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INNOVATIVE RESEARCH FOR A SUSTAINABLE FUTURE

THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON DRINKING WATER RESOURCES
Overview

Natural gas will play a key role in our nation's clean energy future. This resource is found in natural rock formations far underground and is frequently accessed using a method known as hydraulic fracturing (HF), sometimes called "fracking" or "hydrofracking."

What is EPA studying?

EPA is conducting a study of the potential impacts of hydraulic fracturing on drinking water resources.[1] There are two overarching research questions:

- Can HF impact drinking water resources?
- If so, what conditions affect the severity and frequency of those impacts?

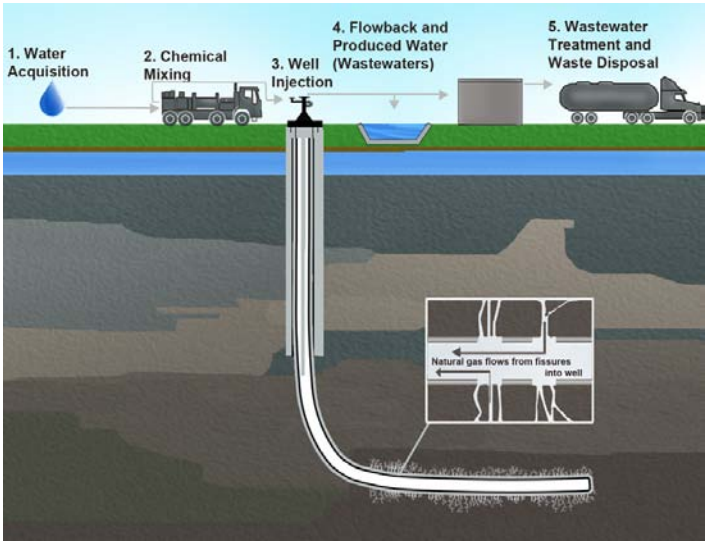
The second question addresses the wide variety of conditions under which HF occurs, including geological settings and industry practices.

Why is EPA conducting this study?

Recent advances in drilling technologies have made access to vast reserves of natural gas and oil economically possible in the US. As a result, the frequency of HF has increased in some regions, and it occurs in a wider variety of geographic regions and geologic formations. These changes have led to an increased public awareness of the potential for HF activities to impact drinking water resources.

In 2010, the US Congress recognized a growing public concern about drinking water in areas with HF activity. Since there was a lack of scientific information to verify or reject this concern, Congress requested that EPA conduct a scientifically rigorous, peer reviewed study to examine the potential for HF to impact drinking water resources.

How is water involved in hydraulic fracturing? Water is essential to the HF process. The graphic to the right illustrates the HF water cycle and highlights the role of water throughout the HF process. At each stage of this cycle, there is the potential for impacts to drinking water resources.



How will the study examine the relationship between HF and drinking water resources?

The study focuses on the HF water cycle, examining the potential impacts to drinking water resources at each stage.

[1] For this study, drinking water resources include any body of ground or surface water that could now, or in the future, be a source of public or private drinking water.

The study uses five main research approaches, each of which serves as a tool for determining the conditions (if any) under which HF can impact drinking water resources. A short description of each of the approaches is provided below.

- An **analysis of existing data** identifies, assesses and compiles relevant data and information from a variety of sources, including state and federal agencies, industry, academia and other sources.
- **Case studies** use a systematic process for the collection of data from real-world sites across the US, including locations where HF has already occurred or will occur in the future.
- **Laboratory studies** provide data from experiments conducted in a controlled environment.
- **Scenario evaluations** use computer modeling to generate information about hypothetical, but realistic, HF scenarios.
- **Toxicological assessments** summarize existing data on human health effects of chemicals associated with HF.[2] In some cases, researchers may generate new data about the toxicity and potential human health effects of selected chemicals.

When will EPA publish the results of this study?

A first progress report is planned for late 2012. A final draft report is expected to be released for public comment and peer review in 2014. Learn more about the estimated research timeline.

How will the results of this study be used?

The results of this study will provide the public and policymakers at all levels with high-quality science that can be used in decision-making processes.

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REFERENCES:

www.epa.gov/hfstudy

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[2] Chemicals associated with hydraulic fracturing include chemicals used in hydraulic fracturing fluids, naturally occurring substances that may be released from subsurface formations during the hydraulic fracturing process, as well as the reaction and degradation products of these substances.