

Stakeholder Engagement Road Map and Peer Review Overview for EPA's Study on the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources

On March 18, 2010, at the request of the U.S. Congress, EPA announced plans to develop a comprehensive research study on the potential impact of hydraulic fracturing on drinking water resources. EPA believes a transparent, research-driven approach with significant stakeholder involvement can address questions about hydraulic fracturing and strengthen our clean energy future. The below roadmap outlines EPA's plans to build upon the Agency's commitment to transparency and stakeholder engagement coordinated during the development of the Hydraulic Fracturing Study Plan and will help inform the 2014 hydraulic fracturing study draft assessment report.

GOALS OF STRENGTHENED STAKEHOLDER ENGAGEMENT

- Increase technical engagement with the stakeholder community to ensure that EPA has ongoing access to a broad range of expertise and data outside the Agency.
- Improve public understanding of the goals and design of the study.
- Ensure that EPA is current on changes in industry practices and technologies so the report of results reflects an up-to-date picture of hydraulic fracturing operations.
- Obtain timely and constructive feedback on projects undertaken as part of the study.
- Subject the report of results and research products supporting the report of results to meaningful and timely peer review, taking into account the study's designation as a Highly Influential Scientific Assessment (HISA).

INCREASED TECHNICAL ENGAGEMENT

In November 2012, EPA held five roundtables focused on each stage of the water cycle:

- **Water Acquisition:** This study takes steps to examine potential changes in the quantity of water available for drinking and potential changes in drinking water quality that result from acquisition for hydraulic fracturing. EPA is aware that the use of recycling is rapidly growing and that this may affect the need to acquire water for hydraulic fracturing.
- **Chemical Mixing:** The study examines the potential release of chemicals used in hydraulic fracturing to surface and ground water through on-site spills and/or leaks and compiles information on hydraulic fracturing fluids and chemicals from publically available data, data provided by nine hydraulic fracturing service companies and other sources.
- **Flowback:** The study examines available data regarding release to surface or ground water through spills or leakage from on-site storage.
- **Water Treatment and Disposal:** The study examines the potential for contaminants to reach drinking water due to surface water discharge, the effectiveness of current wastewater

treatment, and the potential formation of disinfection byproducts in drinking water treatment facilities.

- **Well Injection:** The study takes steps to examine the potential for release of hydraulic fracturing fluids to ground water due to inadequate well construction or operation, movement of hydraulic fracturing fluids from the target formation to drinking water aquifers through local man-made or natural features (e.g., other production or abandoned wells and existing faults or fractures).

Based on feedback from these roundtables, EPA hosted five in-depth technical workshops to address specific issues in greater detail. These technical workshops were held between February and July 2013. In December 2013, EPA reconvened the original roundtable to review the work addressed in the technical workshop series.

IMPROVE PUBLIC UNDERSTANDING

To improve public understanding of the study, EPA staff has increased the frequency of webinars. For instance, after each technical roundtable and workshop, EPA hosted a webinar to report out to the public on meeting themes and discussion. EPA will continue to provide regular electronic updates to its list of stakeholders.

In addition to the webinars, EPA staff are regularly updating the hydraulic fracturing study website and identifying opportunities for briefings and updates on the study to stakeholders, e.g., annual or regional meetings of industry trade associations, annual meetings of environmental/public health groups, academic conferences, annual or regional meetings of water utilities, and tribal meetings.

In December 2012, EPA released a progress report on the study. While the progress report does not make any final findings or conclusions, it provides the public with an update on study activities and future work. Public comment on the report was solicited as part of the Science Advisory Board's review of the report.

ENSURE EPA IS CURRENT ON INDUSTRY PRACTICES

To ensure that EPA is up-to-date on evolving industry practices and technologies, EPA published a Federal Register notice in late 2012 creating a docket where stakeholders could submit peer-reviewed data from ongoing or completed studies. This initial request was extended until November 2013.

OBTAIN TIMELY FEEDBACK

EPA intends to receive timely feedback on the projects conducted as part of the study through the roundtables and technical workshops described above. In March 2013, EPA's Scientific Advisory Board (SAB) formed an ad hoc panel of independent experts who provide periodic advice and review of EPA's hydraulic fracturing research, starting with a consultation to provide feedback on its 2012 Progress Report and concluding with a peer review of the draft assessment report. In addition, this SAB panel may also provide advice on other technical documents and issues related to hydraulic fracturing upon further request by EPA. The panel will provide opportunities for public comment in connection with these activities.

PEER REVIEW IN ACCORD WITH STUDY'S DESIGNATION AS HISA

As a Highly Influential Scientific Assessment, the draft assessment report will receive meaningful and timely peer review in accordance with EPA's peer review handbook.

EPA's Scientific Advisory Board (SAB) formed a panel of independent experts who will provide advice and review under the auspices of the SAB on EPA's hydraulic fracturing research, starting with technical feedback on its 2012 Progress Report and concluding with a review of the draft assessment report. Upon the establishment of the SAB panel, the EPA SAB Staff Office announced a meeting date in May 2013 to review the Progress Report and offer the public an opportunity to provide oral and written comment for consideration. The EPA plans to consider individual experts' comments, which will be informed by public comment, in the development of the draft assessment report that will undergo a formal SAB peer review.

In addition to SAB review, the research projects supporting the report of results will be peer reviewed upon completion. The review plan is as follows:

- Retrospective case studies will be grouped together and will be peer reviewed.
- Most projects will result in articles submitted to journals, and therefore subjected to the journal's peer review processes, external to EPA.
- A few projects and their results will be written into EPA reports which will undergo contractor-led letter reviews by external technical experts.
- Consistent with the regulations governing confidential business information, projects involving confidential business information may not be reviewed by external peer reviewers, but will receive internal expert peer reviews.

ATTACHMENT
STAKEHOLDER ROADMAP, PEER REVIEW OVERVIEW & TIMELINE

I. Increase technical engagement with the stakeholder community to ensure that EPA has ongoing access to a broad range of expertise and data outside the Agency.

PLAN: The week of November 12, 2012 EPA will hold five roundtables focused on each stage of the water cycle, to be followed in Spring, 2013 by a series of technical workshops on topics identified during the roundtables.

IMPLEMENTATION:

- Identify participants for meetings (September 2012):
 - EPA will consult with industry, NGOs, states and tribes through a series of one-on-one meetings in September to present the plan for the roundtables and ask for potential invitees with technical expertise. EPA will then select invitees with appropriate technical backgrounds.
 - Roundtable participants will number 15-20 in addition to EPA staff.
- Kick-off (October 2012)
 - EPA will host a kick-off (virtual) meeting with technical representatives representing a broad range of stakeholders to lay out the context, goals, and logistics for the roundtables.
- Roundtables (November 14-16, 2012)
 - Each meeting will be professionally facilitated.
 - All roundtables will occur in DC. These will be half-day meetings.
- Workshops (February 2013 through April 2013)
- Second round of roundtables (Summer/Fall 2013)

II. Obtain timely and constructive feedback on projects undertaken as part of the study and ensure that EPA is current on changes in industry practices and technologies so the report of results reflects an up-to-date picture of hydraulic fracturing operations.

PLAN: Issue Federal Register (FR) notices in 2012, 2013 and 2014 requesting additional data and information to inform the study. The FR notices will request peer-reviewed data and reports that can help answer the research questions, for example, the content of HF flowback and produced water; the location of prior waste water treatment pits, ponds, lagoons, and tanks; specific sources of water used for HF; specific water quality requirements for use of water or reuse of waste water in HF; partitioning of constituents into gas solid and liquid components (particularly the fate of metals, organics, and radionuclides).

IMPLEMENTATION:

- Technical workshops on specific technical topics suggested by roundtable participants [begin Feb 2013]
- These sessions will flow from roundtable discussions. EPA will convene experts to address specific issues of data collection, method or data interpretation (i.e. how to find more comprehensive/reliable spill data; how to get good data for the EJ analysis, etc). EPA will issue the first FR notice in late 2012 to request peer reviewed data and studies that can help answer the research questions. Additional FR notices will request peer reviewed information will be published in annually, in 2013 and 2014.

III. Improve public understanding of the goals and design of the study.

PLAN: In addition to the organized technical meetings, EPA will seek opportunities (such as association or state organization meetings) to provide informal briefings and updates on the study to a diverse range of stakeholders, including states, NGOs, academia and industry. EPA will also increase the frequency of webinars, hosting them after each technical meeting to report out to the public on the discussion.

IMPLEMENTATION: EPA will host monthly webinars following the initial set of roundtables and each technical workshop to inform the public of topics discussed. EPA will develop and publish a calendar of events where presentations on the study will be made.

IV. Subject the report of results and research products supporting the report to meaningful and timely peer review, taking into account the study's designation as a Highly Influential Scientific Assessment (HISA).

PLAN: Publish and seek comment on 2012 progress report and develop and implement a peer review plan for report of results planned for 2014.

IMPLEMENTATION:

- EPA has committed to issuing a December 2012 progress report on the study. The report will provide an update on study activities and describe future work. The progress report will be available for public comment during the SAB review.
- A separate contractor-led peer review panel will be convened to review results from the retrospective case studies. This process will provide an opportunity for public comment.
- The SAB review of the report of results will meet all the necessary requirements of a HISA.

V. PROPOSED TIMELINE

August 2012

- Federal Register notice to announce formation of SAB panel for review of HF study and solicit expert peer reviewers

September/October 2012

- Meet with key stakeholders to solicit nominations for roundtables.
- Send invitations to nominees.
- Host webinar for invited roundtable participants to provide details on the plans for the roundtables and technical workshops

November/December 2012

- Host 5 roundtables, each focused on a stage of the water cycle as outlined in the HF Study.
- 2012 Progress Report released
- Public webinar to announce the 2012 progress report and provide updates on roundtables
- Federal Register notice to solicit peer reviewed studies and data

January 2013

- SAB panelists finalized
- Public webinar to provide updates on workshop

February/March 2013

- Host first technical workshop, and two additional 2 technical workshops and public webinars after each workshop to provide updates on workshops
- SAB review of 2012 Progress Report

April/May/June 2013

- Host technical workshops
- Public webinar to provide updates on workshops

Summer/Fall 2013

- Reconvene original Roundtables

November/December 2013

- Second Federal Register notice to solicit peer reviewed studies and data