

TESTIMONY

**Fred S. Hauchman, Ph.D.
Director, Office of Science Policy
Office of Research and Development
U.S. Environmental Protection Agency**

**Joint Hearing on Lessons Learned: EPA's Investigations of Hydraulic Fracturing
before the
U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Environment
Subcommittee on Energy
July 24, 2013**

Good morning, Chairman Lummis, Chairman Stewart, and other distinguished members of the two Subcommittees. My name is Fred Hauchman, and I am the Director of the Office of Science Policy in the Office of Research and Development (ORD) at the U.S. Environmental Protection Agency (EPA).

I appreciate the opportunity to talk with you today about the EPA's work to study the potential impacts of hydraulic fracturing on drinking water resources, with an emphasis on adherence to protocols, procedures, and other science policies governing our research activities associated with the study.

Oil and natural gas are important sources of energy, among others, that will continue to play a vital role in our nation's energy future. As the President has stated, "Recent innovations have given us the opportunity to tap large reserves of natural gas in the shale under our feet. But just as is true in terms of us extracting oil from the ground, we've got to make sure that we're extracting natural gas safely, without polluting our water supply." The extraction and development of these energy sources must be done safely, responsibly, and be guided by the best available science.

The Study: Potential Impacts of Hydraulic Fracturing on Drinking Water Resources

In its FY2010 Appropriations Committee Conference Report, Congress requested that the EPA study the relationship between hydraulic fracturing and drinking water, and to use the best available science and independent sources of information. The EPA is undertaking the study using a transparent, peer-reviewed process. We have engaged experts in developing our approach and we continue to consult with experts and stakeholders throughout the study.

In 2011, the EPA began research under its *Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*. The purpose of the study is to assess the potential impacts of hydraulic fracturing on drinking water resources, if any, and to identify the driving factors that may affect the severity and frequency of such impacts.

The scope of the proposed research includes the full hydraulic fracturing water cycle, from acquisition of the water, through the mixing of chemicals and injection of fluids, to the post-fracturing stage, including the management of flowback and produced water and its ultimate treatment and disposal. The EPA's Science Advisory Board (SAB), in their June 2010 review of the draft Study Plan, affirmed that the study scope and general research approaches proposed by the EPA were appropriate. The Study Plan, finalized on November 3, 2011, outlines fundamental research questions associated with each stage the hydraulic fracturing water cycle.

Study Progress Report and Synthesis Report

In December, 2012, the EPA released the *Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources: Progress Report* to provide the public with the latest information on the work being undertaken as part of the research study. This report, which describes the progress that has been made to date, does not contain any findings. As such, it cannot be used to draw conclusions about

the potential impacts of hydraulic fracturing on drinking water resources. The EPA's synthesis of existing literature and data, in combination with laboratory studies, toxicity assessments, scenario evaluations (modeling), and case studies, will address the key research questions about the potential impacts of hydraulic fracturing on drinking water resources. The draft EPA report that synthesizes the results of these studies is expected to be released for peer review and public comment in late 2014.

Scientific Integrity

As noted in the EPA's Study Plan, all EPA-funded research projects must comply with the agency's rigorous quality assurance requirements. Individual projects, for example, are subjected to technical system and data quality audits, and all products will receive quality assurance reviews. The EPA is committed to ensuring scientific integrity in its research, and is conducting this study consistent with the agency's Scientific Integrity Policy¹ and with the six principles laid out by Congress when it requested that EPA conduct the study.

To that end, the EPA is conducting the study following these six principles. First, we are using the best available science. Highly skilled teams of EPA scientists and support staff are conducting rigorously designed research using state-of-the-art laboratories and methodologies. Data analyses and literature reviews are being conducted using the highest quality information available.

Second, we are incorporating independent sources of information in our research. In addition to conducting original research, EPA scientists are gathering and analyzing existing data from a wide variety of sources to ensure a thorough understanding of current information on hydraulic fracturing

¹ <http://www.epa.gov/research/htm/scientific-integrity.htm>

activities and to provide better context for the study findings. This includes data from State agencies, industry, federal agencies and other public sources.

Third, we are following rigorous quality assurance procedures in the study. All research associated with this study is conducted in accordance with the EPA's Quality Assurance Program for environmental data and is meeting ORD's requirements for the highest level of quality assurance. The study's Quality Management Plan establishes the overall quality assurance approach. Each research project is guided by an approved quality assurance project plan, which outlines the necessary quality assurance procedures, quality control activities, and other technical activities that will ensure the collection of accurate data. Results from every project will undergo a comprehensive quality assurance review before being released for peer review.

Fourth, we are engaging stakeholders at every level. This includes the public, industry, non-governmental organizations, tribal governments, and State, inter-state, and federal agencies. Stakeholder input is being considered as we conduct the study and develop the 2014 draft report.

Fifth, we are conducting the study in a transparent fashion. The EPA is communicating research procedures and providing status updates to the public, and will present findings along with underlying assumptions and any uncertainties associated with the final conclusions. The EPA has supported full transparency by holding public information sessions and by posting all quality assurance project plans online.

Sixth, we are committed to a thorough peer review. The EPA conducts its reviews in accordance with the agency's Peer Review Policy,² EPA's Peer Review Handbook,³ and the guidance provided in OMB's Peer Review Bulletin.⁴ The initial scoping plan, the draft Study Plan and the 2012 Progress Report were all reviewed by technical experts from the SAB. As a Highly Influential Scientific Assessment, the 2014 draft report will also receive meaningful and timely peer review by an SAB panel, with opportunities for public comment. The panel members will be briefed periodically as the research progresses to prepare them to conduct the peer review of the 2014 draft report.

In sum, this integrated approach of openness and scientific rigor is ensuring that the EPA study will provide the full range of policymakers with high quality, policy-relevant science that will inform their decision making.

Stakeholder Engagement

Stakeholder input has played, and will continue to play, an important role in the study. We have implemented a strategy that has provided many opportunities for exchange of information and input on the study design and the research as it progresses. The EPA has further enhanced the stakeholder process to ensure that experts in key areas, including cutting-edge industry technologies and practices, are being engaged to provide input on the EPA's research. Five technical roundtables were held in late 2012 on each stage of the water cycle, and a second round of expert workshops on important technical topics⁵

² USEPA, Peer Review and Peer Involvement at the U.S. Environmental Protection Agency, January 31, 2006 http://www.epa.gov/peerreview/pdfs/peer_review_policy_and_memo.pdf

³ USEPA. Peer Review Handbook, 3rd Edition, March 2006 http://www.epa.gov/peerreview/pdfs/peer_review_handbook_2012.pdf

⁴ Office of Management and Budget, Memorandum: Issuance of OMB's "Final Information Quality Bulletin for Peer Review", December 16, 2004 <http://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2005/m05-03.pdf>

⁵ Analytical Chemical Methods; Well Construction/Operation and Subsurface Modeling; Wastewater Treatment and Related Modeling; Water Acquisition Modeling; and Case Studies.

began in February 2013. Information from these roundtables and workshops is being made widely available to the public through webinars and the hydraulic fracturing study website.⁶

In November 2012, the EPA published a *Federal Register* notice to solicit data and studies from stakeholders to inform the study. To ensure transparency, the information received (with the exception of confidential business information) is placed in the EPA docket so that it is accessible to everyone. The EPA has extended the period for submissions to November 2013 to help ensure that the most up-to-date information is available for the preparation of the 2014 draft report. We will continue to engage stakeholders by providing updates and receiving technical input as the research progresses.

Coordination with Other Federal Agencies

The EPA has been actively consulting with several key federal agencies regarding this important research. The EPA, the Department of Energy (DOE) and the US Geological Survey (USGS) routinely exchange information regarding research plans and current activities. Exchanges among the principal investigators, in addition to high level discussions, help to assure that scientific details about the work are shared and can be used to help inform work underway by others. DOE's National Energy Technology Laboratory, for example, recently briefed EPA on the progress of their work in hydraulic fracturing. In addition, DOE and USGS are among those participating in our technical workshops.

Conclusion

In conclusion, the President believes the prudent development of our oil and natural gas resources can make a critical contribution to meeting our nation's energy needs. I am proud to be part of the research effort that will help enable the development of these resources in a way that protects the human health

⁶ www.epa.gov/hfstudy

and the environment while providing the benefits of these important energy sources. We are pursuing this work with the best available science and the highest level of transparency. This study will continue to be conducted through a transparent, peer-reviewed process in consultation with other federal agencies, appropriate State and inter-state regulatory agencies, and with input from industry, non-governmental organizations, tribal governments, and other stakeholders. As you have heard today, we will continue to collaborate with our federal partners and work with our stakeholders to address the highest priority challenges to safely and prudently develop unconventional gas and oil resources.

I look forward to keeping this Committee updated on our progress, and thank you for the opportunity to appear before you today. I am happy to take any questions you may have at this time.