reservoir fluids and be mixed with the flowback. In some areas flowback water is stored and recycled.

Surface spills. Spills of chemical additives or flowback water can have adverse environmental or public health impacts. As with any industrial operation, there is a potential for accidental spills or releases associated with hydraulic fracturing. However, the states have safeguards in place to minimize the risk of spills and reduce their impacts. Michigan requires secondary containment in areas where spills may be most likely, and has strict requirements for spill reporting and cleanup.

Identification of chemical additives. A growing number of public interest groups are advocating for public disclosure of chemical additives used in hydraulic fracturing fluid. A few states are taking actions to require disclosure to a state regulatory agency, although not to the general

public. Under federal law information on chemicals and potential health and environmental effects must be provided in Material Safety Data Sheets (or MSDSs), which are posted wherever the additives are stored, transported, or used. However, the chemical identities and concentrations of some of the chemicals are exempted from disclosure as trade secrets. Those details must be provided to medical personnel in the event of an emergency. In Michigan we believe the MSDSs provide enough information to respond to and track spills. We are working to make that information more readily available to the public.

GWPC Actions to Address the Hydraulic Fracturing Controversy

The GWPC has been engaged on the issue of hydraulic fracturing for some time, and has published two very relevant reports. The first of these reports is called *Modern Shale Gas Development in the United States: A Primer*. The primer discusses the regulatory framework, policy issues, and technical aspects of shale gas resources and provides accurate technical information on hydraulic fracturing.

The second report is entitled *State Oil and Gas Regulations Designed to Protect Water Resources*. The report is a comprehensive state-by-state evaluation. It concludes that state oil and gas regulations are in general adequately designed to directly protect water resources. The report also recommends consideration of flexible Best Management Practices; commends the STRONGER, Inc. process of reviewing state programs; and supports increased digitization of state data.

Last September the GWPC began a project in cooperation with the IOGCC to develop a national registry of chemicals used in hydraulic fracturing. The result is a website called Frac Focus, www.fracfocus.org, launched on April 11. The U.S. Department of Energy provided funding support for the project. The initiative provides oil and gas exploration and production companies with a single-source means to publicly disclose the chemical additives used in the hydraulic fracturing process.

The Frac Focus website features an easy-to-use interface that gives the public and regulators access to comprehensive information about hydraulically-fractured wells nationwide. Searchable fields allow users to identify wells by location, operator, state, and county, as well as a standard well identification number, known as an API number.

The website also contains information about the process of hydraulic fracturing, groundwater protection, chemical use, state regulations, publications, and links to federal agencies, technical resources and each participating company. Within its first months of operation 40 companies had agreed to participate in the effort, more than 450 wells were loaded into the system by 18 of these companies, and the website was visited more than 28,000 times by people in 78 countries.

Future enhancements to the site will include an improved uploading system that should result in quicker posting of greater numbers of records, a Geographic Information System interface that will aid the public in locating records more easily and links to more publications, state agencies and other resources.

My agency in Michigan joins other states in strongly encouraging the industry to upload data to the Frac Focus website. Several states are considering using Frac Focus as part of future chemical disclosure rule changes.

The Pending U.S. EPA Study

I have reviewed the U.S. EPA "Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources" that was published February 7, 2011. We support the study plan in principle. While we believe the states have adequate programs and authority for regulating hydraulic fracturing and a very good understanding of the technology and its potential for impacts, we also acknowledge the potential benefits of a review by the EPA in light of the intense controversy surrounding the subject.

We appreciate the EPA's pledge to work with the states, GWPC, and other stakeholders in conducting the study and are committed to upholding our respective roles. In particular, we want to assure that the study adhere to the directive of Congress that the study utilize the best available science; rely on independent sources of information; be a transparent, peer-reviewed process; and incorporate consultation with stakeholders.

We do have some concern with the scope and timing of the study. The EPA intends to produce an interim report in 2012, and provide additional results in a 2014 report. The EPA has identified a number of questions to be addressed, including impacts of water withdrawals; releases of fracturing fluids, flowback, and produced water; the injection and fracturing process itself; and inadequate treatment of hydraulic fracturing wastewaters. EPA's Science Advisory Board has urged the agency to focus on waste discharges, and we agree with that recommendation, particularly with respect to the interim report. We believe that management of flowback and produced water is the primary concern in hydraulic fracturing. We are concerned that the broad scope of the study as proposed will make it difficult to produce a timely report.

We have one final concern: President Obama has directed the Department of Energy to establish a panel to address concerns regarding potential negative impacts associated with hydraulic fracturing. Within six months, the panel is to offer advice to other agencies on how to better protect the environment from shale gas drilling. It is unclear how the panel's study will be combined with the ongoing EPA study.

Conclusion

In conclusion, we believe the laws and rules in Michigan and other states effectively protect water and other natural resources as well as public health and safety from potential adverse effects of hydraulic fracturing. Michigan is typical of the oil and gas producing states in taking a proactive approach to address large-scale hydraulic fracturing as well as other issues associated with deep shale gas development. The GWPC will continue to assist states with

their regulatory needs for the purpose of protecting water, our most vital natural resource.

Thank you again for the opportunity to appear here today. I would be glad to entertain any questions the Committee may have.