



EPA Activities Related To Hydraulic Fracturing



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Hydraulic Fracturing Study: Background

2010 Appropriations Committee Conference Report urged EPA to study the relationship between hydraulic fracturing and drinking water, using:

- Best available **science**
- **Independent** sources of information
- **Transparent, peer-reviewed** process
- **Consultation** with others



Study Timeline

US Congress urges the EPA to conduct a study

Peer review of draft study plan*
(February – August 2011)

Release progress report*

Peer review of
draft report of results

Release final study plan
(November 2011)

Final report
of results

Planning

Conduct Research

Report of
Results

Technical workshops
(February – March 2011)

Technical roundtables*
(Summer 2013)

Meetings with stakeholders to identify
concerns and study scope
(July – August 2010)

Technical workshops*
(Spring 2013)

Technical roundtables* / information request
(November 2012)

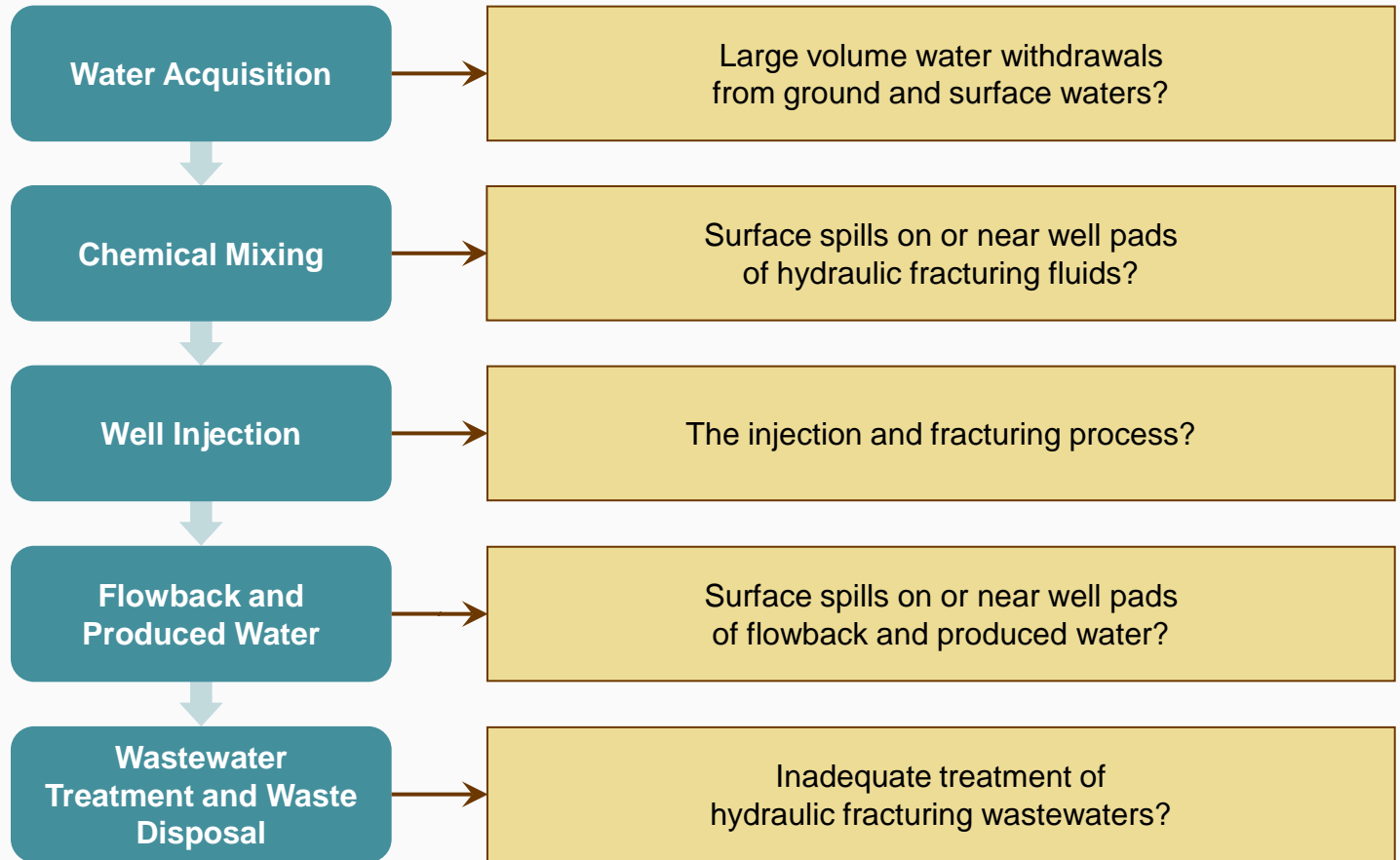
**Webinars conducted to
provide updates*



Chapter 2

Research Overview

Water Use in Hydraulic Fracturing Operations



Technical Stakeholder Engagement for EPA's Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources



FEDERAL REGISTER NOTICE to Request Data from the Public to Inform Ongoing Research
November 9, 2012

Technical Roundtables
November 14

- Water Acquisition
- Chemical Mixing

November 15

- Well Injection
- Flowback & Produced Water

November 16

- Wastewater Treatment & Waste Disposal

Release of 2012 Progress Report

Webinar

Technical Workshops

Discuss specific technical topics identified by Roundtables.

- February 25, 2013
Analytical Chemical Methods Workshop
- April 2013 (est.)
Well Construction / Operation and Subsurface Modeling
Wastewater Treatment and Modeling
- June 2013 (est.)
Water Acquisition
Case Studies

SAB Meeting

Public face-to-face meeting of the SAB ad hoc Hydraulic Fracturing Advisory Panel. EPA will brief the SAB regarding the 2012 progress report.

March 2013

Technical Roundtables

- Reconvene in Summer 2013 to provide continuity of stakeholder input.*
- Present and discuss EPA's scientific research approach and progress.*

Report of Results

Peer Review Ongoing



Technical Roundtables

- **Water Acquisition:** water availability and use; modeling; sources of water for hydraulic fracturing operations; potential impacts on water systems; recycling flowback waters
- **Chemical Mixing:** analytical methods; trends in use of chemicals; indicator compounds; lifecycle assessment
- **Well Injection:** well construction/operation; modeling assumptions, parameters and uncertainty
- **Flowback and Produced Water:** spills database analysis; retrospective case studies; information on state databases available in Texas, Wyoming and Alabama; monitoring strategies for indicator compounds
- **Wastewater Treatment and Waste Disposal:** wastewater treatability studies; residuals; validation of optimized methods for DBP studies; regional differences in wastewater practices; radioactive constituents; reused and reinjected wastewater

**Materials from the Technical Roundtables are available at
<http://epa.gov/hfstudy/techwork13.html>**

Technical Workshops



Technical Workshop Topics and Dates

Topic	Date
Analytical Chemical Methods	February 25, 2013
Well Construction/Operation and Subsurface Modeling	April 2013 (est.)
Wastewater Treatment and Modeling	April 2013 (est.)
Water Acquisition Modeling	June 2013 (est.)
Case Studies	June 2013 (est.)

IDENTIFYING TECHNICAL WORKSHOPS PARTICIPANTS

- Nomination for Technical Workshop on Analytical Chemical Methods closes on January 8, 2013
- Subject matter experts: submit resume and short abstract to participate
- Registration for remaining workshops will open in January

See www.epa.gov/hfstudy for application information



Draft UIC HF Guidance: Recap

- 5/10/12: Draft permitting guidance published in the *Federal Register*.
- Lays out a framework for supporting energy production and protecting USDWs when diesel is used in HF
- Purpose: to clarify how companies can comply with the Energy Policy Act amendment to the Safe Drinking Water Act
 - Permits are required where diesel fuel is used in HF
 - Provides a description of diesel fuels
- Outlines for EPA permit writers, where EPA is the permitting authority:
 - Class II requirements for HF wells where diesel fuel is used
 - Technical recommendations based on special characteristics of HF
 - Makes recommendations that build on best practices from industry and state oil and gas programs
- Protects USDWs from BTEXs in diesel fuel



Draft Guidance Content

1. UIC Background and Implementation
 - Determination of Class II as appropriate well class
2. Diesel Fuels Description
3. Use of Area Permits
4. Information for Permit Application
5. Area of Review
6. Permit Duration & Well Closure
7. Construction & Mechanical Integrity
8. Operation, Monitoring, & Reporting
9. Financial Responsibility
10. Public Notification



Developing the Diesel Fuels Description

- Consulted with states, and industry to determine how diesel was used in HF
- Reviewed “diesel fuels” as described in other federal programs, scientific literature, and industry references:
 - Material Safety Data Sheets from different refineries
 - References from Petroleum Refinery Processes
 - Chemical Abstracts Service (CAS) Registry Numbers can be used to identify diesel fuels



Diesel Fuels Description

Six CAS Numbers

Diesel Fuel / Diesel Fuel No. 1 (68334-30-5)	Diesel Fuel / Diesel Fuel No. 2 (68476-30-2)	Fuel Oil No. 2 / Diesel Fuel (68476-34-6)	Fuel Oil No. 4 / Diesel Fuel No. 4 (68476-31-3)	Kerosene / Marine Diesel Fuel (8008-20-6)	Distillates (Petroleum), Crude Oil / Diesel Fuel (VDF) (68410-00-4)
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Diesel Fuel Alternatives

- Two main types of diesel fuel alternatives:
 - Hydrocarbon-based fluids.
 - Synthetic fluids.
- Diesel alternatives are optimized to have properties similar to diesel to function as:
 - Fluid-loss additives.
 - Carrier fluid (for gelling additives).
 - Winterizing agents for extreme cold/winter treatments.
- Both alternatives are said to be more environmentally and toxicologically benign than conventional diesel fuels.
- Several oil/gas producers and oilfield services companies currently employ or produce diesel-free substitutes in their chemicals.



Recent Activities

- Developing response to comments
 - Approximately 97,000 comments
- Looking at implementation issues
 - Assessing potential flexibilities, based on comments
 - Coordinating with oil and gas programs
 - Coordinating with BLM
- Final guidance projected in late Spring



Coordination with Bureau of Land Management

- The Bureau of Land Management (BLM) proposed their draft rule in May 2012 which aims to update certain sections of their drilling regulations related to hydraulic fracturing on federally managed lands.
- The rule once finalized would:
 - provide disclosure to the public of chemicals used in hydraulic fracturing on public land and Indian land,
 - strengthen regulations related to well-bore integrity, and
 - address issues related to flowback water.



Coordination with BLM

EPA and BLM have been meeting to identify:

- key areas of difference between the BLM proposed rule and the EPA proposed DFHF guidance,
- potential overlap between BLM's Rule and EPA's guidance, and
- opportunities to enhance inter-agency coordination to address any areas of potential overlap or conflicts prior to finalization

Thank You!



Questions?