TESTIMONY

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Joint Hearing on Review of Federal Hydraulic Fracturing Research Activities
before the
U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Energy
and
Subcommittee on the Environment
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Good morning, Chairman Lummis, Chairman Stewart, and other distinguished members of the two Subcommittees. My name is Kevin Teichman, and I am the Senior Science Advisor in the Office of Research and Development at the U.S. Environmental Protection Agency (EPA).

I appreciate the opportunity to talk with you today about EPA's research activities related to hydraulic fracturing, and progress made under Executive Order 13605 and the associated interagency Memorandum of Agreement (MOA) between the Department of Energy (DOE), the Department of Interior (DOI), and the EPA.

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. The extraction and development of these energy sources must be done safely, responsibly, and be guided by the best available science.

The Executive Order, the MOA, and Tri-Agency Coordination

On April 13th of last year, Executive Order 13605 was signed by President Barack Obama to enhance coordination among the Federal agencies responsible for overseeing the safe and responsible development of unconventional domestic natural gas resources and associated infrastructure to reduce U.S. dependence on foreign oil.

Also in April 2012, DOE, DOI, and EPA signed a MOA to develop a tri-agency research program devoted to unconventional oil and gas (UOG) production. Under this MOA, the three agencies are collaborating to provide information and technologies that will support sound policy decisions by Federal agencies; State, Tribal, and local governments; the oil and gas industry; and others to ensure prudent development of these energy sources while promoting safe practices, human health, and the environment. Under this agreement, which is broader than the scope of EPA's current study of the potential impacts of hydraulic fracturing on drinking water resources, the agencies are coordinating their research planning efforts, focusing on each agency's areas of core competency, and collaborating on research with each other and others as much as possible. For example, EPA's areas of core competency are: water quality assessment, air monitoring and assessment, and human health and environmental risk.

Last July, the Tri-agency Steering Committee, described in Dr. Russ' testimony, held webinars for the three different groups of external stakeholders: industry, State and Tribal governments; and non-profit organizations, including environmental groups. At that time, we described the research areas we thought should be studied, and asked each of these groups the following questions:

- In each of the seven potential research areas, what are the most important research questions that can be addressed in the short-term? In the long-term?
- Are there other potential research areas that should be considered?
- What would the most useful research products be in the short-term? In the long-term?
- What research is your organization pursuing, and how do you intend to share your research results?

In addition, the members of the Steering Committee and its Technical Subcommittee continue to participate in technical conferences, meetings, and workshops devoted to this topic, at which we have presented the seven research areas and asked the above questions.

Specifically, EPA has taken steps to coordinate with other Federal agencies throughout the development and implementation of our drinking water study. For example, DOE and DOI are participating in the technical workshops related to our study. These workshops are devoted to analytical chemical methods, well construction/operation and subsurface modeling, wastewater treatment, water acquisition modeling, and hydraulic fracturing case studies.

EPA is also working with the Department of Energy's Lawrence Berkeley National Laboratory to explore the potential for both liquids and gases to move from hydraulically fractured zones to drinking water aquifers. Additionally, EPA's principal investigators remain in frequent contact with their counterparts at DOE and DOI (principally the U.S. Geological Survey (USGS)) regarding research devoted to this important topic.

Collaboration among the three agencies helps to maximize the impact of the research resources available to all of the groups that are working on this important topic, and ultimately ensure that our efforts are coordinated to support the development of our country's oil and natural gas resources in a safe and responsible way.

Tri-Agency UOG Research Plan

In the tri-agency MOA, the three agencies committed to the development of a research plan that would, in brief, synthesize the state of knowledge; identify data gaps; prioritize research topics; describe steps to maximize stakeholder participation; establish mechanisms for cooperation among the three agencies, and determine future goals and objectives. The tri-agency research plan is still under development. Work to date to develop the plan has been very helpful in both coordination among the three agencies' research efforts and the development of the President's FY 2014 Budget Request.

EPA Research Activities in FY 2012 and 2013 – The EPA Drinking Water Study

In FY 2012 and FY 2013, EPA's research efforts related to hydraulic fracturing are focused on carrying out the Congressionally requested *Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources.* This research has focused on assessing the potential impacts of hydraulic fracturing on drinking water resources, if any, as well as identifying the driving factors that may affect the severity and frequency of such impacts.

Work is underway to answer the research questions listed in the "Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources" (Study Plan) available at www.epa.gov/hfstudy.

EPA released a Progress Report in December 2012 that provides an update of the ongoing research. A draft report of results is expected in late 2014. The 2014 draft report will synthesize the results from the research projects together with the available scientific literature to inform answers to the research questions listed in the Study Plan.

As shown in chapter 13 of the Study Plan, there are important questions outside the scope of the current work that are of high priority to stakeholders and merit further investigation. Therefore, the tri-agency research plan will include research needs on potential impacts beyond those of the EPA drinking water study, i.e., on air quality, human health effects, water, and ecosystems. This broader perspective is reflected in the President's FY 2014 Budget Request for EPA and our partner agencies.

FY 2014 Request for EPA

The President's Budget for FY 2014 requests a total of $14.1 million and 24.9 FTE for EPA to conduct UOG research. Resources are requested in three research areas: (a) continuing work on the drinking water study ($6.1 million and 14.9 FTE); (b) water quality and ecological studies ($4.3 million and 5.5 FTE); and (c) air quality studies ($3.8 million and 5.5 FTE). These research areas are among those identified as high priority research topics as part of the tri-agency effort and represent EPA's FY 2014 contribution to that effort.

With respect to the drinking water study, as mentioned earlier, a draft report of the study results is expected in late 2014. FY 2014 resources will be used to revise the report as needed to reflect the comments received during public comment and peer review.

The remaining FY 2014 requested resources would be used to better characterize: (a) the composition of wastewater (flowback and produced waters) and wastewater treatment solids from hydraulic fracturing and UOG operations across the United States and (b) air emissions from hydraulic fracturing operations including methane, combustion byproducts, and volatile organic compounds.

Conclusion

In conclusion, I believe 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 maximizes the potential positive impacts and minimizes the potential negative impacts -- on human health, air quality, water, and ecosystems. We are pursuing this work with the best available science and the highest level of transparency. 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 developing unconventional shale gas and tight 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.