U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF INSPECTOR GENERAL

Protecting America's Waters

Enhanced EPA Oversight and Action Can Further Protect Water Resources From the Potential Impacts of Hydraulic Fracturing

Report No. 15-P-0204 **July 16, 2015**

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Abbreviations

API	American Petroleum Institute
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
GAO	U.S. Government Accountability Office
OCSPP	Office of Chemical Safety and Pollution Prevention
OECA	Office of Enforcement and Compliance Assurance
OIG	Office of Inspector General
ORD	Office of Research and Development
OSWER	Office of Solid Waste and Emergency Response
OW	Office of Water
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
STRONGER Inc.	State Review of Oil & Natural Gas Environmental Regulations Inc.
TSCA	Toxic Substances Control Act
UIC	Underground Injection Control

Cover photo: Example of a hydraulic fracturing site located in the Marcellus Shale. (EPA photo)

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U.S. Environmental Protection Agency
Office of Inspector General

15-P-0204
July 16, 2015

At a Glance

Why We Did This Review

The U.S. Environmental Protection Agency (EPA), Office of Inspector General (OIG), conducted this review to evaluate how the EPA and states use existing authorities to regulate the potential impacts of hydraulic fracturing on water.

The use of horizontal drilling with hydraulic fracturing greatly expanded the ability of producers to recover natural gas and oil from unconventional sources. According to an April 2014 report by the U.S. Energy Information Administration, natural gas production is projected to increase by 56 percent from 2012 to 2040. In addition, crude oil production will climb from 7.5 million barrels per day in 2013 to 9.6 million barrels per day by 2019. The increase in unconventional oil and gas development has led to new and increased potential impacts to water resources.

This report addresses the following EPA goals or cross-agency strategies:

- *Protecting America's waters.*
- *Ensuring the safety of chemicals and preventing pollution.*

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The full report is at: www.epa.gov/oig/reports/2015/20150716-15-P-0204.pdf

Enhanced EPA Oversight and Action Can Further Protect Water Resources From the Potential Impacts of Hydraulic Fracturing

What We Found

Since 2007, the EPA, states and other stakeholders have collectively established regulations, policy, guidance, industry standards and recommended practices to manage impacts to water resources from unconventional oil and gas development. Our review identified two issues in need of improvement by the EPA.

Enhanced EPA oversight of the permitting process for diesel fuel use during hydraulic fracturing can further EPA efforts to protect water resources, and establishment of a plan for determining whether to propose a chemical disclosure rule can help address the public's concerns about hydraulic fracturing chemicals.

First, the EPA needs to improve oversight of permit issuance for hydraulic fracturing using diesel fuels, and address any related compliance issues. Evidence shows that companies have used diesel fuels during hydraulic fracturing without EPA or primacy state underground injection control Class II permits. The EPA has also not determined whether primacy states and tribes are following the agency's interpretive memorandum for issuing permits for hydraulic fracturing using diesel fuels. Enhanced EPA oversight can increase assurance that risks associated with diesel fuel hydraulic fracturing are being adequately addressed.

Second, the EPA needs to develop a plan for responding to the public's concerns about chemicals used in hydraulic fracturing. In May 2014, the EPA initiated a process to evaluate whether to establish federal requirements for chemical disclosure. However, the agency has not yet developed a plan of action for further steps in this proposed rulemaking activity. A plan outlining the agency's next steps would inspire public confidence that the agency is indeed taking action to evaluate disclosure options within a defined timeframe.

Recommendations and Planned Agency Corrective Actions

We recommend that the EPA's Assistant Administrator for Water determine whether primacy states and tribes issue permits for the use of diesel fuels as required. We recommend that the Assistant Administrator for Enforcement and Compliance Assurance address any compliance issues related to issuing permits for hydraulic fracturing using diesel fuels. We also recommend that the Assistant Administrator for Chemical Safety and Pollution Prevention establish and publish a plan with milestone dates that outlines all steps for determining whether to propose a rule to obtain information concerning chemical substances and mixtures used in hydraulic fracturing.

The agency either agreed with our recommendations or proposed actions that meet the intent of our recommendations. All recommendations are resolved or closed and no further response from the agency is needed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

July 16, 2015

MEMORANDUM

SUBJECT: Enhanced EPA Oversight and Action Can Further Protect Water Resources From the Potential Impacts of Hydraulic Fracturing
Report No. 15-P-0204

FROM: Arthur A. Elkins Jr.

TO: Ken Kopocis, Deputy Assistant Administrator
Office of Water

Cynthia Giles, Assistant Administrator
Office of Enforcement and Compliance Assurance

Jim Jones, Assistant Administrator
Office of Chemical Safety and Pollution Prevention

This is our report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

The EPA's Office of Water, Office of Enforcement and Compliance Assurance, and Office of Chemical Safety and Pollution Prevention have primary responsibility for implementing the recommendations in this report.

You are not required to provide a written response to this final report because you provided agreed-to corrective actions and planned completion dates for the report recommendations. The OIG may make periodic inquiries on your progress in implementing these corrective actions. Please update the EPA's Management Audit Tracking System as you complete planned corrective actions. Should you choose to provide a final response, we will post your response on the OIG's public website, along with our memorandum commenting on your response. Your response should be provided as an Adobe PDF file that complies with the accessibility requirements of Section 508 of the Rehabilitation Act of 1973, as amended. The final response should not contain data that you do not want to be released to the public; if your response contains such data, you should identify the data for redaction or removal along with corresponding justification.

We will post this report to our website at http://www.epa.gov/oig.

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Chapter 1
Introduction

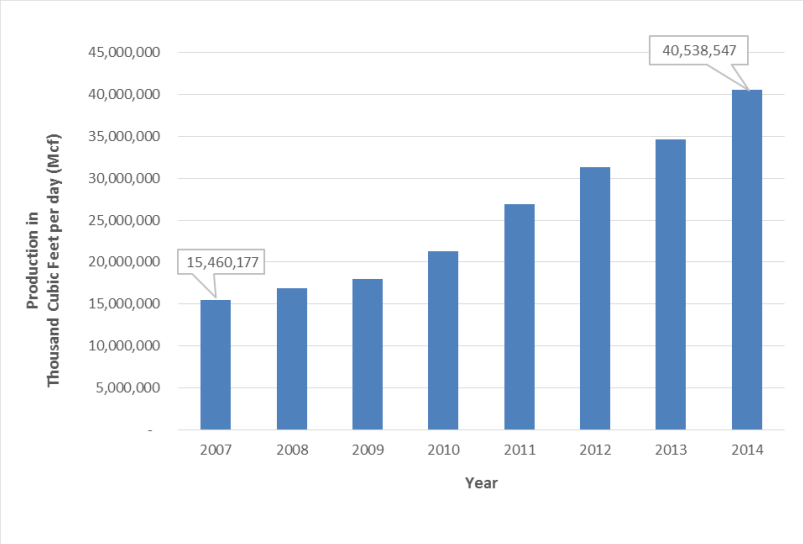
Purpose

The U.S. Environmental Protection Agency (EPA), Office of Inspector General (OIG), conducted this review to examine how the EPA and states use their authorities to manage the potential impacts of hydraulic fracturing on water resources.

Background

In this report, hydraulic fracturing refers to unconventional oil and gas development where vertical and horizontal drilling are combined to exploit unconventional sources of oil and gas. Recent advances in unconventional oil and gas development have made it profitable to extract oil and natural gas reserves previously not economically viable. Although unconventional oil and gas development was used as early as 2003, the process came into widespread use around 2007. Since 2007, the production of oil and gas has grown steadily. The production of natural gas in the major shale formations in the United States has grown from approximately 15.5 billion cubic feet per day in 2007 to 40.5 billion cubic feet per day in 2014 (Figure 1). The production of oil in major shale formations is projected to increase from 7.5 million barrels a day in 2013 to 9.6 million barrels per day by 2019.

Figure 1: Annual natural gas production from seven shale plays (2007–2014)[a]

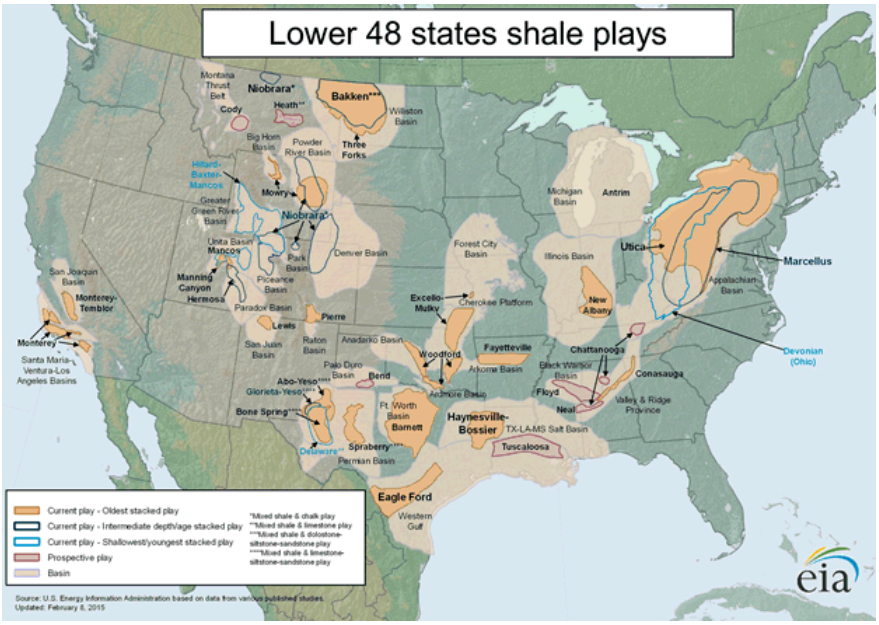


[a] This includes the Bakken, Eagle Ford, Haynesville, Marcellus, Niobrara, Permian and Utica shale plays.

Source: OIG analysis of January 2015 data from the U.S. Energy Information Administration.

According to the U.S. Energy Information Administration, 95 percent of domestic oil production growth and all domestic natural gas production growth during 2011 through 2013 came from seven key regions (or shale plays): Bakken, Eagle Ford, Haynesville, Marcellus, Niobrara, Permian and Utica (Figure 2).

Figure 2: "Shale plays" in the continental United States[a]



[a] A "shale play" is an industry term used to refer to any shale formation that produces natural gas and oil.

Source: U.S. Energy Information Administration (updated February 6, 2015).

Different Stages of Unconventional Oil and Gas Development Have Varying Potential Impacts to Water Resources

The process of unconventional oil and gas development involves the following stages:

1. Preparing the well pad, creating the infrastructure to the pad site, and drilling the well ("construction").
2. Extracting the water needed for well stimulation from groundwater and surface water sources ("water acquisition").
3. Mixing water with chemicals that will be used to stimulate, including hydraulically fracturing, the well ("chemical mixing").
4. Injecting the fracturing fluid into the well to stimulate (creating and propping open fractures) the formation and extracting oil and/or natural gas ("well stimulation").
5. Collecting the wastewater that returns from the well as either flowback and/or produced water ("wastewater management and storage").
6. Treating and/or disposing of the wastewater ("wastewater treatment and waste disposal").

In the 2011 publication *Blueprint for a Secure Energy Future*, the White House highlighted the importance of proactively addressing concerns about potential negative impacts of hydraulic fracturing activities. The growth of unconventional oil and gas development has been accompanied by attention to the impacts of this practice on the environment.

Table 1 summarizes how water resources may be impacted during different stages of unconventional oil and gas development. For example, well pad construction can cause land erosion and runoff of sediment and other harmful pollutants into nearby water bodies. Spills and leaks of hydraulic fracturing chemicals can also result from improper well construction and/or chemical storage and handling during the chemical mixing and well-stimulation stages.

Table 1: Potential impacts to water resources during different stages of unconventional oil and gas development

Stage	Potential impacts to water resources
Construction	• Erosion and sediment runoff into surface waters from land disturbing activities impacting water quality, aquatic life and wetlands. • Improper well construction could impact water resources in other stages of the process. • Spills of drilling mud (i.e., a complex mixture of chemicals used to control pressure, lubricate the drill bit, stabilize the shale formation, control fluid loss, and retrieve cuttings).
Water Acquisition	• Impacts depend on the time of the year, the geographic location of water withdrawals and current water-management practices, but there could be impacts on local water quantity and quality.
Chemical Mixing	• Surface spills or spills that reach the subsurface of individual hydraulic fracturing chemicals or fracturing fluid (i.e., chemicals mixed with water for hydraulic fracturing).
Well Stimulation	• Migration of chemicals and natural gas/oil to groundwater sources as a result of improper well construction, well casing or cement failure under high pressure and/or repeated fracturing. • Migration of fluids through the hydraulically fractured network and/or the existing faults and fractures in the subsurface. • Spills and leaks from hydraulic fracturing equipment (e.g., pumps and flowlines).
Wastewater Management and Storage	• Surface spills and releases of flowback and produced waters while transporting wastewater to or from storage tanks or impoundments containing constituents from the formation water (e.g., naturally occurring radioactive material, barium, dissolved solids, heavy metals and salts).
Wastewater Treatment and/or Disposal	• Water treatment facilities (i.e., publicly owned treatment works and centralized waste treatment) may not be able to effectively treat wastewater from hydraulic fracturing activities, which can impact surface water when discharged. • Spills to surface waters during transportation of wastewater to treatment facilities or disposal sites.

Source: OIG analysis and summary.

Recent EPA Activities Related to Unconventional Oil and Gas Development

The EPA is taking steps to examine its role, responsibilities and prior regulatory determinations in light of a surge in unconventional oil and gas development. The agency has designated a headquarters-level official to share information and coordinate initiatives from various program offices involved with energy extraction activities, including hydraulic fracturing. In addition, EPA regions have managers and staff who coordinate oversight of energy extraction activities on a regional level.

The EPA is also working with states and other stakeholders to understand and address potential concerns with hydraulic fracturing, to ensure the public has confidence that natural gas production will proceed in a safe and responsible manner. The EPA has been moving forward with initiatives to provide regulatory clarity with respect to existing laws and using existing authorities, where appropriate. For example, in February 2014, the Office of Water (OW) issued an interpretive memorandum[1] specific to the use of diesel fuels in hydraulic fracturing. In 2011, the EPA's Region 3 clarified National Pollutant Discharge Elimination System permit requirements if treatment plants accept wastewater from hydraulic fracturing operations.

The EPA's Office of Solid Waste and Emergency Response (OSWER) completed a review of waste-related provisions contained in the state regulations for 26 of the 33 gas-producing states as of March 2014. OSWER also developed a list of more than 80 publicly available sources of voluntary management practices for oil and gas exploration and production wastes. The results of both efforts are posted on the OSWER website as a resource for policymakers and operators.

An unconventional oil and gas development site. (EPA photo)

[1] EPA OW. 2014. Memorandum from Peter Grevatt, Director, Office of Ground Water and Drinking Water, to Regional Administrators and State and Tribal Underground Injection Control Program Directors, Subject: Implementation of the Safe Drinking Water Act's Existing Underground Injection Control Program Requirements for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuel, February 2014.

In November 2014, OW submitted to the Office of Management and Budget proposed pretreatment standards for hydraulic fracturing wastewater from unconventional oil and gas formations sent to municipal wastewater treatment plants. The EPA proposed these pretreatment standards in the Federal Register in April 2015. OW also expects to release its draft chloride water-quality criterion for the protection of aquatic life from discharges of highly saline wastewater into surface water in early 2016.

In March 2015, the EPA's Office of Research and Development (ORD) published results of its analysis of chemical disclosures reported by the oil and gas industry to FracFocus 1.0 between January 1, 2011, and February 28, 2013.[2] In the analysis, ORD identified 692 unique ingredients used as base fluids, proppants, and additives in hydraulic fracturing fluids. In June 2015, the ORD released its draft assessment of the potential impacts of oil and gas hydraulic fracturing activities on the quality and quantity of drinking water resources in the United States for public comment and peer review.[3]

Responsible Offices

The EPA's OW, Office of Enforcement and Compliance Assurance (OECA), and Office of Chemical Safety and Pollution Prevention (OCSPP) are responsible for the issues identified in the report recommendations.

Scope and Methodology

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We conducted this performance audit from February 2014 through April 2015.

We conducted a literature review on unconventional oil and gas development, as defined earlier. During the literature review, we focused on identifying the potential impacts during different stages, as well as the authorities and/or activities used by the EPA, states and other stakeholders to manage the potential impacts (Appendix A).

[2] EPA ORD. 2015. Analysis of Hydraulic Fracturing Fluid Data from the FracFocus Chemical Disclosure Registry 1.0, EPA/601/R-14/003 (March 2015). The data ORD analyzed is an incomplete picture of all hydraulic fracturing due to the voluntary reporting in some states, the omission of Confidential Business Information from disclosures, and invalid or erroneous information in the original disclosures or created during the development of ORD's project database.

[3] EPA ORD. 2015. Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources (External Review Draft), EPA/600/R-15/047c.

We conducted interviews with the EPA and three states about their respective programs regulating the different stages of unconventional oil and gas development, any ongoing initiatives to address potential impacts to water resources, practices observed from industry or implemented by the agency, and their views regarding gaps in regulations. We conducted interviews at EPA headquarters and in EPA Regions 3, 6 and 8. We also interviewed managers and staff from environmental protection and oil and gas agencies in Pennsylvania, Arkansas and Colorado.

We interviewed other stakeholders (e.g., environmental groups, industry groups and academics) about unconventional oil and gas development and any activities or initiatives being implemented to manage potential impacts to water resources during hydraulic fracturing.

Our review focused on identifying the EPA's and states' existing authorities and regulations that protect water resources from unconventional oil and gas development, not on how effectively these authorities and regulations actually protect water resources. We also did not examine the implementation or overall effectiveness of practices recommended by environmental and industry stakeholders at protecting water resources. This did not impact our conclusions or recommendations.

Additional details concerning our scope and methodology are found in Appendix A.

Prior Audit Coverage

The U.S. Government Accountability Office (GAO) issued a report on the development of shale oil and gas resources, and the environmental and public health risks associated with the activity, in September 2012.[4] GAO did not make any recommendations in this report. Also in September 2012, GAO issued a report detailing the key environmental and public health laws that apply to unconventional oil and gas development and the exemptions or limitations that affect how some of these laws can be applied.[5] For this report, GAO also reviewed the environmental and public health requirements governing unconventional oil and gas development in six states (Colorado, North Dakota, Ohio, Pennsylvania, Texas and Wyoming). The GAO identified challenges faced by federal and state agencies in regulating unconventional oil and gas development. The GAO did not make any recommendations to the EPA.

[4] GAO. 2012. Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks. Report No. GAO-12-732.
[5] GAO. 2012. Unconventional Oil and Gas Development: Key Environmental and Public Health Requirements. Report No. GAO 12-874.

In May 2014, GAO published a report on the management and oversight of oil and gas development on federal and Indian lands.[6] GAO recommended that the Bureau of Land Management establish a process to ensure that its rules and guidance are reviewed and updated, improve coordination of inspection with states, provide data and direction to allow staff to efficiently locate resources and wells and determine situations where development may occur without prior approval, and improve timeliness of agreement reviews. The Bureau of Land Management agreed with all recommendations.

In June 2014, GAO published a report on its review of the EPA's oversight of the Underground Injection Control (UIC) Class II program.[7] GAO recommended that the EPA review emerging risks and program safeguards; improve data collection and reporting; conduct a rulemaking to incorporate state program requirements and changes into federal regulations; evaluate and consider alternative processes for incorporating state program changes into federal regulations; and evaluate and revise, if necessary, the UIC program guidance on effective oversight. The EPA agreed with all recommendations except one. While the EPA did not agree to conduct a rulemaking to incorporate state program requirements into federal regulations, it agreed to evaluate alternatives to rulemaking.

[6] GAO. 2014. Updated Guidance, Increased Coordination, and Comprehensive Data Could Improve BLM's Management and Oversight. Report No. GAO-14-238.
[7] GAO. 2014. Drinking Water: EPA Program to Protect Underground Sources from Injection of Fluids Associated with Oil and Gas Production Needs Improvement. Report No. GAO-14-555.

Chapter 2
EPA, States and Other Stakeholders Are Taking Steps to Manage Impacts to Water Resources, But Action Is Needed on the Use of Diesel Fuels in Hydraulic Fracturing, and Chemical Disclosure

Since 2007, the EPA, states and other stakeholders have collectively established regulations, policy, guidance, industry standards and recommended practices to manage impacts to water resources from unconventional oil and gas development. However, our review identified two issues in need of improvement by the EPA.

- First, the EPA needs to improve its oversight of permit issuance for hydraulic fracturing using diesel fuels. Evidence shows that companies have used diesel fuels during hydraulic fracturing without required EPA or primacy state UIC Class II permits. The EPA has also not determined whether primacy states and tribes are following the agency's interpretive memorandum for issuing permits when using diesel fuels during hydraulic fracturing.

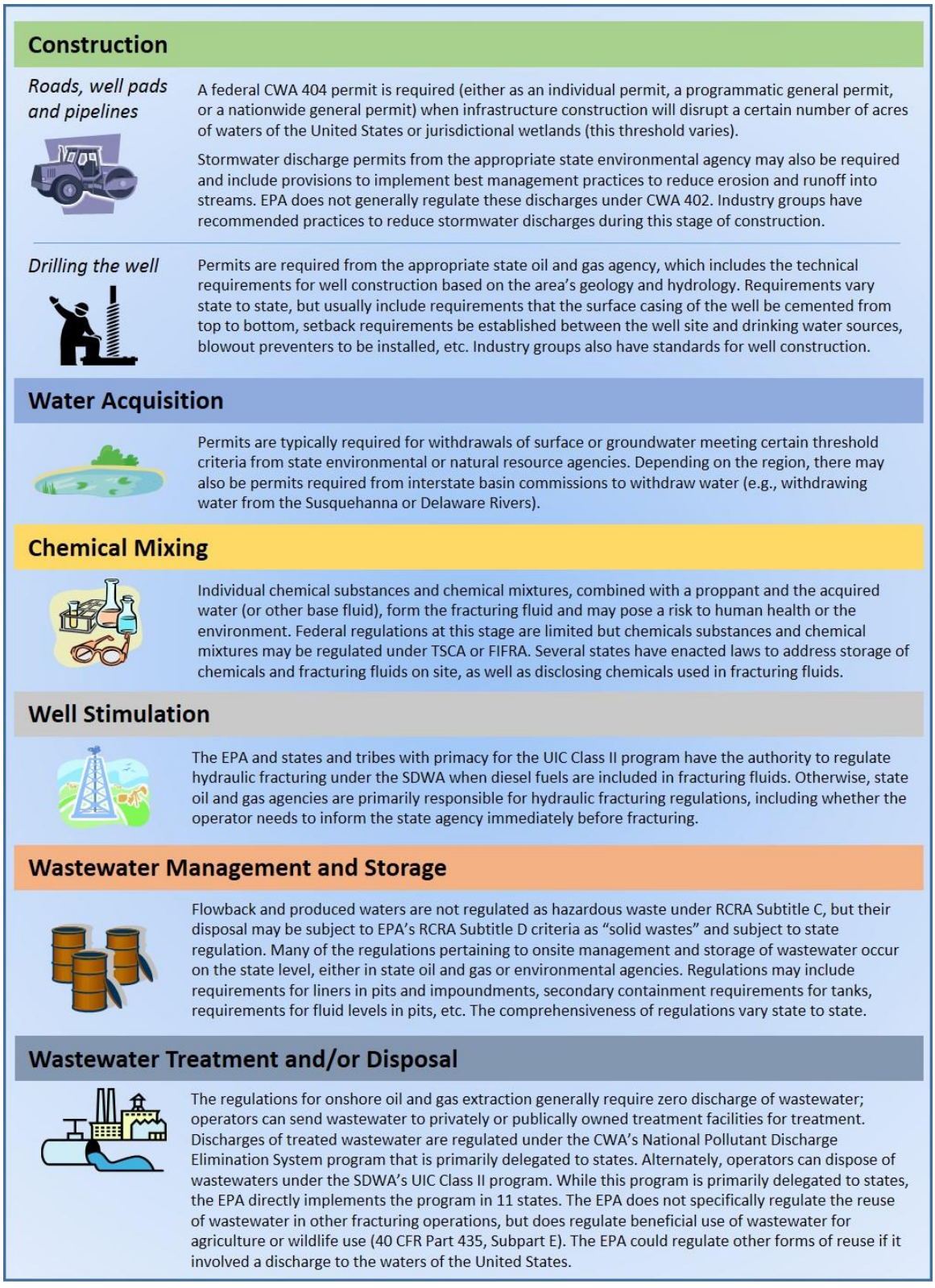
- Second, the EPA has not developed a plan for responding to public concerns about chemicals used in hydraulic fracturing. In May 2014, the EPA initiated a process to seek public and stakeholder comments to evaluate whether to establish federal chemical disclosure requirements. However, the agency has not yet developed a plan of action for further steps in this rulemaking activity.

EPA and States Share Responsibilities for Managing Impacts to Water Resources

The EPA and states have developed different approaches to address the environmental challenges of unconventional oil and gas development. Five key federal laws give the EPA the authority to manage impacts to water resources: Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Clean Water Act (CWA), Safe Drinking Water Act (SDWA), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA).

Many states have their own regulations for the six stages of unconventional oil and gas development, and they adapt regulations in response to development activities as needed. Figure 3 summarizes the regulatory tools established by the EPA and states for use in unconventional oil and gas development.

Figure 3: Summary of EPA, state regulatory and other tools established for use in unconventional oil and gas development



Source: OIG analysis and summary.

According to a 2014 study conducted by the Ground Water Protection Council: [8]

> …State regulatory strategies differ in response to unique local circumstances and characteristics; over time, they evolve to address public concerns about the safety and environmental impact of oil and gas development, as well as rapidly changing technologies, new field discoveries, revised leading operational practices, internal and external reviews, and regulatory experience.

In 2012, the National Conference of State Legislators reported that 170 bills pertaining to unconventional oil and gas development were introduced in 29 states, but only 14 of those states enacted legislation (about 48 percent). In 2013, the number of bills introduced by states increased to more than 225 in 40 states; 23 of those 40 states (approximately 58 percent) enacted legislation in 2013. The introduced bills focused on aspects of the unconventional oil and gas process that are solely part of a state's authority.

In 2009, for example, the state of Arkansas found elevated levels of benzene (a known carcinogen) and chlorides in groundwater. The presence of the chemicals in the groundwater was caused by the improper storage and disposal of hydraulic fracturing wastewater. As a result, the state revoked all land disposal permits and established new permit requirements for storage pits and wastewater disposal. The new requirements also included wastewater pre-testing and set new limits for allowable chloride levels.

In another example, Pennsylvania found that one company contributed to methane groundwater contamination because of failure to properly cement casing at certain wells, as well as groundwater contamination because of a diesel fuel spill. In response, the state developed new regulations that require stricter containment practices for unconventional wells. Colorado and Pennsylvania use their own authorities to require operators to obtain a stormwater discharge permit during the construction stage and implement best management practices to reduce erosion. Stormwater discharges at oil and gas sites generally cannot be regulated under the federal National Pollutant Discharge Elimination System program.

An unconventional oil and gas development site. (EPA photo)

[8] The Ground Water Protection Council is a nonprofit 501(c)6 organization whose members consist of state groundwater regulatory agencies that come together to mutually work toward the protection of the nation's groundwater supplies. The council's mission is to promote the protection and conservation of groundwater resources for all beneficial uses.

Other Stakeholder Initiatives Support Managing Impacts to Water Resources

Other stakeholders also help to develop measures to address current and potential impacts to water resources from oil and gas development. Two active stakeholders are the American Petroleum Institute (API) and the State Review of Oil & Natural Gas Environmental Regulations Inc. (STRONGER Inc.). Between 2009 and 2011, the API developed and published a set of five guidance documents that addressed different issues related to hydraulic fracturing operations (e.g., well construction and integrity, water management, and mitigating surface impacts). Appendix A contains a partial list of the API documents.

In 2013, STRONGER Inc. published guidelines the group uses when it evaluates state regulatory programs. The guidelines address well integrity, baseline groundwater monitoring protocols, and public disclosure of information about chemical additives.

According to the EPA and state regulators, oil and gas companies are also developing new strategies to lessen the impact on water resources by recycling wastewater, storing wastewater in tanks instead of open pits, and not sending wastewater to treatment plants lacking the capacity to handle oil and gas waste. For example, the Arkansas Public Policy Panel reports that the largest producer in the Fayetteville Shale has been working with environmental groups and Arkansas state officials to ensure all operators abide by state and local rules governing unconventional oil and gas activities. This Fayetteville Shale producer also pledged to recycle 100 percent of its wastewater by 2017.

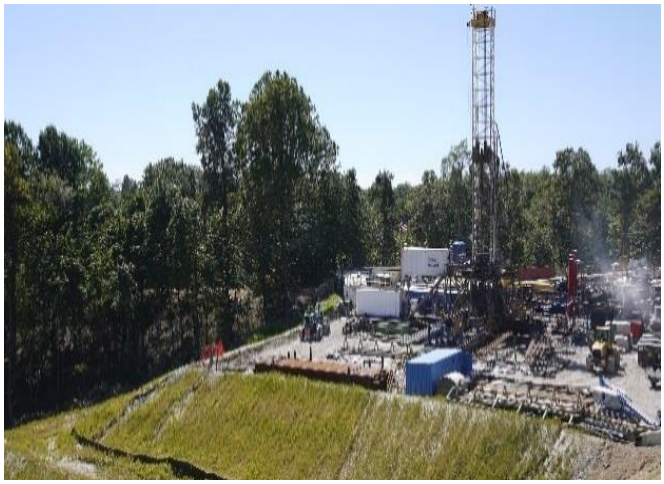
EPA Needs to Assess Whether Permits Are Issued and Enforced Properly When Diesel Fuels Are Used in Hydraulic Fracturing Under the UIC Class II Program

The Energy Policy Act of 2005 (Pub. L 109-58 §322, 119 Stat. 594 (2005)) amended the SDWA (42 U.S.C. 300h (d)) to require permitting of hydraulic fracturing with diesel fuels.[9] As a result of the 2005 amendments to the SDWA (Pub. L 109-58 §322, 119 Stat. 594 (2005)) and the EPA's UIC regulations, a UIC Class II permit must be obtained prior to underground injection of diesel fuels for hydraulic fracturing.

In February 2014, the EPA issued a memorandum with its interpretation of the statutory term "diesel fuels," and guidance containing nonbinding recommendations for how to permit the use of diesel fuels in hydraulic fracturing. The memorandum contained the EPA's interpretation of existing statutory and regulatory requirements. The agency considers the following five substances to be

[9] Diesel fuels contain chemicals, such as benzene, a known carcinogen.

diesel fuels: diesel fuels, No. 2 diesel fuels, No. 2 fuel oil, No. 4 fuel oil, and kerosene. While the guidance is directed to EPA regional permit writers, the agency believes the guidance will be useful to primacy states and tribes implementing the UIC Class II program.[10]



An unconventional oil and gas development site. (EPA photo)

Since the Energy Policy Act amended the SDWA in 2005, there is evidence that the EPA and primacy states have not been fully successful in their efforts to effectively control the use of diesel fuels for well stimulation. In 2011, a congressional investigation reported that the injection of over 32 million gallons of diesel fuels without permits occurred in 19 states between 2005 and 2009.[11] According to the EPA, this congressional investigation prompted the agency to revise its permitting guidance and issue an interpretive memorandum in 2014. The EPA stated the findings from the congressional investigation informed the agency that a 2003 Memorandum of Agreement with three well service companies (BJ Services, Halliburton and Schlumberger) to voluntarily eliminate diesel fuels from hydraulic fracturing fluids injected directly into underground sources of drinking water for coal-bed methane production[12] was not being followed.

In 2012, after discovering that four companies may have used substances during hydraulic fracturing that may have qualified as diesel fuel constituents under the EPA's draft permitting guidance, EPA Region 3 issued written notification to the operators that permits are required under the UIC program.

[10] Primacy states and tribes have Class II UIC programs approved by the EPA through Sections 1422 or 1425 of the SDWA; therefore, states and tribes with approved primacy programs have primary enforcement authority over their respective underground injection activities. States receive primacy from the EPA, provided that the state has regulations as stringent as federal regulations, or the state demonstrates its program is effective in protecting underground sources of drinking waters.

[11] U.S. House of Representatives, Committee on Energy & Commerce, Waxman, Markey, and DeGette Investigation Finds Continued Use of Diesel in Hydraulic Fracturing Fluids (January 2011); and Reps. Waxman, Markey, and DeGette Report Updated Hydraulic Fracturing Statistics to EPA (October 2011).

[12] Methane is generated during coal formation and is contained in the coal microstructure. Typical recovery entails pumping water out of the coal to allow the gas to escape. Between 2008 and 2013, production of coal bed methane decreased from 1,966 billion cubic feet to 1,466 billion cubic feet.

More recently, in "Fracking Beyond the Law,"[13] the Environmental Integrity Project reported that between 2010 and 2014 there were hundreds of instances in which wells were hydraulically fractured with diesel fuels without having a permit.[14] However, in response to the Environmental Integrity Project investigation, Energy in Depth discusses the uncertainty that exists among primacy states and the industry regarding the interpretation of diesel fuels and how the SDWA UIC permitting applies to the use of diesel fuels during hydraulic fracturing.[15] If primacy states and tribes are unclear about the permitting of diesel fuels, this could cause a disparity in the level of protection provided to the environment and public health.

The ORD's analysis of data from FracFocus,[16] the chemical disclosure database, shows that diesel fuels (diesel fuels, No. 2 diesel fuels, and kerosene) have been used during hydraulic fracturing. However, the ORD's timeframe for the FracFocus analysis is prior to the EPA OW's issuance of its interpretive memorandum and permitting guidance for diesel fuels use during hydraulic fracturing. The ORD did not analyze whether a UIC Class II permit had been issued for these instances.

An example of a pit or impoundment at an unconventional oil and gas development site. (EPA photo)

The EPA says it intends to follow the interpretation of "diesel fuels" in its implementation, enforcement and oversight of the UIC Class II program. The EPA's issuance of a memorandum and guidance is an important management control. However, the EPA's implementation of the memorandum and guidance by the agency's permit writers, as well as oversight of primacy states and tribes, will increase assurance that the risks to groundwater resources associated with diesel fuels hydraulic fracturing are adequately addressed.

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[13] Environmental Integrity Project. 2014. Fracking Beyond the Law: Despite Industry Denials, Investigation Reveals Continued Use of Diesel Fuels in Hydraulic Fracturing.

[14] Many of the wells noted in the Environmental Integrity Project's analysis as hydraulically fractured without a permit were done so with kerosene, which EPA did not clarify as a diesel fuel until after the EPA issued its interpretive memorandum and revised permitting guidance in February 2014.

[15] Energy in Depth is a research, education and public outreach project, launched by the Independent Petroleum Association of America in 2009, focused on oil and natural gas energy development. See their analysis of the Environmental Integrity Project's investigation at http://energyindepth.org/national/eip-diesel-fuel-report-lacks-data-integrity/.

[16] ORD analyzed chemical disclosures reported by the oil and gas industry to FracFocus 1.0 between January 1, 2011, and February 28, 2013.

EPA Has Started Responding to the Public's Concerns About Chemicals Used in Fracturing Fluid, But Action Plan Is Needed

In 2011, the EPA received a petition from 115 environmental groups to promulgate rules to require full disclosure of chemicals and mixtures used in oil and gas exploration and production. In response, the EPA agreed to convene a stakeholder process to develop an overall approach to require reporting of chemicals and mixtures used in hydraulic fracturing, while minimizing reporting burdens and costs, taking advantage of existing information, and avoiding duplication of efforts. To facilitate public comment, in May 2014, the EPA published an advance notice of proposed rulemaking identifying key issues for further discussion and analysis. The advance notice of proposed rulemaking requested public comments on various aspects of obtaining information on chemical substances and mixtures used for hydraulic fracturing. Also, the EPA solicited public comment on "appropriate disclosure to ensure that information about the chemicals and mixtures used in hydraulic fracturing activities is provided to the public in a transparent fashion."

The EPA asked the public to comment on several factors, including: (a) the overall approach to reporting and disclosure of chemical substances and mixtures used in hydraulic fracturing, (b) what information companies should report or disclose, (c) the scope of reporting or disclosure of information, and (d) the possible use of third parties in data collection and verification.

The comment period closed in September 2014. The EPA received over 260,000 submissions in response to the advance notice of proposed rulemaking. During our review, the EPA officials said that they will review the comments and consider next steps. To date, however, the agency has not addressed the comments or developed a plan of action for the next steps. The EPA's OCSPP needs to develop an action plan with a timeline to address the public comments and determine whether to propose a rule to obtain information on chemical substances and mixtures used in hydraulic fracturing.

Conclusion

The EPA, states and other stakeholders have made progress developing policies and regulations to manage potential impacts to water resources from hydraulic fracturing. Areas for improvement that can be addressed by the EPA include determining how its memorandum and guidance on the permitting of hydraulic fracturing using diesel fuels is implemented by primacy states and tribes and addressing any compliance issues identified. Additionally, the agency should develop an action plan to address public comments and determine whether there is a need for a federal chemical disclosure program. Addressing these areas will support and strengthen program and environmental protection controls for the growing field of hydraulic fracturing.

Recommendations

We recommend that the Assistant Administrator for Water:

1. Use authorities under the Safe Drinking Water Act to:

    a. Determine whether the EPA, primacy states and tribes issue permits for hydraulic fracturing using diesel fuels as required by statute, the interpretive memorandum and permitting guidance.

    b. Report the results of the determination to the public.

    c. Submit an action plan outlining the steps (along with completion dates) the agency will take if the determination reveals permitting of hydraulic fracturing using diesel fuels is not occurring in accordance with statute, the interpretive memorandum and permitting guidance.

We recommend that the Assistant Administrator for Enforcement and Compliance Assurance:

2. Address compliance issues related to diesel fuel hydraulic fracturing without a permit and not in accordance with statute, the interpretive memorandum and permitting guidance.

We recommend that the Assistant Administrator for Chemical Safety and Pollution Prevention:

3. Establish and publish an action plan with milestone dates that outlines the steps necessary for determining whether to propose a rule to obtain information on the chemical substances and mixtures used in hydraulic fracturing.

Agency Comments and OIG Evaluation

The Deputy Assistant Administrator for Water provided a response to our draft report on May 28, 2015 (Appendix B), which also included responses from OCSPP and OECA. OIG staff met with these offices on June 10, 2015, to gather additional information and discuss the recommendations and the agency responses.

The agency agreed with Recommendation 1 and provided high-level corrective actions that are responsive. The agency disagreed with Recommendation 1(c) in its official response. However, in further discussions, OW staff and managers indicated they will determine by March 2017 if additional steps are needed based on the results of the determination in Recommendation 1(a) and develop an action

plan if appropriate. Recommendations 1(a)-(c) are resolved and open, pending completion of the actions.

The agency disagreed with Recommendation 2 and suggested that this recommendation was unnecessary because of OECA's ongoing work under the agency's Energy Extraction and Production National Enforcement Initiative, which focuses on compliance at onshore natural gas extraction and production facilities. Based on additional information received from OECA, we conclude that the EPA's proposed corrective actions meet the intent of this recommendation. This recommendation is resolved and closed.

The agency agreed with Recommendation 3 and provided high-level corrective actions that are responsive. The agency's initial response did not include a milestone date for completion. However, during later discussions, the agency provided a milestone date of January 2016 to complete evaluation of the public comments received as part of the advance notice of proposed rulemaking and to determine next steps. This recommendation is resolved and open, pending completion of the actions.

The agency also provided technical comments from OW; OSWER; OCSPP; the Office of General Counsel; and Regions 3, 4 and 6. Where appropriate, we incorporated changes to the report based on the agency's technical comments.

Status of Recommendations and Potential Monetary Benefits

RECOMMENDATIONS						POTENTIAL MONETARY BENEFITS (in $000s)	
Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Claimed Amount	Agreed-To Amount
1	15	Use authorities under the Safe Drinking Water Act to:	O	Assistant Administrator for Water			
		a. Determine whether the EPA, primacy states and tribes issue permits for hydraulic fracturing using diesel fuels as required by statute, the interpretive memorandum and permitting guidance.			12/31/16		
		b. Report the results of the determination to the public.			3/30/17		
		c. Submit an action plan outlining the steps (along with completion dates) the agency will take if the determination reveals permitting of hydraulic fracturing using diesel fuels is not occurring in accordance with statute, the interpretive memorandum and permitting guidance.			3/30/17		
2	15	Address compliance issues related to diesel fuel hydraulic fracturing without a permit and not in accordance with statute, the interpretive memorandum and permitting guidance.	C	Assistant Administrator for Enforcement and Compliance Assurance	7/16/15		
3	15	Establish and publish an action plan with milestone dates that outlines the steps necessary for determining whether to propose a rule to obtain information on chemical substances and mixtures used in hydraulic fracturing.	O	Assistant Administrator for Chemical Safety and Pollution Prevention	1/31/16		

[1] O = Recommendation is open with agreed-to corrective actions pending.
C = Recommendation is closed with all agreed-to actions completed.
U = Recommendation is unresolved with resolution efforts in progress.

Appendix A

Additional Details on Scope and Methodology

Literature Review of Potential Impacts

We reviewed the EPA's national study plan and progress report on the potential impacts on hydraulic fracturing. We reviewed GAO reports and published articles about unconventional oil and gas development, including hydraulic fracturing. We also reviewed reports from industry sources and environmental groups for information about potential public health and environmental impacts. A listing of the reports appears below.

Through a literature review, we identified and evaluated the authorities and activities relevant to the EPA, states and other stakeholders involved with the management of potential health and environmental impacts. We reviewed the Energy Policy Act of 2005 and the CWA, SDWA, RCRA, TSCA and CERCLA.

Our review of state regulations focused on the coverage of the regulations, not their quality or effectiveness. For example, we did not conduct a detailed evaluation of what regulators, permit writers or enforcers require when they design and implement their program(s).

EPA Guidance and Reports

- ORD. 2012. Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources Progress Report. EPA 601/R-12/011.
- ORD. 2011. Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources. EPA/600/R-11/122.
- OW. 2014. Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels: Underground Injection Control Program Guidance #84, February 2014. EPA 816-R-14-001.
- OW. 2014. Memorandum from Peter Grevatt, Director, Office of Ground Water and Drinking Water to Regional Administrators and State and Tribal UIC Program Directors, Subject: Implementation of the Safe Drinking Water Act's Existing Underground Injection Control Program Requirements for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuel, February 2014.

Other Documents, Reports and Articles

- API. 2011. Guidance Document HF3, Practices for Mitigating Surface Impacts Associated with Hydraulic Fracturing, First Edition.
- API. 2010. Guidance Document HF2, Water Management Related to Hydraulic Fracturing, First Edition.
- API. 2009. Guidance Document HF1, Hydraulic Fracturing Operations-Well Construction and Integrity Guidelines, First Edition.

- API. 2009. Recommended Practice 51R, Environmental Protection for Onshore Oil and Gas Production Operations and Leases, First Edition.
- Bagheri, F. 2013. Regulation of Hydraulic Fracturing of Shale Gas Formations in the United States. Pepperdine Public Policy Review 6(1).
- Behr, P. 2012. Authors of Model Fracking Regulation Find It's Lonely in the Middle. Midwest Energy News. October 4, 2012.
- Boling, M. 2013. Balancing Environmental, Social and Economic Impacts of Shale Gas Development Activities. Emerging Issues in Shale Gas Development Webinar presentation. Yale Center for Environmental Law and Policy, January 23, 2013.
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- Environmental Integrity Project. 2014. Fracking Beyond the Law: Despite Industry Denials, Investigation Reveals Continued Use of Diesel Fuels in Hydraulic Fracturing.
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- Fershee, J.P. 2012. The Oil and Gas Evolution: Learning from the Hydraulic Fracturing Experiences in North Dakota and West Virginia. West Virginia University Law Legal Studies Research Paper No. 2012-14. Texas Wesleyan Law Review 19: 23-36.
- GAO. 2014. Drinking Water: EPA Program to Protect Underground Sources from Injection of Fluids Associated with Oil and Gas Production Needs Improvement. Report No. GAO-14-555.
- GAO. 2014. Oil and Gas: Updated Guidance, Increased Coordination, and Comprehensive Data Could Improve BLM's Management and Oversight. Report No. GAO-14-238.
- GAO. 2012. Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks. Report No. GAO-12-732.
- GAO. 2012. Unconventional Oil and Gas Development: Key Environmental and Public Health Requirements. Report No. GAO 12-874.

- Gradijan, F. 2012. State Regulation, Litigation, and Hydraulic Fracturing. Environmental & Energy Law & Policy Journal 7(1): 47-85.
- Ground Water Protection Council/ALL Consulting/U.S. Department of Energy. 2009. Modern Shale Gas Development in the United States: A Primer.
- Ground Water Protection Council. 2014. State Oil and Natural Gas Regulations Designed to Protect Water Resources: 2014 Edition.
- Hatzenbuhler, H. and T.J. Centner. 2012. Regulation of Water Pollution from Hydraulic Fracturing in Horizontally-Drilled Wells in the Marcellus Shale Region, USA. Water 4(4): 983-994.
- Horizon Environmental Services, Inc./Independent Producers Association of America. 2004. Guidance Document: Reasonable and Prudent Practices for Stabilization (RAPPS) of Oil and Gas Construction Sites.
- Investor Environmental Health Network/Interfaith Center on Corporate Responsibility. 2014. Disclosing the Facts 2014: Transparency and Risk in Hydraulic Fracturing Operations.
- Konschnik, K.E. and M.K. Boling. 2014. Shale Gas Development: A Smart Regulation Framework. Environmental Science & Technology.
- Kulander, C.S. 2013. Shale Oil and Gas State Regulatory Issues and Trends. Case Western Reserve Law Review 63(4): 1101-1141.
- Liroff, R. 2011. Extracting the Facts: An Investor Guide to Disclosing Risks from Hydraulic Fracturing Operations, published by the Investor Environmental Health Network.
- National Conference of State Legislatures. 2013. States Take the Lead on Regulating Hydraulic Fracturing Overview of 2012 State Legislation.
- National Resources Defense Council. 2012. State Hydraulic Fracturing Disclosure Rules and Enforcement: A Comparison.
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Interviews with EPA, States and Other Stakeholders

We interviewed the EPA and states about their respective programs that regulate the different stages of hydraulic fracturing, any ongoing initiatives to address the potential impacts, recommended practices observed from industry or implemented by the agency, and their views on gaps in regulations. We interviewed EPA Regions 3, 6 and 8 based on the following factors: the amount of unconventional oil and gas development, the current level of federal and state activity and involvement, and recent news or occurrences of alleged contamination from hydraulic fracturing. We also selected one state from each region to interview using the same factors that we used to select the EPA regions. Pennsylvania was selected from Region 3, Arkansas from Region 6, and Colorado from Region 8. In each state, we met with managers and staff from the environmental protection and oil and gas agencies or offices. Table A-1 provides a listing of the organizations interviewed.

Table A-1: Interviews conducted during the OIG evaluation

EPA	• Office of the Administrator • Office of Chemical Safety and Pollution Prevention • Office of Enforcement and Compliance Assurance • Office of Research and Development • Office of Solid Waste and Emergency Response • Office of Water • Region 3 • Region 6 • Region 8
State and Basin	• Arkansas Department of Environmental Quality • Arkansas Department of Natural Resources • Colorado Department of Public Health and the Environment • Colorado Oil and Gas Conservation Commission • Pennsylvania Department of Environmental Protection • Delaware River Basin Commission • Susquehanna River Basin Commission
Industry nongovernmental organizations	• American Petroleum Institute • Colorado Oil and Gas Association • Independent Producers Association of America
Environmental nongovernmental organizations	• Earthworks • Environmental Defense Fund • Natural Resources Defense Council
Others	• STRONGER Inc. • Ground Water Protection Council • Arkansas Public Policy Panel • Professor of Environmental Engineering at the University of Colorado

Source: OIG analysis and summary.

Appendix B

Agency Response to Draft Report and OIG Evaluation

May 28, 2015

SUBJECT: Response to the Office of Inspector General's Draft Report/Project No. OPE-FY14-0018, "Enhanced EPA Oversight and Action Can Further Protect Water Resources from the Potential Impacts of Hydraulic Fracturing," dated April 28, 2015

FROM: Kenneth J. Kopocis
Deputy Assistant Administrator

TO: Arthur A. Elkins, Jr.
Inspector General

Thank you for the opportunity to respond to the issues and recommendations in the subject audit report. The following is a summary of the U.S. Environmental Protection Agency's overall response to the draft report, along with specific comments on each of the report's recommendations. We have also included an attachment with technical comments on the report.

The EPA agrees with and appreciates the recognition by the Office of Inspector General that the Agency is taking positive steps to protect public health and the environment in light of a surge in unconventional oil and gas development. Over the past several years, the EPA has proactively coordinated initiatives from various program and regional offices involved with energy extraction activities, including hydraulic fracturing. The Agency also agrees that it needs to consider the public's interest in the chemicals and mixtures used in hydraulic fracturing activities. The EPA is currently evaluating public and stakeholder comments on the Agency's 2014 Advance Notice of Proposed Rulemaking to obtain information on chemicals and mixtures used in hydraulic fracturing, and to determine appropriate next steps.

Over the past several years, the EPA has worked with states and the regulated community to improve understanding of the provisions of the Safe Drinking Water Act and Underground Injection Control regulations regarding hydraulic fracturing activities. The Agency provided regulatory clarity on hydraulic fracturing by issuing an interpretive memorandum[1] in 2014. In the memorandum, the EPA explains that any owner or operator who injects diesel fuels as part of hydraulic fracturing for oil or gas extraction must obtain a UIC Class II permit before injection, and provides the Agency's interpretation of the statutory term "diesel fuels" for permitting purposes. The EPA also provided detailed recommendations to EPA permit writers in its

[1] "Implementation of the Safe Drinking Water Act's Existing Underground Injection Control Program Requirements for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels" (EPA, 2014)

permitting guidance for hydraulic fracturing using diesel fuels.[2] The EPA engaged with state and tribal programs, industry stakeholders and the environmental community throughout the development and after publication of the UIC permitting guidance and interpretive memorandum for the use of diesel fuels in hydraulic fracturing.

The EPA coordinates with states where use of diesel fuels in hydraulic fracturing has been reported and evaluates any information regarding injection of diesel fuels for hydraulic fracturing on a case-by-case basis. For example, the Environmental Integrity Project issued a report in late 2014, stating that diesel fuels usage had been reported in multiple states through the disclosure website www.fracfocus.org. In response, EPA regional offices met with the states where unpermitted diesel fuels usage was reported. As a result of this communication, the state programs initiated investigations. Upon review of the wells' final stimulation plans, the states found that diesel fuels were not actually used in those hydraulic fracturing activities. The reports of diesel fuel usage in FracFocus were either filing mistakes or were part of initial drilling plans that were not implemented. With assistance from the EPA, state and tribal governments have worked to inform well service companies and operators of the UIC permit implications of using diesel fuels for hydraulic fracturing, and have encouraged the use of safer alternatives.

Based on the EPA's outreach and evaluation, to date, no states or tribes with permitting authority for the UIC Class II program have received applications or issued any permits for the use of diesel fuels in hydraulic fracturing. Likewise, the Agency has not received applications nor issued any permits for the use of diesel fuels in hydraulic fracturing where the EPA is the permitting authority. Further, as noted above, investigations of diesel fuels use since the release of the Agency's 2014 guidance and memorandum show that no improper permitting of diesel occurred in these cases.

In 2011, the EPA designated "energy extraction" as one of its six National Enforcement Initiatives, which includes a focus on unconventional gas extraction and production. The Initiative's primary goal is to address impacts to air and water from onshore natural gas extraction and production activities that may cause or contribute to significant harm to public health and/or the environment. Compliance issues associated with hydraulic fracturing at natural gas sites, including the UIC Class II program, fall under the Energy Extraction Initiative.

The EPA will continue to use its oversight authorities under the Safe Drinking Water Act to work with state primacy programs and EPA regional permit authorities to communicate requirements and responsibilities regarding the use of diesel fuels during hydraulic fracturing, and to evaluate reports of unpermitted use of diesel fuels in hydraulic fracturing. If a permit is warranted, the EPA will ensure that the activity is permitted in a manner that is protective of underground sources of drinking water.

[2] *Revised Guidance: Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels: Underground Injection Control Program Guidance #84* (EPA, 2014)

AGENCY'S RESPONSE TO REPORT RECOMMENDATIONS

Agreements

No.	Recommendation	High-Level Intended Corrective Action(s)	Estimated Completion by
1(a).	Use oversight authorities under the Safe Drinking Water Act to determine whether the EPA, primacy states and tribes issue permits for the use of diesel fuel during hydraulic fracturing as required by statute, the interpretive memorandum and permitting guidance.	As part of the EPA UIC program's regular oversight activities with states and through direct implementation of the UIC program, the Agency will continue to communicate requirements and responsibilities regarding the use of diesel fuels during hydraulic fracturing. Through these oversight activities, we will determine whether diesel fuels are used; and, if so, whether the EPA, states and tribes are issuing permits in accordance with the SDWA and UIC regulations.	December 2016
1(b).	Report the results of the determination to the public.	The Office of Water will compile results of regional and primacy program permitting activities regarding the use of diesel fuels in hydraulic fracturing and post those results on our public website.	March 2017
3.	Establish and publish an action plan with milestone dates that outlines the steps necessary for determining whether to propose a rule to obtain information on the chemical substances and mixtures used in hydraulic fracturing.	In May 2014, the EPA issued an Advance Notice of Proposed Rulemaking to seek public and stakeholder input on how best to obtain information on chemicals and mixtures used in hydraulic fracturing. The EPA is currently evaluating the comments to determine appropriate next steps and our future plan of action.	To be determined based on evaluation of public comments.

OIG Response: The agency's high-level corrective actions for Recommendations 1(a) and 1(b) are responsive. Subsequent to a meeting with the agency in June 2015, the EPA provided an estimated date of January 2016 for Recommendation 3 of when it will complete its evaluation of public comments and decide whether to continue the rulemaking process.

Disagreements

No.	Recommendation	High-Level Intended Corrective Action(s)	Estimated Completion by
1(c).	Submit an action plan outlining the steps (along with completion dates) the Agency will take if the determination reveals permitting of diesel fuel during hydraulic fracturing is not occurring in accordance with statute, the interpretive memorandum and permitting guidance.	Outreach and evaluation to date has shown that neither states, tribes, nor the EPA have received applications or issued any permits for the use of diesel fuels in hydraulic fracturing. Since the 2014 guidance and memo clarified requirements, the EPA has not seen any evidence of improper use of diesel fuels, so an action plan would be premature without the results of the determination in 1(a).	The EPA will determine any next steps based on the results of the determination in recommendation 1(a). If significant diesel use is found and states are issuing permits, the EPA may decide to examine how states are permitting the use of diesel fuels in hydraulic fracturing activities with respect to the practices found in the guidance.
2.	Address compliance issues related to diesel fuel use during hydraulic fracturing without a permit and not in accordance with statute, the interpretive memorandum and permitting guidance.	This recommendation is unnecessary and should be deleted. The EPA designated "energy extraction" as a National Enforcement Initiative in 2011. The Initiative has the primary goal of addressing impacts to air and water from onshore natural gas extraction and production activities that may cause or contribute to significant harm to public health and/or the environment.	The Agency is implementing the Energy Extraction National Enforcement Initiative, which is focused on onshore natural gas extraction and production, and which encompasses UIC Class II compliance issues.

OIG Response: The agency's high-level corrective actions for Recommendation 1(c) are responsive. Following a June 2015 meeting to discuss the agency's comments, the agency provided an estimated milestone completion date of March 2017 for Recommendation 1(c), based on the results of Recommendation 1(a), For example, if significant diesel use is found and states are issuing permits, the EPA may decide to examine how states are permitting the use of diesel fuels in hydraulic fracturing activities with respect to the recommendations for the EPA permit writers found in the guidance. Should significant unpermitted diesel use be found, the EPA's response would depend on considerations such as its extent and location, as well as the reasons for the unpermitted use.

The OIG disagrees with the agency that Recommendation 2 should be deleted. During the June 2015 exit meeting, agency staff indicated that any compliance issues identified from onshore natural gas and concurrent oil extraction and production activities would be part of the Energy Extraction and Production National Enforcement Initiative. Other oil extraction activities would be part of the regions' core enforcement programs. After receiving and reviewing clarifying information from the agency, we consider Recommendation 2 as closed upon issuance of the final report.

CONTACT INFORMATION

If you have any questions regarding this response, please contact Ronald Bergman, Acting Director, Drinking Water Protection Division, Office of Ground Water and Drinking Water at (202) 565-3823; Andrew Stewart, Acting Director, Special Litigation and Projects Division, Office of Civil Enforcement/Office of Enforcement and Compliance Assurance at (202) 564-1463; or Paul Lewis, Chief, Chemical Information and Testing Branch, Office of Pollution Prevention and Toxics at (202) 564-6738.

cc:
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Action Follow-up Coordinators (HQ and RT)

Appendix C

Distribution

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Assistant Administrator for Chemical Safety and Pollution Prevention
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