



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
CINCINNATI, OHIO 45268

March 22, 2010

MEMORANDUM

SUBJECT: Advice on Hydraulic Fracturing Research

FROM: Sally Gutierrez, Director /signed/
Office of Research and Development
National Risk Management Research Laboratory

TO: Vanessa Vu, Director
Science Advisory Board Staff Office

This memorandum requests the Science Advisory Board (SAB) Environmental Engineering Committee (EEC) to generate ideas/suggestions on EPA's Office of Research and Development (ORD) proposed approach for developing a policy-relevant research program related to hydraulic fracturing. The purpose of this research program is to ensure drinking water protection and address related public health and environmental issues over the lifecycle of hydraulic fracturing, specifically as it pertains to the extraction of oil and gas from geologic formations.

Background

In its Fiscal Year 2010 Appropriation Conference Committee Directive to EPA, the U.S. House of Representatives urged the Agency to conduct a study of hydraulic fracturing and its relationship to drinking water, specifically:

"The conferees urge the Agency to carry out a study on the relationship between hydraulic fracturing and drinking water, using a credible approach that relies on the best available science, as well as independent sources of information. The conferees expect the study to be conducted through a transparent, peer-reviewed process that will ensure the validity and accuracy of the data. The Agency shall consult with other Federal agencies as well as appropriate State and interstate regulatory agencies in carrying out the study, which should be prepared in accordance with the Agency's quality assurance principles."

Hydraulic fracturing (HF) is a well stimulation technique used by gas producers to explore and produce natural gas from sources such as coalbed methane and shale gas formations. The gas

extraction process includes: site exploration, selection and preparation; equipment mobilization-demobilization; well construction and development; mixing and injecting fracturing fluids; hydraulic fracturing of the formation; produced water and waste management, transport, treatment, and/or disposal; gas production (infrastructure for storage and transportation); and site closure.

EPA's Office of Research and Development (ORD) has developed a proposed approach for developing a policy-relevant study related to hydraulic fracturing. The purpose of the study is to evaluate the relationship between hydraulic fracturing and drinking water. Socio-economic factors may also play a role in understanding how to address potential health and environmental concerns. To ensure that meaningful results are produced in a timely manner, it is important to clarify the overall scope of the study and define explicit short-term and long-term goals. In developing the study design and potential research products, it is important to consider the types of information that might be needed to inform policy decisions.

ORD is currently engaged in compiling available information; identifying data gaps and research needs; defining and prioritizing study objectives; and developing a timeline to implement the study. An important part of this effort will be stakeholder involvement.

Specific Request

ORD has requested that the SAB Environmental Engineering Committee (EEC), as augmented for the hydraulic fracturing review, generate ideas/suggestions and comments on the overall approach that will be used to frame the hydraulic fracturing study design and the areas that will be addressed by research. ORD is seeking specific advice on the development of the scope of the study, the approach to analyze data gaps and research needs, the stakeholder process, and the identification of the critical research questions. SAB feedback will be used to guide the development of a scientifically sound study to establish the relationship between drinking water resources and hydraulic fracturing as it pertains to the extraction of oil and gas from geologic formations.

Charge to SAB

1. Proposed Scope of Study:

Congress urged EPA to carry out a study on "the relationship between hydraulic fracturing and drinking water." Key to determining the scope of the study is understanding whether or not the scope of the study should be narrowly focused or broadly focused, taking into account water resources and related public health and environmental issues over the lifecycle of hydraulic fracturing.

Charge Question 1: What recommendations does the SAB EEC have regarding this question of scope?

2. Proposed Research Topics:

ORD has identified the following proposed research categories relevant to hydraulic fracturing pertaining to extraction of oil and gas from geologic formations and its relationship to drinking water:

- Characterization of the Hydraulic Fracturing Lifecycle
- Potential Relationships to Drinking Water Resources
- Potential Health and Environmental Risks.

Charge Question 2A: What recommendations does the SAB EEC have regarding these proposed research categories and the related questions in the scoping paper?

Charge Question 2B: What process does the SAB EEC suggest for prioritizing research needs given the Congressional request and a desire by the Agency to complete initial research products by the end of calendar year 2012?

3. Stakeholder Process:

It will be critical to engage the stakeholder community in the planning process to establish a research program that is reflective of diverse interests and viewpoints.

Charge Question 3: What advice does the SAB EEC offer for designing a stakeholder process that provides for balanced input in developing a sound scientific approach for the overall research strategy?