

# FRACKING UP AND FIGHTING FOR THE PUBLIC'S DRINKING AND AQUIFER WATERS (*Part 2*)

**“ProPublica” News Articles on Hydraulic ‘Fracking’  
Gas Drilling Controversies in the United States,  
October 2010 - August 2011**

*As reported by:*  
**Abrahm Lustgarten,  
Nicholas Kusnetz  
Marie C. Baca  
Sasha Chavkin  
Joaquin Sapien,  
Eric Umansky,  
Lisa Schwartz  
Liz Day**

*Follow the Debates  
Raging in the United States*

**52 investigative stories compiled faithfully,  
chronologically, and reformatted into a single,  
searchable pdf file (with original hyperlinks),**

**from the [ProPublica website](http://www.propublica.org),**

**[www.propublica.org](http://www.propublica.org)**

**(Journalism in the Public Interest)**

**Gas Drilling Section: Buried Secrets**

**<http://www.propublica.org/series/fracking>**

*Compiled by Will Koop, B.C. Tap Water Alliance, August 31, 2011  
website: [www.bctwa.org/FrackingBC.html](http://www.bctwa.org/FrackingBC.html)*

## CHRONOLOGICAL LIST OF ALL ARTICLES FOUND IN THIS DOCUMENT (WITH WEBSITE ADDRESSES)

October 1, 2010. *Pa. Environmental Agency Butts Heads With Gas Drilling Company Over Town's Water Woes*

<http://www.propublica.org/blog/item/pa.-environmental-agency-and-gas-drilling-company-butts-heads-over-dimocks-/>

October 26, 2010. *Leaked Memo Depicts Bare-Bones Regulatory Environment for NY Gas Drilling*

<http://www.propublica.org/article/leaked-memo-depicts-bare-bones-regulatory-environment-for-ny-gas-drilling/>

November 2, 2010. *Two Companies Seek Trade Secret Status for Fracking Fluids in Wyoming*

<http://www.propublica.org/article/two-companies-seek-trade-secret-status-for-fracking-fluids-in-wyoming/>

November 9, 2010. *Science Says Methane in PA. Water Is from Drilling, Not Natural Causes*

<http://www.propublica.org/article/science-says-methane-in-pa.-water-is-from-drilling-not-natural-causes/>

November 12, 2010. *Interview: Former NY Environmental Commissioner Pete Grannis on Gas Drilling*

<http://www.propublica.org/article/interview-former-ny-environmental-commissioner-pete-grannis-on-gas-drilling/>

November 16, 2010. *Pittsburgh Bans Natural Gas Drilling*

<http://www.propublica.org/article/pittsburgh-bans-natural-gas-drilling/>

November 16, 2010. *Halliburton's Stonewalling Works in Pa., but Sparks Subpoena at EPA*

<http://www.propublica.org/article/halliburtons-stonewalling-works-in-pa-but-sparks-subpoena-at-epa/>

November 30, 2010. *NY Assembly Approves Hydraulic Fracturing Moratorium*

<http://www.propublica.org/article/new-york-assembly-approves-hydraulic-fracturing-moratorium/>

December 6, 2010. *Beyond Fracking: Experts Challenge Safety of Exploratory Wells, Vertical Drilling*

<http://www.propublica.org/article/beyond-fracking-experts-challenge-safety-of-exploratory-wells-vertical-drill/>

December 9, 2010. *Some Appointees to Oil and Gas Commission Are Industry Execs, Lobbyists*

<http://www.propublica.org/article/some-appointees-to-oil-and-gas-commission-are-industry-exec-lobbyists/>

December 17, 2010. *Executive Order Suspending Fracking Brings Little Change*

<http://www.propublica.org/article/executive-order-suspending-fracking-brings-little-change/>

December 21, 2010. *Residents Divided About PA's Agreement With Gas Drilling Company Over Water Contamination*  
<http://www.propublica.org/article/residents-divided-about-pas-agreement-with-gas-drilling-company-over-water/>

December 29, 2010. *Regulation and Disclosure of Fracking at the Center of Gas Drilling Debate*  
<http://www.propublica.org/article/fracking-regulation-and-disclosure-at-center-of-gas-drilling-debate/>

January 5, 2011. *Regulation and Disclosure of Fracking at the Center of Gas Drilling Debate*  
<http://www.propublica.org/article/pennsylvanias-drilling-wastewater-released-to-streams-some-unaccounted-for/>

January 13, 2011. *Pennsylvania's Governor-Elect Nominates Insiders for Top Environmental Posts*  
<http://www.propublica.org/article/pennsylvanias-governor-elect-nominates-insiders-for-top-environmental-posts/>

January 14, 2011. *Opponents to Fracking Disclosure Take Big Money From Industry*  
<http://www.propublica.org/article/opponents-to-fracking-disclosure-take-big-money-from-industry/>

January 21, 2011. *As Pennsylvania Implements New Wastewater Rules, Some State Waterways Still Face Problems*  
<http://www.propublica.org/article/as-dep-implements-new-wastewater-rules-some-pa-waterways-still-face-problem/>

January 25, 2011. *Climate Benefits of Natural Gas May Be Overstated*  
<http://www.propublica.org/article/natural-gas-and-coal-pollution-gap-in-doubt/>

January 28, 2011. *In Symbolic Move, Philadelphia Calls for Gas Drilling Ban*  
<http://www.propublica.org/article/in-symbolic-move-philadelphia-calls-for-gas-drilling-ban/>

January 31, 2011. *Clearing the Air on ProPublica's Drilling Pollution Story*  
<http://www.propublica.org/article/clearing-the-air-on-propublicas-drilling-pollution-story/>

February 2, 2011. *Drilling Industry Says Diesel Use Was Legal*  
<http://www.propublica.org/article/drilling-industry-says-diesel-use-was-legal/>

February 3, 2011. *Many PA Gas Wells Go Unreported for Months*  
<http://www.propublica.org/article/many-pa-gas-wells-go-unreported-for-months/>

February 4, 2011. *Anatomy of a Gas Well: What Happened When a Well Was Drilled in a National Forest*  
<http://www.propublica.org/article/anatomy-of-a-gas-well-what-happened-when-a-well-was-drilled-in-a-national-f/>

February 9, 2011. *EPA Wants to Look at Full Lifecycle of Fracking in New Study*  
<http://www.propublica.org/article/epa-wants-to-look-at-full-lifecycle-of-fracking-in-new-study/>

February 10, 2011. *John Hanger, PA's Former Environmental Chief, Talks About Challenges of Keeping Gas Drilling Safe*

<http://www.propublica.org/article/john-hanger-pas-former-environmental-chief-talks-about-challenges-of-keepin/>

February 25, 2011. *Hydrofracked? One Man's Mystery Leads to a Backlash Against Natural Gas Drilling*

<http://www.propublica.org/article/hydrofracked-one-mans-mystery-leads-to-a-backlash-against-natural-gas-drill/>

February 28, 2011. *Natural Gas Drilling Debate Heats Up: Read Our Guide*

<http://www.propublica.org/article/natural-gas-drilling-debate-heats-up-read-our-guide/>

March 9, 2011. *PA Governor Gives Energy Executive Supreme Authority Over Environmental Permitting*

<http://www.propublica.org/article/corbett-pa-energy-exec-authority-environment/>

March 9, 2011. *Former Bush EPA Official Says Fracking Exemption Went Too Far; Congress Should Revisit*

<http://www.propublica.org/article/former-bush-epa-official-says-fracking-exemption-went-too-far/>

March 30, 2011. *Pennsylvania Limits Authority of Oil and Gas Inspectors*

<http://www.propublica.org/article/pennsylvania-limits-authority-of-oil-and-gas-inspectors/>

April 4, 2011. *Deteriorating Oil and Gas Wells Threaten Drinking Water, Homes Across the Country*

<http://www.propublica.org/article/deteriorating-oil-and-gas-wells-threaten-drinking-water-homes-across-the-co/>

April 11, 2011. *Pa.'s New Jobs Czar Fought Enviro Regs for Years*

<http://www.propublica.org/article/pas-new-jobs-czar-has-anti-regulatory-history/>

April 12, 2011. *More Reasons to Question Whether Gas Is Cleaner Than Coal*

<http://www.propublica.org/article/more-reasons-to-question-whether-gas-is-cleaner-than-coal/>

April 13, 2011. *PA Senate Confirms Controversial Job Czar Nominee*

<http://www.propublica.org/article/pa-senate-confirms-controversial-job-czar-nominee/>

April 21, 2011. *Natural Gas Drilling Is at a Crucial Turning Point*

<http://www.propublica.org/article/natural-gas-drilling-is-at-a-crucial-turning-point1/>

April 26, 2011. *Response to Pa. Gas Well Accident Took 13 Hours Despite State Plan for Quick Action*

<http://www.propublica.org/article/response-to-pa-gas-well-accident-took-13-hours-despite-state-plan-for-quick/>

May 5, 2011. *PA Oil and Gas Inspectors Free to Issue Violations Without Approval From Top, Enviro Chief Says*

<http://www.propublica.org/article/pa-oil-and-gas-inspectors-free-to-issue-violations-without-approval-from-to/>

May 9, 2011. *Scientific Study Links Flammable Drinking Water to Fracking*  
<http://www.propublica.org/article/scientific-study-links-flammable-drinking-water-to-fracking/>

May 12, 2011. *Fracking: The Music Video*  
<http://www.propublica.org/article/fracking-music-video/>

May 17, 2011. *PA Officials Issue Largest Fine Ever to Gas Driller*  
<http://www.propublica.org/article/pa-officials-issue-largest-fine-ever-to-gas-driller/>

May 17, 2011. *Gas Drilling Companies Hold Data Needed by Researchers to Assess Risk to Water Quality*  
<http://www.propublica.org/article/gas-drilling-companies-have-the-water-quality-methane-risk-data/>

May 19, 2011. *Forced Pooling: When Landowners Can't Say No to Drilling*  
<http://www.propublica.org/article/forced-pooling-when-landowners-cant-say-no-to-drilling/>

May 25, 2011. *Exxon Ad Makes Gas Drilling Seem Simpler—and Safer—Than It Really Is*  
<http://www.propublica.org/article/exxon-ad-makes-gas-drilling-seem-simpler-and-safer-than-it-really-is/>

June 20, 2011. *Critics Find Gaps in State Laws to Disclose Hydrofracking Chemicals*  
<http://www.propublica.org/article/critics-find-gaps-in-state-laws-to-disclose-hydrofracking-chemicals/>

June 24, 2011. *EPA Fracking Study to Focus on Five States—But Not Wyoming*  
<http://www.propublica.org/article/epa-fracking-study-to-focus-on-five-states-but-not-wyoming/>

June 30, 2011. *New York Proposes Permanent Ban on Fracking Near Watershed and State Land*  
<http://www.propublica.org/article/fracking-still-on-hold-in-new-york-pending-environmental-review/>

June 30, 2011. *Oil and Gas Drilling Surges Despite Increased Oversight*  
<http://www.propublica.org/article/oil-and-gas-drilling-surges-despite-increased-oversight/>

July 8, 2011. *Lawsuits Predicted as New York Towns Ponder Whether to Block Fracking*  
<http://www.propublica.org/article/lawsuits-predicted-as-new-york-towns-ponder-whether-to-block-fracking/>

July 14, 2011. *State Fracking Rules Could Allow Drilling Near New York City Water Supply Tunnels*  
<http://www.propublica.org/article/state-fracking-rules-could-allow-drilling-near-new-york-city-water-supply-t/>

July 29, 2011. *EPA Proposes New Rules on Emissions Released by Fracking*  
<http://www.propublica.org/article/epa-proposes-new-rules-on-emissions-released-by-fracking/>

August 4, 2011. *Does an Old EPA Fracking Study Provide Proof of Contamination?*  
<http://www.propublica.org/article/does-an-old-epa-fracking-study-provide-proof-of-contamination/>

August 9, 2011. *N.Y. Enviro Commissioner Expects Little From EPA Fracking Study*  
<http://www.propublica.org/article/new-york-environment-commissioner-expects-little-from-epa-fracking-study/>

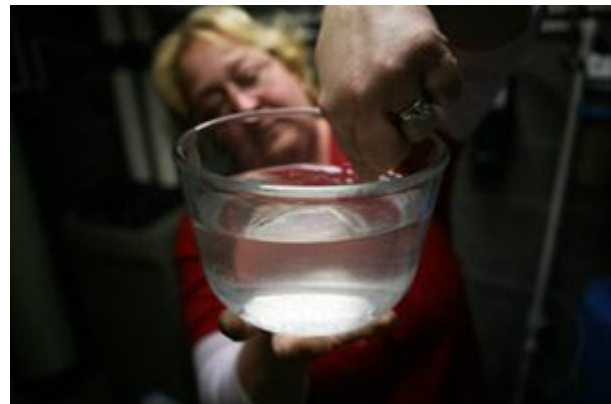
August 12, 2011. *Report for Obama Questions Effectiveness of Gas Drilling Regulations*  
<http://www.propublica.org/article/report-for-obama-questions-effectiveness-of-gas-drilling-regulations/>

## Pa. Environmental Agency Butts Heads With Gas Drilling Company Over Town's Water Woes

By [Marian Wang](#)

Oct. 1, 2010, 11:06 a.m.

*Dimock resident Julie Sautner, seen in her basement with water from her filtration system, flushed her toilet one day to find a rush of earth-brown water. Tests showed her drinking water was high in aluminum, iron and methane. (Abrahm Lustgarten/ProPublica)*



Residents of Dimock, Pa., whose [water woes have been widely chronicled](#) as a prime example of the hidden costs of natural gas drilling, will get a safe and permanent water supply to replace their methane-contaminated wells, the Pennsylvania Department of Environmental Protection announced Thursday.

For about two years, Cabot Oil & Gas, a natural gas drilling company, has [supplied drinking water](#) to some Dimock residents after several private drinking wells were found to be contaminated with methane, the main component of natural gas. A few wells have exploded. The Pennsylvania DEP has said that Cabot is responsible for the problems and announced intentions to bill the company for the cost of an [\\$11.8 million plan to construct a new public water line](#) to serve these residents.

“We have had people here in Pennsylvania without safe drinking water for nearly two years,” said John Hanger, head of Pennsylvania’s DEP. “That is totally unacceptable. It is reprehensible. We have given Cabot every opportunity to resolve this matter.”

But Cabot has pushed back against the agency, [taking out a full-page ad](#) this week in [several local newspapers](#) and calling plans to construct the water system “unreasonable, unprecedented ... and unfair.”

The company also issued [the following statement](#):

Despite the fact that the company has presented overwhelming scientific evidence and historical documentation to the Pennsylvania DEP proving it is not responsible for methane gas migration to local water wells, the Pennsylvania DEP has chosen to ignore such evidence, preferring instead to base unprecedented and costly mandates on biased and unscientific opinions and accounts.

Pennsylvania’s DEP chief said earlier this week that the agency and the company would [likely end up in court](#) on this issue.

As we’ve reported, the agency [fined Cabot \\$120,000](#) last fall after determining that water supplies were contaminated by methane gas leaked through Cabot’s faulty well casings. It was fined again in April for failure to address the problem of methane contamination. This time the fine was heftier — a [\\$240,000 penalty](#), plus \$30,000 each month until the department determines that the problem has been properly addressed. It also ordered the company to permanently shut down some of its wells.

As we’ve noted, methane in drinking water itself [isn’t necessarily harmful](#) or dangerous, but it can be when it evaporates from the water and into people’s homes. If the gas becomes concentrated enough, it can ignite, even [in water](#).

A private lab that tested water in Dimock found that water supplies in the areas affected by methane contamination were also contaminated by [toxic industrial solvents](#) including toluene, xylene and ethylbenzene, the Scranton Times-Tribune reported earlier this month.

A group of Dimock residents — among them, a former Cabot employee and several residents whose wells had caught fire — [filed a lawsuit](#) last year against the company for the contamination and the health risks it could pose to them.

Cabot mentioned the lawsuit in its ad this week, adding that it “does not believe it caused these conditions and intends to fight these allegations through its scientific findings.”



# Leaked Memo Depicts Bare-Bones Regulatory Environment for NY Gas Drilling

By [Marie C. Baca](#)

Oct. 26, 2010, 10:11 a.m.

*Pete Grannis, now the former commissioner of the New York State Department of Environmental Conservation, was dismissed from his post after penning an internal memo that criticized Gov. David Paterson's budget cuts. (Mike Groll/AP Photo)*



The [leaked memo](#) that led to the dismissal of New York's top environmental official last week depicts a severely understaffed agency that has struggled to adequately perform its duties over the past two years and is ill-equipped to supervise natural gas drilling.

"All of the meat has been snipped free of the bones, and some of the bones have disappeared," wrote Department of Environmental Conservation Commissioner Pete Grannis in the memo. "Many of our programs are hanging by a thread."

The Albany *Times Union* reported on the internal memo last Tuesday. Grannis was dismissed by Gov. David Paterson two days later. In the aftermath, environmental groups are rallying behind Grannis, and gas drilling companies are calling for a better-financed DEC that can more effectively regulate drilling in the Marcellus Shale.

The memo, which responded to a request from the governor's budget division that the DEC cut 209 people from its staff by the end of the year, described an agency that is "in the weakest position it has been since it was created 40 years ago."

"The public would be shocked to learn how thin we are in many areas," Grannis wrote. "The risks to human health ... have already increased with respect to enforcement activities related to pollution sources. ... We are now responding to and cleaning up fewer petroleum spills."

Calls to the DEC were directed to the governor's office, where spokeswoman Jessica Bassett confirmed that Grannis had been terminated but declined to comment about how the DEC would be able to perform its duties with additional cuts.

"We had to make some difficult decisions," said Bassett. "All (budget) areas have been affected," not just environmental agencies, she said.

Environmental groups are calling for Grannis to be reinstated as commissioner, a position he had held since 2007.

"Pete Grannis has been a steadfast champion for decades, and was a dedicated public servant who truly understood all the environmental challenges facing New York State," reads a statement by the



conservation group Audubon New York. “It’s a shame that the Paterson administration’s assault on the environment has claimed another strong advocate.”

But Grannis and his agency have not always been hailed by environmental groups, which have criticized the state’s oversight of gas development.

ProPublica launched an investigation into [the hidden costs of gas drilling](#) in 2008. A series of articles revealed that New York regulators were both unaware that the drilling technique known as [hydrofracking](#) would pump toxic chemicals underground and not sure how the state would [dispose of the waste water produced](#) in the process.

“As disappointed as we were with Grannis, the fact of the matter is that the DEC is our protector,” said Ramsay Adams, executive director of the environmental group Catskill Mountainkeepers. “But if things were being regulated at a pitiful level before, what’s going to happen now?”

According to the Grannis memo, the loss of 209 jobs would be a significant blow to the agency, which would be left with a total of 2,926 staffers if those cuts were implemented. The memo states that the DEC will have lost more than 20 percent of its workforce since April 2008 from attrition and recession-triggered downsizing. It lost another 800 jobs in the decade before former Gov. Eliot Spitzer was elected in 2006.

Grannis wrote that many of the agency’s responsibilities would have to be delegated to the federal Environmental Protection Agency, which is preparing a report on the safety of hydraulic fracturing.

## Two Companies Seek Trade Secret Status for Fracking Fluids in Wyoming

By [Marie C. Baca](#)

Nov. 2, 2010, 11:03 a.m.

*This post has been corrected ([11/3/2010](#)).*

*A drilling rig on the Pinedale Anticline with the Wyoming Range in the background. (Wendy Shattil/Bob Rozinski - International League of Conservation Photographers/Flickr)*



Two chemical manufacturers are seeking an exemption from new rules in Wyoming that require public disclosure of the chemicals used in [hydraulic fracturing](#), a controversial natural gas drilling process suspected of polluting groundwater.

ChemEOR, based in Covina, Calif., and CESI Chemical Inc., based in Marlow, Okla., have asked the Wyoming Oil and Gas Conservation Commission to grant their fracturing fluids trade secret status, according to state oil and gas supervisor Tom Doll. The designation would still require the

companies to share their formulas with the state but would exempt them from making the information available to the public.

“Disclosure is the rule,” Doll said. “Anything else is a rare exception, and one we will look at very, very closely.”

Doll said most companies that have approached him over the past month have said they are willing to give their chemical information to both the agency and the public.

The [new rules](#), which went into effect Sept. 15, require drilling companies to tell regulators which chemicals they plan to use in each well before the well is approved. Companies must also disclose the concentrations of the chemicals they used once the operation is complete. The list of chemicals and concentrations is available to the public on the [Wyoming Oil and Gas Conservation Commission website](#).

If a company claims that certain information is a trade secret, the commission or state courts would review the request and, if approved, the relevant information would be withheld from the public.

Chemical and drilling companies have long argued that their products are safe and that sharing their proprietary information, as the Wyoming law now requires, would harm the industry.

“We’re not doing this because it’s a personal interest,” said Patrick Shuler, vice president of technology and development at ChemEOR. “We’re trying to keep our people gainfully employed, and that means maintaining our trade secrets and our competitive advantage.”

CESI Chemical did not respond to requests for comment.

Environmentalists and researchers say that if the Wyoming law is implemented as promised, it could create the most comprehensive data yet for studying the relationship between hydraulic fracturing and water contamination.

“If disclosure hurts the industry, then that’s a problem with the industry,” said Deb Thomas, an organizer with the [Powder River Basin Resource Council](#), a Wyoming environmental group. “We shouldn’t be protecting these companies at the expense of the public.”

While the new law makes it difficult for companies to keep the chemicals they use secret, there is a loophole that allows them to delay the disclosure. Under Wyoming law, companies can keep information about their “first, exploratory” well -- also known as a “wildcat well” -- confidential for six months. The new law maintains this provision.

This loophole dates back to earlier gas drilling legislation, Doll said, and is meant to allow companies to maintain their competitive advantage while they determine the viability of a new drilling area. Once the company files a completion report or the six months expires, the information is no longer confidential.

Drilling companies can ask for an additional six-month confidentiality extension, but Doll has been reluctant to do that. He said he is currently reviewing some 200 wells that were given confidential status before the new guidelines went into effect.

If you want to check out the chemicals used in Wyoming's wells, you need two of the three following pieces of data: an API number (the unique number assigned to each well), the name of the company that operates the well, and/or the location of the well. Much of this information can be found on the "[Horizontal Wells](#)" link on the [Wyoming Oil and Gas Conservation website](#). A list of the chemicals that drillers plan to use in each well can then be found by clicking on the "[APD's](#)" link on the main page. The list of the chemicals and concentrations that were actually used in those wells can be found by clicking the "[Completions](#)" link on the main page.

**Correction:** An earlier version of this article stated that ChemEOR was a subsidiary of Flotek Industries Inc. CESI Chemical, not ChemEOR, is a subsidiary of Flotek.

## Science Says Methane in PA. Water Is from Drilling, Not Natural Causes

By [Abrahm Lustgarten](#)  
Nov. 9, 2010, 1:13 p.m.

**Nov. 10:** This story has been [corrected](#).

*A drilling rig in Dimock, Pa. (Abrahm Lustgarten/ProPublica)*



In its Sunday, Nov. 6, business feature, The [New York Times wrote](#) about concerns some residents across the country have about pollution in their water supplies from natural gas drilling. The paper traveled to northeastern Pennsylvania, where more than a dozen residents' water has been fouled by the drilling process and the state is arranging to replace their drinking-water supply.

[ProPublica has been reporting](#) on the water concerns there, in the town of Dimock, since late 2008.

At the end of its article, the Times used a quote that raised questions about whether gas drilling is responsible for the contamination, or whether the problem has been made up or overhyped.

The quote came from Martha Locey, a 78-year-old resident of the nearby town of Montrose, Pa., who said she's had methane in the water of her family farm for decades -- long before the drilling started.

"My father dug our well in 1945, and we knew it had lots of iron in it, and we thought it had something else, but we weren't sure, because it had lots of bubbles in it," Mrs. Locey said. "So my nephew took it to school in the '60s, and the science teacher lit it, and it burned, so he said, 'It's methane.'"

Mrs. Locey may be right. It's quite likely that her nephew did in fact light his water on fire almost 50 years ago -- and that the water contained gas. It just wasn't the same type of gas that is causing problems in Dimock.

Methane does occur naturally in water wells, and it is not uncommon in Pennsylvania water. But state officials long ago determined that the methane bubbling up in Dimock's wells was the result of the disruptive drilling processes taking place adjacent to the wells. The gas that typically is found naturally in water wells comes either from methane deposits somewhere near the earth's surface, or from the decomposition of bacteria (this is called biogenic methane).

Scientists have tested the molecular composition of the methane found in Dimock and determined that it came from the Devonian layer of shale, thousands of feet below the surface. In geologic geek-speak, it's called "thermogenic," meaning it is essentially the same kind of gas that the energy companies are drilling for.

Residents in Dimock and across the country have found thermogenic gas in their water where drilling is taking place. Many people are blaming the invasive and controversial drilling process called [hydraulic fracturing](#), and federal authorities are studying whether that process in particular is endangering water supplies in several states. But whether it was fracking or some other part of the drilling process -- the construction of the wells, for example -- there is little debate among regulators and scientists that the contamination in Dimock is related to the drilling.

**Correction:** This story incorrectly stated that well water had been fouled in northwestern Pennsylvania. The story should have said the water was fouled in northeastern Pennsylvania.

# Interview: Former NY Environmental Commissioner Pete Grannis on Gas Drilling

by [Marie C. Baca](#)

Nov. 12, 2010, 8:55 a.m.

*Pete Grannis, commissioner of the New York State Department of Environmental Conservation, speaks during a interview in Albany, N.Y., on April 15, 2010. He spoke to ProPublica about hydraulic fracturing, his time as a regulator and the future of natural gas drilling in the U.S. (Mike Groll/AP Photo)*



Former state assemblyman Alexander B. “Pete” Grannis, 68, served as the state’s top environmental official for two and a half years beginning April 1, 2007. A graduate of Rutgers University, he received a law degree from the University of Virginia Law School and helped organize New York City’s first Earth Day in 1970. During his tenure as commissioner, the Department of Environmental Conservation was criticized for underestimating [the risks of hydraulic fracturing](#) -- a controversial gas drilling technique that is temporarily banned in the state -- but also praised for creating the nation’s first [fracturing chemical disclosure rules](#). He was fired on Oct. 21 by Gov. David Paterson after a memo Grannis wrote criticizing the governor’s proposed budget cuts for the DEC was leaked to the press. In the memo he said the agency wouldn’t be able [to perform its duties if the cuts went into effect](#). Grannis’ sudden departure sparked outrage from environmental groups and questions about the future of natural gas drilling regulation in New York. ProPublica reporter Marie C. Baca interviewed Grannis in ProPublica’s Manhattan offices on Nov. 5 and by phone on Nov. 10. The following is a transcript of those interviews, edited for clarity and length.

# Pittsburgh Bans Natural Gas Drilling

By [Marie C. Baca](#)

Nov. 16, 2010, 5:49 p.m.

*Downtown Pittsburgh (Getty Images)*



Citing health and environmental concerns, the Pittsburgh, Pa., city council voted unanimously Tuesday to ban natural gas drilling within the city limits. It is the first such ban in a Pennsylvania city.

The 9-0 vote received a standing ovation, [according to the Associated Press](#).

Pittsburgh sits on the Marcellus Shale, the gas-rich rock formation that has triggered a drilling boom in the eastern United States. The drillers use a technique known as [hydraulic fracturing](#) or fracking, which shoots fluids underground at high pressures to release gas from bedrock. ProPublica has written more than 70 articles documenting the [hidden costs of fracking](#).

The Pittsburgh bill was drafted by the Community Environmental Legal Defense Fund, a nonprofit advocacy group.

“Commercial extraction of natural gas in the urban environment of Pittsburgh poses significant threat to the health, safety and welfare of residents and neighborhoods within the city,” the ordinance said. “[Drilling] allows the deposition of toxins into the air, soil, water, environment and the bodies of residents.”

Mayor Luke Ravenstahl, who has indicated he opposes the measure, has 10 days to review it before the ban goes into effect. If he vetoes the bill, six council votes would be needed to override him.

Yesterday, the city council in the Pittsburgh suburb of South Fayette passed a zoning ordinance that banned drilling in residential and conservation areas.



# Halliburton's Stonewalling Works in Pa., but Sparks Subpoena at EPA

By [Marie C. Baca](#)

Nov. 16, 2010, 1:52 p.m.

*(Photo: Pennsylvania Department of Environmental Protection)*



On Nov. 9, the Environmental Protection Agency announced that Halliburton had refused to give the agency a complete list of the chemicals it uses for gas drilling, resulting in a subpoena for the energy giant. But the battle to keep much of this information confidential is one that Halliburton is winning in Pennsylvania.

Halliburton did not respond to requests for comment on this article, but a company spokeswoman [told MSNBC.com](#) that the EPA had approached Halliburton with “unreasonable demands” and that the company was working to supply the agency with the information it needs to complete its study of the relationship between water contamination and the controversial drilling technique known as [hydraulic fracturing](#), or fracking. Of the nine companies the EPA asked to supply the information, only Halliburton -- the largest North American provider of hydraulic fracturing services -- refused.

Halliburton has worked hard to keep the contents of its fracking fluids secret, but the campaign has become more difficult as environmental advocates and researchers push for full disclosure. But in Pennsylvania, a state that is undergoing a natural gas drilling boom in the Marcellus Shale rock formation, regulators appear willing to accept Halliburton's argument that it should be allowed to keep details about its chemicals secret in order to maintain its competitive advantage.

Fracking shoots millions of gallons of water mixed with chemicals underground at high pressures to break rock and release natural gas. The process is currently exempt from federal regulation under the Safe Drinking Water Act as a result of assurances by the Bush-era EPA that fracking posed no harm to water supplies. In October 2009, after receiving reports of contamination near fracking sites and complaints that the agency's position was based on outdated and incomplete information, Congress ordered the [EPA to conduct a comprehensive study](#) of the technique.

The EPA said earlier this year that the study would examine a [broad scope of activities](#) associated with fracking, and that drilling companies would have to provide information about their chemicals so the effects of those activities could be tracked over time.

“There's just so much we don't know about the effects of fracking,” said Gwen Lachelt, oil and gas accountability project director for the Colorado-based advocacy group Earthworks. “We deserve to have that question answered, and that can't be done without full public disclosure.”



## **‘Small But Critically Important’**

Pennsylvania is also making an effort to address concerns about fracking by revising its oil and gas regulations, which haven't been updated since 1989. On July 10 of this year, the state environmental quality board released a draft of proposed amendments to the existing rules, including a provision for the Department of Environmental Protection to collect “a list of hydraulic fracturing chemicals used” in each completed well.

In the public comment period that followed, more than 2,000 individuals and organizations, including Halliburton, offered their feedback on the proposal.

[Halliburton's nine-page letter](#) (PDF), dated Aug. 9 and submitted by the law firm Manko, Gold, Katcher & Fox LLP, expressed concern for the “small but critically important universe of proprietary chemicals.” “Operators and service companies already disclose substantial information regarding the fluids used in hydraulic fracturing operations,” said the letter. “Pennsylvania has longstanding and strong policies that recognize and favor the protection of proprietary information and trade secrets because of the innovation that such protections support.” The letter listed a series of cases in which Pennsylvania courts have “invoked a broad range of remedies in instances where trade secrets have been, or are threatened to be, misappropriated.”

On Oct. 12, the Environmental Quality Board released the revised version of its proposed rule changes adjusted to incorporate the feedback collected during the comment period. Under the new disclosure guidelines, drillers are required to list only the names and concentrations of chemicals that have a Material Safety Data Sheet.

MSDS forms contain general information about potentially hazardous substances in the workplace, including appropriate handling protocol and the possible risks of exposure. The federal Occupational Safety and Health Administration mandates that employers make these documents available to their employees.

But MSDSs exist only for substances that are known to the public and have been tested to determine their toxicity. If a company claims that a chemical or some other material is a trade secret, it can withhold the name and the “specific identification” of the chemical as long as the chemical's general effects are listed on the MSDS, according to an OSHA spokeswoman.

Halliburton tried to persuade the EPA to accept MSDSs in lieu of the more detailed list of ingredients the agency requested -- but the EPA said that information was insufficient.

“The thoroughness of the study depends on timely access to detailed information about the methods used for fracturing,” wrote the agency in a statement announcing that it would subpoena Halliburton for the details it needs. “Halliburton has failed to provide EPA the information necessary to move forward.”

Scott Perry, director of Pennsylvania's Oil and Gas Bureau, said he doesn't know how many drilling chemicals don't have an MSDS or have an MSDS that contains only limited information. When asked how he would determine the number of chemicals that will remain undisclosed under the new regulations, he said he did not know.

Pennsylvania law also gives drillers another way to avoid disclosure: They can designate any information they provide to regulators as a trade secret, which means it would not be available to the public. Under the state's Right-to-Know Act, any information that a company says allows it to create "independent economic value" because it isn't generally known can be labeled a trade secret and made exempt from public disclosure requirements.

Perry said he doesn't think the state's broad protection of trade secrets will prevent him from executing his duties as a regulator, but he does worry that it might complicate his bureau's relationship with the public. "We want people to have the confidence that we are going to do what we are supposed to do when it comes to gas drilling," he said. "Transparency is a major part of that."

### **Looking Ahead**

Pennsylvania's new drilling guidelines will be reviewed by the legislature and voted on this month by the Independent Regulatory Review Commission, the state agency that evaluates proposed regulations before they become law.

Halliburton announced this week that it has placed new information on [its website](#) about the contents of its fracking fluids that are being used in Pennsylvania. The description of its water, hybrid and foam fracking fluid formulations lists about a dozen substances along with their MSDSs. No information that was previously undisclosed is listed.

# NY Assembly Approves Hydraulic Fracturing Moratorium

by [Marie C. Baca](#)

Nov. 30, 2010, 3:41 p.m.

The New York state legislature refused to consider most major agenda items in Monday's session, but they still gave their final approval to a bill that places a six-month ban on hydraulic fracturing while state and federal agencies review the practice.

[The measure](#), which was [approved by the state senate](#) in August, was adopted by the assembly in a 93-43 vote. To become law, it must be signed by Gov. David Patterson before the end of the year.

The bill prohibits the issuing of new permits for hydraulic fracturing—the controversial drilling practice also known as fracking—until May 2011. As ProPublica reported [earlier this year](#), the broad language of the measure does not differentiate between the different ways that fracking can be used. Industry experts say it could lead to the suspension of nearly all oil and gas drilling in the state.

Fracking shoots fluids underground at high pressures to release gas from bedrock. The practice is increasingly being used by drillers to harvest gas from the Marcellus Shale, the rock formation found in New York and several other states.

Concerns about water contamination have made fracking particularly controversial in New York, where residents receive drinking water so pure that it receives little treatment.

Gov. Patterson has signaled in the past that he supports the moratorium, and Governor-elect Andrew Cuomo has indicated that he would not support new fracking in the state unless the practice is proven to be safe.

# Beyond Fracking: Experts Challenge Safety of Exploratory Wells, Vertical Drilling

By [Marie C. Baca](#)

Dec. 6, 2010, 5:30 p.m.

For more than two years, the natural gas drilling debate has focused primarily on the use of hydraulic fracturing in horizontal wells. But expert testimony submitted for a government hearing next month challenges long-held assumptions about the safety of deep vertical drilling and exploratory wells, which operate in many states with limited regulatory oversight.



The administrative hearing will be held by the [Delaware River Basin Commission](#), a federal agency that regulates a variety of water and land activities in Pennsylvania, New York, New Jersey and Delaware. At issue is the commission's June 2010 determination that companies that drill exploratory wells—wells that are drilled to test theories about where gas might be found—must obtain the agency's approval before drilling within its jurisdiction, and whether or not 11 exploratory wells in Pennsylvania that have already been approved should be exempt from the regulation.

The commission rarely holds hearings, and the progress of this one is being followed closely by industry and environmental advocates because of its implications for the drilling boom in the gas-rich Marcellus Shale rock formation, which underlies much of the basin.

The commission's decision to regulate exploratory wells is being challenged by the Northern Wayne County Property Owner's Alliance, with drilling companies Hess Corp. and Newfield Exploration Co. joining as interested parties. Challenging the exemption of the 11 approved wells are two environmental organizations, [Damascus Citizens for Sustainability Inc.](#) and the [Delaware Riverkeeper Network](#), along with Nockamixon (Pa.) township, where one of the wells is located.

The Commission refused to supply any of the testimony that has been submitted for the hearing without a Freedom of Information Act Request. ProPublica filed that request, but in the meantime the environmental organizations provided the reports they submitted, as well as the reports the commission submitted on its own behalf.

None of the other parties involved in the hearing responded to requests to comment or to provide ProPublica their expert reports or other relevant documents.

The commission's [reports](#) assert that:

- Wells drilled 7,000 to 8,000 feet to reach the Marcellus formation create pathways through which naturally-occurring contaminants can potentially migrate into ground and surface water

- Natural gas exploratory wells have the potential to harm endangered species in the river basin

The [reports submitted by the two environmental organizations](#) assert that:

- Although they receive less regulatory review, exploration wells can be more dangerous than production wells because the drilling hazards in an exploration area are by definition unknown
- Hazardous chemicals are used in the exploratory well construction process, and the risk of those chemicals moving into groundwater in the Delaware River Basin is exacerbated because of natural seismic activity in the area
- The 11 wells in question do not meet the criteria for exploratory wells. Documentation indicates that some of these wells will be used not just for gathering data but for gas production, which circumvents part of the regulatory process required for production wells
- Pennsylvania's erosion, sedimentation, and storm water regulations for gas and oil companies require far less oversight than any other industrial activity in the state
- The Pennsylvania Department of Environmental Protection's permit process, construction guidelines and emergency preparedness plans are insufficient to mitigate the risk factors posed by exploratory wells
- Any drilling activities, vertical or horizontal, that take place in shale rock formations pose significant risks to human health and the environment

The commission's reports were written by fish and wildlife biologist Robert M. Anderson, ecologist Danielle A. Kreeger, petroleum engineer Patrick M. O'Dell, biologist Erik Silldorf, ecologist John K. Jackson, ecologist Bernard W. Sweeney and public health researcher Conrad Daniel Volz.

The environmental organizations' reports were written by engineer Michele E Adams, chemist Ronald E. Bishop, civil engineer Peter M. Demicco, petroleum engineer Susan L. Harvey, environmental scientist Glenn C. Miller, engineer Emmett M. Owens, geologist Paul A. Rubin, and medical toxicologist Daniel T. Teitelbaum.

Edward N. Cahn, a former federal judge, has been appointed by the Delaware River Basin Commission to preside over the January hearing. Cahn will submit his recommendations to the commission, which will vote on them at a future public meeting.

# Some Appointees to Oil and Gas Commission Are Industry Execs, Lobbyists

by [Marie C. Baca](#)

Dec. 9, 2010, 2:44 p.m.

December 13, 2010: This post has been [corrected](#).

*(Photo: Abrahm Lustgarten/ProPublica)*



Joseph Pettey is the owner of Pettey Oilfield Services Inc., and the 2003 West Virginia Oil and Gas Festival Man of the Year. Thomas E. Stewart is a third-generation driller who lobbies the government on behalf of energy companies. Both sit on the [Interstate Oil and Gas Compact Commission](#), which is increasingly positioning itself as an authority on drilling-related issues like [hydraulic fracturing](#).

The 38-state commission was created in 1935 to promote the efficient harvesting of oil and gas. Its mission was later expanded to acknowledge the need to protect health, safety and the environment while accomplishing that goal. It is funded by government grants and fees from the states. The commission members are appointed by the member governors. Most are state regulators who oversee gas and oil drilling, but at least seven states have representatives who are either lobbyists or energy executives.

Pettey is the official representative for West Virginia; Stewart is an associate representative for Ohio; lobbyist Robert W. Harms is an associate representative for North Dakota; James R. Daniels, the general manager of Murfin Drilling Company, is an associate representative for Kansas; William S. Daugherty, CEO of natural gas company NGAS, is Kentucky's official representative and D. Michael Wallen, also of NGAS, is its associate representative; Rick Calhoun of Pruet Oil and Charlie Williams Jr. of oil and gas production company Vaughey & Vaughey are associate representatives for Mississippi; and Steven C. Agee of Agee Energy LLC is an associate representative for Oklahoma.

Both official and associate representatives participate in committees, said commission executive director Mike Smith, although associate representatives vote on policy recommendations only if the official representative isn't available.

The governors can also appoint as many committee members as they choose. The agency denied ProPublica's request for a list of committee members; a spokeswoman said the list has been confidential since 2008.

Although the organization meets biannually, most of its activities -- conducting research, developing resolutions and communicating that information to public officials -- take place in small committee meetings throughout the year. The commission's recommendations have enjoyed substantial credibility in the debate over [hydraulic fracturing](#), or fracking, the controversial natural-

gas extraction technique that the commission has deemed to be safe. The IOGCC authored an [oft-cited 2002 survey](#) that determined that nearly 1 million wells had used fracking “with no documented harm to groundwater” in its member states.

When asked by ProPublica if he felt his dual affiliations presented a conflict of interest, Stewart, the associate representative from Ohio, answered with a one-word e-mail: “No.” A few minutes later he sent a second e-mail asking this reporter if she felt it was a conflict of interest to present herself as a journalist.

Harms, the lobbyist who is the associate representative for North Dakota, said that while he believes that government agencies should avoid “even the appearance of impropriety,” he doesn’t think his participation in the IOGCC counts as such. “The organization is not an advocate for the industry,” said Harms. “It primarily contains state regulators, and those are the people who run the show.”

Agee, the Agee Energy president who is an associate representative for Oklahoma and also an economics professor at Oklahoma State University, echoed Harms’ statement. “I don’t think it’s a conflict,” he wrote in an e-mail. “The governor chooses well-informed representatives that act in the best interest of the state.”

The other official and associate representatives contacted for this article did not respond to requests for comment.

Exactly how the presence of gas and oil interests might affect the agency’s resolutions is difficult to determine, because little information about the organization’s inner workings is accessible to the public. When Smith was asked whether having industry representatives on the commission raised potential conflicts of interest, he referred that question to the member governors.

A spokeswoman for Gov. Mark Parkinson of Kansas said in an e-mail that “it is beneficial to appoint members to boards or commissions with related experience in the industry or field to help bring perspective.” She also noted that the decision to appoint a drilling company manager to fill one of the Kansas slots was not made by Gov. Parkinson.

The six other governors with representatives known to be industry executives or lobbyists did not respond to requests for comment.



# Executive Order Suspending Fracking Brings Little Change

By [Sasha Chavkin](#)

Dec. 17, 2010, 2:23 p.m.

*New York Gov. David Paterson (Photo courtesy of the New York State Governor's Office)*



When New York Gov. David Paterson recently vetoed a bill that would have placed a temporary moratorium on new permits for hydraulic fracturing, he issued an executive order that instead suspended the approval of certain types of these permits until after July 1, 2011. “I am proud to issue this Executive Order,” Paterson said in a [statement](#), “which will guarantee that before any high-volume, horizontal hydraulic fracturing is permitted, the Department of Environmental Conservation will complete its studies and certify that such operations are safe.”

But Paterson’s executive order does little to change the status quo, according to experts who’ve been following the drilling issue. The DEC has already stopped issuing such permits in the Marcellus Shale formation, the area covered under Paterson’s order, until it completes its ongoing review of the practice’s safety. The next draft of that review isn’t expected to be released until the middle of next year, about the same time the governor’s executive order says the moratorium will expire.

Technically, however, the executive order expires when Paterson leaves office next month unless Governor-elect Andrew Cuomo chooses to renew it. Cuomo’s transition team didn’t return calls for this article; neither did the Attorney General’s office, where he currently serves. In a Nov. 11 radio interview on WOR, Cuomo said he [won’t approve additional fracking](#) “until the facts are determined by bona fide studies.”

New York’s former DEC commissioner, Pete Grannis, said the executive order was “more of a political cover than a substantive effect on the ongoing work of the department.” Paterson fired Grannis in October after a memo Grannis wrote criticizing Paterson’s proposed budget cuts was leaked to the press.

“With or without the executive order, the department is not going to complete its work on the document and proceed any sooner than the moratorium would have expired,” said Grannis, who is now the special counsel for the nonprofit group Environmental Advocates of New York.

[Hydraulic fracturing](#) -- also known as fracking -- is a drilling practice in which fluids are shot underground at high pressures to release gas from bedrock. It has become controversial due to concerns about water contamination, particularly in New York, where residents receive drinking water that is so pure that it requires little treatment.

The bill Paterson vetoed would have suspended any new permits for fracking until May 2011. Paterson [vetoed the legislation](#) on Dec. 11, stating that its language was overly broad and would result in jobs being lost even for types of drilling that cause “no demonstrated environmental harm.” His moratorium is narrower, focusing on horizontally-drilled wells, in which drillers probe underground shale seams laterally, in the Marcellus Shale formation.

“The DEC has approximately 58 applications considered pending and not acted upon, and no action would be expected on those applications until the review is finished,” said department spokesman Yancey Roy.

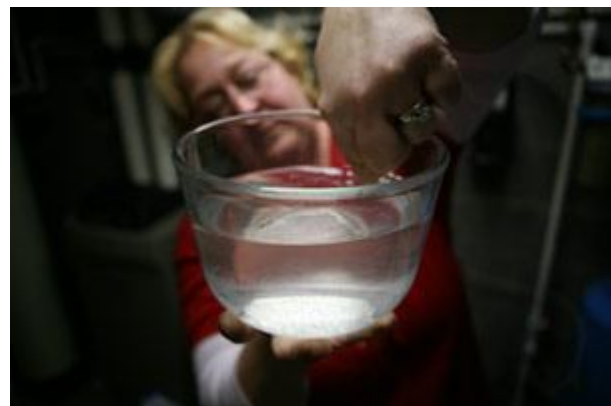
Roy said “there’s no prescribed timeline right now” for completion of the review. But Kate Sinding, a senior attorney with Natural Resources Defense Council, expects it to take significantly longer than the time allotted by Paterson’s moratorium, in light of the transition between governors, expected budget cuts, and the extensive public comments expected on the issue.

## Residents Divided About PA’s Agreement With Gas Drilling Company Over Water Contamination

By [Nicholas Kusnetz](#)  
Dec. 21, 2010, 7 p.m.

*A version of this story was [published](#) by the Pittsburgh Post-Gazette.*

*Dimock resident Julie Sautner is seen in her basement with her water filtration system in the winter of 2009. (Abrahm Lustgarten/ProPublica)*



Residents of Dimock, Pa., said they were surprised -- and in some cases upset -- by the settlement that state environmental regulators reached last week with Cabot Oil & Gas, which the Department of Environmental Protection says contaminated 18 water wells with methane from its gas drilling operations.

The homeowners were told in September that the DEP was [going to provide](#) them with fresh water by building a pipeline from a nearby water treatment facility. A state infrastructure fund would have fronted the \$11.8 million cost of the project, and the DEP was going to seek reimbursement from Cabot.

But last week the DEP announced that the pipeline project was dead and that Cabot [had agreed instead](#) to give the homeowners \$4.1 million and provide treatment systems for their well water. The 19 families who draw water from the wells will be offered payments equal to twice the value of

their homes, with a minimum payment of \$50,000. The settlement also gives the DEP \$500,000 to cover the cost of the investigation.

Some of the residents are outraged by the change in plans, even though they say they will accept Cabot's offer.

"They destroy your life, your water, and for compensation they wave a little bit of money and expect you to take it and abandon your home," said Julie Sautner, who says her well was the first to be contaminated, in September 2008. "Just take the money and shut up. This is America, and I never expected this."

Sautner and several other homeowners [filed a federal lawsuit](#) against Cabot last year, seeking damages for their losses and a fund to cover the cost of any medical treatment that might be caused by the contamination. They also want to stop the company from any further drilling in the area. The new settlement is not expected to affect this separate civil suit.

Sautner said Cabot installed a treatment system in her home two years ago. She said she later disconnected it because it didn't work.

But Loren Salsman, who is not part of the lawsuit, said the methane separator Cabot installed at his house works fine. He said his well has always had methane, which sometimes occurs naturally in well water, but that the levels increased as a result of drilling in August 2009. He said he's not concerned about the methane, because it is not toxic and evaporates out of water.

"I was thrilled with the decision," Salsman said, speaking of the settlement.

George Stark, a Cabot spokesperson, said the treatment systems the company is offering now are more sophisticated than those it installed in the past. He said the systems can be retooled based on the nature of a specific well's contamination to remove the methane as well as any other impurities that may be in the water.

"I believe the new systems we'll be installing are fully functional," he said.

Stark said he did not know how long the systems usually last, or whether Cabot will pay for maintenance or replacement if they don't work.

Michael Smith, a DEP spokesperson, said in an e-mail that the department decided to settle with Cabot because there was "wide opposition" to the pipeline and it likely would never have been built.

"This settlement is intended to give the affected families some options for how they can address their particular situation," he said.

A group of pro-drilling residents and business owners in the area, who started a campaign called Enough Already, organized a vocal [opposition to the project](#), saying it was an intrusive solution that would jeopardize water supplies for the neighboring town of Montrose, where water for the pipeline would have come from. Some of the businesses that participated in the campaign work with Cabot.

One, run by Guy Parrish, has been making water deliveries to the affected families in Dimock and will be installing the new treatment systems.

Eric Brunges, manager at Brunges Commercial Supply, said the group was “all for the people in Dimock having good water” but worried that the project would run over budget and that taxpayers would bear the costs.

Brunges said the group met with Cabot to get information about the pipeline but received no money from the company and made its decisions independently.

Homeowner Julie Sautner said she will get about \$250,000 from Cabot in the settlement. She said the county tax assessor’s records say her home is valued at about \$130,000 but that she recently got an independent assessment that valued it at around \$190,000.

Residents say their land values have plummeted since the water became contaminated.

“There is no property value here no more,” said Norma Fiorentino, whose well exploded on New Year’s Day, 2009. Fiorentino said she’ll be getting \$228,928. “Nobody wants to build a house where there’s no water.”

In November of last year, the [DEP found Cabot responsible](#) for polluting what the agency later determined to be 18 wells. It said faulty drilling practices allowed methane, the primary component of natural gas, to leak into the aquifer. Cabot did not agree with the department’s findings but agreed to fulfill the obligations laid out in the settlement.

Methane is not toxic, but it can build up in wells and cause explosions. Tests done later by a private firm [found toxic chemicals](#) in some of the Dimock wells, but those chemicals were not scientifically linked to Cabot’s drilling.

The DEP has halted Cabot’s drilling activities around the affected wells, but the agreement establishes a path for the company to resume those operations in April.

“The agreement lays out a clear timeline on how Cabot must test pressure readings at the gas well and levels of combustible gas in nearby water wells,” Smith said by e-mail. “If gas levels persist in the water supplies, the company must properly vent the water wells so they do not pose a danger to residents or property in the area. Ultimately, the company must demonstrate that their gas wells are no longer allowing methane to migrate and contaminate nearby water supplies.”

The families have up to 85 days to decide whether or not to accept the offer. Those who decline have until Dec. 31, 2012 to change their minds. After that date, the money reverts to Cabot.

The agreement allows Cabot to stop delivering the potable water it has been providing to residents, whether or not a family agrees to the offer.

In a separate letter sent after the settlement, Sautner and Fiorentino said [Cabot offered](#) to pay them immediately if they released the company from any legal claims, such as the federal civil suit.

“People are desperate but not that desperate,” Sautner said. “Give up our lawsuit? I mean, we’ve been working on this for two years now. What are they, crazy?”

Nolan Ely, another homeowner, said he is outraged by the agreement between Cabot and the DEP. He said the amount he’ll get, which he wouldn’t disclose, wasn’t much more than the minimum and not enough to pay for a lifetime supply of water, should the treatment system not work.

Ely is in an unusual position, because until recently he worked as a heavy-equipment operator for Cabot. Two years ago he was working on a well just hundreds of feet from his own property, which he had leased to the company, when he said drillers hit an unexpected pocket of gas.

“I had to hit the emergency button and shut down the operation,” he said. “Probably a month or so after that we started having problems with our water. And I begged Cabot to come check our water, and they didn’t.”

Ely later joined the civil lawsuit against Cabot and was put in the uncomfortable spot of suing the company that sent him both paychecks and royalty payments.

Ely said Cabot fired him a few months ago, citing conflict of interest because of the lawsuit. Stark, the Cabot spokesman, said Ely was put on paid leave and chose not to come back.

## Regulation and Disclosure of Fracking at the Center of Gas Drilling Debate

By [Nicholas Kusnetz](#)

Dec. 29, 2010, 9:59 a.m.

*(Photo: Abrahm Lustgarten/ProPublica)*

The [risks](#) and benefits of drilling for natural gas have been so [widely discussed](#) over the past year that even if you haven’t been following gas drilling closely, you might now be familiar with the word “frack.”



For those who aren’t, the term is short for [hydraulic fracturing](#), a practice where gas drillers shoot pressurized water mixed with sand and chemicals into a well to release natural gas from the earth. The practice has been around for decades, but it’s gained new prominence in the past few years with the growth of horizontal drilling, where drillers mine the earth laterally deep underground. The technique has allowed the expansion of drilling into gas-bearing shales across the country, but it also requires large quantities of fracking fluids, sometimes millions of gallons per well. And it’s this

mix of water and chemicals that has generated the bulk of the controversy and a series of studies, orders and regulations in 2010 from the federal government and a number of states.

Of particular concern to regulators and public health advocates are the specific chemicals that go into that chemical mixture. The industry has fought disclosure for years and had largely been able to keep well-to-well specifics secret, but that began to change this year. Wyoming [updated its oil and gas regulations](#) and, in an effort to fend off potential federal oversight, started requiring drillers to list the name and concentration of each of the chemicals used in each well. In Pennsylvania, where drilling in the region's Marcellus Shale continues to expand, regulators have written similar rules that await final approval by the legislature. In [both cases](#), however, drillers may be able to find exceptions.

Disclosure has been a center of debate on the federal level as well. Both the [EPA](#) and the [House Energy and Commerce Committee](#) initiated investigations, seeking details from oil-services companies. In November, Halliburton broke from its peers and [refused to give the EPA](#) a full list of the chemicals in its fracking fluids. The agency has since subpoenaed the information and continued to design its study, which is set to begin early next year and last into 2012.

But it could be up to Congress whether and to what degree the EPA and other federal agencies ultimately regulate the practice. After Interior Secretary Ken Salazar [raised the prospect](#) of requiring chemical disclosure from drillers on federal lands in November, Reps. Joe Barton, R-Texas, and Fred Upton, R-Mich., -- who is the incoming chair of the House Energy and Commerce Committee -- sent Salazar a [pointed letter](#) in which they said they feared that a "rush to regulate" fracking would "chill domestic oil and gas development." Although the letter suggests Upton may not continue the more aggressive oversight of his predecessor, a spokeswoman for current committee chair Henry Waxman, D-Calif., said the fracking study will continue after the House switches hands.

The elections brought change in the states as well. As we [reported last summer](#), politicians and the gas industry in New Mexico and Colorado have been pushing to roll back some of the stricter regulations those states enacted in the past few years. Both states' governors-elect had said as candidates that they supported relaxing the rules. In New Mexico, soon-to-be Gov. Susana Martinez [indicated](#) she may seek to loosen a rule that requires drillers to use synthetic liners in their waste pits, saying that "[unnecessary and burdensome regulations](#)" have costs jobs and impeded growth.

Aside from disclosure, New York is still working out how and when it will allow drilling to begin in its share of the Marcellus Shale, the deep rock formation that has been a [bonanza](#) for [gas drillers](#) in Pennsylvania and West Virginia. After vetoing a legislative moratorium on fracking, Gov. David Paterson [enacted his own](#) limited moratorium this month. The measure bans new permits for drilling in the Marcellus until July 2011, when the state's Department of Environmental Conservation is expected to have drafted a final set of rules outlining how to handle Marcellus drilling.

In the new year, legislators and regulators across the country can look to a [recent study](#) that found that more than three out of four Americans support greater disclosure of fracking chemicals and more studies of the practice's environmental impact. The poll, released this month by the Civil Society Institute, found that three in five people had "at least some awareness of fracking as an issue." We'll let you decide how mainstream that really is, but we'll continue watching these developments around the country.



# Pennsylvania's Drilling Wastewater Released to Streams, Some Unaccounted For

By [Nicholas Kusnetz](#)

Jan. 5, 2011, 10:20 a.m.

*The McKeesport Sewage Treatment Plant, one of nine plants on the Monongahela River that has treated wastewater from Marcellus Shale drilling operations. (Joaquin Sapien/ProPublica)*



As gas-drilling operations proliferated in Pennsylvania's Marcellus Shale over the past couple of years, most of the hundreds of millions of gallons of briny wastewater they produced was eventually dumped into the state's rivers. Much of the rest is unaccounted for. That news, [from a detailed look](#) at the state's management of drilling wastewater by the Associated Press, should come as no surprise to readers of this site.

As [we reported](#) in October 2009, Pennsylvania was largely unprepared for the vast quantities of salty, chemically tainted wastewater produced by drilling operations in the Marcellus, the gas-bearing shale formation that stretches under that state and into West Virginia, New York and Ohio. While the state Department of Environmental Protection called for the fluids to be sent through municipal treatment plants, those facilities are largely unable to remove the salts and minerals, also known as Total Dissolved Solids (TDS), from the waste.

As our story noted, abnormally high salt levels in the Monongahela River in 2008 corroded machinery at a steel mill and a power plant that were drawing water from the river. The DEP suspected that drilling wastewater was the cause and ordered upstream treatment plants to reduce their output. But months later levels spiked again.

AP examined the DEP's first annual report of waste produced by drilling operations in Pennsylvania's Marcellus Shale area from July 2009 through June 2010. Among the AP findings:

- More than 150 million gallons were discharged into rivers after passing through treatment plants in the 12-month period. Enough, as the AP put it, "to cover a square mile with more than 8 1/2 inches of brine."
- More than 50 million gallons, or about one-fifth of the total waste fluid, was unaccounted for because of "weakness" in the state's reporting system or incomplete filings from drilling companies.

The AP report says researchers still don't know whether high TDS levels are harmful to humans or wildlife. But the analysis found that some public water utilities had exceeded the federal limit for levels of cancer-causing trihalomethanes, which can form when chlorine in drinking-water treatment systems combines with bromide, which can be present in drilling waste.



As we reported back in 2009, the federal EPA recommends against discharging drilling wastewater into rivers, but it allowed Pennsylvania to continue the practice because more stringent regulations were in the works. The DEP announced new limits on TDS discharges in August, but they apply only to new and expanding facilities. The department has not yet responded to ProPublica's questions about the number or nature of any new treatment plant applications, so it's unclear to what extent these new standards are actually being practiced.

Another solution, which DEP secretary John Hanger and drilling companies say is already in the works, is to encourage companies to reduce waste by reusing wastewater in new wells. Hanger told the AP he thinks about 70 percent of fluids are now being reused.

But [as we reported](#) in December 2009, part of the reason drillers are able to achieve such high rates of reuse is that much of the fluid they pump into gas wells never comes back to the surface. When as much as 85 percent of the water and chemical mixture remains in the ground, drillers can dilute what little comes back with fresh water and reuse it. While that solves the issue of discharging briny water into rivers, it raises a separate set of questions about the implications of leaving fracking chemicals underground.

As the AP notes, industry claims of higher levels of waste-recycling can't be verified until the next DEP report is released, in mid-winter. Until then, Hanger called for "daily vigilance" of rivers and streams to ensure standards are being met.

# Pennsylvania's Governor-Elect Nominates Insiders for Top Environmental Posts

By [Nicholas Kusnetz](#)

Jan. 13, 2011, 12:44 p.m.

**3:05 p.m.:** This post has been updated to reflect a response from the Marcellus Shale Coalition.

*Pennsylvania Gov.-Elect Tom Corbett announced his appointments for the top energy and environmental positions this week. (PennStateLive/Flickr)*



Pennsylvania's incoming governor announced his appointments for the top energy and environmental positions this week, naming four men experienced with the state's legislative and administrative process to oversee the growing natural gas industry and the implementation of new regulations governing how the industry drills its wells and disposes of its wastewater.

To head the Department of Environmental Protection, Gov.-Elect Tom Corbett, a Republican, named a judge who has served on a state environmental court for both Democratic and Republican governors. Michael Krancer, whose appointment requires approval by the state senate, is seen as an uncontroversial choice by environmental groups and the industry.

David Masur, director of [PennEnvironment](#), an environmental group, said he is "reservedly optimistic" about Krancer.

"He's the face of the environment for the Corbett administration," he said, "but he only does what his boss tells him to."

Corbett, who is currently Pennsylvania's attorney general, has come out against a proposed gas-extraction tax on the industry. And during his campaign, Corbett said that the DEP has lost its way in recent years, a time when the department has pushed more stringent regulation of the gas industry in the face of criticism that oversight was too lax.

"I will direct the Department of Environmental Protection to serve as a partner with Pennsylvania businesses, communities and local governments," Corbett [says on his website](#). "It should return to its core mission protecting the environment based on sound science."

Companies associated with drilling in the Marcellus Shale contributed more than \$800,000 to Corbett over the last few years, compared to just over \$100,000 given to his Democratic opponent, according to the website [Marcellus Money](#), which is run by Pennsylvania Common Cause and Conservation Voters of Pennsylvania.

Corbett selected Patrick Henderson for a newly created Cabinet-level position to coordinate energy issues. Henderson is currently the director of the Senate Environmental Resources and Energy

Committee, which is chaired by Sen. Mary Jo White, who has supported expanding drilling operations and resisted some of the stricter regulations of the industry.

Corbett's transition team did not immediately return requests for comment, but his website describes the position Henderson would hold as a "senior advisor" who "will ensure the execution of policy in the best interest of our energy and environmental needs."

The other nominees to DEP positions include John Hines, who is being promoted from within the department, and Jeff Logan, who served under former Gov. Tom Ridge.

The Marcellus Shale Coalition, an industry group, issued a statement praising the nominees and their "proven track records" of protecting the environment while promoting job growth.

Like many other states, Pennsylvania faces a [multibillion dollar budget deficit](#), and it's unclear to what extent this may affect the DEP's staffing. The department has quadrupled its enforcement staff in recent years, despite overall staff cuts at the DEP, but the enforcement staff is still struggling to keep up with the booming industry. We've been covering the [expanding natural gas industry](#) for the past couple of years, and drilling in Pennsylvania's share of the Marcellus Shale formation has grown tremendously over that period, with some 1,400 wells drilled last year, up from 210 in 2008.

While environmental groups have generally [expressed hope](#) about the nominees, Masur questioned how effective they will be in the face of the new governor's close relationship with the drilling industry.

"How do you go out after aggressive enforcement against an industrial sector that gave a lot of money to your boss?" Masur said. "The proof is in the pudding and we just won't know till they're in their jobs."

# Opponents to Fracking Disclosure Take Big Money From Industry

By [Abrahm Lustgarten](#)  
Jan. 14, 2011, 3:46 p.m.

**Jan. 20:** This post has been [corrected](#).

*(Photo by Abrahm Lustgarten/ProPublica)*



Congress isn't going to regulate hydraulic fracturing any time soon. But [the Department of Interior might](#). For starters, Interior is mulling whether it should require drilling companies to disclose the chemicals they use to frack wells drilled on public lands, and already the suggestion has earned Interior Secretary Ken Salazar an earful.

On January 5, a bipartisan group of 32 members of Congress, who belong to the Natural Gas Caucus, sent [Salazar a letter imploring](#) him to resist a hasty decision because more regulations would “increase energy costs for consumers, suppress job creation in a promising energy sector, and hinder our nation’s ability to become more energy independent.”

A week later, 46 House Democrats followed up by [signing a letter to Salazar](#) urging him to at least adopt the disclosure requirement because, as Rep. Maurice Hinchey, D-N.Y., said, “communities across America have seen their water contaminated by the chemicals used in the hydraulic fracturing process.”

“The public has a right to know what toxins might be going into the ground near their communities, and what might be leaking into their drinking water,” [said the letter](#), which was sent by the three initial sponsors of now-stalled legislation to regulate fracturing, Hinchey, Rep. Jared Polis, D-Colo., and Rep. Diana DeGette, D-Colo.

In the context of today’s roiling political and energy debates, it’s not at all clear who will win. But if money is an indicator, the anti-regulatory group has the upper hand.

A back-of-the-envelope analysis of campaign finance dollars contributed to the members of Congress who are speaking out on the issue shows that the [Natural Gas Caucus received 19 times more money from the oil and gas industry between 2009 and 2010](#) than the group who signed Rep. Hinchey’s letter. According to data from Open Secrets, the 32 members against disclosure received \$1,742,572. The average contribution from the oil and gas sector to individuals from that group was \$54,455. Oklahoma Democrat Dan Boren, who co-chairs the caucus, personally received more than \$202,000, including almost \$15,000 from Chesapeake Energy, one of the largest natural gas producers in the United States.

By comparison, the [Hinchey-DeGette-Polis group—which has 14 more people than the Natural Gas Caucus—received \\$91,212 from the industry](#). The average contribution to those members was \$1,982, 1/27th the amount donated to members of the Natural Gas Caucus.

Requiring disclosure of the chemicals used to drill on federal lands would affect only a small proportion of gas wells drilled in the country each year—roughly 11 percent, by the Department of Interior’s estimates. In 2009, 19,000 new gas wells were drilled, adding to the 493,000 gas wells already producing in the United States. According to Hinchey’s office, disclosure on federal lands would set an important precedent, because that information would become part of the public record and, when combined with state-based disclosure rules, “would provide a great deal of useful information for those concerned with the risks these chemicals may pose.”

Traditionally, the exact recipes of chemicals used in the fracturing process have been kept secret by the companies to protect their competitive advantage, and the fracturing process itself is exempt from federal regulation under the Safe Drinking Water Act. The disclosure issue has become a rallying point against natural gas development in the United States because scientists have repeatedly said that they can’t thoroughly examine water contamination cases for links to drilling because they don’t know what to test for.

At least four states have already mandated some degree of disclosure of fracking chemicals: Wyoming, New York, Pennsylvania and Colorado. If federal lands are added to those states, then public disclosure of fracking chemicals would be required on roughly 40 percent of the gas wells in the United States. (It’s difficult to pinpoint the exact percentage because federal statistics don’t distinguish between oil and gas wells.)

The resistance to disclosure mandates on federal lands contradicts the public position of many of the oil and gas companies involved. Chesapeake Energy, the company that contributed so heavily to Rep. Boren, has repeatedly stated that it supports more transparency and believes the chemicals used in fracturing should be disclosed.

*Nicholas Kusnetz contributed to this report.*

**Correction (Jan. 14):** The original version of this story represented a statement made by Rep. Maurice Hinchey about the letter he sent to the Department of Interior as a quotation from the letter itself. The story has been revised to make the distinction between his statement, and the letter. Also, in the data table below, the contribution amounts for Rep. Boren and Rep. Murphy had been switched.

## Campaign contributions from the oil and gas industry, 2009-2010

Source: [Open Secrets](#)

### *To the: Natural Gas Caucus*

Dan Boren (D-OK) Co-Chair, Natural Gas Caucus	\$202,500
Tim Murphy (R-PA) Co-Chair, Natural Gas Caucus	\$96,350
Marsha Blackburn (R-TN)	\$57,500
Jo Ann Emerson (R-MO)	\$0
John Shadegg (R-AZ)	\$12,400
Lee Terry (R-NE)	\$52,650
Dan Burton (R-IN)	\$2,600
Frank Lucas (R-OK)	\$48,350
Jason Chaffetz (R-UT)	\$19,500
Jim Costa (D-CA)	\$59,900
Christopher Lee (R-NY)	\$16,650
Jason Altmire (D-PA)	\$10,450
Kevin Brady (R-TX)	\$91,400
John Fleming (R-LA)	\$121,650
John Sullivan (R-OK)	\$124,800
Bill Shuster (R-PA)	\$25,000
Sue Myrick (R-NC)	\$21,000
Rob Bishop (R-UT)	\$17,750
Glenn Thompson (R-PA)	\$55,072
Cynthia Lummis (R-WY)	\$89,550
Mark Critz (D-PA)	\$0
Bob Goodlatte (R-VA)	\$7,000
Thaddeus McCotter(R-MI)	\$3,000
Denny Rehberg (R-MT)	\$35,550
Mike Conaway (R-TX)	\$132,100
Tom Cole (R-OK)	\$80,500
Gene Green (D-TX)	\$83,600
Wally Herger (R-CA)	\$7,000
Shelley Moore Capito (R-WV)	\$49,900
Mike Coffman (R-CO)	\$44,250
Ralph Hall (R-TX)	\$48,750
Mike Ross (D-AR)	\$125,850
<b>Total</b>	<b>\$1,742,572</b>



## Campaign contributions from the oil and gas industry, 2009-2010

Source: [Open Secrets](#)

*To the: Hinchey-DeGette-Polis group*

Maurice D. Hinchey (D-NY)	\$0
Diana DeGette (D-CO)	\$2,750
Jared Polis (D-CO)	\$0
Gary Ackerman (D-NY)	\$5,800
Barbara Lee (D-CA)	\$3,250
Howard L. Berman (D-CA)	\$0
Earl Blumenauer (D-OR)	\$6,062
Lois Capps (D-CA)	\$0
William Lacy Clay (D-MO)	\$0
Steve Cohen (D-TN)	\$0
Gerald Connolly (D-VA)	\$4,500
Keith Ellison (D-MN)	\$1,750
Eliot L. Engel (D-NY)	\$0
Sam Farr (D-CA)	\$0
Barney Frank (D-MA)	\$0
Raul Grijalva (D-AZ)	\$2,500
Mazie Hirono (D-HI)	\$4,000
Rush D. Holt (D-NJ)	\$0
Michael M. Honda (D-CA)	\$1,000
Dennis J. Kucinich (D-OH)	\$0
James R. Langevin (D-RI)	\$0
Zoe Lofgren (D-CA)	\$2,500
Nita M. Lowey (D-NY)	\$7,700
Carolyn B. Maloney (D-NY)	\$9,500
Betty McCollum (D-MN)	\$0
Mike Thompson (D-MS)	\$5,250
James P. Moran (D-VA)	\$1,500
Jerrold Nadler (D-NY)	\$15,100
John W. Olver (D-MA)	\$3,000
William L. Owens (D-NY)	\$0
John P. Sarbanes (D-MD)	\$4,050
Janice D. Schakowsky (D-IL)	\$0
Jose Serrano (D-NY)	\$0
Jackie Speier (D-CA)	\$0
Fortney Pete Stark (D-CA)	\$0

Paul Tonko (D-NY)	\$4,000
Chris Van Hollen (D-MD)	\$6,000
Lynn C. Woolsey (D-CA)	\$0
Mike Quigley (D-IL)	\$0
Chellie Pingree (D-ME)	\$0
Jay Inslee (D-WA)	\$0
Bob Filner (D-CA)	\$0
Dale E. Kildee (D-MI)	\$0
Donna F. Edwards (D-MD)	\$1,000
Steven R. Rothman (D-NJ)	\$0
Adam Smith (D-WA)	\$0
<b>Total</b>	<b>\$91,212</b>

**Correction (Jan. 20):** This story originally listed Rep. Donna Edwards as a democrat from Texas. She is, in fact, from Maryland.

## As Pennsylvania Implements New Wastewater Rules, Some State Waterways Still Face Problems

by [Nicholas Kusnetz](#)

ProPublica, Jan. 21, 2011, 3:23 p.m.

Image by [Allan Foster](#).



A couple of weeks ago we [wrote a story](#) about the release of partially treated gas drilling wastewater into Pennsylvania's rivers. The post highlighted an [Associated Press analysis](#) of data covering July 2009 through June 2010 and mentioned a new state rule that requires newly-built wastewater plants to meet higher treatment standards.

We wanted to know if those new standards are being met, so we asked the Department of Environmental Protection when any new plants might be built. Later that night, a spokeswoman for the DEP sent us a chart showing that a couple of dozen are planned or proposed. She also pointed out that two of about 20 existing plants on the list already meet the new regulations.

But that list was incorrect. In fact, only one plant satisfies the regulations. The other one listed is not yet built, and not even fully permitted, according to Larry Mostoller, president and CEO of Somerset Regional Water Resources, the company building the facility. (Jamie Legenos, the DEP spokeswoman, said that labeling this plant operational was a clerical mistake.)

Legenos could not give us an estimate of how long it may be before more plants are online. Mostoller said his plant could be operating by the summer of 2012. Another plant he is building, which he said is fully permitted and took two and a half years to get approved, should be running within a year.

Former DEP Secretary John Hanger, who left the department this week with the out-going governor, said focusing on when or how many plants may go online misses the big picture: that the state's drinking water is safe and that gas drilling is producing far less wastewater than originally predicted, because drillers are reusing most of their wastewater. He said a monitoring network in rivers and drinking-water facilities ensures that contaminants do not reach high levels.

"This is why we can tell you that every drop of water that goes to a tap meets the standard," he said. "And if it didn't we would immediately notify the public."

The [regulations](#) were updated in August to require all new and expanding facilities treating oil and gas wastewater to remove Total Dissolved Solids (TDS), a measure of dissolved organic and inorganic materials such as salts and minerals, down to a concentration of 500 milligrams per liter (other industries have a higher limit).

Many of the state's waterways suffer from high TDS levels that have harmed aquatic life and have occasionally contributed to health concerns at some drinking-water facilities, according to the [official Pennsylvania Bulletin](#), where the new regulations were published. It says 17 drinking-water intakes on the Monongahela River are subject to high levels of one contaminant, "which result in increased risks of bladder cancer." It also says TDS levels have contributed to a "shift in biotic communities" in some of the state's rivers. The effects of TDS on human health depend on its components.

The EPA sets a guideline of 500 mg per liter for TDS as a "[secondary standard](#)," meaning it may have aesthetic or cosmetic effects, such as tooth discoloration, but the agency lets states decide whether to enforce that guideline, which is included in the [Safe Drinking Water Act](#).

Hanger said the Pennsylvania law sets its "trigger" at 375 mg per liter, so if TDS levels exceed that point downstream, DEP can compel any plant to reduce or halt its discharges. We were unable to verify with the department that this trigger applies to existing oil and gas wastewater facilities. Legenos pointed us to language applying the trigger to other industries and to a general statement that the law guarantees levels will not rise above 500 mg per liter.

John Baillie, senior attorney at the environmental group PennFuture, which worked to pass the regulations, said he's not aware of a trigger in the law that applies to existing oil and gas wastewater facilities. He said the DEP does have the broad authority to limit wastewater discharges if the department decides they are contributing to pollution.

Hanger said the regulations allow the DEP to guarantee that Pennsylvania's drinking water meets the EPA standard. But that doesn't mean that the state's waterways are in the clear.

"I think it's fair to say in some cases they are less stressed and in some cases they're probably about in the same position," he said, compared to when TDS levels spiked in the Monongahela in 2008,

[corroding equipment](#) at a steel mill and a power plant. “Problems on Monongahela have not gone away, but they’ve been less severe.”

The Monongahela’s TDS problem can’t be blamed entirely on gas drilling. Hanger said the water’s TDS content was high even before it entered the state, having passed through heavy mining areas in West Virginia. Runoff from mining and other industries contributes to TDS levels, although gas wastewater has particularly high concentrations of these salts and minerals.

The bulletin says other Pennsylvania rivers also have a limited ability to sustain new discharges containing high TDS levels.

Some have questioned whether the new rules go far enough to fully protect the state’s waterways. The regulation instructs the department to monitor levels as monthly averages and to allow for temporary spikes, which can be caused not only by increased discharges but also by low water levels. In its [public comment](#) on an early draft of the rule, the environmental group [Delaware Riverkeeper](#) said that fluctuations in TDS levels can harm aquatic life.

Still, the new regulations were largely recognized as a victory for environmentalists.

“They weren’t as strong as first proposed, but that’s always the case,” said Jan Jarrett, PennFuture’s president and CEO. “Generally speaking we think that now that they’re in place and they’re in force, they’re adequate to protect the streams from the TDS.”

# Climate Benefits of Natural Gas May Be Overstated

By [Abrahm Lustgarten](#)

Jan. 25, 2011, 9:34 a.m.

**10:36 a.m.:** This post has been [corrected](#).



*An antelope passes by a natural gas drilling rig south of Pinedale, Wyo. (Douglas C. Pizac/AP file photo)*

The United States is poised to bet its energy future on natural gas as a clean, plentiful fuel that can supplant coal and oil. But new research by the Environmental Protection Agency—and a growing understanding of the pollution associated with the full “life cycle” of gas production—is casting doubt on the assumption that gas offers a quick and easy solution to climate change.

Advocates for natural gas routinely assert that it produces 50 percent less greenhouse gases than coal and is a significant step toward a greener energy future. But those assumptions are based on emissions from the tailpipe or smokestack and don’t account for the methane and other pollution emitted when gas is extracted and piped to power plants and other customers.

The EPA’s new analysis doubles its previous estimates for the amount of methane gas that leaks from loose pipe fittings and is vented from gas wells, drastically changing the picture of the nation’s emissions that the agency painted as recently as April. Calculations for some gas-field emissions jumped by several hundred percent. Methane levels from the hydraulic fracturing of shale gas were 9,000 times higher than previously reported.

When all these emissions are counted, gas may be as little as 25 percent cleaner than coal, or perhaps even less.

Even accounting for the new analysis, natural gas—which also emits less toxic and particulate pollution—offers a significant environmental advantage. But the narrower the margins get, the weaker the political arguments become and the more power utilities flinch at investing billions to switch to a fuel that may someday lose the government’s long-term support.

Understanding exactly how much greenhouse gas pollution comes from drilling is especially important, because the Obama administration has signaled that gas production may be an island of common political ground in its never-ending march toward an energy bill. The administration and Congress are seeking not just a steady, independent supply of energy, but a fast and drastic reduction in the greenhouse gases associated with climate change.

Billions of cubic feet of climate-changing greenhouse gases—roughly the equivalent of the annual emissions from 35 million automobiles—seep from loose pipe valves or are vented intentionally from gas production facilities into the atmosphere each year, according to the EPA. Gas drilling emissions alone account for at least one-fifth of human-caused methane in the world's atmosphere, the World Bank estimates, and as more natural gas is drilled, the EPA expects these emissions to increase dramatically.

When scientists evaluate the greenhouse gas emissions of energy sources over their full lifecycle and incorporate the methane emitted during production, the advantage of natural gas holds true only when it is burned in more modern and efficient plants.

But roughly half of the 1,600 gas-fired power plants in the United States operate at the lowest end of the efficiency spectrum. And even before the EPA sharply revised its data, these plants were only 32 percent cleaner than coal, according to a lifecycle analysis by Paulina Jaramillo, an energy expert and associate professor of engineering and public policy at Carnegie Mellon University.

Now that the EPA has doubled its emissions estimates, the advantages are slimmer still. Based on the new numbers, the median gas-powered plant in the United States is just 40 percent cleaner than coal, according to calculations ProPublica made based on Jaramillo's formulas. Those 800 inefficient plants offer only a 25 percent improvement.

Other scientists say the pollution gap between gas and coal could shrink even more. That's in part because the primary pollutant from natural gas, methane, is far more potent than other greenhouse gases, and scientists are still trying to understand its effect on the climate—and because it continues to be difficult to measure exactly how much methane is being emitted.

In November the EPA announced new greenhouse gas reporting rules for the oil and gas industry. For the first time under the Clean Air Act, the nation's guiding air quality law, thousands of small facilities will have to be counted in the pollution reporting inventory, a change that might also lead to higher measurements.

The natural gas industry, in the meantime, has pressed hard for subsidies and guarantees that would establish gas as an indispensable source of American energy and create a market for the vast new gas reserves discovered in recent years. The industry would like to see new power plants built to run on gas, automobile infrastructure developed to support gas vehicles and a slew of other ambitious plans that would commit the United States to a reliance on gas for decades to come.

But if it turns out that natural gas offers a more modest improvement over coal and oil, as the new EPA data begin to suggest, then billions of dollars of taxpayer and industry investment in new infrastructure, drilling and planning could be spent for limited gain.

“The problem is you build a gas plant for 40 years. That’s a long bridge,” said James Rogers, CEO of Duke Energy, one of the nation’s largest power companies. Duke generates more than half of its electricity from coal, but Rogers has also been a vocal proponent of cap-and-trade legislation to limit greenhouse gas emissions.

Rogers worries that a blind jump to gas could leave the country dependent on yet another fossil resource, without stemming the rate of climate change.

“What if, with revelations around methane emissions, it turns out to be only a 10 or 20 percent reduction of carbon from coal? If that’s true,” he said, “gas is not the panacea.”

The American Petroleum Institute said in an e-mailed response that federal offshore drilling rules are already cutting down on the emissions tallied by the government. Spokesmen for the Independent Petroleum Association of America and the natural gas lobbying groups Energy in Depth, American Clean Skies Foundation and America’s Natural Gas Alliance, which have all been pushing to expand the use of gas, declined to comment on the EPA’s new figures and what they mean for the comparison between gas and coal.

But industry groups point out that gas looks attractive compared to the alternatives.

Nuclear energy is less polluting than gas from a climate-changing perspective, but it is costly and viewed skeptically in the United States because of the dangers of disposing of radioactive waste. So-called “clean coal”—including underground carbon sequestration—could work, but the technology has repeatedly stalled, remains unproven, and is at least 15 years away. Renewable sources like wind and solar are being developed rapidly, but the energy is expensive and won’t provide a commanding supply of electricity for decades.

Gas, on the other hand, is plentiful, accessible and local.

### **Methane Is a Potent Climate Gas**

Measuring the amount of natural gas that is leaking during drilling is one challenge. Getting a grip on how that gas—which is mostly methane—affects the environment, and what effect it will have on global warming, is another. And on that, some scientists still disagree.

Greenhouse gases include carbon dioxide, as well as methane, propane and lesser-known gases that also affect climate change. For the purposes of standardization, all these gases are described together using the unit Co<sub>2</sub>e, or carbon dioxide “equivalent.” But because each gas has a different potency, or “warming” effect on the atmosphere, a factor is applied to convert it to an equivalent of carbon dioxide.

Methane, the primary component of natural gas and among the more potent greenhouse gases, has far more of an effect on climate change than carbon dioxide. But determining the factor that should be applied to measure its relative warming affect is still being debated.

To crunch its numbers, the EPA calculated the average concentration of methane in the atmosphere over a 100-year period and determined that over that period methane is 21 times more potent than



carbon dioxide. Using that equation, a ton of methane emissions is the equivalent of 21 tons of carbon dioxide.

But some scientists argue that the impact of methane gas should be calculated over a shorter time period, because methane degrades quickly, and because gas drilling releases large quantities of methane into the atmosphere all at once, likely concentrating and amplifying the effect.

Robert Howarth, an environmental biology professor at Cornell University, used research from the United Nations to calculate that if methane's potency were considered over 20 years rather than 100 years, it would be 72 times as powerful as carbon dioxide in terms of its warming potential.

Figured that way, the climate effect of methane from natural gas would quickly outpace the climate effect of carbon dioxide from burning coal. Howarth's research is incomplete and has been criticized because at first he failed to figure in methane emissions from coal mining. But he said that after correcting his error, the emissions from coal barely changed, and the data still showed that the intensity of methane could erase the advantages of using natural gas.

"Even small leakages of natural gas to the atmosphere have very large consequences," Howarth [wrote in a March memorandum](#), which he says is a precursor to a more thorough study that could begin to scientifically answer these questions. "When the total emissions of greenhouse gases are considered ... natural gas and coal from mountaintop removal probably have similar releases, and in fact natural gas may be worse in terms of consequences on global warming."

Howarth says his latest calculations show that the type of shale gas drilling taking place in parts of Texas, New York and Pennsylvania leads to particularly high emissions and would likely be just as dirty as coal.

Environmental groups say factual data on how much methane is emitted from gas fields—and what the warming affect of that methane is—should be locked down before major policy decisions are made to shift the nation toward more reliance on gas.

"You can't just assume away some of these sources as de minimus," said Tom Singer, a senior policy analyst for the Natural Resources Defense Council who focuses on emissions reporting in New Mexico. "You need to get a handle on them before you can make a determination."

### **Less Pollution Means More Profit**

The EPA tracks fugitive and vented methane emissions through a program called Natural Gas STAR and then works to get drilling companies to save money by stanching their leaks and selling the gas they capture for profit. It was a discrepancy in the Gas STAR data that prompted the EPA to sharply revise the government's greenhouse gas statistics late last year.

According to Gas STAR's most recent figures, at least 1.6 percent of all the natural gas produced in the United States each year, about 475 billion cubic feet, is assumed to be leaked or vented during production. But those numbers were reported before the EPA adjusted its greenhouse gas estimates, and they are expected to rise when the new estimates are plugged into the calculation. If companies could capture even the gas leaked in Gas STAR's current estimates, it would be worth \$2.1 billion a year at today's prices and would cut the nation's emissions by more than 2 percent right off the bat.

Several studies show that maintaining and installing equipment to capture the emissions pays for itself within 24 months.

Gas STAR has seen some success in pushing companies to use these capture tools. The EPA's 2010 greenhouse gas inventory, using 2008 data, shows that even though more gas is being produced from more wells, total emissions from that production have decreased by more than 26 percent since 1990, mostly due to the progress of Gas STAR. But while these figures demonstrate that Gas STAR is effective in lowering the annual rate of emissions, the EPA's new figures essentially move the starting point, and, when recalculated, 2008 emissions are now understood to have been 53 percent higher than emissions in 1990.

That doesn't mean the program isn't working—it is. It simply means that the road to making reductions significant enough to affect the rate of climate change is much longer than expected.

The EPA now reports that emissions from conventional hydraulic fracturing are 35 times higher than the agency had previously estimated. It also reports that emissions from the type of hydraulic fracturing being used in the nation's bountiful new shale gas reserves, like the Marcellus, are almost 9,000 times higher than it had previously calculated, a figure that begins to correspond with Robert Howarth's research at Cornell.

### **Clean Enough to Count On?**

Getting a solid estimate of the total lifecycle emissions from natural gas is critical not only to President Obama's—and Congress'—decisions about the nation's energy and climate strategy, but also to future planning for the nation's utilities.

Even small changes in the lifecycle emissions figures for gas would eventually affect policy and incentives for the utility industry, and ultimately make a big difference in how gas stacks up against its alternatives.

Rogers, the Duke executive, says the country's large promised reserves of natural gas must also hold up for gas to prove beneficial, in terms of both cost and climate. If domestic reserves turn out to be smaller than predicted, or the nation runs out of gas and turns to liquefied gas imported from overseas, then the greenhouse gas footprint of natural gas would be almost equal to coal, Jaramillo pointed out in her [2007 lifecycle analysis, published in the journal Environmental Science and Technology](#). That's because the additional processing and shipping of liquefied gas would put even more greenhouse gas pollution into the atmosphere.

“In the 60's we put a needle in one arm—it was called oil,” Rogers said. “If the shale gas doesn't play out as predicted, and we build a lot of gas plants in this country, and we don't drill offshore, we're going to be putting the needle in the other arm and it's going to be called gas.”

The utilities are in a bind because they have to build new power plants to meet the nation's demand for energy, while anticipating an as-yet-undefined set of federal climate and emissions regulations that they believe are inevitable. Do they build new gas-fired plants, which can cost \$2 billion and take three years to bring online? Or do they wait for proven systems that can capture carbon from coal-fired plants and sequester it underground?

If carbon sequestration works, coal-based power emissions could drop by 90 percent, said Nick Akins, president of American Electric Power, the nation's largest electric utility and the number-one emitter of greenhouse gas pollution. That suggests to Akins that natural gas may not be the solution to the nation's energy needs, but rather the transitional fuel that bridges the gap to cleaner technologies.

"Going from a 100 percent CO2 emitter to a 50 percent solution when you could go beyond that is something we need to turn our attention to," said Akins. "If there is a 90 percent solution for coal, and other forms like nuclear, and renewables, then obviously you want to push in that direction as well."

**Correction:** The article originally misstated that methane, at least 21 times more potent than CO2, is the most potent of greenhouse gases. The article should have stated that it is among the more potent greenhouse gases.

## In Symbolic Move, Philadelphia Calls for Gas Drilling Ban

By [Nicholas Kusnetz](#)

Jan. 28, 2011, 12:52 p.m.

*Philadelphia became the latest city calling for at least a temporary ban on new wells in the watershed that serves the city's taps. (Fordan/Flickr)*



As the federal government continues to study a controversial gas drilling technique and the states tinker with their own regulations, some cities and towns are trying to halt local drilling. Philadelphia

became the latest to do that on Thursday, when city officials called for at least a temporary ban on new wells in the watershed that serves the city's taps.

The request was part of a set of recommendations in a report approved by the city council asking federal and state authorities to tighten drilling regulations. The report also urges the city-owned utility to avoid buying gas that comes from the Marcellus Shale, the layer of rock that stretches under much of Pennsylvania and is considered one of the world's largest gas fields.

But the vote was largely symbolic. The utility doesn't buy any Marcellus Shale gas and has no plans to -- and new drilling in the Delaware River Basin is already on hold. The idea was to send a message, said Michelle Wilson, a spokeswoman for Curtis Jones, Jr., the councilman who sponsored the report.

"Philadelphia is a major city and we're hoping that behind this push, that we can use it for leverage," Wilson said.

The report cites the uncertainty around the environmental and economic impact of hydraulic fracturing—in which drillers use millions of gallons of water mixed with sand and chemicals to extract gas—to argue for a cautious approach to drilling. The Delaware River Basin Commission, the interstate authority that must authorize drilling permits in the watershed, has already suspended approving new wells until it adopts [a set of regulations](#) covering gas drilling. That process will take months, said a spokeswoman for the commission. The city council asked that the ban be extended until an EPA study of hydraulic fracturing is completed, which isn't expected until next year.

With the vote, Philadelphia joined [New York City](#) and [Pittsburgh](#), as well as a [number of smaller towns](#) in the northeast and [Texas](#), in trying to influence where and how the gas industry drills its wells.

In November of 2010 Pittsburgh became the first Pennsylvania city to ban drilling within its boundaries. The ordinance was written by an advocacy group called the [Community Environmental Legal Defense Fund](#), which is pushing similar laws in municipalities throughout the Marcellus Shale region, including [one in Maryland](#). Ben Price, who is organizing the effort for the defense fund, said the ordinances aim to protect residents' rights to clean air and clean water. He said cities and towns are simply stepping in where state governments refuse to.

But there's some question as to whether the outright bans by Pennsylvania municipalities are legal or whether state law supersedes them, said Travis Windle, a spokesman for the gas industry group the Marcellus Shale Coalition. Some towns have [reportedly backed off](#) proposing bans for fear of attracting costly lawsuits.

Windle said the local efforts are based on misinformation and will hurt economic growth.

"I think that just underscores what a huge job we have to do in better educating folks across the spectrum," he said.

While their direct impact on drilling is arguable, the various initiatives signal rising awareness and concern about drilling for natural gas, said Amy Mall, a policy analyst with the Natural Resources Defense Council, an environmental group.

"Local elected officials are hearing the concern from their communities and that's a good thing," she said. "I think it reflects that we need to look at this industry nationally."

New York City officials issued their own call for a ban on drilling in the city's watershed in December 2009. As with Philadelphia, drilling there is already on hold until a state environmental impact study is finished. Wilson said that Philadelphia officials have been working with their peers in Pittsburgh and New York to try to coordinate their efforts against drilling.

Before the Philadelphia vote, there was some confusion about whether the city council could direct the utility company's gas purchases. State law requires utilities to seek the cheapest gas, which for now means a long-term contract for fuel coming mostly from the Gulf of Mexico. Initially, the council wanted to ban purchases of Marcellus gas, should they become the cheapest option. That language was softened to urge the utility to consider environmental concerns as well as price and to try to avoid Marcellus gas.

# Clearing the Air on ProPublica's Drilling Pollution Story

By [Abrahm Lustgarten](#)

Jan. 31, 2011, 7:52 p.m.

On January 25, ProPublica published [a story](#) disclosing that the EPA had more than doubled its estimates of the amount of greenhouse gases believed to be leaked into the atmosphere from the natural gas drilling and extraction processes. The article used these new EPA estimates, combined with peer-reviewed research methodologies, to compare the total lifecycle emissions from natural gas use to the total lifecycle emissions from coal. We found that in a worst-case -- but very common -- scenario, the advantage of using natural gas was substantially diminished from the advantage held by conventional wisdom. To be clear, our article did not say that the EPA had conducted the lifecycle analysis of the fuels, or that the EPA had concluded gas was disadvantageous.

Last week the industry-funded pro-drilling group Energy in Depth -- which has not contacted ProPublica directly to express concerns about the article's accuracy -- [issued a statement challenging](#) the facts of our story. The EID release states that the EPA data cited in the article is not new, that the agency never undertook a lifecycle assessment of natural gas, that ProPublica ignored other EPA documents, and that ProPublica's conclusions are based on a "pamphlet" by a university researcher.

These assertions amount to a misunderstanding of the article and a distortion and mischaracterization of the facts.

For one, EID inexplicably claims that ProPublica's characterizations are made "absent any data." ProPublica's finding is based on several interviews with agency officials and the recent publication by the EPA of a [working document](#) that clearly outlines the EPA's revision of its older figures. [Page 10](#) of that document states that greenhouse gas emissions from the production stage of oil and gas alone are now believed to be 198 MMtCo<sub>2e</sub>, an upward revision from 90 MMtCo<sub>2e</sub> under the agency's old analysis. Broken down, that same page states that total methane leaked and vented from all natural gas systems -- not just production, but also including processing and transmission -- was about 261 MMtCo<sub>2e</sub>, far more than double the comparable amount the EPA had last reported on [page 3-45 of its annual published greenhouse gas inventory](#). EPA officials told ProPublica that their research was on this topic was evolving quickly, that the figures published in the working document represented the latest and most accurate understanding held by the agency, and that they supersede the comparable data published in the [EPA's April, 2010 Greenhouse Gas Inventory](#). They advised that because the figures seemed to be changing frequently, we generalize our conclusions to say that emissions estimates had "at least doubled."

The EID statement argues that no new EPA research exists concerning the lifecycle of natural gas, and states that ProPublica's report is based on "a six-page pamphlet." [ProPublica's original story](#) is clear in explaining that EPA provided revised estimates for gas field emissions, not the lifecycle assessment. The lifecycle analysis itself is based on a peer-reviewed article published in the highly-regarded scientific journal [Environmental Science and Technology](#). That journal article explains in

detail the methodology used to calculate the lifecycle emissions from natural gas compared to the lifecycle emissions from coal, depending on multiple variables including the various efficiencies and heat rates of the power plants where the fuel is ultimately burned. The author of that paper worked with ProPublica to provide a formula, which ProPublica then used to calculate a new lifecycle estimate based on the updated emissions figures set by the EPA.

The EID response points to a chart contained on page 3-45 [of the EPA's 2010 Greenhouse Gas Inventory](#) that shows declining annual emissions from natural gas drilling and alleges that ProPublica ignored this data. In fact, ProPublica's article not only linked to this document and referenced this exact chart as one measure of the government and industry's success in working to cut emissions, but factored an estimate for the EPA's emission-reduction program, called GasSTAR, into its calculations.

EID suggests that this older EPA document reflects the best known data for emissions. It does not. The new EPA estimates are more recent and more accurate, according to the EPA, and when the Greenhouse Gas Inventory is updated in April 2011 it will reflect the revisions.

The EID statement, referencing the chart on p. 3-45 of the old 2010 inventory, states that "methane that escapes into the air pursuant to natural gas operations in the United States continues to go down. By a lot." In fact, when these numbers are updated to reflect the EPA's latest figures, the chart is expected to change and the net amount of emissions will have gone up, not down, according to an explanation given by the EPA to ProPublica.

The EID response criticizes [the EPA technical paper](#) itself, stating incorrectly that on p. 84 the EPA based all of its findings "on a single data point." In fact, the reference in question is [on p. 86](#) and it clearly states that the EPA's estimates were based on "several" factors, including data from the GasSTAR program itself. The document goes on to describe one example, but states repeatedly that its estimates are still considered to be conservative, and likely underestimated.

The EID response suggests that the EPA's own conclusions are based on thin research. But the fact is that there is a long, deep record of peer-reviewed scientific research and government-sponsored reports that have also said that gas field emissions are underestimated and should be sharply revised upward. Here is a sampling of documents explaining how emissions estimates have been underestimated: A [Texas study by the EPA's current regional administrator when he was a professor at Southern Methodist University](#); a [climate evaluation completed by the state of New Mexico](#), and a [paper published by researchers at the University of California, Irvine](#). One especially good resource is this document containing an [industry estimate from the gas drilling company Williams](#).

Finally, EID attacks the methodology of a Cornell University researcher, Robert Howarth, and alleges that ProPublica's article was incorrectly based on Howarth's estimates. In fact Howarth's research was not the basis for any of the emissions figures or calculations reported by ProPublica, and ProPublica's article was completed before Howarth's latest letter, cited by EID, was released.

ProPublica repeatedly sought comment and input on its reporting from the natural gas industry over the past several months, including Energy in Depth. EID was shown the specific findings of our article, and was pointed to the documentation that supported it, before ProPublica's article was published, yet repeatedly declined to comment.



Separately, the EPA has also sent a statement regarding ProPublica's reporting to Energy in Depth. In it, press officer Erin Birgfeld references [the same technical paper](#) discussed above and emphasizes that it "does not estimate emissions from the gas industry and the emissions estimates in the article were not developed by EPA." When we contacted the EPA for an explanation, we were told that the EPA did not find any factual discrepancies with what ProPublica had reported and was not disputing any of the emissions figures contained in the documents referenced here. The agency's statement was only meant to clarify that the lifecycle analysis was calculated by ProPublica and was separate from the emissions figures the agency has reported.

## ***Comments***

**Chris, [Feb. 1, 8:10 a.m.](#)**

Here's the full statement from EPA, since Abrahm couldn't find any space to post it:

"EPA has not conducted an analysis of coal versus natural gas, and there is no new report. The information referred to in the article was developed based on information from a Technical Support Document, however, which was developed as support for the Greenhouse Gas Reporting Program. The reporter used that data and did his own calculations to arrive at the figures used in the article.

"The document above does not estimate emissions from the gas industry and the emissions estimates in the article were not developed by EPA. EPA has not reviewed the analysis described in the article in detail, but we have not seen any indication that the benefits of natural gas have been called into question. Available data demonstrate that switching from another fossil fuel to natural gas reduces emissions of carbon pollution and other harmful pollutants that threaten Americans' health."

**Shelly T, [Feb. 1, 7:29 p.m.](#)**

Stand your ground on this Propublica. I've thought for a long time that moving to natural gas was mostly a way for T. Boone Pickens to get even richer and didn't benefit the environment or the climate ENOUGH to warrant a move to it from \*other\* fossil fuels. We need to get rid of all fossil fuels. Our climate and our future depend on it. We need to get emissions down to zero, not half of coal and oil. Not 25% either.

When considering the pollution of fossil fuels you need to consider the entire life cycle, so I appreciate PP's work on this. I looked up long ago on a large natural gas website the CO2 emissions of natural gas and it's evident that it's a bit better for \*pollution\* but still bad for \*climate change\*. Not worth it.

The EPA is overly careful in the wording of all of its statements because they have to be for legal reasons.

Ignore the big fossil fuel companies, they will eventually be the losers in energy and they know it.



**Karl Stevens, [Feb. 1, 7:32 p.m.](#)**

Follow the money. When an industry shill challenges a journalist, it's usually a deceptive challenge with propaganda and profits as the primary motives. Fact is, all fossil fuel sourcing and use are harmful to humans and the biosphere. Some more, some less. But all are harmful in a variety of ways that go beyond greenhouse gas emissions. The larger context is that there are no technological fixes, neither green nor brown, that will cleanly supply the energy we use to fuel our obese lifestyles. Only by reducing our consumption rates will we ever be truly green. Now watch while the propagandists for the fossil fuel industry, and for the current death-dealing consumerist culture, post comments attacking me and Pro Publica.

**Shelly T, [Feb. 1, 7:32 p.m.](#)**

“Available data demonstrate that switching from another fossil fuel to natural gas reduces emissions of carbon pollution and other harmful pollutants that threaten Americans’ health.”

That’s disappointing. The EPA can’t really believe that getting to zero carbon emissions involves burning lots of natural gas, and polluting our water in the process.

**James Barth, [Feb. 1, 8:01 p.m.](#)**

Propaganda is what Lee Fuller and Energy in Depth do. They challenged GASLAND almost before it was screened, and their “debunking” was an embarrassment from which they had to backpeddle furiously. If one were to check the original document the lobbying group put out, to the current objections that it posts, you will find serious omissions, such as their original, bizarre statement “A recent study by Penn State Univ. projects that by the year 2020, producers will have developed 3,587 shale gas wells.” I believe the real projection was that by the year 2020, production will have ramped up to about 3,587 PER YEAR.

Energy in Depth is not interested in truth, but rather, in muddying the waters, through amateurish attempts at undermining the reputations of their opponents.

Hopefully, truth will out, and will be understood. Kudos to ProPublica for leading the charge.

**Mike H, [Feb. 1, 11:21 p.m.](#)**

Poor Mr Lustgarten .... caught with his hand in the cookie jar of disinformation again, just like when Dave Kopel called you to the carpet.

You shouldnt be so blatant with your lies in the future.

**Ira, [Feb. 9, 8:14 p.m.](#)**

Congratulations on the EPA looking at the real life cycle of natural gas extraction. Now, will someone look at the true life cycle of coal - mountaintop removal, water pollution, rail delivery diesel pollution, and of course, loss of life.

# Drilling Industry Says Diesel Use Was Legal

By [Abrahm Lustgarten](#)

Feb. 2, 2011, 7:14 p.m.

*Nicholas Kusnetz contributed to this report.*

*An oil drilling rig near Stanley, N.D. The well is being drilled into the Bakken Formation, one of the largest contiguous deposits of oil and natural gas in the United States. (Karen Bleier/AFP/Getty Images)*



After three members of Congress reported this week that drilling companies have been injecting large amounts of diesel fuel underground to hydraulically fracture oil and gas wells, the industry is fighting back -- not by denying the accusation, but by arguing that the EPA never fully regulated the potentially environmentally dangerous practice in the first place.

According to a letter to the EPA from Henry Waxman, D-Calif., Edward Markey, D-Mass., and Diana DeGette, D-Colo., 14 fracking companies injected more than 32 million gallons of diesel fuel into the ground in 19 states between 2005 and 2009. And they did it without asking for or receiving permission from environmental regulators in those states. Diesel fuel contains benzene, a known carcinogen, which has been detected in water supplies near drilling facilities across the country.

At first, the lawmakers' findings look like the prelude to a slam-dunk criminal case.

The 2005 Energy Policy Act states that hydraulic fracturing using diesel is subject to federal regulations that protect drinking water by governing the injection of materials underground. Those injection regulations, contained in the Safe Drinking Water Act, say that companies need a permit before they put anything down a well.

By the lawmakers' reading of these statutes, the drilling companies broke the law.

But the energy companies now say there was no law to break.

"We are not questioning that EPA has the authority to regulate hydraulic fracturing under the Safe Drinking Water Act if diesel fuel is being used. It's the fact that there are no rules to do that," said Lee Fuller, vice president of government relations for the Independent Petroleum Association of America and executive director of industry-funded Energy in Depth.

An e-mail that ProPublica received from Halliburton, which the lawmakers said used 7.2 million gallons of diesel fuel in violation of federal requirements, supported that view. The company said it had not violated any laws, "because there are currently no requirements in the federal environmental regulations that require a company to obtain a federal permit prior to undertaking a hydraulic fracturing project using diesel."

So how can the two sides be so clearly divided in their interpretation of the law? The conflict goes back to a series of agreements and reports that over the years have tried to address the environmental risks inherent to diesel use and hydraulic fracturing but have never succeeded in settling the essential questions.

The effort began in 2004 during the Bush administration, when the EPA last published a study of hydraulic fracturing. That report, which has been criticized by scientists and environmentalists as incomplete, concluded that hydraulic fracturing did not pose a threat to drinking water. But it was clear about one exception: When diesel fuel is used, hydraulic fracturing is not safe and could indeed endanger drinking water.

Based on this, the Bush administration took two steps to limit the use of diesel.

First, it sought a voluntary handshake agreement by the three largest drilling contractors then responsible for some 95 percent of fracturing operations in the United States. The companies -- Halliburton, BJ Services and Schlumberger -- all volunteered to stop using diesel fuel in coal bed methane gas wells, according to a signed memorandum of understanding. At the time, gas wells drilled into coal beds were the focus of the EPA's consideration, because they are often near shallow aquifers.

Second, the Republican-led Congress wrote in an exception to the so-called "Halliburton loophole" in the 2005 Energy Policy Act, which stated that hydraulic fracturing could not be regulated under the Safe Drinking Water Act. According to the language of that law, the use of diesel fuel for fracking would still qualify for regulation.

The drilling industry appeared to accept not only the finding that diesel was dangerous in fracking, but that the federal government was going to regulate it. And it was widely assumed that diesel fuel had largely been eliminated from fracking as a result.

When pressed on the issue last just year, for example, Energy in Depth, which is run by Lee Fuller, the man now arguing that the EPA has no regulatory standing, wrote on its website that diesel use shouldn't be a concern, partly due to "the fact that federal statute explicitly identifies diesel fuel as a substance that, if used, immediately lands that operation under the regulatory authority of EPA."

All sides seemed to be in agreement.

"We knew at the time the [voluntary agreement] was signed that these service companies made up 95 percent of service operations taking place ... and that they discontinued the use of diesel fuel and they continue to report that they do not use diesel fuel," an EPA hydrologist who worked on the 2004 report, Jeffrey Jollie, told ProPublica in 2008.

Ben Grumbles, the EPA's former assistant administrator for water, said last year in an interview with ProPublica that "this was a positive step, and a sincere step forward for us to make sure that... they knew we were watching this and knew that it could be a problem if they used this sort of a process."

When ProPublica questioned industry representatives about diesel in recent years, they responded in a chorus, strongly implying that the EPA agreement had effectively forced the industry to widely adopt best practices.

In July 2009, David Dunlap, then the chief operating officer for the fracturing company BJ Services, which has since been acquired by Baker Hughes, told ProPublica that after the 2004 agreement forced BJ Services to stop using diesel in coal bed methane wells, “it really was a practical matter” to phase it out in all wells. It didn’t make sense to have two different systems, he said, so the industry was gradually phasing it out. “It’s probably the biggest single move the industry has made to get greener,” Dunlap said, referring to the ripple effect of the agreement.

“I can’t speak for every fracturing company in the U.S., but we have gone strictly to mineral oil slurries,” he added, referring to the mixture of fluids pumped underground. “We don’t use diesel in any slurries in the U.S. today. None.”

Others were equally adamant. “Yeah, there used to be diesel,” David Holcomb, director of research for the Texas-based drilling chemistry company Frac Tech, told ProPublica in 2009. “We never added benzene to a fracturing fluid, we never have and never will. We don’t do that anymore.”

The lawmakers report that in fact BJ Services injected 11,555,538 gallons of diesel fuel between 2005 and 2009, and that Frac Tech injected 159,371 gallons in that period. Waxman’s office did not respond to ProPublica’s questions about exactly when those injections had occurred, so it is impossible to know if the injections were made after Dunlap’s and Holcomb’s statements. Dunlap, who now works at Superior Energy Services, did not respond to a request for comment. Holcomb said the lawmakers didn’t understand the information they had collected, and that Frac Tech might have used diesel to clean its lines, but that it had not used it in fracturing fluids.

Now, however, the industry seems to be abandoning its stance that diesel fuel has been phased out for a new one based on the legal readings. That means the diesel revelations are now more likely to land the simmering 15-year debate about the interpretation of hydraulic fracturing regulations -- which began in a mid-90s Alabama lawsuit -- back in court.

A spokesman for Baker Hughes -- the drilling firm that acquired BJ Services -- said that his company hadn’t violated any laws, arguing that the EPA agreement not to use diesel applied only to coal bed methane wells and that the EPA never articulated its rules under the Safe Drinking Water Act for other applications.

“The regulations did not expressly address or prohibit the use of diesel fuel as fracturing fluids,” he said, adding that the company phased out diesel fuel sometime before 2010. “We believe that retroactively creating a permitting requirement is clearly improper... there was nothing in the federal regulations ---it neither addressed it or prohibited it.”

And there is the kernel of the fight. In July the EPA posted an updated page to its website clarifying that it expects drilling companies to file for permits before using diesel-based fracture fluids. The IPAA immediately filed objections in court, arguing that while the Energy Policy Act of 2005 gave the EPA the right to regulate diesel fracturing, it didn’t specify when or how it should do it. The agency is only now laying out the rules that would put the law into action, and it is doing it

retroactively and arbitrarily, according to Fuller, the IPAA vice president. He said the EPA’s website clarification is “not proper rule-making.”

“What they should do if they are going to set up a rule structure is they need to go through the normal rulemaking process,” he added. “You submit a proposal, go through public comments, then review those comments.”

The Obama administration is arguing, according to court filings, that the law always obligated the EPA to enforce the Safe Drinking Water Act and that a website change articulating that policy does not amount to a change in regulations at all.

It is not yet clear whether the government will launch a criminal investigation into the diesel use reported by the three Democrats, or wait for the legal issues to be ironed out by a judge. When asked, an EPA spokeswoman would only say that the agency is still reviewing the information it received from the lawmakers.

## Many PA Gas Wells Go Unreported for Months

By [Nicholas Kusnetz](#)

Feb. 3, 2011, 12:05 p.m.

*A drilling rig in Dimock, Pa. (Abraham Lustgarten/ProPublica)*



On Sept. 14, 2009, natural gas operators [finished drilling the 3H well](#) on the Lbros farm in southwest Pennsylvania. Just over four months later, they “fracked” it by injecting more than 6 million gallons of chemical-laced water into the 2-mile-plus-deep well.

It wasn’t until nearly a month after that, on Feb. 22, 2010, [according to public records](#), that Pennsylvania’s Department of Environmental Protection received paperwork showing that drilling and fracking on the Range Resources well were completed. Before that, it’s not clear what the department knew about the well’s evolution, other than that drilling had begun the previous June.

That reporting delay appears to violate [a Pennsylvania law](#) that requires drilling companies to submit a “well record” to the DEP no more than 30 days after drilling is completed. Those records report the depth of the well and the geological formations the drillers encountered. They also contain details of the cement and casing that surround the well and prevent gas and fluids from leaking and polluting aquifers.

DEP spokeswoman Jamie Legenos said some of the department’s regional offices haven’t enforced the law. But she said the reporting delay doesn’t present a danger because in most cases the

department relies on inspections, rather than the reports, to ensure that wells are drilled to code. When inspectors can't make it to a site, she said, they keep in touch with drillers by phone and e-mail.

The 3H well on the Lbros farm has never been inspected, according to the DEP's [online reporting system](#), which was last updated in August. Neither have three other wells drilled on the farm.

Legenos said the reporting discrepancy stems from the fact that the well record is on the [same piece of paper](#) as a form that companies must file after wells are hydraulically fractured, the process that injects them with millions of gallons of water mixed with sand and chemicals to release gas from the earth. The two processes are often separated by several months, and some DEP offices have allowed companies to submit both records at once.

Matt Pitzarella, a spokesman for Range Resources, one of the state's largest drillers, said Range has followed that procedure with all its well records and was unaware it may have been violating state law. Pitzarella said the company will be "fine with either format, but it probably warrants further discussion with the incoming administration." Pennsylvania's new governor, Tom Corbett, [appointed a new DEP secretary](#) in January.

In an e-mail, Legenos said the DEP plans to address the reporting discrepancy, but she didn't say when. "With our increasing enforcement personnel reporting compliance will be more rigorously enforced."

The DEP's enforcement staff has increased nearly four-fold in the past two years, to about 130 people, 65 of whom are inspectors, Legenos said. But the state is still struggling to keep up with the natural gas boom in the Marcellus Shale, the gas-bearing rock formation that stretches under large parts of New York, Pennsylvania, West Virginia and Ohio.

More than 21,000 oil and gas wells have been drilled in Pennsylvania since 2005, including some 2,700 last year. The DEP inspected about 9,000 wells in 2010, but Legenos could not say how many of those were newly drilled and how many were older wells still in operation.

Deborah Goldberg, an attorney with the environmental group [Earthjustice](#), said Pennsylvania needs to keep increasing its inspection staff.

"I just don't think they have anywhere near the number of inspectors they need so they can be doing timely inspections of all the wells they've been permitting," she said. The department issued more than 6,100 well permits last year.

Other states have also had trouble keeping pace with the rapid growth of gas drilling, as ProPublica [reported in 2009](#). [Colorado](#) and [Wyoming](#) both updated their regulations in recent years, and each state requires drillers to submit some type of report within 30 days of drilling. But in Colorado, too, there aren't enough inspectors to cover the state's wells, said David Neslin, director of the state's Oil and Gas Conservation Commission.

Legenos said most of Pennsylvania's wells are inspected during drilling operations. But that leaves unanswered what happens when they aren't. State law says the department's "intent" is to have

inspectors present at each of a number of points in a well's lifespan, including drilling and fracking. Legenos did not say how often that intent is met.

ProPublica submitted a public records request for a small selection of Well Record and Completion reports for Range Resources. The request covered about six months of drilling and initially produced reports for 42 wells, including Lbros 3H. When we told the DEP in December that some reports seemed to be missing from our request, the department produced six more. This week the department said it was still looking to see if more requests may be missing.

Using those records, along with the DEP's [online reporting system](#), we determined that most of the wells were inspected at least once during drilling. However, none were inspected during fracking. And six had not been inspected at all as of August 2010. Those numbers do not necessarily represent the inspection rates of gas wells across Pennsylvania.

Details contained in the Well Record and Completion reports are critical to determining the integrity of a well, said Susan Harvey, a petroleum engineer who has consulted for environmental groups. The highly pressurized fracking fluids tend to follow the path of least resistance, she said, and a faulty cement job can provide an easy exit. Bad cementing can also contribute to a blowout, [as is suspected](#) in the BP Deepwater Horizon disaster.

Cementing problems are [believed to have led](#) to the 2009 explosion of a water well and the contamination of drinking water near the town of Dimock, Pa. In that case, the DEP [cited drillers](#) for faulty cementing and casing and also for turning in late Well Record and Completion reports.



# Anatomy of a Gas Well: What Happened When a Well Was Drilled in a National Forest

By [Nicholas Kusnetz](#)

Feb. 4, 2011, 4:51 p.m.

This story has been updated:

*From USDA Fernow Experimental Forest pipeline report: Foliar injury of trees damaged by aerial release of drilling fluids on May 29, 2008, from the B800 well. Pit containing drilling fluids is shown in the foreground. Photo taken June 11, 2008. Photo by U.S. Forest Service.*



In our original story we wrote that there were 73 active gas wells in the Monongahela National Forest in 2009. We have since received updated and more specific information. Of those 73 wells, three have since been plugged and are no longer producing. Another 55 are actually gas storage wells. When demand is low, operators can pump natural gas into these non-producing wells and store it in geological formations deep underground until demand picks up. The 15 remaining wells are currently producing or are ready to produce gas.

A [new report](#) by the U.S. Forest Service offers one of the most detailed accounts yet of how natural gas drilling can affect a forest – in this case the Fernow Experimental Forest, deep in the mountains of West Virginia.

The report traces the construction and drilling of a single well and an accompanying pipeline on a sliver of the 4,700 acre forest that federal scientists have been studying for nearly 80 years. It found that the project felled or killed about 1,000 trees, damaged roads, eroded the land and—perhaps most important—permanently removed a small slice of the forest from future scientific research.

The report said the drilling didn't appear to have a substantial effect on groundwater quality. The scientists did not monitor the forest's most sensitive ecosystems, including extensive caves, and did not evaluate the operation's impact on wildlife. The authors also did not test for any of the chemicals added to drilling and hydraulic fracturing fluids.

The report, and the well in question, hints at a larger story of the tensions that have emerged as drilling expands across federal lands in the eastern United States. The B800 well, as it's called, [drew controversy](#) within the Forest Service when it was planned and approved in 2007. In [a letter](#) obtained by the group Public Employees for Environmental Responsibility, or PEER, three Forest Service scientists criticized the decision to approve the well, saying it threatened endangered bats and the interconnected caves where they live. The scientists also said the well threatened the long-term research performed in the forest. The employees requested a legal opinion on the matter, but were [reportedly rebuffed](#) by their superiors.

The report, whose authors include the three scientists who criticized the decision, notes that some of the scientists' worst fears, including that turbid water would fill the area's caves, did not occur. Instead, the greatest impacts of drilling were unexpected. A planned release of wastewater killed scores of trees, and drilling trucks proved much more damaging to the roads than normal logging traffic.

Tom Schuler, a forest researcher who signed the letter and worked on the new report, said it is one of the first published studies to observe the entire course of drilling and preparing a well for production.

"It really opened up this new area that's very pertinent to what's going on in West Virginia, Pennsylvania and the whole northeast United States," he said. "It opened up the sort of first chapter to that."

The need for that research is great, Schuler said. Drilling in Pennsylvania's Allegheny National Forest, which hosts thousands of wells, has [drawn concern for years](#). There are 15 wells currently producing gas in the Monongahela National Forest, which contains the Fernow research area. A 2006 [Forest Service report](#) said 75 percent of the total area of the forest may sit above a gas reservoir.

There have been other controversial leases in the Monongahela National Forest as well. Last year, the Bureau of Land Management [cancelled plans](#) to lease land for gas development after environmental groups said drilling would threaten endangered bats, as well as local fisheries and water supplies.

In much of the East, national forests were created from privately owned land, and in many cases the mineral rights remained private. The result is a legal gray area. The documents unearthed by PEER include a [legal memorandum](#) from an Interior Department solicitor saying that while the government cannot prevent a leaseholder from developing the gas, "the Forest Service may exercise its discretion in approving the location of structures on the surface to establish reasonable conditions and mitigation measures to protect federal surface resources, including endangered species."

PEER [brought attention](#) to this legal problem in 2009, saying the Forest Service was not prepared to handle mineral rights across 34 eastern states and, in the case of the Fernow gas well, avoided addressing the legal uncertainties.

"In the face of ambiguity, they just got out of the way," Jeff Ruch, PEER's executive director, told ProPublica. Ruch said the documents PEER found showed that Forest Service administrators had more authority than they were ready to acknowledge.

The Fernow well is a vertical well and did not require the high volumes of hydraulic fracturing fluids that are commonly injected into the horizontal wells drilled in the Marcellus Shale, which underlies much of West Virginia. The Fernow well was fracked, but with much less fluid.

According to the report, a [well blowout](#) accidentally sprayed that fracking fluid onto surrounding land and trees, browning leaves and killing ground cover. After drilling was complete, Berry Energy, which owns the well, also sprayed some 80,000 gallons of wastewater into the forest. The

brine liquid shocked about 150 trees into shedding their leaves. A year later, half of those trees still had no foliage. This disposal method, called land application, is legal in West Virginia with conventional wells, Schuler said, but is not allowed for wells drilled in the Marcellus Shale.

Schuler said the scientists were surprised that the trees lost their leaves. Drillers normally spray the waste over a larger area but the scientists asked Berry to contain the application, which meant spreading the salts and chemicals on a smaller piece of land. The soil in that area was left with high levels of chloride, calcium and sodium. Animals were attracted to the area, likely because of the high salt content of the soil.

David Berry, president of Berry Energy, said his company repaired the damage to the roads. He lamented the harm done by the waste disposal.

“We always used a good bit of real estate and never had that type of result or impact,” he said. “If I’d known, I would have demanded more area to do our land application.”

Berry said his company operates about 130 wells in West Virginia and holds another lease for some 6,700 acres elsewhere in the Monongahela National Forest.

The report’s authors said more research is necessary and that their findings should not be extrapolated to other wells in the region.

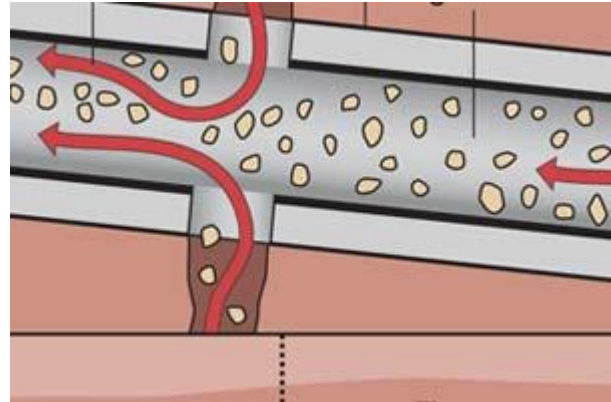
“There are pros and cons to the development of natural gas and there are environmental impacts as we document,” Schuler said. “It’s going to be developed and it would behoove us to do it in an environmentally sustainable way, and that’s what we’re trying to begin to understand.”

# EPA Wants to Look at Full Lifecycle of Fracking in New Study

By [Nicholas Kusnetz](#)

Feb. 9, 2011, 3:32 p.m.

The EPA has proposed examining every aspect of hydraulic fracturing, from water withdrawals to waste disposal, according to a draft plan the agency released Tuesday. If the study goes forward as planned, it would be the most comprehensive investigation of whether the drilling technique risks polluting drinking water near oil and gas wells across the nation.



The agency wants to look at the potential impacts on drinking water of each stage involved in hydraulic fracturing, where drillers mix water with chemicals and sand and inject the fluid into wells to release oil or natural gas. In addition to examining the actual injection, the study would look at withdrawals, the mixing of the chemicals, and wastewater management and disposal. The agency, under a mandate from Congress, will only look at the impact of these practices on drinking water.

The agency's [scientific advisory board](#) will review the draft plan on March 7-8 and will allow for public comments then. The EPA will consider any recommendations from the board and then begin the study promptly, it said in a [news release](#). A preliminary report should be ready by the end of next year, the release said, with a full report expected in 2014.

A statement from the oil and gas industry group Energy in Depth gave a lukewarm assessment of the draft.

“Our guys are and will continue to be supportive of a study approach that’s based on the science, true to its original intent and scope,” the statement read. “But at first blush, this document doesn’t appear to definitively say whether it’s an approach EPA will ultimately take.”

The study, [announced in March](#), comes amid rising public concern about the safety of fracking, as ProPublica [has been reporting](#) for years. While it remains unclear whether the actual fracturing process has contaminated drinking water, there have been [more than 1,000 reports](#) around the country of contamination related to drilling, as we reported in 2008. In September 2010, the EPA [warned residents of a Wyoming town](#) not to drink their well water and to use fans while showering to avoid the risk of explosion. Investigators found methane and other chemicals associated with drilling in the water, but they had not determined the cause of the contamination.

Drillers have been fracking wells for decades, but with the rise of horizontal drilling into unconventional formations like shale, they are injecting far more water and chemicals underground than ever before. The EPA proposal notes that 603 rigs were drilling horizontal wells in June 2010,

more than twice as many as were operating a year earlier. Horizontal wells can require millions of gallons of water per well, a much greater volume than in conventional wells.

One point of contention is the breadth of the study. Chris Tucker, a spokesman for Energy in Depth, said he understands the need to address any stage of the fracking that might affect drinking water, but he's skeptical that water withdrawals meet the criteria.

"The only way you can argue that issues related to water demand are relevant to that question is if you believe the fracturing process requires such a high volume of water that its very execution threatens the general availability of the potable sources," he wrote in an e-mail.

The EPA proposal estimates that fracking uses 70 to 140 billion gallons of water annually, or about the same amount used by one or two cities of 2.5 million people. In the Barnett Shale, in Texas, the agency estimates fracking for gas drilling consumes nearly 2 percent of all the water used in the area.

The EPA proposes using two or three "prospective" case studies to follow the course of drilling and fracking wells from beginning to end. It would also look at three to five places where drilling has reportedly contaminated water, including two potential sites in Pennsylvania's Marcellus Shale, and one site each in Texas, Colorado and North Dakota.

# John Hanger, PA's Former Environmental Chief, Talks About Challenges of Keeping Gas Drilling Safe

By [Nicholas Kusnetz](#)

Feb. 10, 2011, 10:13 a.m.

John Hanger, who led Pennsylvania's Department of Environmental Protection until January, recently talked with ProPublica about the challenges of [trying to regulate](#) the expanding drilling industry. Hanger joined the DEP in 2008, when gas drilling in the state's Marcellus Shale formation was ramping up. During his tenure, the department tightened drilling regulations by limiting the discharge of certain pollutants into rivers and streams, strengthening standards for new wells, banning development within 150 feet of certain waterways and requiring drillers to include water-use and waste-disposal plans with their well permit applications. Before he joined the department, Hanger was president and CEO of PennFuture, an environmental organization. He left the DEP when Tom Corbett took over as governor.

**When you joined the department in 2008, drilling in the Marcellus Shale was just starting to take off. What did you expect at the time?**

When I was asked by Governor Rendell to take the job, before I gave him an answer I asked him what did he want me to do. ... He rattled off five items, and the third one on the list was to protect the waters and produce the gas. ... Obviously we had a lot of work to do. The regulations needed a complete rewrite, there needed to be funds and revenues raised to pay for increased staff.

**I think there's a sense among some who have followed drilling in Pennsylvania that regulators have been playing catch-up to the industry.**

The industry is growing rapidly, and our goal was to grow with the industry. To some that may look like playing catch-up. To others it may look like exactly what I said it was, trying to pace growth with the industry. The one area of rules that I think were behind the times were the drilling standards. As I've said, I think those rules should have been updated a decade ago. ... Pennsylvania has had gas migration issues for a long time, and the [well] casing and cementing rules and other criteria were not where they needed to be. I moved to get those changed within months of coming through the door.

The water plan rule I think went into effect when it should have gone into effect. There were a couple cases where a drilling company had, I'm speaking metaphorically, put a big straw in a small glass, and it impacted two streams. Then we put in place the water plan requirement, and to our knowledge we haven't had a problem since.

We announced the waste disposal rule [which set limits for discharging certain pollutants found in drilling wastewater] in 2009. ... Unless this rule changed, the industry wouldn't recycle, they wouldn't look for deep well injection. ... I think basically that rule went into place as it should have. It changed as the industry ramped up.

**One of the recurring issues around the growth of gas drilling is that, even if laws are in place, they need to be enforced. Does Pennsylvania have enough inspectors to oversee the industry as it continues to grow?**

It does as of this moment, but I've been saying for two years that's a question that has to be asked and answered every year. As the industry grows, the answer I think will be no, if we stay with the current staffing. We hired in 2009. We hired in 2010. And if we were still in charge of the department, we would probably end up hiring again in 2011, depending on what's going on with the industry.

**Can that realistically be done?**

Of course it can be done. If needed, and I'm not prepared to say today that it's needed, the state or a governor needs to make this a top priority and then it can happen. That's what we did. We raised the fee. ... You could raise the fee, you could restructure the fee, you could tax the industry, how about that idea?

[Former Governor Ed Rendell and Hanger tried unsuccessfully to persuade the state legislature to levy a tax on natural gas extraction.] It's absolutely vital that this industry pay a reasonable drilling tax. That's why every other state has assessed a drilling tax. It's because there are actually winners and losers.

**Do you think gas drilling with high-volume hydraulic fracturing, as it's being practiced now in Pennsylvania, is safe?**

Yes, it's safe in this respect. Is the risk zero? No. But is it as safe as mining and producing and burning coal? It's actually much safer... Is it as safe or safer than drilling, producing and burning oil? It is actually much safer... None of our risks in energy production are zero.

**What could drilling companies do to make it safer?**

What is desperately needed is the creation of a culture of safety within the industry. And it's possible to do. I'm very proud of the fact that Pennsylvania, in 2010, had its first year without a mining fatality. ... In Pennsylvania there are coal companies that have a culture of safety and have created for the first time in the history of the state, no mining deaths. It's a phenomenal thing.

The government, federal and state, played an important role in creating incentives for the industry to develop that culture of safety. I have no doubt, if there was no regulation of coal mining in Pennsylvania, there would have been many more deaths, and the environmental damage would have been much greater. These industries can't self-regulate to that culture of safety.

**Does Pennsylvania have the laws it needs to make sure the drilling industry takes that path?**

I think there are a couple of areas where further work needs to be done, at a minimum. One is the bonding law [which requires that drillers post bonds to cover the cost of plugging and reclaiming wells that are no longer producing]. The bonding rate in Pennsylvania is scandalously low: It's ridiculous.



[Also], it would make good environmental and economic sense to have a spacing and pooling rule on the books. The details need to get worked out, but essentially, what it would do is say that wells cannot be closer than X. I've thrown out somewhere between one and two miles apart... And that gas can in fact be pooled as long as any gas used from an unwilling mineral owner is compensated for it at certainly the fair market value. [Because a single well can often drain gas from several properties, "pooling" laws sometimes allow drillers to extract that gas over the objection of some of the landowners.] Most other states have some provision like that.

### **Should the federal government regulate fracking?**

I laugh when people ask that question because, basically, if the BP oil spill showed anything, it's that you can't rely on the federal government to regulate the oil and gas industry. The Minerals Management Service was completely captured by the industry. There's no guarantee that doesn't happen at the state level either, but I think local people have much more ability to impact their governor. They pick their governor, they elect their state legislature. I think generally it's better to have these questions decided close to home. It's Pennsylvania's water, it's Pennsylvania's air, it's Pennsylvania's land.

### **Do you think the criticism of the way drilling has been handled in Pennsylvania has been fair?**

If you get to these jobs you better be ready for criticism. I think some of the criticism has been useful, and I think some of it is uninformed, and some of it deliberately uninformed. There are some folks who want to shut down the industry and are willing to say anything to accomplish that goal.

### **What was your greatest achievement at the department?**

There are a number of accomplishments I would highlight. One is building 1,200 megawatts of new renewable energy from 2003 to 2011. ... The state has done extraordinarily well in developing green jobs. There's a lot of talk of jobs in the Marcellus, and that talk is true. The Marcellus has created direct jobs and more through the additional revenue that then creates indirect jobs. But the state has also developed, according to the most recent survey of the Pennsylvania Department of Labor and Industry, 41,000 renewable energy jobs.

The other thing I would point to is that hazardous air pollutants have been cut by 40 percent in Pennsylvania since 2003, with most of that improvement occurring since 2007.

### **Anything you would have done differently?**

If I were king, I would have left office with the bonding amounts raised and with the maximum fines raised [for rule violations]. Both are important pieces of business not taken care of. I think the regulation of air emissions from natural gas production facilities is a matter that is not fully resolved. I think that's a significant issue that needs to be resolved.

### **What are some of the challenges you foresee for your successor?**

There's a daily challenge, which is most important, which is to make sure that the process of regulation remains independent and professional and the laws are being enforced. There's the continuing need to review regulations to make sure they're adequate to the task.

**With your experience working in a state that saw tremendous growth in shale gas drilling over just a few years, do you have any advice for regulators in other states who are in a similar situation?**

First, you've got to have adequate staff. I find it remarkable that Pennsylvania is really the only state that's hired significant numbers of people—maybe the only state that's hired new staff—to oversee the industry. Colorado is a much bigger state geographically, with a much bigger area to cover, and it's got a third of the regulatory staff. I mean, that's impossible.

The second thing I think you need is the will, the will to enforce. If you're not willing to really enforce the rules and the regulations it doesn't matter how many people you have on the regulatory staff.

Without that, nothing else matters. If you've got leadership in the governor's chair, or in the presidency, or in the secretary's office saying "don't really regulate, treat the industry as a partner, treat the industry as a client," then it doesn't matter how many regulators you have, it doesn't matter what the words on the page say.

**Are you concerned that any of what you've accomplished might be rolled back or undone by the new administration?**

We're going to have to wait and see what folks do. I'm open-minded about what's going to occur here. I think the public, however, wants this done the right way. The public, I think, by and large wants the gas produced and the environment protected.

I think most Pennsylvanians also understand that our energy choices are not perfect, that today if we are not using more natural gas, we are going to be using more coal and oil, both of which cause many more environmental problems during the production of those fuels and during the combustion of those fuels than natural gas does.

**What's next for you?**

I've formed a consulting company, and I'm going to be doing some work there. I'll probably affiliate with a law firm as well. I'm in the process of working that out. My affiliation with the law firm will be to develop a clean energy practice. I'm very interested in pursuing the development of renewable energy and energy efficiency. There's a huge growing need for those projects, the public is strongly supportive, and I want to play a role in pushing forward clean energy projects.

# Hydrofracked? One Man's Mystery Leads to a Backlash Against Natural Gas Drilling

by [Abrahm Lustgarten](#)

ProPublica, Feb. 25, 2011, 7 a.m.

*This story was published as part of Amazon's Kindle Singles program, and is [available for reading](#) on that device. ProPublica's first Kindle Single, "Pakistan and the Mumbai Attacks: The Untold Story," is also [available](#).*



*Louis Meeks' well water contains methane gas, hydrocarbons, lead and copper, according to the EPA's test results. When he drilled a new water well, it also showed contaminants. The drilling company EnCana is supplying Meeks with drinking water. (Abrahm Lustgarten/ProPublica)*

There are few things a family needs to survive more than fresh drinking water. And Louis Meeks, a burly, jowled Vietnam War hero who had long ago planted his roots on these sparse eastern Wyoming grasslands, was drilling a new well in search of it.

The drill bit spun, whining against the alluvial mud and rock that folds beneath the Wind River Range foothills. It ploughed to 160 feet, but the water that spurted to the surface smelled foul, like a parking lot puddle drenched in motor oil. It was no better — yet — than the water Meeks needed to replace.

Meeks used to have abundant water on his small alfalfa ranch, a 40-acre plot speckled with apple and plum trees northeast of the Wind River Mountains and about five miles outside the town of Pavillion. For 35 years he drew it clear and sweet from a well just steps from the front door of the plain, eight-room ranch house that he owns with his wife, Donna. Neighbors would stop off the rural dirt road on their way to or from work in the gas fields to fill plastic jugs; the water was better than at their own homes.

But in the spring of 2005, Meeks' water had turned fetid. His tap ran cloudy, and the water shimmered with rainbow swirls across a filmy top. The scent was sharp, like gasoline. And after 20 minutes — scarcely longer than you'd need to fill a bathtub — the pipes shuttered and popped and ran dry.

Meeks suspected that environmental factors were to blame. He focused on the fact that Pavillion, home of a single four-way stop sign and 174 people, lies smack in the middle of Wyoming's gas patch. Since the mid 1990's, more than 1,000 gas wells had been drilled in the region — some 200 of them right around Pavillion — thousands of feet through layers of drinking water and into rock that yields tiny rivulets of trapped gas. The drilling has left abandoned toxic waste pits scattered across the landscape. It has also disturbed the earth itself. One step in the drilling cracks and explodes the earth in a physical assault that breaks up the crust and shakes the gas loose. In that process, called hydraulic fracturing, a brew of chemicals is injected deep into the earth to lubricate the fracturing and work its way into the rock. How far it goes and where it ends up, no one really knows. Meeks wondered if that wasn't what ruined his well.

Meeks couldn't have foreseen it when he began raising questions about his water, but hydraulic fracturing was about to revolutionize the global energy industry and herald one of the biggest expansions in U.S. energy exploration in a century. Although the basic technique was developed decades ago, technological advances had made it possible to frack deeply buried rock formations long thought to be inaccessible. That meant a vast stockpile of domestic energy was suddenly available to help loosen the grip of foreign oil on the U.S. economy. It also meant that gas — which burns cleaner than coal — would become a pillar of the government's campaign to address climate change.

As a result, drilling was about to happen in states not typically known for oil and gas exploration, including Michigan, New York and even Maryland. It would go from rural, sparsely populated outposts like Pavillion to urban areas outside Dallas, Denver and Pittsburgh. Along the way, a string of calamitous accidents and suspicious environmental problems would eventually make hydraulic fracturing so controversial that it would monopolize congressional hearings, draw hundreds in protests and inspire an Academy-Award-nominated documentary produced for Hollywood.

Louis Meeks, unintentionally, would be a part of that fight from the very beginning. His personal fight began with something simple: the energy industry's insistence that fracturing couldn't contaminate water.

If the earth were an apple, the argument goes, Meeks' drinking water was drawn from the thin skin, while the gas drilling happened far deeper, close to the seeded core. The environment is also protected by the meticulous construction of the gas well itself, with layers of cement poured around redundant layers of steel to contain whatever happens inside the pipe and shield the fresh water around it from contamination.

“You’ve got about a mile of rock between the areas you are fracturing and the drinking water,” says Doug Hock, a spokesperson for the U.S. Division of EnCana, which owns several hundred gas wells around Pavillion. With its Canadian division, EnCana is the fifth largest oil company in North America.

Still, the circumstances near Meeks’ property in Pavillion all pointed to drilling.

Three months before his water went bad, EnCana had laid pipe down into a gas well about 500 feet from Meeks’ front door. The well, called Tribal Pavillion 24-2, had “circulation” problems during its construction — meaning that the cement may not have filled all the space between the well and the earth, and that its walls had to be strengthened. EnCana says the problems were minor and had nothing to do with the deterioration of Meeks’ water. “There is no evidence to suggest the well bore integrity was in any way or at any time compromised,” Hock said. But over time Meeks’ water had become undrinkable. His neighbors stopped filling up their bottles with it. Soon they were afraid to touch it.

Meeks started calling state environmental officials, but he got little help. They said his water met national standards, so it was still safe to drink. The taste, they said, was probably from rare iron bacteria that can’t easily be removed.

EnCana vehemently denied responsibility. The company’s engineers explained to Meeks that the layer of natural gas EnCana was mining was some 3,200 feet — more than half a mile — below the bottom of Meeks’ water well. It would be like a drop of poison seeping its way through the granite massif of El Capitan for drilling fluids to wind up in his water. “Activity in the natural gas well did not contaminate the surrounding soil or groundwater,” Hock stated.

In the spring of 2005, however, EnCana began bringing Meeks a tanker full of fresh water each month as a “good neighbor” gesture. A 5,000-gallon cistern full of fresh water was connected via a long black plastic pipe to the plumbing in his home and refilled every month. But EnCana made it clear that the tank was temporary, and Meeks decided he had to drill a new hole from scratch. This one, he decided, would need to be deeper than his old well and a football field’s length further from the gas wells. He paid a contractor \$13,000 to drill it, taking the money from his retirement savings. He felt he had no choice. He’d settled on the land intending to spend the rest of his life there.

“It’s a nice little place,” Meeks said. “We raise our own lamb, raise our own beef, eggs, we put a garden in. It’s pretty hard to just start over.”

Meeks was born in Riverton, a ranching and drilling town 26 miles from Pavillion, in 1950. In the spring of 1969, he was stationed with the 34th Engineer Battalion in Vietnam when his base was attacked in the middle of the night. Rockets rained down on the barracks, and a piece of shrapnel sliced through his buttocks and into his gut. He received medals for his service, including the Purple Heart, but he also spent the next two years in hospitals — in Tokyo and then Germany and finally at Fitzsimmons Veterans facility in Denver, where a colostomy reconstructed his intestinal tract. After the Army he came home to Wyoming, where he found day work tying wool for a sheep shearing crew, and then on the drill rigs. He was part of a cementing crew and a workover crew — the team that goes back to an old well and re-stimulates it to get it to produce more oil or gas. But when he complained of stomach pain his VA doctor said he shouldn’t lift more than 25 pounds. “In the oil field you’ve got to lift more than that,” he says, “so they got rid of me.”

Before Meeks retired he learned a thing or two about drilling. He knew that cementing a well was crucial to holding in the gas and contaminants and that sometimes — more often than people liked to say — it failed. After all, there was no way to know for sure that every little crevice and cavern in the earth surrounding a well bore had been completely sealed. The best measure of the strength of that barrier was the circulation process, which works on the assumption that when excess cement comes back up the sides after being pumped down the middle, it has filled everything in between. And that was the very process that EnCana had trouble with on 24-2.

So, there Meeks was on Dec. 19, 2005, watching his contractor drilling deeper, puncturing one layer after another of clay, shale and sandstone bedrock interspersed with overlapping aquifers that trapped fresh water beneath the ground like a giant natural filter. The drill bit hit 340 feet, but the water was still bad. At 440 feet, it wasn't any better. Geologists say that 30 rock formations containing fresh water may lie beneath Pavillion — layers that supply drinking, irrigation and cattle water for almost all the rural residents in that part of the state. How many of those layers were no longer clean?

At 540 feet the new well still wasn't drawing water suitable for the cattle trough, and Meeks' contractor, Louis Dickinson, shut down the engines and brought the drill bit to a rest. But before Dickinson could finish the job, a distant rumbling began echoing from below. It grew steadily louder, like some paranormal force winding its way through the earth. "Then, holy mackerel," says Meeks, "it just came on us."

An explosion of white foam and water, chased by a powerful stream of natural gas, shot out of the ground where Meeks had drilled his well. It sprayed 200 feet through the air, nearly blowing the 70-foot-tall drilling derrick off its foundation, crystallizing in the frigid winter air and precipitating into a giant tower of ice.

## **A Suspicious Correlation**

The blowout, roaring like a jet engine, continued for 72 hours, until a judge ordered EnCana engineers to use their equipment to control it. In that time, according to one estimate a gasfield worker gave Meeks, 6 million cubic feet of natural gas shot out of his 540-foot-deep water well, more than many gas wells in that part of Wyoming produced in an entire month.

Meeks suspected the 24-2 well was to blame, so he hired an environmental engineer to examine the gas production records of surrounding wells. The engineer found a curious correlation — but it was with well 14-2, which was 1,000 feet away from 24-2 and had been drilled in 1980, more than 23 years before EnCana bought the operations in that area. On the week Meeks' water well was being drilled, gas production in 14-2 fell off by about 25 percent. But on the day Meeks' rogue water well was plugged, gas production at 14-2 more than tripled.

Meeks is no scientist. He has an eighth-grade education. But based on circumstantial evidence — the proximity of the gas wells to his water and the timing of when his water turned bad — he was convinced that the energy industry was to blame. EnCana's Hock said that the company was working on 24-2 to optimize its gas flow, but that no one had done much at all on 14-2 since it was drilled. He called the apparent correlation "merely coincidental." The sharp variation in the 14-2 well, Hock said, was part of the normal variation of the well's production over time.

Hock hypothesized that Meeks struck a natural pocket of gas with his water well. Hock also said that Meeks' well was illegal, because he had a permit to drill it only to 300 feet. But Dickinson, who drilled the water well for Meeks — and has also drilled a water well for EnCana — said that while the allegation is technically accurate, permit depth is considered more of a guideline and is not normally enforced. “It is your best guess,” confirmed Lisa Lindemann, administrator of the groundwater division that issues permits for the Wyoming state engineer’s office. Lindemann said the state would have allowed Meeks to drill deeper than his permit and had no reason for concern.

Convinced he now had tangible evidence tying EnCana’s wells to his water problems, Meeks set out to build a case and get the company to help him. He wanted clean water restored to his property or enough money to buy another ranch. He hired and fired lawyers and sent missives to the press. He spent almost all of his savings — more than \$100,000 — and armed himself with data culled from thousands of hours of painstaking technical research. In his living room, where two buffalo hides cover couches that sit beneath the mounted bust of a large bull, file boxes full of well records and scientific reports gradually rose in a teetering tower against the wall.

Meeks began developing a theory. The contamination could have come from leaky old waste pits or from a crack in a well pipe. But the more he learned, the more he suspected it had something to do with hydraulic fracturing.

Thousands of pounds of pressure from fracking, he believed, could exploit tiny cracks or flaws in a well’s cement casing. What else could possibly force contaminants through long distances underground, through layers of solid rock? The 14-2 gas well drew gas from more than 1,200 feet lower than his water well. Given the apparent correlation in the gas production and the distance between the wells, he thought something had to be connecting them underground. Since fracturing is designed to crack open the rock, and since no one knows for sure how far those cracks go, such a connection seemed logical.

“If this well is producing at 1,700 feet and that gas is coming up to 500 feet, there is a void in there or something that’s making it come all that way,” he says. “How else would it come up? Fracking is a problem out here because they don’t know where it’s going.”

Dickinson, who drilled the well, said he had never experienced anything like it. “I’ve had a few blow outs,” he said. “It was definitely coming from that lower formation.”

When Meeks began his research in the mid-2000s, there was little factual basis for his suspicions. Outside the industry, not much was known about fracking. All he had was his own logical, but subjective, interpretation of the curious set of circumstances before him.

In fracturing, between 200,000 and 6 million gallons of water are mixed with a cocktail of solvents, surfactants and acids that make up about 1 percent by volume and are pumped into the well under enough pressure to bore a hole in a sidewalk. The fluids are mixed with sand, so they can lodge deep in the cracked earth, prop open the fissures they create and keep the gas and fluids flowing freely.

Exactly how far these man-made cracks reach, or whether they can connect with other faults and fissures to create a pathway toward the surface, is unclear. That 1,000 feet of solid rock and layers



of steel pipe should be an effective barrier between the gas well and his water well sounded plausible enough to Meeks, but then someone needed to explain to him how his blowout happened.

EnCana's Hock said the company never injected enough fluid into the 24-2 well or any other well in the area to make its way all the way back to the surface. Hock insisted the industry had proved such a connection was impossible.

But Meeks couldn't find a single independent or peer-reviewed study of fracturing's effects on water resources; the reports he found were mostly drafted by or paid for by the oil and gas industry. The Environmental Protection Agency had said fracturing was safe, but it had based its conclusion in part on a review of many of the same industry materials Meeks had studied. The EPA never tested water wells itself. And scientists say that sort of testing — both before and after drilling takes place — is essential to a sound scientific analysis of the impacts of drilling.

“The critical thing that has to be done is a systematic sampling of the background prior to drilling activity, during and after drilling activity,” said Geoffrey Thyne, a geologist and former professor at the Colorado School of Mines and an environmental-engineering consultant with expertise in drilling and fracturing. “Ideally we would go out, we would put monitoring wells in and surround an area that was going to be fractured as part of normal operations.”

The budget for that kind of project would run to a ballpark of \$10 million, which Thyne said would be a relatively small project for the U.S. Geological Survey or the EPA to undertake. But such a study had never been done.

The thing that kept bugging Meeks — a nagging lesson from his own days on the rigs — had to do with the cement and casing. To protect shallow water aquifers, the regulations say that oil and gas wells have to be encased in concrete far deeper than residents usually drill for water. But some of the records Meeks gathered showed that many of the wells had never been cemented that far. And he couldn't get any of the regulators he talked to to do anything about it.

“I was doing anything I could to get help,” says Meeks. “I'd try to tell them there was a problem here but nobody would listen to me.”

For one, nobody could agree that anything was actually wrong with his water. There was little debate that it looked brown, smelled like fuel and tasted awful. But by the standard commonly used to decide if water is safe to drink — the sort of test a homebuyer would require before signing a mortgage — Meeks' water was fine. It didn't contain heavy metals or arsenic or any of the handful of obvious contaminants that drinking-water specialists look for. But the tests didn't look for the vast array of obscure compounds that can come from industrial processes like drilling, many of which are unknown, even to the scientific community.

EnCana also took samples of Meeks' water, had them tested, and said that it found nothing.

Wyoming state officials, including Mark Thiesse, then the West District groundwater supervisor for the Department of Environmental Quality, told him they didn't have the inspectors or money to conduct a scientific analysis. “I don't know how many times Thiesse told me ‘we don't have a smoking gun and we don't have any money, so what do you want us to do?’” Meeks said.

Thiesse, who has since moved to a different part of the DEQ, said he tested Meeks' well five times. "We have not found hydrocarbons. We have not found fracking chemicals. We have found nothing out of the ordinary. So it's pretty circumstantial."

Each agency Meeks contacted — including the Bureau of Indian Affairs, which is partially responsible for regulating drilling on the Wind River Reservation lands — treated him as if his story were the first time they had heard the suggestion that drilling fluids could wind up in drinking water.

By this time, Meeks' neighbors, loyal to an oil and gas industry that pumps billions of dollars into Wyoming's economy and is a significant employer, thought he was a hothead threatening to dismantle their livelihoods more than a victim defending the region's water. As many people saw it, there was nothing to win by complaining. At best, Meeks would be proved right, and the natural landscape around Pavillion would forever carry a stigma. At worst, he would discredit the industry, hurt their business and put everyone's jobs at risk.

One afternoon Meeks was down by the road, tearing out a section of fence. "There's a preacher works a mile down. He stopped and said, 'You are the worst neighbor I could ever have,' " Meeks said. " 'Every time I see you you've got a jar of water in your hand or you are in the newspaper. What if one of these days I want to sell my land? You're making it so I can't.' "

Nearly two years after his water first turned bad, Meeks found himself alone, an aging near-bankrupt war vet facing off against one of the more powerful corporations on the continent.

## **The Feds Grow Alarmed**

As Meeks continued his quest, hydraulic fracturing was transforming the energy industry and unfurling a wave of drilling that rippled quickly across the country. The fracturing technology that was first used commercially by Halliburton in 1949 had been reworked until a sweet spot combination of chemicals and pressure was derived that made it possible to reach gas far deeper in the earth than energy companies had previously been able to.

In 1995 hydraulic fracturing was used in only a small fraction of gas wells, and the nation's gas reserves were around 165 trillion cubic feet. The United States was so desperate for energy that energy companies were scrambling to secure foreign oil and building \$300-million ports to import liquefied natural gas from Russia, Qatar and elsewhere.

By late 2008, however, fracturing was being used in nine out of 10 of the roughly 33,000 wells drilled in the United States each year, and estimates of the nation's gas reserves had jumped by two thirds. Drilling was taking place in 31 states, and geologists claimed the United States contained enough natural gas to supply the country for a century. Russia's president (and former chairman of its state gas company, Gazprom), Dmitri Medvedev, said he would curtail his own nation's gas drilling efforts because he thought the United States might have so much gas that it wouldn't buy more from Russia.

"Hydraulic fracturing is one of the U.S. oil and gas industry's crowning achievements," said Lee Fuller, vice president of government affairs for the Independent Petroleum Association of America

and an influential lobbyist who helped shape federal policy on fracturing. Fracturing, Fuller said, takes place “with surgical precision and unrivaled environmental safety records.”

As the gas rush spread from central Wyoming, Montana and New Mexico to Colorado, Texas, Arkansas and Pennsylvania, the wells got closer and closer to peoples’ homes — not just in rural towns like Pavillion, but in downtown Ft. Worth and within 150 miles of Manhattan. Forests were checkered with five-acre pads cleared for wells and compressor stations. Tens of thousands of trucks delivered water and removed hazardous waste. In Pennsylvania at least one well was being drilled on an elementary school grounds. In Texas and New Mexico, gas rights were leased beneath city parks. Some states mandated that the typical 15-story, 1,200-horsepower drilling rigs be set up at least 150 feet from homes — not out of any environmental concern, but because that was the distance that would keep the house safe if the rig toppled over.

Erik Schlenker-Goodrich, director of the climate and energy program at Western Environmental Law Center, describes it as “a landscape-scale industrial process.” Think of it, he said, as “a gigantic factory, spread across thousands, if not hundreds of thousands of acres, just without a roof.”

As more wells were drilled, however, more reports began to emerge from people who had similar experiences to that of Louis Meeks.

In Clark, a small northern Wyoming town, benzene was detected in an aquifer after a well blowout. In central Colorado, near the town of Silt, a water well exploded, sending its cap shooting off into the sky. A few miles away, methane gas was found bubbling up out of a placid eddy in a tributary to the Colorado River; then high levels of benzene were detected. It was difficult to say what led to each of these accidents — the latter two of which were also connected to EnCana wells — but drilling and the close proximity of hydraulic fracturing operations was a common thread.

Even in Pavillion, it turned out, Meeks wasn’t the only one with problems. Central Wyoming is a private place, where pride stifles complaints and the miles of space between homes are emblematic of the privacy between people. So, it wasn’t until Meeks’ wife, Donna, a bookkeeper at the Fremont County School District, was chatting with co-worker Rhonda Locker that she learned that the Lockers had also lost their clean water. Rhonda was battling illnesses that she and her husband suspected were caused by contamination. The gas drilling company Tom Brown had paid to have a water-filtration system installed in the Lockers’ house years ago, before Tom Brown was bought by EnCana.

Although the Lockers lived just a short way down the road from the Meeks, the two families had never spoken about their problems. “We weren’t real open about our concerns,” Jeff Locker said. “It’s kind of like talking about your medical conditions.”

Even as a pattern began to emerge, state and federal environment regulators viewed these cases as extraordinary exceptions. If they were addressed at all, they were taken on as isolated problems, not symptoms of a larger threat. Regulators in different states rarely compared notes, and anecdotal stories were confined to local press reports and never thoroughly investigated. The dots were not connected.

Not, that is, until a problem began to emerge 90 miles west of Louis Meeks' home, in Sublette County, Wyoming, a wind-raked, sparsely populated valley with a deeply buried dome of gas-rich sandstone known as the Pinedale Anticline. In 1999 there had been fewer than 35 producing wells in the Pinedale drilling field, which had hitherto seen little activity aside from ranchers running cattle and the nearby crossing of the Oregon Trail. By 2008, there were more than 1,100, and EnCana, Shell, BP and other companies were lining up to participate in the drilling of 4,400 more Sublette County wells on the ocean of sagebrush.

Much of the land in Sublette County is owned by the federal government, which meant that the Environmental Protection Agency — not just state regulators — was charged with conducting an environmental review before drilling is allowed. As part of that review, in 2007 EPA hydrologists sampled a pristine drinking water aquifer that underlay the region. What they found was a show-stopper: frighteningly high levels of benzene, a known carcinogen, in 88 separate samples stretching across 28 miles.

“It was like, holy shit, this is huge,” said Greg Oberley, a groundwater specialist at the EPA's Region 8 headquarters in Denver. “You've got benzene in a usable aquifer and nobody is able to verbalize well, using factual information, how the benzene got there. Nobody understood what caused this.”

One thing was clear: There was little industrial activity in the Pinedale area other than drilling, and few other potential causes for the pollution.

In the past, water contamination in drilling fields had been blamed on outdated practices — the messy mistakes of the 1950s. But drilling in Pinedale was relatively new. In this modern field, any contamination linked to drilling also had to be linked to contemporary practices.

For perhaps the first time, federal officials charged with watching over the nation's drinking water in the oil and gas fields were alarmed. “I had to change my paradigm on how the industry was operating,” Oberley said. “That's kind of where I said, ‘This needs a better look.’ “

Oberley was among a small group of EPA scientists — mostly based out of the Denver offices — who wanted to begin fresh research into what was causing water pollution near drilling fields. The biggest question, of course, was whether drilling posed a significant threat to water resources.

The stakes were potentially high. Policy makers — and even prominent environmental groups like the Sierra Club — were championing natural gas as a viable new energy supply, because it burns 50 percent cleaner than coal at the power plant and because it offers the opportunity to make headway against climate change.

If the EPA's scientists concluded that modern drilling did indeed endanger water on a large scale, and the rate of drilling in the United States continued to skyrocket in regions that relied heavily on aquifers and were concerned about water shortages, then research from Wyoming could have broad implications. Much of the Dust Belt, from the Dakotas down to Texas, relies on groundwater aquifers for water, as do many other rural areas across the United States. Fifteen percent of Americans rely on private wells — the kind Louis Meeks drilled in his yard — for their water. Not that the enormous underground reservoirs were likely to become polluted all at once — they contain way too much water — but the sheer size of the population dependent on groundwater illustrated

the risks. These resources are not routinely tested for pollutants from drilling or any other industry, and there are no federal regulations to ensure that they remain safe to drink.

Contaminants could also affect surface water supplies.

The Colorado River, which supplies drinking water to one in 12 Americans, is fed from the drainage that runs through the Pinedale Anticline and is vulnerable to pollution from gas development not just in Wyoming, but throughout the most intensive drilling regions in western Colorado and Utah.

As drilling activity moved east, to cramped and populated areas, the water resources that could potentially be at risk grew even larger. Between Pennsylvania's Delaware and Susquehanna River basins and the Catskill watershed in New York — an area that lies in the heart of the eagerly sought Marcellus Shale gas deposits — drinking water is supplied to New York City, Philadelphia, Baltimore and Trenton, NJ, another 5 percent of the U.S. population. Add those segments together, and a significant percentage of the U.S. water supply — not to mention at least 15 percent of the country's agriculture — could potentially be affected if it turns out that drilling for natural gas leads to significant pollution over a long period of time.

“Are the problems we're seeing an anomaly? Or is the current regime with new fields and new practices compromising ground water quality on a wide-spread, wide scale basis?” asked one senior EPA staff person, who declined to be named because the issue is so politically charged. “That's a question that we really don't have answers to. We have anecdotal reports. The weight of evidence, it's adding up.”

To chisel into these issues, Oberley knew the studies he wanted to do would have to be done deliberately, objectively and would take a long time. After all, the EPA's de facto policy had been to allow most of the new drilling that was taking place.

“For EPA to walk into industry's offices and say, ‘You need to change this,’ we have to have some pretty good data to back that up,” Oberley said. “Because they're not going to respond to innuendo or insinuation that there's a problem.”

## **Obstacles to Research**

It wasn't at all clear that the EPA had the budget, the political fortitude or the impetus to pursue the thorough study that Oberley and other scientists thought was needed.

The agency had looked, briefly, at hydraulic fracturing before. In 2004 it published a report examining how it affected water supplies in a type of geologic formation, called coalbed methane, which is different from the rocks being drilled in most of the nation's new gas fields. The report detailed numerous concerns about the potential for dangerous fluids to migrate underground. But then, in an abrupt turn, it concluded that hydraulic fracturing “poses little or no threat” and “does not justify additional study.” The one exception, it found, was when diesel fuel was used in fracturing fluids. But the industry insisted that it was discontinuing that practice.

The EPA's findings were criticized in some scientific circles at the time, and by an EPA whistleblower, Wes Wilson, for bending to Bush administration dictates and ignoring scientific methods for analyzing contamination complaints.

Wilson, a recently retired environmental engineer who spent 36 years overseeing oil and gas industry impacts in the Rocky Mountain Region for the EPA, called it "a bogus study" because it relied on a peer committee with industry ties, excluded the agency's own best experts and failed to follow its own protocol.

The study included complaints from a handful of people with water problems, but the EPA never tested their water or investigated their cases, instead trusting answers it received from a series of questions sent to state regulators. The final version of the study was reviewed by a peer board that included former oil and gas industry employees from BP, Halliburton and other energy companies. Documents ProPublica obtained through the Freedom of Information Act show that the agency even negotiated a side agreement with Halliburton, exchanging a promise of leniency toward oilfield service companies for a gentleman's agreement to stop using diesel fuel in fracturing.

Oil-state politicians had been trying for years to win an exemption for hydraulic fracturing from the Safe Drinking Water Act, the 1974 law that regulates the injection of waste and chemicals underground, and the EPA's 2004 report was used to justify that effort. The next year, President George W. Bush's landmark energy legislation, the 2005 Energy Policy Act, included a provision that specifically prohibited the EPA from regulating fracturing under the Safe Drinking Water Act. Regulation would now fall to each individual state, many of which had underfunded departments, looser standards and more limited manpower than the federal government.

There was at least subtle pressure on the EPA scientists to go along with what the administration wanted, according to the EPA's assistant administrator for water at the time.

"The administration did not want us to take a formal position of opposition to the exemption," says Ben Grumbles, the EPA's former assistant administrator for water, who is now president of the Clean Water America alliance. "I know EPA was stating concerns about the overly broad language [in the study]. We never construed it as a clean bill of health."

The energy industry began parading the EPA's 2004 report around like a hard-won trophy, as proof that water contamination couldn't be linked to the drilling process. "It shows there is no need for concern," said Doug Hock, the EnCana spokesman. Case closed: Fracturing was safe, and the "Halliburton Loophole," as the exemption came to be called, effectively tied the hands of anyone in the EPA with an inclination to consider what fracturing might be doing to the environment in the gas patch.

"That door was nailed shut," says Oberley. "We absolutely do not look at fracking as an injection activity under the Safe Drinking Water Act. It's not done."

Other obstacles also blocked the EPA from starting new research. The chemicals used in fracking — the names of the compounds that scientists would have to look for if they were to test water for contamination — are kept secret. Industry claims the information is proprietary, akin to Coke keeping its recipes secret from Pepsi. It discloses trade names — like ZetaFlow — of the various concoctions of chemicals the drillers used, along with a statement of health risk meant for worker

safety, called a Material Safety Data Sheet. But the exact chemicals and proportions that go into ZetaFlow, for example, remain a mystery.

“These operations are ones the companies have spent millions of dollars developing. From their perspective it is the mechanism by which they have a competitive advantage over other people in their industry,” says Lee Fuller. “I would fully expect that they would try to protect that right as long as they possibly can.”

But that protection left the scientists to do a lot of guesswork. “We don’t really know what those things that we should be looking for are,” says Oberley. “That’s been kind of an issue all along. ... The service companies haven’t been fully disclosing to EPA what those constituents are.”

When Louis Meeks learned that the chemicals used in hydraulic fracturing were kept secret he was dumbfounded. Why was everyone so confident that drilling hadn’t ruined his water if no one really knew what contaminants came from the drilling in the first place? Trying to find the truth was like shooting at a target, blindfolded, in the middle of the night.

Yet that’s what Meeks tried to do. In October 2007 he hired a private engineering firm to take samples of his water. The glass vials were shipped to a lab in Virginia — “The local labs never find anything,” Meeks says — and analyzed for an array of pollutants. The tests cost Meeks \$4,400, but the results gave him a boost. In addition to abnormal levels of chloride, iron and total dissolved solids, the lab found glycols, a chemical often used to keep fluids flowing in cold conditions. “Glycols are commonly used in antifreeze,” testing hydrogeologist Bill Newcomb wrote in the lab report, “and with regard to natural gas production, in dehydration processes.”

For the first time in three years Louis Meeks could fall asleep without wondering if he was crazy. It was a start.

## **A Crack in the Conventional Wisdom**

Still, the energy industry’s certainty about the safety of hydraulic fracturing seemed to many people unassailable. The process had been used reliably for more than 60 years, industry spokespeople said, during which time few complaints had been raised relative to the nearly 1 million frack jobs that had been done in the United States. Oil and gas companies employ some of the brightest geological scientists, and the papers that emerged — either directly from industry sources or from government agencies that contracted industry consultants to write them — shaped the opinions of regulators and policymakers who read them.

“35,000 wells are hydraulically fractured annually in this country with close to one million wells having been hydraulically fractured in the United States since the technique’s inception with no documented harm to groundwater,” wrote the Interstate Oil and Gas Compact Commission in a white paper it submitted to Congress.

“The technology has proven to be a safe and effective stimulation technique,” said a report contracted by the U.S. Department of Energy, titled “Modern Shale Gas Development in the U.S.: A Primer.”



The fact that over the years fracturing technology evolved to use more chemicals and vastly larger quantities of water, and go thousands of feet further into the ground, was usually left out of the conversation.

Faced with so much official momentum against him, Meeks felt he had reached a dead end. He and EnCana reached a settlement through arbitration. EnCana paid him money — he says he can't discuss the amount — and promised to clean up his water. Hock said EnCana had already spent more than \$170,000 trying to solve Meeks' water challenge.

Meeks' frustration was apparent to his family. By the end of 2007 his son, Louis Jr., decided to see what he could do to get his father some support. "They just felt like they were up in a corner and that they couldn't do anything," says Meeks Jr., who grew up on the Pavillion ranch and now manages a call center in the Philippines. "I wanted to find an advocate for my parents, somebody that could give advice."

Meeks Jr. called a northern-Wyoming-based environmental group, the Powder River Basin Resource Counsel, which was fighting coal- and gas-related issues. Through them, his father was introduced to Deb Thomas, an organizer of an offshoot group that had been battling extensive aquifer contamination from drilling in northern Wyoming.

Thomas came to Pavillion and met with Meeks. "When I got down there and saw what was going on, it was the same story," she says. "So I knew it was going to be really hard to get the state to act on their issues just like it had been on ours. You aren't heard, because the state's main priority is the money that they get from the oil and gas development."

Thomas helped coordinate the Lockers, the Meeks, and others for the first time, and the little group began digging deeper into reports of fracturing-related problems in Colorado and elsewhere. Fueled in large part by their persistence, an avalanche of questions — from environmental groups across the country — began to rain down on regulators and drillers. And people began spotting cracks in the conventional wisdom put forth by the energy industry that said that hydraulic fracturing was safe.

For example, despite the industry's explanation that thick bedrock safely separates the fracturing target from water sources, evidence began to emerge suggesting that contaminants from gas wells were somehow making their way into groundwater. Perhaps the tiny fissures that radiate through the bedrock from hydraulic fracturing really were, as Meeks had suspected, allowing the chemical solution to escape into groundwater aquifers. Or maybe contaminants could travel through pre-existing natural cracks, or through a connection of underground passageways, or by the pathway carved by the well itself.

In Colorado, methane showed up frequently in water wells, and researchers thought it might be originating from the same gas reservoirs being drilled deep underground. In Ohio, gas seepage from a natural gas well blew up a house. In Pennsylvania, a vast underground gas injection cave, where gas is put for long-term storage, had somehow leaked into water supplies over 50 square miles. But these incidents were never linked, in part because the state agencies handling them remain separate and uncoordinated.

Dennis Coleman, a leading international geologist and expert on tracking underground migration, says more data must be collected before anyone can say for sure that drilling contaminants have made their way to water or that fracturing is to blame. But Coleman also says there's no reason to think it can't happen. Coleman's Illinois-based company, Isotech Laboratories, has both the government and the oil and gas industry as clients. He says he has seen methane gas seep underground for more than seven miles from its source. If the methane can seep, the theory goes, so can the fluids.

"There is no such thing as impossible," Coleman says. "Like everything else in life it comes down to the probability."

So, is seepage what made Meeks' water well explode with gas?

"This is a field where there is almost no research," said Geoffrey Thyne, the geologist and former professor at the Colorado School of Mines and an environmental engineering consultant. Thyne has found methane and drilling wastewater in dozens of water samples, including from domestic wells, in Colorado and thinks it could have traveled through underground fractures. "It is very much an emerging problem."

Meeks says that when he was working on well construction and fracturing jobs, there were many times when confusion reigned on the muddy flats of a well pad about what, exactly, the conditions were underground and where all the fluid and cement pumped down there had gone. Well cementing and construction techniques might provide the first and most important line of defense against water contamination and the forces of fracturing, but he knew from experience that they were not always practiced and that even when they were the outcome was far from predictable.

A well is constructed in telescoping sections that become increasingly thinner as the well extends deeper into the earth. The first section is wide, maybe seven inches, and each succeeding section is narrower yet. The sections are supposed to be encased in layers of steel pipe to contain the fracture fluids and the gas that runs through them. Like caulk pumped into a window frame, concrete is then used to fill the void — called an annulus — left between the pipe layers and the earth.

"With respect to groundwater, that's pretty much the holy grail," said Mike Paque, director of the Ground Water Protection Council, a group made up of state oil and gas regulators that has examined a number of complaints of groundwater contamination near drilling. "In almost all those cases where there was any indication that there were problems it's been tagged back to poor casing and cementing."

At some point the well's casing layer ends altogether, and from that point downward the drill pipe runs naked through hundreds, sometimes thousands of feet of earth and bedrock. The assumption is that the solid rock layers function like the cement, sealing in all the fluid that is pumped down. Between the lower bare sections and the upper portions encased by cement, nothing is supposed to be able to escape.

A foremost expert on fracturing supports Meeks' theory that things often don't go according to plan. Dale Henry, a retired petroleum engineer, said that as many as a third of the wells he worked on over his career "lose circulation." That means that during hydraulic fracturing the pressure didn't build up the way it should have, because fluids seeped out somewhere on the way down, like a

garden hose losing pressure because of punctures. According to Henry, the question is more like, how often does it work properly?

For three decades Henry was responsible for cementing and hydraulic fracturing jobs around the world — including in central Wyoming — as an employee of Dow Chemical, and then Dowell-Schlumberger, a company that was later bought entirely by Schlumberger, now a leading competitor to Halliburton. In 2006 and again in 2008 he ran unsuccessfully for the top job at the Texas Railroad Commission, one of the nation's largest oil and gas regulatory agencies, in part because he wanted to reform the laws that protect water. "I can guarantee you that 90 percent of the time you do not have cement behind the pipe for several thousand feet down at the bottom that keeps your fluids, whether it is produced fluids or frack fluids, where you want them to be," Henry says.

Even if the deep rock layers can seal chemicals from the aquifers above the well, he says, the well itself creates an opening where fluids and gas can be pushed through — especially under the thousands-of-pounds-per-square-inch pressure from fracturing.

Henry's not a scientist, and he's never tracked exactly where his fracture fluids end up. But he firmly believes that fluids can travel outside the well. "Over time they will migrate to the surface," he said. "Fracturing jobs make that more possible because of the excessive pressures."

Other Wyoming gasfield workers have reiterated Meeks' accounts of problems he witnessed as a rig hand. Although the hole in the seal created by the gas well is supposed to be filled with cement — especially near the surface, where wells often run straight through aquifer layers — they say cement jobs are inconsistent.

"It is common knowledge that the lower layers are full of irregularities," said Patrick Jacobson, a rig worker who manages drilling-fluid pumps on gas rigs. The concrete can crack as it dries and expands, Jacobson says, or it can slip into cavities eroded by the turbidity of the injected drilling fluids or into large natural gaps or cracks in the earth, never filling the well annulus at all. Although fracturing is not supposed to take place until the cement integrity is confirmed and it has had time to dry, rig workers often rush on to the next stage right away. "I think anybody who works in the oil fields, if they tell you the truth, would tell you the same thing," Jacobson said.

EnCana's Hock said the company is meticulous about casing its wells to the proper levels, and about fixing the casing when something goes wrong. "No exceptions have ever been made to that practice," he said. He said the company allows 12 to 24 hours for the cement to dry before any well is fractured.

As Meeks continued collecting records, he focused hard on cementing records. Based on his own experience and on what he had gathered, he still suspected that faulty cementing might be the root cause of his water problem. Using well construction records he painstakingly culled from public files in state drilling offices, he examined documents showing how far down the cement was run on wells near his property. Wyoming drilling regulations — the default law for that area — require cementing to be at least 150 feet below the deepest permitted water wells nearby. Engineers that Meeks hired to examine the records found that cement on the 24-2 well was run only to 562 feet, and the 14-2 was cased to 599 feet. Others were run to as little as 400 feet. The EPA says that water wells in the area are drilled to 750 feet, sometimes deeper.

The contamination of his water well, he began to think, could have been prevented if the drillers had made different choices about how to build the wells near his home.

But when Meeks looked at the broader laws governing drilling in Wyoming and elsewhere to see how the problems might have been detected before they reached his water, he found that few states explicitly required the sort of well pressure monitoring or cement testing that ensure the fluids stay where they are supposed to. There were, simply, few public records documenting the effectiveness of the cement in gas wells or the frequency and success of hydraulic fracturing jobs.

It had been three years since Meeks began his quest, and the more he learned, the more he felt trapped at a dead end. Even with the help of Thomas and with the circumstantial evidence they had gathered and the questions that were now being asked nationally, Meeks still had no scientific evidence connecting his clouded water with gas drilling.

He'd made hundreds of phone calls and written dozens of letters to his governor and to Congress. But no one seemed ready to do anything for this stubborn man in a tiny town in the middle of nowhere.

For the first time, he and Donna began to seriously consider selling the ranch. All the efforts to fix his water were failing, and his settlement with EnCana was falling apart. He knew they would eventually take away the cistern of fresh water.

It was a painful turning point. "It's a place that he bought and struggled to pay for with his VA loan and worked for 30 years to build into a place that he wanted," says his son, Louis Jr. "It has crumbled."

But selling proved to be impossible. In January 2006, Meeks' property was appraised at \$239,000. But in May 2008, Jane Rainwater, a local realtor, sent Meeks a coldly worded letter saying his place was essentially worthless and she could not list his property. "Since the problem was well documented ... and since no generally-accepted reason for the blowout has been agreed upon," she wrote, "buyers may feel reluctant to purchase a property with this stigma."

Not sure where to turn next, Meeks pored through the original environmental impact statement conducted for drilling near Pavillion. The document contained the names of scientists who had commented on the potential risks to water supplies. In what would turn out to be a lucky coincidence, he fixated on one.

"I saw Greg Oberley's name in there," Meeks said. "So I said, 'well, I'm going to call him.' "

## **An Investigation Begins**

On May 14, 2008, at Greg Oberley's invitation, Louis Meeks drove six hours to Denver to tell his story to EPA officials in person. With him was a small entourage: Jeff Locker, Meeks' neighbor down the road; John Fenton, another neighbor; and Deb Thomas, from Northern Wyoming. They had recently formed the Pavillion Area Concerned Citizens and had begun organizing a political and advocacy campaign around the pollution fears.

The group gathered in the agency's regional headquarters, an airy glass building a few blocks from Coors Field and the historic Union Station. From these offices the EPA oversees Colorado, Wyoming, North and South Dakota, Utah and Montana — states that account for a large portion of the oil and gas drilling in the United States. EPA representatives from many of the region's divisional offices — water, air quality, Superfund, National Environmental Policy Act compliance — were there, as well as representatives from the Wyoming Department of Environmental Quality.

Thomas opened with a PowerPoint presentation about documented problems in Clark, WY, a small town just outside of Yellowstone National Park. In August 2006 a gas well had blown out, leading to the temporary evacuation of 25 homes and contaminating groundwater aquifers and soil in the area. Benzene was detected in at least one person's drinking-water supply.

One by one, the others followed with their personal stories. John Fenton described how his mother, and six months later his wife, had both lost their sense of smell. The county assessor told him that his property had also lost half its value because of the water concerns. Jeff Locker described his wife's health problems, including intense neuropathic nerve damage.

“She would scream in pain, like someone was running knives through the bones in her shins,” Jeff Locker says about Rhonda's condition. “Then it worked through her spine, and now it will start and move up through her whole body. She just turns grey when it happens.” Rhonda had been to the best doctors in the West, including the Mayo Clinic in Phoenix, Ariz., and no one could diagnose her problem.

Meeks recounted the research he had done, the doors he had knocked on and the eventual coalescing of his neighbors. What had begun as one man's lonely quest for environmental justice had turned into a community fighting together. Now here he was, backed by a chorus of voices begging the federal government to step in and help protect them. The state regulators, each speaker told the EPA, had failed them. They needed the federal government to do something.

“You could tell that people were frustrated, scared,” said Luke Chavez, an EPA Superfund investigator who attended the meeting. Chavez had heard stories like this before, and in most cases they turned out to be nothing. So, he was skeptical. But still, the emotional presentation tugged at him and the others in the room. “You take what you hear with a grain of salt. But I went back and said, ‘OK, so, can we at least get some information for these people?’ “

Moved by the stories they had heard, Chavez, Oberley and others at the meeting persuaded their bosses to at least let them find out whether Pavillion's water was safe to drink. The agency found some money in its Superfund cleanup program to pay for the project, and Chavez was assigned to help lead it.

But by then fracturing had become a flashpoint for political controversy, and the EPA proceeded with caution. While Oberley and others were concerned about the stories they heard, they didn't consider their Pavillion research to be an investigation into hydraulic fracturing. In fact, they weren't ready to draw conclusions that the contamination had anything to do with drilling at all.

“Hydrofracking is a risk activity,” says Oberley. “But so is drilling, so is pit location, so are all these other things. So, I've got a lot of things I want to look at.”

There was a theme, however, linking each of those concerns to the fracturing chemicals. The chemicals are a substantial part of the hazardous water from underground that is dumped into waste pits from drilling. It's the fracturing pressure that can exploit a weakness in the well casing. It's the fracturing process that puts the chemicals underground in the first place, where, if they stay in the cracked rock thousands of feet below, they may leak out somewhere higher in the system.

When these aspects of the drilling cycle are including, fracturing becomes about much more than the moment of high-pressure injection. But that's not how the industry tends to see it.

The industry's definition boiled down to lawyerly semantics. It meant that fracturing couldn't be blamed unless the high pressure inside the well at the moment it was fractured directly caused the contamination. "Hydraulic fracturing related contamination would result if the hydraulic fracturing stimulation is the sole cause of the well integrity to fail," explained Lee Fuller, the lobbyist for the Independent Petroleum Association of America. According to Fuller's definition, fracturing would not be the cause if the fracturing fluids were spilled on the surface, or if the fracking waste was improperly disposed of, or even if the cement casing in a well split apart after the enormous pressure of fracking, as has happened in several of the most egregious incidents.

An EPA fracturing expert, Nathan Wiser, put it this way when considering the drilling industry's limited definition of what constitutes hydraulic fracturing: "You can certainly characterize fracturing as an event that happens on a Tuesday," he said. "It's a singular event in that well's life. But it can expose other weaknesses, and through the extra pressure that is exerted on the well at that time it sort of shakes loose that problem."

For the time being, however, the EPA study wasn't about fracturing, and it wasn't about opposing the development of a natural resource that could help secure the nation's energy future. The agency was simply responding to a community in need of help, a public health issue that needed attention.

"These are not people who complain," said Oberley. "The oil and gas industry has been out there since the mid-seventies, and they've coexisted with them. So, it's not that they were having a problem with the industry. They were having a problem with their wells being contaminated."

It took 10 months for the EPA to send its team to Pavillion. But in February 2009, Luke Chavez arrived at Louis Meeks' house on Powerline Road to have a look for himself. It was a frigid day, snowless but blustery. They walked the property together, through the leafless apple trees. Chavez was bundled up, with a camera and notebook in hand. Meeks wasn't. No matter what the weather, he always seemed to wear the same thing: jeans, suspenders, a flannel shirt over his thick shoulders, and a straw cowboy hat covering his mop of grey hair.

At a steel feed trough, Meeks turned on the hose that was connected to his problem well. The water shot out strong, splashing against the base of the bin and creating a froth of small bubbles. On the surface, Chavez could see the sheen, a subtle oil slick. Meeks filed a mason jar and held it to the sun — it was murky. Grasping it like a football in his calloused, working man's hands, he shook it, then opened the lid and sniffed the bottle. Curling his nose and turning aside, he offered the jar to Chavez to smell for himself. Chavez recoiled.

"It was what they said it was," he said. "I was like, yeah, that's definitely worth at least doing some analysis."

Chavez, a stout, gregarious guy who is prone to understatement and comes across more as a chatty neighbor than a federal investigator, knew a thing or two about the gas patch and about farming, as well. He grew up on a farm in New Mexico's San Juan basin, where some of the nation's most intensive drilling takes place. There were two wells on his father's property, and Chavez saved for college by working as a roustabout on a drilling rig. He identified with the alfalfa and the hay, and he understood the local residents' instinctive distrust of the government. He worked hard to build a rapport.

But Chavez also understood that while gas drilling seemed to be the predominant industrial activity in the area, and thereby a likely cause of the contamination, that didn't mean a thing without systematic research. Was fertilizer used nearby? Did Meeks overhaul truck engines and spill diesel on the property? There was already known water contamination from several old waste pits in the area, and EnCana had a cleanup program under way — maybe the pollution Meeks and the others were finding in their water came from those sources.

“We try to brainstorm what else it could be,” Chavez says. “A lot of times reality is crazier than even your imagining.”

In March 2009, six weeks after President Obama's inauguration and four years after Meeks first had trouble with his water, a team from the EPA's Superfund program began collecting 39 water samples from properties around the Pavillion area. It was the first formal investigation into complaints of water pollution in Pavillion after many years of letter writing and phone calls and visits to the governor's office and even a couple of lawsuits. Across the mountains in Pinedale, Oberley had also continued to collect water samples from the aquifer underneath the Anticline drilling fields — where he'd found the benzene the year before — and was carefully assembling a broader body of data. The EPA scientists preferred to keep a low profile and dodge the political canon fire that was bound to be returned from any perceived assault on the oil and gas industry. But, in effect, the EPA had begun its first robust scientific examination of the environmental effects of natural gas drilling on the nation's water supply.

By this time, complaints about water contamination in drilling areas had become a national issue.

New Mexico state officials had released a report detailing that contaminants from oil and gas waste pits — the same kinds of dirt ditches that surround Pavillion — and other drilling byproducts had leaked into groundwater in more than 700 cases. Colorado regulators had tallied more than 300 similar cases — not just the conspicuous well blow-ups in Silt but also an underground leak of fracturing fluids that seeped out of a cliff side and formed a 200-foot toxic icefall. A hospital nurse in Colorado had nearly died of organ failure after treating a rig worker who had spilled fracturing fluids on his clothing.

Louis Meeks felt validated, but also sad, as he read the news. Accounts of contamination seemed to be tracking the drilling boom as it swept across the country, from the Barnett Shale in Texas to the Marcellus Shale in Pennsylvania and New York.

In Louisiana, 16 cattle dropped dead after drinking fracturing fluids from a puddle in a field. In Ohio, a house exploded, nearly killing the elderly couple who lived there, after hydraulic fracturing exploited a crack in the cement casing of a nearby gas well, allowing methane to seep underground and fill the couple's basement. In Pennsylvania, news emerged that a couple and their 17-month-old



grandson had been killed after a similar accident in 2004. Like the earliest complaints in Wyoming, the news media didn't connect that tragedy with drilling until it became clear that similar problems were happening across the state.

Worst, to Meeks, was what seemed to be unfolding in Dimock, PA. First, an elderly woman's water well blew up on New Year's Day. Then her neighbors began complaining of milky, methane-rich water just like Meeks had. Then another landowner was able to light his tap water on fire. Soon at least 13 households in that one small town had severe water problems that state regulators said were caused by casing and cementing problems at wells drilled by Texas-based Cabot Oil and Gas Corporation. Within a few years of the drilling boom hitting Pennsylvania, regulators had counted more than 50 cases where methane and other contaminants had exploded out of wells or leaked underground into drinking water supplies.

In New York, which was bracing for a similar onslaught of drilling, residents began holding protests to keep hydraulic fracturing out of New York City's watershed, the county's largest unfiltered municipal water supply, serving 9 million people. The state began a multiyear comprehensive environmental analysis of the new fracturing technology, and an upstate congressman, Maurice Hinchey, brought the issue to Washington. Along with Colorado Congresswoman Diana DeGette and Colorado Congressman Jared Polis, Hinchey proposed the FRAC Act, a bill that would undo hydraulic fracturing's exemption from the Safe Drinking Water Act and require oil and gas companies to disclose the names of the chemicals in the fracturing solutions they used.

In the face of this tornado of worry, the drilling industry remained steadfast in its insistence that fracturing and all the drilling processes related to it were completely safe. They continued to spend tens of millions of dollars lobbying against regulation and peppered websites and publications with pro-gas advertisements. Industry trade groups pointed out that drilling development brings jobs and economic bounty to ailing communities and painted critics as unpatriotic heretics working against U.S. energy independence. They drew support from local businesses and residents whose communities needed the money and needed the jobs.

The industry also continued repeating a stubborn claim that by this time seemed almost absurd to Meeks, given the mounting evidence to the contrary: "As far as frack fluids getting into water there's never been a proven case of that happening," says EnCana's Doug Hock. "There has never been a documented case."

The industry's claim was repeated before Congress, in court and to anyone else who asked. It was part of the reason the EPA hesitated to dig further.

The ambiguous identity of the fluids also clouded the issue. States and environmental groups had identified more than 600 chemical compounds that could be used in drilling and fracturing, but they weren't confident the list was complete or accurate. When a regulator suspects fracturing may have led to contamination, Fuller says, they simply have to go out and test the water for fracturing chemicals. "If they don't find them, then the source of the problem is elsewhere," he said.

Joyel Dhieux, an EPA environmental scientist, agrees. But, like Oberley, she says the industry's logic is backward. First the EPA needs to know the names of the chemicals. Then it can examine contaminated water for fracking chemicals. "If you don't know what's in it I don't think it's possible."

Adding insult, the industry continued to suggest that the troubling stories emerging across the country, including from Louis Meeks, are “anecdotal,” implying that no science or investigation has ever verified the contamination as true.

The dearth of hard science on the matter, however, cut both ways. In a spring 2009 conference call with reporters, American Petroleum Institute senior policy adviser Richard Ranger — an industry expert who has spoken frequently on the fracturing issue — was asked to produce evidence that fracturing is without environmental risk.

“Have there been any recent studies done on the safety of this?” a reporter asked.

“I’m just not sure that that study is out there,” Ranger replied.

“To be clear, we are saying this is a totally safe technology but we can’t point to any recent studies that say this is a safe technology?” a reporter pressed.

“Or that says it is unsafe,” Ranger replied.

## **Contamination Confirmed**

Late that summer Meeks was told that the EPA was ready to reveal its first findings. On August 11, 2009, eager to finally hear what was in his water, Meeks got in his red 1994 Nissan pickup and drove the five miles to Pavillion’s community center, a corrugated steel building with bare walls and poured-concrete floors at the end of one of the two roads that cut through town. He had been anticipating the meeting for six months.

Along with 80-some other residents, some who had driven from as far as Riverton, 26 miles away, Meeks took a seat on one of the wooden benches that were lined up facing a folding table and a projection screen, eager to hear the preliminary findings from the EPA’s first round of water testing.

With the room quiet and tense, Luke Chavez, the EPA Superfund investigator, started off tentatively. He was shy and non-committal. But he proceeded to make headlines.

Of the 39 water samples his team had taken from a smattering of properties around Pavillion, Chavez said 11 were contaminated with chemicals, including some with strong ties to hydraulic fracturing. The EPA found arsenic, methane gas, diesel-fuel-like compounds and metals including copper and vanadium. Of particular concern were compounds called adamantanes — a natural hydrocarbon found in gas — and an obscure chemical called 2-butoxyethanol phosphate. 2-BEp is a compound closely related to 2-BE, a substance known to be used in hydraulic fracturing solutions, and that is known to cause reproductive problems in animals. It was a chief suspect when Colorado regulators investigated the well explosion in Silt.

Meeks’ well contained traces of petroleum hydrocarbons, bisphenol A, the adamantanes, and methane. John Fenton’s water, which tasted good and hadn’t even been suspected to have been contaminated, had methane and bisphenols. And Jeff Locker’s water, even after filtering with a reverse osmosis system, contained arsenic, methane and metals.

It seemed like the worst news anyone could get, but to the people whose water was bad, it was almost liberating. For the first time, an objective scientific inquiry had confirmed that the groundwater in Pavillion, WY was contaminated.

Suddenly it didn't matter to Meeks what the preacher had told him that day by his mailbox, or how skeptical some of his neighbors had been about his incessant complaints. He wasn't crazy. His water actually was bad. So was the water on several other Pavillion ranches.

"Everybody's been calling me a liar since day one," Meeks says. "Finally we've got some proof. Now they know it wasn't just me, I thought. We can push on now."

The room buzzed as the Pavillion community tried to process what the information meant. Meeks, a man of few words, kept his thoughts to himself. "Sometimes the way I put things people don't like it," he said. "So, I like to wait and think about it and try to put it in the right words later."

Sanchez cautioned that the findings were still tentative. Because the EPA didn't have a complete list of chemicals to work from, it had to go through the exhaustive process of scanning water samples for spikes in unidentified compounds and then running those compounds like fingerprints through a massive criminal database, hoping to find matches in a vast library of unregulated and understudied substances.

EnCana had sent a spokesman, Randy Teeuwen, to the meeting, and he stood saying that "we are as concerned as you are, and we want to find the source of these compounds too." The comment drew jeers from the crowd that had once glared skeptically at Meeks and his public battle.

Jim Van Dorn, a local water professional, turned back to Chavez. "If they'd tell us what they were using then you could go out and test for things and it would make it a lot easier, right?" he shouted.

"Exactly," Chavez shot back.

But Chavez tried to put the information in context. The compounds weren't exclusive to fracturing fluids, he said. Some of them could also be found in common household cleaners.

The EPA's findings set off a firestorm of accusations. Environmentalists issued a press release pointing out that chemicals used in fracturing had been found in Pavillion's water. A prominent EPA scientist with expertise in the Safe Drinking Water Act enforcement said the results pointed more and more to fracturing. Pressure mounted on the EPA's Denver offices. It began to field phone calls from pro-drilling representatives of Congress, questioning the research.

The EPA held steady, rowing hard through the rapids and trying to keep its distance from the politics and maintain its objectivity. The scientists stressed that no conclusions would be drawn until the agency completed yet another round of research, this time with more water tests and extensive lab work. They wanted get a better grasp of the quantity of contaminants in the water, and test more samples.

Chavez tried to temper both environmentalists' and the industry's expectations and keep the relatively small Pavillion project from taking on outsized national significance.

“We’re not ever going to say, ‘yeah, we know for sure.’ I think there will be a certain amount of preponderance of evidence,” he said. “The hydraulic fracturing picture seems to be in the national spotlight. But we are trying to be as broad as possible. Even if we find risks or something ... again, it’s Pavillion. It’s Wyoming. It’s one little small spot that has totally different geology than the Marcellus shale.”

But it was difficult for Meeks and the environmentalists tracking this issue to ignore the deep controversy the agency was slowly wading into. All they could do was hope the agency would broaden its examination of drilling before the political currents against it became paralyzing.

## **No More Water**

In the fall of 2009, Meeks got a call to meet Randy Teeuwen, the EnCana representative, at the Holiday Inn in Riverton.

The company had warned him months earlier that it would stop paying for his water supply and had given him the option to continue the service and pay for it himself. Meeks declined. There was no way he could afford the payments. He was still hoping that a broader settlement might be reached and EnCana would buy him out. If his property was worthless, Meeks wanted them to pay for his entire loss.

A real estate holding company called Pavillion Land Development, which shares an office address with EnCana in Denver, had bought the home in Silt, CO where the water well blew up, and at least one other Pavillion property with contamination problems, a 300-acre ranch. Meeks didn’t see why they shouldn’t do the same for him.

“We’re asking them to drill a new well, get us good water, or get us out of here,” he said.

In the meantime he was gambling that the tanker of water would stay put.

Meeks drove to the Holiday Inn and sat with Teeuwen in the motel’s café. There was small talk. Teeuwen asked him whether his granddaughter was still spending a lot of time out at the ranch, Meeks says. Then Teeuwen told him that by Sept. 15 EnCana would remove the water tanker that had been parked in front of his house.

Meeks was stunned into silence, unsure what to do. “That tank is costing \$70 a day to site there — plus it cost them \$280 a week to bring me a load of water. That’s over \$3,000. ... Now how could people like us pay \$3,000 for water? And especially for something we did not do wrong.”

The 26-mile drive home was one of the longest of his life. He would have to tell Donna. And they were almost out of money.

For the first time in this long fight, Meeks had no idea what would happen next.

“I didn’t know what we were going to do or what to tell my wife,” he says. “It makes you feel less like a man. You don’t have no answer, and you can’t get no answers. What are you going to do? I didn’t have anything I could tell her.”

Meeks Jr. said that the turn of events nearly broke his father. “My dad feels like he has let us down as a family and that all that he has worked to give us and to leave us — which is by no means huge, but it’s his accomplishment — is no longer there,” said Louis Meeks Jr. “It’s like having the last 30 years of your life taken away from you. My parents aren’t quitters, and they don’t give up that easily.”

Meeks, feeling boxed in, called local news reporters to witness the water being removed.

On September 14, HB Rentals, the global oilfield services supplier EnCana had hired to supply Meeks with water, sent Scott Farrell with a truck to remove the tanker of water from Meeks’ home. Farrell found himself facing a cluster of television crews and reporters. But Meeks, for all his blustery anger, was uncharacteristically quiet. After all these years the wind seemed to have been sucked out of his lungs, and he had nothing to say.

He fought tears, and his voice quivered as he told his story to the TV cameras. Taking the water was like issuing a life sentence. Once it was gone, there was no way he would be able to replace it.

“I can’t believe someone would do something like that,” he told the reporters.

Farrell was visibly affected. “We decided that we were not going to leave Mr. Meeks without any water,” he said, when the cameras turned to him. “We’re going to leave the tank and everything here at no charge.”

But a few hours later, HB returned, loaded the tanker, and finally took Louis Meeks’ water away.

It’s difficult to know exactly what happened and why. Meeks said that EnCana told Farrell, “You get that god damn tank outta there or EnCana will give them (HB) no more work.” But an EnCana spokesman said that’s not the way it happened. According to EnCana, HB was welcome to make its own decision — but EnCana wasn’t going to foot the bill.

HB had recently bid on two major contracts with EnCana, which was planning to double its gas production over the next five years. “If we land them they would be one of our largest onshore customers,” says Tim Murphy in HB’s Houston office.

“A good deed was turning bad in a hurry,” says Andy Davidson, HB’s local manager in Riverton. “We got caught in a very ugly — in the middle of a situation. I know Louis Meeks personally, and we do business with EnCana also.”

October turned to November, and like it does in Wyoming, winter set its claws in early. For weeks Meeks drove to town for water, carting it back in 5-gallon jugs and using it to cook and to drink. There was no bathing, no heat. Meeks worried it wasn’t safe for his granddaughter to visit, and it was a humiliating way for his wife to live. At his suggestion, she moved in with their daughter, who had a house in town. He would visit them there and take showers.

Meeks was too proud, too stubborn, and too in love with the wild acreage of Wyoming to leave the ranch. And he had his cattle and sheep to care for. “Everything is invested in this place. I just can’t leave it,” he said. “How are you going to just walk away?”

As winter approached, Meeks found himself huddled around the pellet stove in the living room, having shut off the side rooms to block in the warmth. Now that his home had no water supply, he couldn't use his hot-water heating system.

By Christmas 2009, nearly four years after his water well blew out and his war against the drillers began in earnest, Meeks had given up. Against the advice of the EPA, the Centers for Disease Control, and his own friends and family Meeks stomped out into his front yard with a wrench and a box of tools and reconnected his fouled water well to the house's plumbing system, restoring his heat and shower and washing water with a certifiably contaminated, water supply. According to the EPA records, his water contained traces of xylene, toluene and diesel fuel, which were common in fracturing fluids, and other derivatives of petroleum hydrocarbons, including benzene, a chemical believed to cause aplastic anemia and leukemia.

"It's really easy to say you should just get out of this situation," says Deb Thomas, Meeks' friend and the environmental organizer from Clark. "But they are not young. Everything that they have is wrapped up in that place — not just in their home. They've got animals and a life here. It's pretty hard to leave that."

Meeks didn't drink the water but used it to bathe and clean his dishes. By January he was complaining of ill effects on his health. He suffered of shortness of breath and described lesions and sores on his arms and legs. At the veterans hospital, he was told he had a respiratory infection and prescribed prednisone and moxifloxacin — but the doctors couldn't say whether it was the water, the stress, or his persistent medical problems that were to blame.

While he suffered, EPA took its biggest step on the fracturing issue in more than six years.

In March 2010, EPA administrator Lisa Jackson announced that the EPA would undertake a major national study of risks to water supplies from hydraulic fracturing far bigger than the Pavillion study. This time, scientists would broaden their definition of fracturing beyond the energy industry's version, and examine every aspect of the process, from the transportation and disposal of the chemicals to the water supplies needed to make the process happen.

In New York, Gov. Paterson issued an executive order banning one type of hydraulic fracturing until July 1, 2011, by which time he hoped environmental officials would have thoroughly examined its safety. And in several states — including Wyoming — laws were passed to require drilling companies to disclose the chemicals they pump into the ground. A group of Democratic members of Congress ratcheted up the debate by revealing that fracking companies had continued to inject tens of millions of gallons of diesel fuel and diesel mixtures into the ground as part of the fracturing process long after they promised not to in 2005.

In Pavillion, the EPA's research continued.

A few months after the agency announced its national study, Chavez, Oberley and the others returned to announce the results of a second round of water testing. Residents, including Louis Meeks, were told not to drink their water under any circumstances and to open windows for ventilation when they showered or washed clothes to avoid building up enough methane to cause an explosion. The agency found the worst contamination in test wells it drilled near the abandoned pits, raising fresh questions about whether the pits might be the source of the groundwater contamination

in Pavillion, or whether, as Meeks remained convinced, the damage might also be coming from the gas wells.

The tension in Washington, however, has sharpened. Last fall the EPA received an enraged call from a staff member to James Inhofe, the conservative senator from Oklahoma known as a staunch defender of — and leading campaign finance recipient from — the oil and gas industry. Inhofe then sent a letter to EPA administrator Lisa Jackson questioning the EPA's motives in Pavillion and characterizing its Region 8 staff as insubordinate and uninformed.

Whatever the EPA does, its environmental research is guaranteed to go slower than the pace of drilling development. In 2010, another 14,324 new gas wells were drilled in the United States, including in Wyoming. “If things don't change now it's going to be just a big polluted dump,” said Meeks Jr.

Meanwhile Meeks is still living on his ranch, still tracking the latest national developments in the hopes of finding more clues to the mystery of what happened to his water. The state is considering proposals to pipe municipal water through a public system out to his neighborhood. Until then, he and Donna, who is back home again, and at least 20 other Pavillion families are drinking bottled water paid for by EnCana through an intermediary. His granddaughter eats on paper plates, and Meeks won't let her wash her hands before dinner. There is still no clean water to bathe in, or to water the vegetables or to feed the animals. In November, he had a heart attack. His doctors tell him it was probably caused by stress.

“I think a lot of people look at me and think what did I end up with after five years,” Meeks says. “I'm stupid for going up against a billion-dollar company.”

“There is no end in sight,” he adds. “But at least they are listening now.”

*ProPublica's Nicholas Kusnetz contributed to this story.*



# Natural Gas Drilling Debate Heats Up: Read Our Guide

Feb. 28, 2011, 7:48 p.m.

It's been a busy couple of weeks in the fracking and natural gas drilling debate, with the documentary film [Gasland](#) nominated for an Academy Award and a [front-page story](#) in Sunday's New York Times on the dangers posed by the technology.

The Times story underscored the findings of dozens of reports that ProPublica has published over the past three years, adding new details from previously undisclosed government documents about the amount of radioactive water produced by drilling.

The increasing public interest in the possible dangers of gas drilling comes as the world's energy companies are placing a multi-billion dollar bet on its potential. At the request of Vice President Dick Cheney, Congress exempted gas drilling from federal regulation in 2005. Since then, industry officials have successfully lobbied against calls in Washington to change the law, calls that have intensified in recent months with new attention on the issue.

For those who want to dive deeper into the complex science and regulatory issues of fracking, we offer a quick breakdown of the key issues.

It's a subject reporter Abrahm Lustgarten has been covering for ProPublica since July of 2008. In the years since then, Lustgarten and his ProPublica colleagues have criss-crossed the country, interviewing drillers, industry officials and residents from Wyoming to Colorado to Pennsylvania. To listen to a podcast from Lustgarten, click [here](#). To read a detailed account of one man's fight against water contamination in Wyoming, click [here](#). (Lustgarten received the 2009 George Polk Award for environmental reporting for his investigation of hydraulic fracturing as well as the 2009 Stokes Award for Best Energy Writing from the National Press Foundation.)

Below is a list of 15 of our most important stories, arranged by topic so you can quickly find the information you need. For a list of all the 100 or so stories we've written about gas drilling since 2008, you can also visit our [gas drilling home page](#).

## Radioactivity

- [Is Marcellus Shale Too Hot to Handle?](#) – A 2009 analysis of wastewater samples from wells in New York showed levels of radioactivity more than 250 times the federal drinking water standard.

## Wastewater

- [With Natural Gas Drilling Boom, Pennsylvania Faces an Onslaught of Wastewater](#) – As gas drilling expanded in 2008 and 2009, Pennsylvania regulators were unprepared for a wave of contaminated wastewater.

- [Drilling Wastewater Disposal Options in N.Y. Report Have Problems of Their Own](#) – This December 2009 investigation showed that none of the disposal options laid out in a state report on gas drilling was realistic.

## **Methane Contamination**

- [Officials in Three States Pin Water Woes on Gas Drilling](#) – As new drilling expanded across the country, cases proliferated of natural gas leaking into water wells.
- [Water Problems From Drilling More Frequent Than Pa. Thought](#) – Methane related to the natural gas industry has contaminated water wells in at least seven Pennsylvania counties since 2004.

## **Overview**

- [Buried Secrets: Is Natural Gas Drilling Endangering U.S. Water Supplies?](#) – A 2008 investigation found more than 1,000 cases of water contamination in drilling areas around the country.
- [New York's Gas Rush Poses Environmental Threat](#) – As state legislators looked to fast-track gas drilling permits in 2008, this investigation revealed environmental harm from drilling in other states and looked at how drilling might affect New York's waters.
- [What We Don't Know](#) – A look at the basics of hydraulic fracturing and gas drilling from December 2009.
- [How the West's Energy Boom Could Threaten Drinking Water for 1 in 12 Americans](#) – An examination of the threats posed by oil and gas drilling in the Colorado River Basin.

## **Regulation**

- [State Oil and Gas Regulators Spread Too Thin](#) – As gas drilling expanded across the country, state agencies failed to keep pace by hiring more inspectors, leaving some wells uninspected for years.
- [Underused Drilling Practices Could Avoid Pollution](#) – Innovative industry solutions that would use less water and reduce air pollution have not played a prominent role in the national debate over how to drill safely.
- [In New Gas Wells More Chemicals Remain Underground](#) – A December 2009 investigation showed that despite previous reports, as much as 80 percent of hydraulic fracturing fluids can remain underground.
- [Energy Industry Sways Congress With Misleading Data](#) – As the industry tried to pre-empt stronger federal regulation, it used arguments that were undercut by its own data and reports.

## **Air Pollution**

- [Climate Benefits of Natural Gas May Be Overstated](#) – New emissions estimates by the Environmental Protection Agency cast doubt on the assumption that gas offers a quick and easy solution to climate change.

# PA Governor Gives Energy Executive Supreme Authority Over Environmental Permitting

By [Abrahm Lustgarten](#), [Nicholas Kusnetz](#) and [Joaquin Sapien](#)

March 9, 2011, 11:50 p.m.

*Pennsylvania Gov. Tom Corbett*  
(AP Photo/Daniel Shaknen)



Pennsylvania has come under fire lately as pollution from drilling in the Marcellus Shale threatens water resources across the state. But instead of ratcheting up oversight, Gov. Tom Corbett wants to hand authority over some of the state’s most critical environmental decisions to C. Alan Walker, a Pennsylvania energy executive with his own track record of running up against the state’s environmental regulations.

Walker, who has contributed \$184,000 to Corbett’s campaign efforts since 2004, is CEO and owner of Bradford Energy Company and Bradford Coal, which was once among Pennsylvania’s largest coal mining companies. He also owns or has an interest in 12 other companies, including a trucking business and a central Pennsylvania oil and gas company.

Walker was Corbett’s first appointee—he chose him to lead the Department of Community and Economic Development in December, before taking office. Now, as Corbett stakes much of the state’s economy on Marcellus Shale gas drilling, a paragraph tucked into the 1,184-page budget gives Walker unprecedented authority to “expedite any permit or action pending in any agency where the creation of jobs may be impacted.” That includes, presumably, coal, oil, gas and trucking.



*C. Alan Walker*

It’s not clear how Corbett can delegate such sweeping authority to the economic development office, which would be reorganized to focus on coordinating with corporate interests and creating job growth. It also isn’t clear how the state would address the legal conflicts that could arise if, for example, Walker pushed for approval of a permit that conflicted with the Clean Water Act or other federal laws. The governor’s office did not respond to repeated requests to clarify Walker’s role, and other state agencies deferred to the governor.

Environmental groups think Corbett will need to issue an executive order or some other legal clarification to allow Walker’s office to wield so much influence over regulations.

“I have never seen anybody give an economic development director the authority to tell every other agency in the state what to do with regard to its statutory responsibilities,” said Deborah Goldberg, an attorney with Earthjustice, an environmental group active on drilling issues. “The law requires

that you not pollute the waters of Pennsylvania, and if he tries to speed up an application that makes it possible that that is going to happen then I think he is clearly operating outside of his authority.”

A spokesman for the economic development office said Walker will not speak publicly until his confirmation. But Walker did post a statement on the department’s website.

“The budget introduced today represents a completely new way of doing business for DCED and its economic development partners,” the statement said. “In a tough economic climate, we need to send a powerful message to the Pennsylvania Business Community that Pennsylvania is open for business.”

Walker’s ties to the energy industry are deep. He is listed on state disclosure forms as an executive of the Pennsylvania Coal Association and he has served as chairman of the Pennsylvania Chamber of Business and Industry. He also has firsthand experience with the state’s environmental regulations, because his companies would likely have applied for permits similar to those the oil and gas industry is now pursuing in the Marcellus. And like many energy companies, his, too, have run into problems with the state.

In 2002, three of Walker’s coal companies notified Pennsylvania’s Department of Environmental Protection that they had run out of money and were going to stop treating the 173 million gallons of polluted water they produced each year and released into tributaries of the Susquehanna River. The state eventually got a court injunction to force them to continue treating the wastewater as required by state and federal law.

Corbett’s budget, which was introduced Tuesday, emphasizes job creation and proposes eliminating economic development hurdles by streamlining permitting processes in the DEP and the Department of Transportation.

“To address the length of time agencies take to act on permits and eliminate permit backlogs, PennDOT and DEP have begun auditing and assessing all of their permit processes to make them more responsive to the needs of job creators,” the budget says.

In the budget Corbett says drilling will bring Pennsylvania 200,000 jobs and \$18 billion in economic benefit by the end of the decade. But the drilling industry’s explosive growth has also caused environmental problems and the budget raises questions about whether the DEP—which could lose nearly 20 percent of its funding—will be able to address them.

Private water wells have been contaminated with methane gas and other pollutants across the state, and in many cases the DEP has found that hasty or insufficient gas well construction was to blame. Several drilling site accidents have led to spills where wastewater, including from hydraulic fracturing, contaminated streams.

A [2009 ProPublica investigation](#) revealed that Pennsylvania’s sewage treatment plants were accepting millions of gallons of drilling wastewater, but lacked the technology to remove or treat many of the chemicals and pollutants the water contained. In 2008 people along one stretch of the Monongahela River were [advised](#) to drink bottled water because the level of dissolved minerals and salts in the river was almost twice as high as the DEP considers safe.

The state has since more than doubled its workforce of inspectors and strengthened regulations for how gas wells are drilled, permitted and constructed. The DEP has installed additional water-quality monitors along the Monongahela and required drillers to report where they will take their wastewater after a well has been hydraulically fractured. The agency has also required that wastewater treatment plants be equipped to remove the minerals and salts. And it has received proposals for 24 new waste treatment plants that are now in permitting or review processes—the type of projects Walker could conceivably influence.

In January, the [Associated Press found](#) that about 150 million gallons of Marcellus Shale wastewater—the majority of the wastewater for the period examined—had been dumped into rivers and streams after only partial treatment. A [subsequent story](#) from the New York Times revealed that much of that wastewater was dangerously radioactive, and that drinking water facilities have not been testing their intake for this radioactivity.

On Monday the EPA leaned on Pennsylvania’s DEP to tighten its oversight of drilling waste disposal. The next day, Gov. Corbett released his budget, reducing DEP funding and stating that job creation should trump lengthy permitting delays.

“It’s an expression of a philosophy that doesn’t value environmental regulation,” said Jan Jarrett, president of PennFuture. “It seems to be the desire of the governor to have this guy be able to pick up the phone and expedite any program that might impact jobs.”

The Governor’s office did not respond to repeated requests for comment about the policy shift, the role of the economic development office, or funding for the DEP. Spokespeople for both the DEP and the state Attorney General’s office also declined to comment, saying that only the Governor’s office could speak to the issue.

*ProPublica Director of Research Lisa Schwartz and researcher Liz Day contributed to this report.*

# Former Bush EPA Official Says Fracking Exemption Went Too Far; Congress Should Revisit

By [Abrahm Lustgarten](#)

March 9, 2011, 1:21 p.m.

*Benjamin Grumbles, assistant administrator for water at the Environmental Protection Agency, testifies on Capitol Hill, on April 15, 2008. (Susan Walsh/AP Photo)*



*When Benjamin Grumbles was assistant administrator for water at the Environmental Protection Agency in the George W. Bush administration, he oversaw the release of a 2004 EPA report that determined that hydraulic fracturing was safe for drinking water. Then he watched as Congress used those findings to bolster the case for passing a law that prohibited the EPA from regulating fracking under the Safe Drinking Water Act.*

*In two interviews with ProPublica -- the first on June 29, 2009, soon after he left the EPA, and the second on March 5, 2011 -- Grumbles ponders the criticism leveled at the 2004 study and suggests that it's now time for Congress and the EPA to take another look at hydraulic fracturing. Our questions, and his answers, have been combined and edited for length to the version you see here. Grumbles is currently on the board of the Clean Water America Alliance, a group focusing on water sustainability issues. He has also served as head of Arizona's Department of Environmental Quality.*

**Q: In the 2004 EPA study, which examined hydraulic fracturing in coalbed methane gas wells, a commission of experts concluded that the process “poses little or no threat” to underground sources of drinking water. That study has since been criticized. Where do you stand?**

I saw that there were accusations, by Congressman (Henry) Waxman and Congresswoman (Diana) DeGette, that somehow politics were involved in that commission, or that it was too heavily slanted towards an industry perspective and that there were not enough environmental groups on that commission. There was also an employee in Denver who claimed whistle-blower status and felt that there was a greater risk to groundwater than was being acknowledged. Honestly, I never felt that the claims had much merit.

The career employees reviewing the report were quite comfortable with the integrity and product of that commissioned report. So, they recommended to me that hydraulic fracturing was not the type of threat that should be as high a priority as other types of threats to drinking water supplies. They took great offense to some of the other accusations that were made that the commission was biased in some way.

**Q: You've said the study was never intended to be a "clean bill of health." Can you explain?**

When we got the report, it was a snapshot in time. It was a thorough review describing the issues. Whether it's hydraulic fracturing or any other type of practice that can have an impact on the environment, one single report shouldn't be the basis for a perpetual, never-ending policy decision.

It wasn't meant to be a bill of health saying 'well, this practice is fine. Exempt it in all respects from any regulation.' I'm sure that wasn't the intent of the panel of experts, and EPA never viewed it that way. That's one reason why we were urging Congress to say 'look, if you are going to issue an exemption, ensure that it is not perpetual.'

**Q: You're referring to the exemption passed by Congress as part of the 2005 Energy Policy Act, which prohibited the regulation of fracturing under the Safe Drinking Water Act. What did you think about the idea of an exemption?**

The career staff and I felt that when Congress provides a permanent exemption in an environmental statute, they need to be very careful about that and they need to have some built-in review process or safeguards so that if there is a risk presented, either the states or the EPA can then revisit it.

**Q: Why, then, did you relinquish authority to both regulate the process and to revisit the issue?**

I was disappointed, and I think others at EPA were disappointed, that the language [of the exemption] did not include the type of safety net language that I suggested.

It is not for one office and one agency to announce a position of the executive branch. And our view was, we had concerns about the scope of the language, we provided technical assistance and information, and ultimately Congress decided not to include the language that we had suggested. I was disappointed by that, but there is always tomorrow, and there is always the opportunity for additional facts to get Congress to revisit the exemption.

**Q: So, were you overruled?**

No, I felt that the commission's report [the 2004 EPA study] was an important piece that indicated that this was not presenting a significant threat to groundwater. I did feel as a matter of policy that the exemption was broader than it should have been at the time.

We certainly did not ask Congress to exempt hydraulic fracturing. We opposed the language, and we did provide information to executive committees.

**Q: How did politics influence the EPA's oversight of this issue?**

What came across clearly to the EPA was that the [Bush] administration did not want us to take a formal position of opposition to the exemption. It wasn't so much a pressure. It was just very clear, here is the situation: EPA officials or career staff are not to take a position of opposition or support for the legislation.



I'm not saying that there was political pressure in some sense of being told not to say certain things. This is the case in all high-profile legislative and congressional issues over my six years at EPA.

When it comes to working with Congress, the EPA is one important voice in where the executive branch is coming from, but it is not the only voice. So, as is always the case with any administration, there was coordination of the process with the Department of Energy, Office of Management and Budget, the White House. I know the office of the vice president [Dick Cheney] was involved, but I honestly did not see much involvement at all.

**Q: How did you get the message that the EPA shouldn't take a formal position on the exemption?**

They would say, 'continue to monitor this issue, work with congressional offices, explore the language, but don't take a formal position either for or against the language that was being developed in Chairman Barton's committee.' [Joe Barton, House Energy and Commerce Committee]

**Q: Were you or the EPA ever instructed on what, specifically, to conclude in your research?**

I never received any political pressure to do anything, or to take any particular view other than to not have an official position of opposition to the legislation that Chairman Barton and others were working on in the House and the Senate.

**Q: The EPA's 2004 report did find that diesel fluid in fracturing presented a risk to groundwater. How was this addressed?**

The former administrator [of water] Tracy Mehan recognized that under current law the agency was not regulating or prohibiting diesel fluids from being used in the hydraulic fracturing process, so he signed, on behalf of the EPA, an MOU [memo of understanding] with major companies that have a major stake in this, voluntarily getting them to commit not to use diesel fluids for the hydraulic fracturing process.

Based on current law and what tools we had, I felt this was a positive step. And it was a sincere step forward for us to make sure that we were engaged with the industry and engaged in the sense that they knew we were watching this and knew that it could be a problem if they used this sort of a process.

**Q: And now we learn from some members of Congress that diesel use continued despite those efforts ...**

It's disappointing, and the agency needs to follow up and ensure that the industry is providing accurate and timely information.

I think if the information is true that industry withheld information or misled regulators or the policy makers, then that is serious, and they need to provide all the relevant information they have.

**Q: What does the situation say about the role of binding regulations vs. informal agreements?**

A memo of understanding was the best way we had available at the time. Obviously, I think the right step is for Congress to look at the exemption carefully and require the industry to provide timely, accurate information so that Congress and the agency can revisit whether the exemption makes sense or not, or consider an exemption that is not as broad and has additional safeguards.

It's important to ensure that both sides of this story are told. It's not only 'what does the practice entail and what kind of fluids are being used,' but also to understand what role does it play in the nation's energy policy? The reality is there are energy companies and communities that are very supportive of hydraulic fracturing and the potential for natural gas in the country.

But from an environmental regulator standpoint, you have to make sure that all the facts are out on the table.

**Q: What did the EPA want the legislative exemption language to say?**

I didn't feel strongly that an exemption was necessary -- that any legislative language was needed. But if language was going to move through, it should have included some broader recapture provision that allowed for regulation under the Safe Drinking Water Act if a problem developed -- that the exemption would not be applicable. That's easier said than written.

Oftentimes in environmental laws, when it comes to permitting certain activities, there will be a period of time when that activity may be permitted, but that direction is for a limited time and that, then, forces a revisiting of the issue. And that allows science to drive the results and to revisit whether an exemption is appropriate.

I don't know how the congressional committee ultimately debated that, but they arrived at a broad exemption where the only restriction on it was if diesel fluids were used in the process. I would have been more supportive of language that was more restrictive.

**Q: How did the exemption change the EPA's oversight of hydraulic fracturing?**

Once Congress enacted that exemption it signaled to the agency, 'well, we can do some review and monitoring of the situation, but we need to focus on some other priorities.'

**Q: And what do you think of what has happened since that exemption was passed in 2005?**

I'm not surprised at the discussions that have come up. Since then, there has been increasing data -- this being one of the big topics of the day when it comes to water and energy -- and there have been an increasing number of instances where communities and citizens have expressed concern. I think it is important to keep having that conversation as to whether an exemption makes sense, and also what additional science is needed to justify the continuation of the exemption.

**Q: If the law had been written with the sort of safety net you wanted, would the recent news about water contamination have been enough to force the government to revisit the exemption issue?**

Probably. From what I have seen and read about the past few years, while there is growing promise within the energy sector for natural gas and the hydraulic fracturing process, there is also a growing list of concerns. They weren't known to us at the time, within the agency and within Congress.

I'm not in a position to second-guess or revisit a law that is based on the data that we had at the time. We did not see this as a high-priority environmental risk. But we did know that this was a relatively new process and we had concerns that a particular exemption needs to be revisited when more is learned.

Clearly Congress should focus on this and ask whether it should continue in place as is, given the increasing amount of information and concern over the practice. I support EPA's effort to revisit the issue, to gather all of the facts and to do an even more comprehensive assessment.

**Q: Should energy companies continue to be allowed to keep the names of the chemicals they use for fracturing secret?**

I think this is one where it is important for the EPA and the Congress to ensure that the public has the relevant information as to what is happening in the hydraulic fracturing process.

I think communities' right to know is a valuable tool. There has always been a balance with confidential business information. But since we didn't have the legal authority under the Safe Drinking Water Act, we had to rely on powers of persuasion and other tools to get the industry to commit to providing us information and also refrain from using diesel fuel.

**Q: The conclusions of the 2004 EPA report don't appear to reflect the severity of the concerns voiced in earlier drafts and even deeper in the pages of the same final version. Did political pressures influence the editing process?**

If there were changes that were made, it is news to me. I really never saw any evidence of that. What I saw was the final report, and that EPA staff felt that the report was a solid product and there was integrity to the process. The most important thing was that at the time EPA felt that the report was a valid work, and that it was indicating that there was not a risk to groundwater.

But that by itself doesn't justify a statutory exemption, particularly an exemption that isn't revisited.

**Q: The 2004 EPA fracturing study was designed to be the first part of a three-phase process. But the first phase concluded that fracturing "does not justify additional study." Why?**

I don't recall how it was resolved. There was never a sense that the chapter had ended. There was interest in our part in doing additional phases. Based on the conversations I remember having, further study and gathering information in the field would have been appropriate.

## **Q: Broadly speaking, what is the political environment that the EPA operates within?**

Well, environmental laws can at times collide with energy policies and complicate energy policies. When the environmental statutes -- the Clean Water Act, Clean Air Act, NEPA [National Environmental Policy Act] -- are being discussed, other agencies have strong views and perspectives and want to support energy production and facilitate energy supply.

The environmental laws and programs don't always trump ... If the mood of the nation is to increase energy independence and energy supply, some of the environmental provisions can be viewed as constraints or barriers to that process. We've got to keep working on ways to get the two, environment and energy, to be on the same side.

## **Pennsylvania Limits Authority of Oil and Gas Inspectors**

By [Abrahm Lustgarten](#)

March 30, 2011, 6:46 p.m.

*A Chesapeake Energy natural gas well site is seen near Burlington, Pa., in Bradford County. (Ralph Wilson/AP Photo)*



Oil and gas inspectors policing Marcellus Shale development in Pennsylvania will no longer be able to issue violations to the drilling companies they regulate without first getting the approval of top officials.

That's according to a directive laid out in a series of emails received by the Department of Environmental Protection staff last week and leaked to ProPublica. The [emails say](#) the new edict applies only to enforcement actions related to Marcellus Shale drilling and that failure to seek prior approval "will not be acceptable."

The memos require that each of the hundreds of enforcement actions taken routinely against oil and gas operators in Pennsylvania each month now be approved by the department's executive deputy secretary, John Hines. The memos are raising concerns that the state's environmental inspectors can no longer act independently and that regulations could be overridden by the political whims of the state's new governor, Tom Corbett.

"What this apparently is saying is that before any final action, the inspector must get approval by two political appointees: the secretary and the deputy secretary," said John Hanger, who headed the DEP until January under former Gov. Ed Rendell and worked to strengthen the state's oil and gas regulations. "It's an extraordinary directive. It represents a break from how business has been done

in the department within the Marcellus Shale and within the oil and gas program for probably 20 years.

“It’s on its face really breathtaking and it is profoundly unwise. I would urge them to rethink and rescind.”

Corbett has made no secret of his support for drilling and has stated repeatedly that regulatory reforms can help spur job creation. Last month he gave C. Alan Walker, a former coal industry executive and longtime opponent of environmental regulations, authority to overwrite permitting decisions at the DEP in order to encourage economic development.

A spokeswoman for the DEP told ProPublica Wednesday that the initiative is not political, will not interfere with enforcement, and is intended to clear up confusion and inconsistency in the agency’s regional offices. The spokeswoman, Katy Gresh, said there is no connection between the DEP directive and Gov. Corbett’s economic initiatives.

“It isn’t meant to be an interference,” Gresh said. “It’s meant to be a benefit to our constituents and would quite frankly streamline operations.

“There are times that NOV’s (violations) have been issued when there is a pop can lying on a site. Yet maybe other things are being missed, things that are truly detrimental to the environment that we want to take action on.”

Hanger, however, says that DEP inspectors need to have breathing room to do their jobs and that forcing a senior review of their actions will only increase skepticism about their enforcement decisions.

“It will cause the public to lose confidence entirely in the inspection process. The oversight process must be professional and independent,” Hanger said. “Inserting this level of review means the secretary, if he is going to take this seriously, probably has no time to do anything else.

“I do not believe this is coming from John Hines,” Hanger continued. “This is an enormous change in policy and it’s impossible for something like this to be issued without the direction and knowledge of the governor’s office.”

Gresh disagreed.

“The governor’s office is not behind this,” she said. “The governor charged (DEP) secretary (Michael) Krancer with bringing about consistency in his agency. This was a decision made at DEP in order to affect positive change.”

# Deteriorating Oil and Gas Wells Threaten Drinking Water, Homes Across the Country

By [Nicholas Kusnetz](#)  
April 4, 2011, 1 a.m.

A version of this story was [co-published](#) with the Pittsburgh Post-Gazette.



*Gas company employees must test this temporary vent to see if it's safe for Nick Kellington and his family to visit their home. The Kellingtons were evacuated after gas from a nearby abandoned well caused a small explosion in West Mifflin, Pa. (Nicholas Kusnetz/ProPublica)*

In the last 150 years, prospectors and energy companies have drilled as many as 12 million holes across the United States in search of oil and gas. Many of those holes were plugged after they dried up. But hundreds of thousands were simply abandoned and forgotten, often leaving no records of their existence.

Government reports have warned for decades that abandoned wells can provide pathways for oil, gas or brine-laden water to contaminate groundwater supplies or to travel up to the surface. Abandoned wells have [polluted the drinking water source for Fort Knox, Ky.](#), and leaked oil into water wells in Ohio and Michigan. Similar problems have occurred in Texas, New York, Colorado and other states where drilling has occurred.

In 2008, gas from an abandoned well leaked into a septic system in Pennsylvania and exploded when someone tried to light a candle in a bathroom, killing the person, according to a [2009 draft report](#) by the state's Department of Environmental Protection. That report also documented at least two dozen other cases of gas seeping from old wells, including three where the drilling of new wells "communicated" with old wells, leaking gas into water supplies and forcing the evacuation of a home.

In February, methane from an old well made its way into the basement of a house in West Mifflin, Pa., triggering a small explosion. Two families were evacuated and have not yet returned home.

Such incidents rarely receive much attention outside the states and neighborhoods they affect. But as the nation's latest drilling boom continues, abandoned wells have begun attracting more attention, particularly in states where the earth is already pock-marked with holes left by earlier waves of extraction. New wells sometimes disturb layers of rock and dirt near fragile old wells, leading to new cases of contamination.

The most recent effort to count the nation's unplugged wells was [a survey](#) published in 2008 by the Interstate Oil and Gas Compact Commission, a multistate agency made up of regulators and industry representatives. It found that states had located nearly 60,000 wells that needed to be plugged -- and estimated that as many as a million more may be out there. In Pennsylvania alone, regulators estimate that 184,000 wells were drilled before records were kept. Many of those wells were plugged with stumps, rocks or nothing at all.

"The fact that there are thousands of these out there that need to be addressed, it's a problem, and it's a problem common to all states" with a history of drilling, said Bradley Field, who heads New York's Division of Mineral Resources.

The task of finding, plugging and monitoring old wells is daunting to cash-strapped state governments. A shallow well in good condition can sometimes be plugged with cement for a few thousand dollars. But costs typically run into the tens of thousands, and a price tag of \$100,000 or more isn't unusual.

*Vents like the one pictured in the foreground have been installed throughout Versailles, Pa., so gas from abandoned wells can be directed away from homes.*  
(Nicholas Kusnetz /ProPublica)



In the last decade, New York has managed to plug only about 125 of its estimated 40,000 deteriorating wells. It has taken Kentucky more than two decades to plug about 4,000 wells -- and it has a waiting list of almost 13,000 more. Even Texas, which has invested heavily in abandoned wells, is years away from plugging all of its open holes. Since 1984, it has plugged more than 30,000 wells. But almost 10,000 are still open, and more are found and added to the list all the time.

Some regulators fear that the number of abandoned wells will grow when the [current drilling boom](#) runs its course. Last year, oil and gas operators drilled almost 45,000 new wells across the United States, and that number is expected to hold steady or increase as the nation tries to wean itself from



foreign oil. If even a small fraction of those wells is eventually abandoned, states will be left with the bill, just as they were when the last boom ended in the mid-1980s.

To prevent that from happening, states require energy companies to post bonds before they begin building their wells. But the bonds are often so low that it can be more economical for a company to forfeit its bond rather than plug its wells. In Pennsylvania, for instance, an energy company can cover hundreds of wells with a single \$25,000 bond.

[John Hanger](#), who until January headed Pennsylvania's Department of Environmental Protection, called the bonds "scandalously low."

"There are some choices you shouldn't put in front of even good companies," Hanger said. "I'd like to think the companies would do the right thing, but we know that just isn't always the case."

### **The Birthplace of an Industry**

[One of Pennsylvania's worst cases of gas migration](#) occurred in the Borough of Versailles, a small, working-class community just outside Pittsburgh. From 1919 through 1921, more than 175 gas wells were drilled in the town. Residents put wells in their backyards to heat their homes, packing them into the 25-by-100-foot lots.

The boom dried up when most of the wells proved unproductive. But in the 1960s, pockets of gas began leaking into homes. Some houses were condemned and demolished, and Versailles eventually became a case study for federal scientists trying to locate old wells.

Researchers studied old maps and walked the grounds with magnetometers, which detect the magnetic field from metal casings in the wells. If casings were never installed or had been removed, they could test the soil for hydrocarbons that might be leaking to the surface.

Some of the old wells were plugged. But more often vents were installed to direct gas away from the homes. Today, dozens of pipes pop out of the ground in yards, behind garages and through houses, slowly leaking methane and hydrogen sulfide so the explosive gases don't accumulate. In 2009 Versailles received a \$368,600 federal grant to maintain its aging vents. About 50 methane alarms have also been installed in the town.

The vents and alarms are just part of life in Versailles. The mayor, James Fleckenstein, recently bought a house with two vents on the property and an alarm in the kitchen.

*Two vents allow natural gas to escape from the property bought by James Fleckenstein, the mayor of Versailles, Pa. Fleckenstein says the vents, which can be found throughout the town, are just a part of life in Versailles. (Nicholas Kusnetz/ProPublica)*



"We've been living with this problem forever," Fleckenstein said. "People would have a vent in their yard burning 24 hours a day all year long, a one-inch pipe sticking out of the ground. People would put a coffee can and light it and it would just burn all the time."



There's no longer enough pressure in the gas formation to make the vents flammable, Fleckenstein said, and the town hasn't had any problems with migrating gas for a couple of years. But that could change at any time, said Fred Baldassare, who for years oversaw gas migration cases for the Department of Environmental Protection and now runs a consulting business. Old wells can deteriorate or become clogged, he said, and conditions underground can change.

In February, gas from an abandoned well caused a small explosion just across the river from Versailles, in West Mifflin, Pa. The gas company evacuated the house where the explosion occurred, as well as the house next door, where Nick Kellington lived with his wife and four children.

"I said 'How long are we packing for?' and he said 'I don't know,'" Kellington said. "Somebody tells you that, what do you do?"

Kellington said the DEP, which declined to comment about the case, used old maps to identify a nearby well that may be the source of the gas. The Kellingtons are renting a townhouse while they wait for a state-hired contractor to fix the problem. Baldassare has been hired as a subcontractor.

Every time the Kellingtons visit their former home, a gas company employee must first test the temporary vent that sticks out of their basement window. Even then, Kellington has to leave his cell phone outside, lest a spark ignite a pocket of gas.

Finding and plugging an old well can be risky, because nearby wells may be disturbed and begin releasing gas. So, the Kellingtons' home is being fitted with a system that pumps air under the house, creating a high-pressure zone that would prevent the gas from leaking indoors.

Kellington said that even if the system is installed successfully, he may try to sell the house and move.

"My wife just doesn't feel safe," he said.

## **A 150-Year-Old Legacy**

Edwin Drake drilled the nation's first commercial oil well near Titusville, Pa., in 1859, and for decades people across the country drilled wells as they pleased. Some states didn't develop modern regulations until the second half of the 20th century.



Edwin Drake drilled the nation's first commercial oil well near Titusville, Pa., in 1859, and for decades people across the country drilled wells as they pleased. Some states didn't develop modern regulations until the second half of the 20th century.

*Versailles, Pa., as seen in 1920.*

In the early days, the industry was dominated by “get-rich-quick wildcatters,” said Dale Henry, a veteran of the oil and gas industry who ran unsuccessfully to sit on the Texas Railroad Commission, which regulates drilling in the state. Those who didn’t get rich often ran out of money before they could plug or seal their wells, Henry said.

“They simply fold their tent, head into the darkness and you never hear or see them again,” he said.

Nobody knows how much damage abandoned wells have caused over the years. Most states don’t systematically track cases of contamination that result from abandoned wells, said Mike Nickolaus, special projects director for the Ground Water Protection Council, an association of state groundwater agencies.

“It might be a problem, it might not,” Nickolaus said. “That’s the problem you have. You can’t just count up the numbers and say that represents a big problem, a small problem or no problem at all.”

Despite the lack of comprehensive data, state and federal reports have chronicled scores of contamination cases over the last couple of decades.

In 1989, the Government Accounting Office found [nine cases](#) where abandoned wells had contaminated groundwater, including one Kentucky case that rendered the water for more than 80 households undrinkable. The GAO said its findings were incomplete and warned that state agencies didn’t have the funds to track and plug the growing number of abandoned wells.

Ohio’s Department of Natural Resources found 41 cases where abandoned wells contaminated private water supplies from 1983 through 2007. Those incidents represented about 20 percent of Ohio’s oil and gas contamination cases during that period.

The [EPA’s 2004 study of hydraulic fracturing](#), which is best known for determining that fracking didn’t threaten drinking water, examined groundwater contamination in the San Juan Basin in Colorado. The report said state authorities suspected that gas migration into water wells and buildings was due, at least in part, to the presence of abandoned wells.

Some regulators are concerned that [fracking](#), which is used in most new wells, increases the possibility that old wells will be damaged or disturbed. The process injects water, sand and chemicals into wells at high pressure to release oil or gas. But by disrupting the earth it can also push gas and other contaminants into openings created by old wells.

That’s what investigators think happened on a rainy day in 2006, when [gas and water began spewing out of the ground on Emile Alexander’s farm](#) in Washington County, Pa. Investigators determined that the fracking of a new well caused methane to leak through an abandoned well and into the ground and the aquifer. Some water wells near Alexander’s farm have been fitted with vents to allow stray gas to escape. Methane gas isn’t toxic to ingest, but it can explode.

Although Alexander receives royalty payments from two wells on his land, he wishes he had never signed the lease. “I didn’t sign it to kill me,” he said.

[In an internal briefing last year](#), EPA scientists raised concern that fracking near Pennsylvania's many abandoned wells could threaten groundwater, saying the old wells "may present a risk unique to the hydrofrac process."

This year, as part of [its first comprehensive study](#) of hydraulic fracturing, the EPA plans to look at whether abandoned wells might become conduits for fracking fluids.

### **Lack of Money Thwarts a Fix**

More than two decades ago, [federal scientists determined](#) that chlorides, or salts, were leaking through abandoned wells and into an aquifer that supplies drinking water to nearly 40,000 people in Fort Knox, Ky.

Mike Unthank, a scientist with the United States Geological Survey, said the problem could be solved if a few dozen abandoned wells were plugged. But the bids that Kentucky's Division of Oil and Gas state received were so high that the Fort Knox project alone would deplete its \$1.3 million plugging fund.

Marvin Combs, the division's assistant director, said the fund is used to plug 250 to 300 wells a year. At that rate, it will take more than 40 years to work through the nearly 13,000 wells the state has identified so far.

*Nick Kellington, of West Mifflin, Pa., says the bushes that once grew on this bare spot died after a gas leak forced his family to evacuate their home. (Nicholas Kusnetz /ProPublica)*



While the Fort Knox wells wait their turn, local water officials are using a pumping system to push fresh water through the aquifer, diluting the chlorides enough to keep them below the federal safe drinking water limit. But the system must be constantly monitored, and just a few missteps or a change in conditions could make the water undrinkable.

Ideally, the bond money that a company must post before drilling would cover the cost of plugging any wells it abandons. But the bonds are often too low. A recent [Government Accountability Office review](#) found that the minimum bonding levels for drilling on federal land were set half a century ago and that Interior Department officials haven't adequately reviewed them or raised them when necessary.

"It begs the question, does it truly provide the incentive to operators to do the reclamation? Because that's the whole point of what the bond is," said Anu Mittal, the GAO report's lead author. "Given how many wells are being drilled right now -- in the last decade it has doubled -- it does raise some concerns that if the operators don't reclaim the land like they're supposed to it's creating a huge liability for the federal government."

Some states, including Wyoming, have strengthened their bonding requirements. But Wyoming's oil and gas supervisor, Tom Doll, said that though his agency now requires some of the highest bonds in the nation, it couldn't afford to plug all the wells that would likely be abandoned if the

energy market crashed again, as it did when oil prices fell 50 percent in 1986. He said lower natural gas prices have already driven energy companies to close some coal bed methane wells in Wyoming.

John Hanger, the former head of Pennsylvania's Department of Environmental Protection, said the way states handle today's drilling rush will determine how this boom eventually plays out, especially in the Marcellus Shale, which lies beneath Pennsylvania, New York and parts of six other states.

"I personally think one of the very good things that's coming out of the Marcellus is a whole lot more attention to the problems that were created in the past and the opportunity to do it better this time," he said. "If we don't raise the bonding amounts, we're repeating a mistake."

## Pa.'s New Jobs Czar Fought Enviro Regs for Years

By [Abrahm Lustgarten](#)

April 11, 2011, 12:01 a.m.

*A version of this story was [co-published](#) with the Pittsburgh Post-Gazette.*

*C. Alan Walker  
(Pennsylvania House of Representatives)*



For years C. Alan Walker, a coal industry mogul and wealthy donor to Pennsylvania's Republican Party, clashed with environmental officials who tried to regulate his companies. He described them as "vindictive," "out of control" and "the most dangerous thing" affecting the country's welfare.

In 1981 Walker even argued that the state should let someone from industry influence how environmental regulations were enforced.

Now, some 30 years later, Walker himself has been given exactly that role by the state's new Republican governor, Tom Corbett, who has accepted nearly \$184,000 in political donations from Walker since 2004.

In January Corbett [appointed Walker](#) acting secretary for the state's Department of Community and Economic Development (DCED). In March he gave him authority to expedite and influence permits at any state agency, including the Department of Environmental Protection, which regulates drilling in the Marcellus Shale, one of the nation's most important natural gas fields. Walker was also appointed to the state's Marcellus Shale Commission, a multi-stakeholder group that will advise the state in developing the shale. The goal, Corbett has said, is to "make Pennsylvania the Texas of the natural gas boom" and "create jobs, not votes."

A spokesman for Corbett said that Walker's role is not unprecedented and that his influence will be tightly focused on promoting job growth while preserving environmental enforcement.

Walker's assignment has raised questions about how a businessman whose coal companies were cited numerous times for polluting streams and drinking water -- and who then fought the state's orders to clean them up -- will work with DEP officials who are tasked with carrying out environmental laws.

Walker recently assured state legislators that he will not issue permits or override environmental decisions. "I'm merely here as an expediter to make sure that permits get the proper attention," he said.

He has also defended his coal companies' environmental record. "As long as I have run those companies, not one gallon of polluted water went into a Commonwealth stream—period," he is quoted as saying in the March 24 edition of the Patriot News, a newspaper in central Pennsylvania. "I wouldn't want to live in the state of Pennsylvania if it had."

However, a review of court documents, state records, and of Walker's own statements since the late 1970s revealed at least 15 cases in which Walker's businesses polluted the state's waterways.

State records show that in the 1980s and 1990s Walker's companies were ordered to treat wastewater that was contaminating residential drinking water wells and nearby streams. In Rush Township mines drained into streams, polluting the municipal water supply for the nearby town of Houtzdale, as well as Mountain Branch, a stocked trout stream.

In an email, a DCED spokesman told ProPublica that mining is a dirty business and that Walker had met his legal responsibilities.

In 2003, Walker told the DEP that his companies, which were winding down operations, could no longer afford to treat wastewater. After he threatened to stop treating the waste sites, he reached [a summary settlement](#) with the state: He and his insurance companies contributed to a \$7.2 million cleanup trust, and the state released him from his treatment responsibilities. The settlement, which he signed on Oct. 2, 2003, included a statement describing the harm his companies had done to water resources over the years. Walker said recently that he never intended to stop treating the wastewater, and that his stance at the time was merely a negotiating tactic.

"Defendants have allowed discharges of acid mine drainage to the groundwater and surface waters ... of the commonwealth," the agreement states. "Defendants' discharges of acid mine drainage have impacted adversely and are impacting adversely those surface and groundwaters. ... The defendants agree that the findings ... are true and correct."

Both Walker and Corbett declined to be interviewed about the environmental record of Walker's companies or about his new governmental duties. When asked about Walker's environmental record, Corbett's spokesman, Kevin Harley, said it doesn't pertain to his current responsibilities.

"He's the secretary for DCED -- he's not the secretary of DEP," Harley said. "All he can do is ask that the permits that have a significant number of jobs involved get expedited, as long as all the I's are dotted and T's are crossed."

Walker's appointment has been approved by the state's Democratic caucus, but no date has been announced for his final confirmation before the full Assembly.

Few people contacted for this article were comfortable talking about Walker on the record for fear that it would affect their careers in state government or their business dealings in the state. Although he is not well known to the general public, Walker is described as a powerful voice in the current administration, a forceful presence in the Pennsylvania business community, and a generous donor to at least three past Republican governors.

In a 1981 interview for [a public television documentary](#), Walker said that business leaders needed to proactively insert themselves into the governing process. "You can't separate politics and business," he said, "because today our business in particular is so heavily regulated that if you don't have a way to communicate your problems to the government people that regulate you then you've got very serious problems."

Dick Thornburgh, who was Pennsylvania's governor from 1979 to 1987 and later became attorney general of the United States, told ProPublica in an interview that in the 1980s Pennsylvania's economy was suffering, just as it is now. Walker "was pro-business, and we had a desperate need for business leaders to become involved in economic growth."

#### **Pennsylvania Budget Hearing Department c**

[http://www.youtube.com/watch?v=OS5Hippgwq8&feature=player\\_embedded](http://www.youtube.com/watch?v=OS5Hippgwq8&feature=player_embedded)

Walker answered questions at a state House appropriations hearing on March 24 about how he will carry out his new job. He offered an example of the help he gave a metallurgy company that wants to move to Clearfield County. The company, he said, plans to hire 200 welders and pay them above-average wages. But it had been told it would have to wait six months for DEP permits.

"I asked permission of the secretary of DEP to call the office and ask why the permit was being held up," Walker told the lawmakers. "I called the office of the DEP. ... The person on the phone said, 'Well, I don't have anybody here to type the permit.' So, that's the type of situation I plan to get involved in. To expedite permits that are being held up for bureaucratic reasons."

But the case Walker referred to wasn't quite so straightforward. The company, Oklahoma-based Allied Technology, is part of a Houston-based oil and gas field services conglomerate, Forum Energy Technologies. Allied submitted its permit application to the DEP on Jan. 5 and on Feb. 18 was told there were some "deficiencies" in the materials it had provided. Several people close to the process said that when Walker stepped in, the DEP was running due diligence on the company, exactly as state regulations require.

Allied's permit was expedited, as Walker had requested, bypassing other permit applications that fell further down in the stack. On March 12 an announcement was published in the Pennsylvania Bulletin, signifying that the process was moving swiftly forward.

"He gave an example of what on the surface appeared to be an absurd withholding of a permit," said Gregory Vitali, the state representative who questioned Walker in the hearing. "It was not accurate



as he described it. It had nothing to do with what he was suggesting. It was legitimate procedure that needed to be followed.”

## **Historical Resistance**

Walker’s family company, Bradford Coal, was founded by his father in 1935. In 1979, when Walker was the company president, Bradford was cited for air pollution violations, and the U.S. Supreme Court ruled that residents had the right to sue the company for failing to comply with regulations. By the early 1980s Bradford was producing more than 1.7 million tons of coal a year, making it one of the state’s largest coal producers. Walker’s holdings grew until, according to disclosure records filed with the state this year, he owned or held a substantial share in at least 13 companies, including a trucking business and a small oil and gas company.

In the years Walker has run these companies, he hasn’t been shy about criticizing environmental regulators, often assailing their influence in speeches, on television and in the state’s newspapers. In one TV interview he said environmental regulators were “constantly throwing more roadblocks and hurdles in.”

In 1980 he told the Pennsylvania Environmental Council, a group of academic, government and industry representatives, that “the coal industry is at the mercy of its natural adversary,” referring to regulators. In the speech, he proposed a new position in state government that could “act as an advocate” for industry, perhaps as deputy secretary for natural resources in the state commerce department, according to an Oct. 18, 1980, article in the Pittsburgh Press.

Walker stated his views again in a 1981 public television documentary called “A Coal Operator’s Turn,” produced by Penn State University. In particular, he complained about the permitting process and said regulators didn’t understand the businesses they were regulating. “That’s where the frustration and the anger comes in, because primarily I think it’s ignorance on the part of the people we are dealing with.”

In the film, Walker faces off with a group of residents from a small central Pennsylvania town called Egypt, near Walker’s Bear Hill mining operation. [A 1980 Notice of Violation](#) shows that Bradford Coal had been cited by state regulators for contaminating the residents’ drinking water with acid mine discharge. According to the notice, he was ordered to stop the pollution and provide replacement drinking water for the residents.

“To date the affected residents of Egypt have not been provided with replacement water,” says the state [Department of Environmental Resources letter](#). “Bradford Coal Company has failed to provide treatment for the acid discharges and has failed to submit a plan.”

But more than a year later, when the documentary was produced, the company still hadn’t complied.

“They are using blackmail to force us to put water in there for those people,” Walker says in the film. “It gets back to this: Who are the regulators responsible to? They are supposed to be responsible to the people. But they become an end in themselves, and we’ve got a serious problem because they are out of control.”

Robert Ging was one of those regulators. At the time, Ging was a state assistant attorney general in the environment department working to prosecute cases like the one against Bradford.

After months went by without action, Ging proposed that Bradford Coal forfeit the bonds it had posted with the state. But then he learned the bonds wouldn't be enough to cover the cost of fixing the contamination.

In February 1981, Ging got a court injunction to compel Walker to replace the water. Still, Walker did not comply.

That September, Ging decided to crank up the pressure. "It was controversial," Ging said in a recent interview. "Alan Walker was a bigwig in the Pennsylvania Coal Association, and Thornburgh was running for governor. Walker was a big hitter in his campaign and was working for him in Clearfield County." In fact, Walker had recently hosted and introduced Thornburgh at a campaign event.

Ging pressed on anyway. Fed up with what he described as Walker's stubborn lack of cooperation, he tried to enforce the injunction against Bradford Coal. That Dec. 4, Ging said he was granted court clearance to file a contempt action against Bradford Coal. He was also planning to deny a mining permit to another Walker company, Al Hamilton Contracting Company, because of the risk of acid mine water pollution.

On Dec. 14, Ging was summoned to his bosses' office in Harrisburg and fired. He is now an environmental attorney in southwestern Pennsylvania.

In 1983 [Ging testified](#) before the Pennsylvania House Conservation Committee, which was investigating the influence of special interests in the state's environmental enforcement. He told the committee that he had been warned not to push the Walker cases too hard and said state officials had questioned his "loyalty" and warned him not to embarrass the governor. According to his statement at the hearing, Ging's boss "stressed the governor is trying to portray coal as the energy of the future and some of the recent enforcement efforts which we had taken against surface mine violators had created an aura of overzealous enforcement." Ging testified he was criticized "for using pressure tactics on the coal company by threatening to go back into court to enforce the injunction."

Thornburgh told ProPublica that Walker was both a "generous" campaign contributor and a friend but denied favoring Walker during his administration or giving Walker's companies special treatment. Like Corbett today, Thornburgh said that even while he focused on supporting business growth, his administration's environment department rigorously enforced state and federal environmental laws.

### **An Agreement Brings Closure**

Records show that Walker's regulatory troubles persisted throughout the 1980s and 1990s and that state regulators repeatedly pressed his companies to treat acid mine drainage and curb pollution.

When an elderly woman's basement in Clearfield County filled with muddy red acid mine drainage water and contaminated her water supply in 1991, she complained to the state environment



department. Walker's company sued her, forcing her family to take out a second mortgage and pay some \$15,000 in legal fees, according to news reports at the time. The suit was dismissed, but she was left to pay the legal fees. In response to her plight, State Rep. Camille "Bud" George wrote an anti-SLAPP law to protect citizens from retaliatory lawsuits meant to intimidate witnesses. Pennsylvania passed a version of the law in 2000.

In the late 1990s, three of Walker's companies -- the Shannon Land & Mining Company, Al Hamilton Contracting, and Manor Mining and Contracting -- entered into a much-publicized deal to sell land to the state for a Pennsylvania National Guard tank training facility. Though the deal collapsed, the contract contained a 5 percent nonrefundable earnest fee, and Walker walked away with more than \$326,000 in taxpayer money.

Robert Casey, Pennsylvania's auditor general at the time and now a U.S. senator, [audited the transaction](#) and found that the deal had been skewed to benefit Walker's companies. Casey did not return phone calls for this story, but his audit found that the property contained "significant, long-term acid mine drainage" and 14 other unresolved title issues "that constitute a further breach of contract." The audit said that breach of contract should have caused Pennsylvania to ask for its money back.

Walker's environmental record resurfaced as an issue in 2002. That's when Walker, who wanted to wind down his businesses, notified the state that he would no longer treat pollutants from at least 15 properties that the state had ordered him to clean up over the years. In effect, he was threatening to send millions of gallons of toxic water into streams.

"That obviously got our attention," said David Hess, who headed the state environment department at the time. "He was a tough businessman."

Hess got an injunction to keep Walker from abandoning his treatment facilities. The following year, under then-Governor Ed Rendell, the [DEP reached a settlement](#) agreement with Walker to resolve all of his companies' outstanding treatment responsibilities.

The text of that agreement provides details on how each of Walker's toxic water treatment sites was handled over the years. In some of the cases, Walker's companies complied immediately, agreeing to treat the water. But he fought the state on four cases, filing appeals -- sometimes repeatedly -- and drawing them out for years before a plan was agreed on to treat the water.

The plan stipulated that to cover part of the cleanup costs, estimated at more than \$7 million, Walker and his insurance companies would forfeit nearly \$3.8 million in bonds that he had posted with the state. The balance would be delivered to the state in the form of 2.34 million pounds of unmined coal at the Manor #44 mine.

A spokeswoman for the DEP declined to answer questions about the mine, [the settlement agreement](#), the status of the cleanup trust, or about Walker's influence on the permitting process. Federal records from the Department of Energy do not show regular production from the mine after 2000, and state documents indicate the mine is part of a remediation program. Pictures show it flooded, and apparently abandoned, raising questions about how difficult it would be for the state to cash in its value.

Hess, the former DEP secretary, said it is not unusual for the state to take assets as compensation, but that it is a last resort. “It happens when the state is party to bankruptcy and those types of things,” he said. “Does it happen every day? No, obviously you prefer cash, and you take whatever bonds or guarantees were posted.”

As part of the 2003 agreement, Walker was personally released from all liability, meaning his assets could not be claimed if the state ran out of money to clean up the mines. Robert Ging said such an agreement ran against the intent of the state’s clean streams laws, which were written explicitly to enable individuals to be held accountable. He said no case he settled during his tenure had that kind of provision.

“It tells me,” said Ging, “that this man received special treatment unlike anybody else that I have ever had to deal with.”

*ProPublica’s Nicholas Kusnetz contributed to this report.*

**Correction (April 11, 2011):** This story originally stated that the Pennsylvania governor was Tom Ridge in 2003 when the DEP reached a settlement agreement with Walker to resolve all of his companies’ outstanding treatment responsibilities. In fact, Ed Rendell was governor at the time.

## More Reasons to Question Whether Gas Is Cleaner Than Coal

By [Abrahm Lustgarten](#)  
April 12, 2011, 1:39 p.m.

*An drilling rig Ray, N.D. (Karen Bleier/AFP/Getty Images)*



One of the main advantages of natural gas is that it is supposed to be far cleaner than oil or coal. Right now Congress is even considering a T. Boone Pickens-inspired bill aimed at converting the nation’s truck fleet to run on natural gas. If it’s passed, it will be in large part on the assumption that such a move will help the nation reduce climate-changing greenhouse gases.

But evidence continues to mount that natural gas is not as clean as we like to think.

In January, [a ProPublica investigation](#) found that large amounts of “fugitive” emissions were left out of common comparisons between coal and gas and that if these emissions were counted the advantages of natural gas dwindled. [Our report](#) found that the Environmental Protection Agency’s emissions estimates from hydraulic fracturing in shale formations were 9,000 times higher than the agency had previously estimated. We also [quoted Robert Howarth](#), a Cornell University professor, saying that he would soon release research that showed that the emissions from gas were even worse.

More details of [Howarth's research](#), which is reportedly scheduled to be published in the journal *Climatic Change*, were released by [The Hill](#) and [The New York Times](#) this week. Howarth's conclusion -- that shale gas production is actually far dirtier than coal in terms of greenhouse gas emissions -- is attracting national attention.

Howarth's findings are based in part on the EPA's revelation that far more gas escapes into the atmosphere in production fields than was previously known, and on a mathematical tweaking of the intensity of methane gas' effect on the atmosphere. Howarth, whose figures for total emissions exceed even the EPA's revised estimates, calculates the impact of methane in the atmosphere over a 20-year period, saying the urgent need to address short-term climate change justifies that calculation. Over 20 years, methane is considered 72 times as powerful as carbon dioxide in its effects on climate change. Using that approach, Howarth concludes that gas may be between 20 and 100 percent dirtier than coal.

The EPA uses a different factor, calculating methane's effect on the atmosphere over 100 years, in part because the gas degrades over time. Using the 100-year time frame, methane's potency is diminished by about one third. [ProPublica used this calculation](#) in January and determined that in some cases -- where an old and inefficient power plant was used to burn the gas, for example -- natural gas may hold a 25 percent advantage over coal throughout its lifecycle, far less than the 50 percent advantage generally touted.

Howarth's calculations erase even that small advantage though. When he used the 100-year measure, he concluded that the greenhouse gas emissions footprint of coal and gas were equal.

There's plenty of parsing left to do here before clear answers emerge about exactly how natural gas stacks up. But one thing is increasingly certain: Without [sustained efforts](#) to shut off and capture leaked emissions in the gas production fields, whatever advantages natural gas does present will be diminished.

## PA Senate Confirms Controversial Job Czar Nominee

By [Nicholas Kusnetz](#)

April 13, 2011, 6:32 p.m.

The controversial nominee to head Pennsylvania's economic development agency was approved Tuesday night by the state Senate. C. Alan Walker, a former coal baron and prominent Republican donor, gained [unanimous support](#) to oversee the state's Department of Community and Economic Development. In March, Gov. Tom Corbett also [gave Walker's department](#) authority to intervene in any agency's permitting process.

Earlier this week, [ProPublica detailed](#) Walker's long history of fighting regulation of his industry, including cases where his companies polluted the state's waters.

# Natural Gas Drilling Is at a Crucial Turning Point

*A drilling rig in Wyoming. (Abraham Lustgarten/ProPublica)*

By [Abraham Lustgarten](#)  
April 21, 2011, 2:33 p.m.



*ProPublica has been covering gas drilling since 2008. When The Guardian asked us to participate in a series it is running about hydraulic fracturing and natural gas, we wrote this analysis of how Europe might learn from the problems we've uncovered in the United States.*

First, a wave of new natural gas drilling swept across the United States. Mountain and pastoral landscapes were transformed into landscape-scale factories that optimistically promised a century's worth of clean-burning fuel and a risk-free solution to dependence on imported oil. In 2008, it seemed the ultimate win-win in an era of hard choices.

Later, more sobering facts began to complicate things. The drilling relies on an invasive process called [hydraulic fracturing](#), or “fracking,” that uses brute force and dangerous chemicals to crack open the Earth and extract the gas from previously unreachable deep deposits.

Where the drilling and fracturing happened, water wells sometimes became contaminated. Waste pits leaked into aquifers. Large quantities of fresh water were used. Mountain glaciers and Wyoming valleys became shrouded in smog. Reports began to emerge that natural gas might cause [almost as much greenhouse gas pollution as coal](#).

Now the industry is at a crucial point. Even as the hard lessons have come into focus, the myriad opportunities presented by this vast fuel source have made its development inevitable.

In the United States, President Barack Obama stands firmly behind expanded natural gas use and the local economic development it brings. In the next 10 years, the United States will use the fracturing technology to drill hundreds of thousands of wells in cities, rivers and watersheds. Drilling – along with fracking – is fast expanding across Europe, South Africa and Russia. And it will not stop while oil prices are at record highs, the Middle East is in turmoil and nuclear energy is bogged down by global distrust after the Fukushima crisis.

The industry and governments need to figure out how to scale up gas drilling safely and how to learn from the mistakes in the United States where the fracturing technology was first put to commercial use. The problem is that despite their head start, U.S. scientists and regulators have not answered crucial questions about the risks.

Where will the vast amounts of water for fracturing come from, and how will the waste water be safely disposed of?

Are regulations in place to make sure the industry extracts the gas as safely as possible and that underground sources of drinking water are protected?

And what, exactly, happens when bedrock is shattered and filled with chemicals deep underground?

It remains unclear, for example, how far the tiny fissures that radiate through the bedrock from hydraulic fracturing might reach.

Or whether they can connect underground passageways or open cracks into groundwater aquifers that could allow the chemical solution to escape into drinking water, as methane from these wells has been proven to have done.

And it is not certain that the chemicals – some, such as benzene, are known to cause cancer – are adequately contained by either the well structure beneath the Earth or by the people, pipelines and trucks that handle it on the surface. Almost no research exists into these issues.

Rather than learning from the environmental problems, the drilling industry has insisted they are not its fault. It maintains the fracturing happens thousands of feet from water supplies and below layers of impenetrable rock that seal the world above from what happens down below. There is no reason for concern, they say.

Yet there is. And the frequent cases of contamination and well control problems across the United States that have come to light through several [ProPublica investigations](#) prove it. Even if layers of rock can seal water supplies from the layer where fluid is injected, the gas well itself creates an opening in that layer.

The well bore is supposed to be surrounded by cement, but often there are large empty pockets or the cement cracks under pressure. In many instances, the high pressure of the fluids being injected into the ground has created leaks of gas – and sometimes fluids – into surrounding water supplies..

This is partly why the U.S. [Environmental Protection Agency has undertaken a nationwide study](#) into the lifecycle impacts of fracking, for the first time. The next step will be to use the findings to inform a rigorous system of oversight so drilling happens in the best, most technologically advanced and safest way possible.

In the United States that is going to be tough, because the federal government does not regulate hydraulic fracturing. Oversight is left to states where regulations vary widely. Europe, where disparate governments oversee a shared continuous natural landscape, may face similar challenges. The energy industry already knows how to prevent water pollution and how to sharply reduce toxic air emissions, for example. Drilling companies have figured out how to drill wells with fewer toxic chemicals, so it can enclose wastewater. In the US, legislators are considering a baseline set of rules with higher standards which would make fracturing slightly more expensive than the industry has wanted, but also offer an opportunity for consistency, predictability and the streamlining of operations.

For places already coping with the environmental consequences of drilling, that will boost confidence that natural gas can be harvested safely. It will also lead to political and regulatory

stability that will end up saving the industry money. And only then can drilling for gas be the win-win it was promised to be.

## Response to Pa. Gas Well Accident Took 13 Hours Despite State Plan for Quick Action

By [Nicholas Kusnetz](#)

April 26, 2011, 1:11 p.m.

**April 28:** This post has been [updated](#).

*The outside of a natural gas drill site owned by Chesapeake Energy in Leroy Township, Pa., on April 20, 2011. (The Daily Review-C.J. Marshall/AP Photo)*



When Chesapeake Energy lost control of a Marcellus Shale gas well in Pennsylvania on April 19, an emergency response team from Texas was called in to stop the leak. By the time the team arrived more than 13 hours later, brine water and hydraulic fracturing fluids from the well had spewed across nearby fields and into a creek.

Why did a team have to be called in from Texas, as [the Scranton Times Tribune has reported](#)? That's what we're trying to figure out.

According to a plan that Pennsylvania's Department of Environmental Protection [announced in August 2010](#), a Pennsylvania-based emergency response crew should have been available to handle the blowout. The plan was created after Texas crews had to be called in to deal with two serious gas drilling accidents last summer. The first [was a blowout](#) at an EOG Resources well in Clearfield County on June 3 -- it took the Texans 16 hours to arrive at that site. The other [was a fire](#) at a Huntley & Huntley well in Allegheny County that killed two workers on July 23 -- the emergency responders showed up 11 hours later that time.

John Hanger, the DEP's former secretary, said at the time that the delay was unacceptable.

"When an accident occurs, we cannot wait 10 or more hours for a crew to fly in from halfway across the country," he said in a news release.

To remedy the situation, Hanger said that Texas-based CUDD Well Control would open a new facility in Bradford County and that 16 specially trained responders would be able to reach any well in Pennsylvania in five hours or so. If a well operator didn't respond promptly, the DEP would call in the CUDD team. Drilling companies could use CUDD, too.



The arrangement seemed to work. When a Talisman Energy well blew out in Tioga County on Jan. 17, the CUDD team had the well under control [in less than four hours](#).

Dennis Corley, CUDD's vice-president, said he offered the company's services to Chesapeake after last week's blowout -- which occurred in Bradford County -- but was told that Chesapeake was already under contract with another emergency responder, Houston-based Boots & Coots.

Corley said the DEP did not request help from CUDD. The DEP, which is now led by Michael Krancer, didn't respond to calls and emails from ProPublica.

Rory Sweeney, a Chesapeake spokesman, said he didn't know why it took emergency responders more than 13 hours to arrive. He could neither confirm nor deny that the team that sealed the well late Thursday had come from Texas.

In a phone interview yesterday, Hanger said the state's agreement with CUDD was still in place when he left the DEP in January. The agreement "was put in place to make sure it was a matter of a few hours" before help arrived, Hanger said. "That was the point."

In a notice of violation issued to Chesapeake last week and [published by The Daily Review](#), in Towanda, Pa., the DEP asked the company to explain why the response took so long.

Another question raised by last week's incident is what tests the DEP and Chesapeake are using to monitor the spill's effect on water and soil. In the notice of violation, the department asked Chesapeake for a full list of the chemicals it was using to hydraulically fracture the well. But Sweeney, the Chesapeake spokesman, said on Monday that the company hadn't yet reported the composition of the fracturing fluids to the department. He said Chesapeake is still determining exactly what was in the fluid that leaked to the surface. Despite that gap in knowledge, he said the spill has caused "minimal" harm to the local environment.

Sweeney directed us to a [new website](#) that companies are using to voluntarily disclose the hazardous components of their fracturing fluids. But the problematic well, called Atgas 2H, is not listed on that site. Other wells Chesapeake has drilled in Bradford County are listed, however, and they show a number of toxic chemicals, including 2-butoxyethanol, which can damage blood cells and vital organs. Those disclosures also list at least one proprietary ingredient, a component that the company has kept secret.

Sweeney said Chesapeake has replaced the damaged well head and is now considering whether to permanently plug the well or try to bring it into production. Chesapeake has voluntarily suspended all its hydraulic fracturing operations in the Marcellus Shale for the time being.

**Update:** When we first interviewed Chesapeake spokesman Rory Sweeney, he said he didn't have any details about when Chesapeake responded to the Bradford County well blowout. After the story ran, however, he sent us an email saying that an in-house well control specialist arrived at the site within 30 minutes, with three more arriving in the next eight hours. He said they reduced the flow by about 70 percent before the Boots & Coots team arrived. "Chesapeake's response to the situation was immediate and did not take 12 hours as some have reported," Sweeney wrote.

ProPublica's information about Chesapeake's response time came from the "notice of violation" that the DEP sent to Chesapeake after the spill. In that document, the DEP asked the company to explain "why Chesapeake took 12 hours to have a well control service company at the site when there are other well control service companies located closer to Atgas 2H Well." In his original interview, Sweeney confirmed that the blowout began about 11:45 p.m. on April 19. According to the DEP document, Boots & Coots arrived at 1:25 p.m. the next day. Chesapeake said the leak was sealed on April 21 and the well was fully controlled on April 25.

## PA Oil and Gas Inspectors Free to Issue Violations Without Approval From Top, Enviro Chief Says

By [Nicholas Kusnetz](#)  
May 5, 2011, 11:09 a.m.

*A drilling rig in Pennsylvania. (Wikimedia Commons)*



Pennsylvania officials said this week that oil and gas inspectors do not need approval from the state's top environmental boss to issue violations to companies drilling for gas in the Marcellus Shale. In March, [internal emails](#) from the Department of Environmental Protection were leaked to ProPublica and other news organizations [showing a directive](#) that appeared to order just that. The emails told field staff to forward their work to superiors—and eventually to the head of the department—and await approval before issuing any violations.

It remains unclear whether that order has been repealed or whether it ever was put into place. In April, the DEP [told the Pittsburgh Post-Gazette](#) that the order was a temporary "procedural change." On Tuesday, [Gov. Tom Corbett](#) and DEP Secretary Michael Krancer simply said such approval had not been required.

"I'm here to tell you inspectors were never under an order or directive or anything else to clear through Mike Krancer or anybody else in central office to write notices of violation," Krancer [told a group of state legislators](#) on Tuesday. "That story was blown way out of proportion."

A report by the Post-Gazette said the department [has rescinded the order](#).

"The notice of violation process is just as it was," DEP spokeswoman Katy Gresh told the Post-Gazette. "The inspectors don't need pre-approval and that has been communicated to them."



In his comments before lawmakers, Krancer acknowledged that story but did not directly address whether anything had been rescinded.

“It doesn’t matter to me,” whether the report that the order was repealed is true, he said, “as long as you get to the same result. And the result is that inspectors aren’t having to clear any [violations] through either me or others in central office.”

The DEP has not responded to a request for comment from ProPublica.

Jan Jarrett, president of the environmental group PennFuture, said the episode had been a major public relations blunder for the department and that she’s happy the issue has been settled.

“They rescinded it, so credit where credit’s due,” she said.

When we [first reported the story](#) in March, Gresh did not deny that the order would require inspectors to seek approval before issuing violations. The [original email](#), sent by the department’s executive deputy director, John Hines, said that all violations or actions “must get the approval” of Hines and eventually Krancer, who was appointed to head the DEP in January. “Any waver from this directive will not be acceptable,” he wrote.

Gresh told us then that the directive was meant to correct inconsistencies across the department and that it would not interfere with enforcement.

“There are times that [violations] have been issued when there is a pop can lying on a site,” she said in March. “Yet maybe other things are being missed, things that are truly detrimental to the environment that we want to take action on.”

Former DEP Secretary David Hess told us in March that such a directive was not surprising, given that a new administration was in charge. He said it’s understandable for a new department head to want to know what is happening across the agency, which has field offices across the state that operate somewhat independently.

“Anybody with a business that has six different offices, has new people in those offices, you really want to do things consistently,” he said.

In his remarks to state lawmakers this week, Krancer said he wants to make sure that inspectors across the agency are issuing violations that are consistent with the law. Krancer, who previously sat as a judge on the state’s Environmental Hearing Board, said he’d seen corporate lawyers dress down inspectors for inconsistent actions and that he wants to make sure his staff is prepared.

“Write your [violations] so they’re clear, so they’re concise and so that you, Mr. Inspector, can come to court and defend them and defend what you did,” he said. “Because that’s what you’re going to have to do in this day and age.”

# Scientific Study Links Flammable Drinking Water to Fracking

By [Abrahm Lustgarten](#)

May 9, 2011, 3 p.m.



*(Abrahm Lustgarten/ProPublica)*

For the first time, a scientific study has linked natural gas drilling and hydraulic fracturing with a pattern of drinking water contamination so severe that some faucets can be lit on fire.

[The peer-reviewed study](#), published today in the Proceedings of the National Academy of Sciences, stands to shape the [contentious debate](#) over whether drilling is safe and begins to fill an information gap that has made it difficult for lawmakers and the public to [understand the risks](#).

The research was conducted by four scientists at Duke University. They found that levels of flammable methane gas in drinking water wells increased to dangerous levels when those water supplies were close to natural gas wells. They also found that the type of gas detected at high levels in the water was the same type of gas that energy companies were extracting from thousands of feet underground, strongly implying that the gas may be seeping underground through natural or manmade faults and fractures, or coming from cracks in the well structure itself.

“Our results show evidence for methane contamination of shallow drinking water systems in at least three areas of the region and suggest important environmental risks accompanying shale gas exploration worldwide,” the article states.

The group tested 68 drinking water wells in the Marcellus and Utica shale drilling areas in northeastern Pennsylvania and southern New York State. Sixty of those wells were tested for dissolved gas. While most of the wells had some methane, the water samples taken closest to the gas wells had on average 17 times the levels detected in wells further from active drilling. The group defined an active drilling area as within one kilometer, or about six tenths of a mile, from a gas well.

The average concentration of the methane detected in the water wells near drilling sites fell squarely within a range that the U.S. Department of Interior says is dangerous and requires urgent “hazard mitigation” action, according to the study.

The researchers did not find evidence that the chemicals used in hydraulic fracturing had contaminated any of the wells they tested, allaying for the time being some of the greatest fears among environmentalists and drilling opponents.

But they were alarmed by what they described as a clear correlation between drilling activity and the seepage of gas contaminants underground, a danger in itself and evidence that pathways do exist for contaminants to migrate deep within the earth.

“We certainly didn’t expect to see such a strong relationship between the concentration of methane in water and the nearest gas wells. That was a real surprise,” said Robert Jackson, a biology professor at Duke and one of the report’s authors.

Methane contamination of drinking water wells has been a common complaint among people living in gas drilling areas across the country. [A 2009 investigation by ProPublica](#) revealed that methane contamination from drilling was widespread, including in [Colorado](#), Ohio and [Pennsylvania](#). [In several cases](#), homes blew up after gas seeped into their basements or water supplies. In Pennsylvania a 2004 accident killed three people, including a baby.

In [Dimock, Pa.](#), where part of the Duke study was performed, some residents’ water wells exploded, or their water could be lit on fire. In at least a dozen cases in Colorado, ProPublica’s investigation found, methane had infiltrated drinking water supplies that residents said were clean until hydraulic fracturing was performed nearby.

The drilling industry and some state regulators described some of these cases as “anecdotal” and said they were either unconnected to drilling activity or were an isolated problem. But the consistency of the Duke findings raises questions about how unusual and widespread such cases of methane contamination may be.

“It suggests that at least in the region we looked, this is a more general problem than people expected,” Jackson told ProPublica.

For those who live in the midst of this problem, the report serves as long-awaited vindication. “We weren’t just blowing smoke. What we were talking about was the truth,” said Ron Carter, a Dimock

resident whose water [went bad when drilling began there in 2008](#) and was later tested as part of the study. “Now I’m happy that at least something helps prove out our theory.”

Methane is not regulated in drinking water, and while research is limited, it is not currently believed to be harmful to drink. But the methane is dangerous because as it collects in enclosed spaces it can asphyxiate people nearby, or lead to an explosion.

To determine where the methane in the wells they tested came from, the researchers ran it through a molecular fingerprinting process called an isotopic analysis. Water samples furthest from gas drilling showed traces of biogenic methane—a type of methane that can naturally appear in water from biological decay. But samples taken closer to drilling had high concentrations of thermogenic methane, which comes from the same hydrocarbon layers where gas drilling is targeted. That—plus the proximity to the gas wells—told the researchers that the contamination was linked to the drilling processes.

In addition to the methane, other types of gases were also detected, providing further evidence that the gas originated with the hydrocarbon deposits miles beneath the earth and that it was unique to the active gas drilling areas. Ethane, another component of natural gas, and other hydrocarbons were detected in 81 percent of water wells near active gas drilling but in only 9 percent of water wells further away. Propane and butane were also detected in some drilling area wells.

The report noted that as much as a mile of rock separated the bottom of the shallow drinking water wells from the deep zones fractured for gas and identified several ways in which fluids or the gas contaminants could move underground: The substances could be displaced by the pressures underground; could travel through new fractures or connections to faults created by the hydraulic fracturing process; or could leak from the well casing itself somewhere closer to the surface.

The geology in Pennsylvania and New York, they said, is tectonically active with faults and other pathways through the rock. They noted that leaky well casings were the most likely cause of the contamination but couldn’t rule out long-range underground migration, which they said “might be possible due to both the extensive fracture systems reported for these formations [and the many older, uncased wells drilled and abandoned.](#)”

The water was also analyzed for signs that dangerous fluids from inside the gas wells might have escaped into water supplies. The group tested for salts, radium and other chemicals that, if detected, would have signaled that the produced water or natural fluids in the well’s target zone were making it to the aquifers. But those types of fluids were not found. The group did not test for fracking chemicals or hydrocarbons like benzene, relying instead on the saline or radioactive compounds like radium as indicators.

In an interview, Jackson said that gas was more likely to migrate underground than liquid chemicals. Based on his findings, he doesn’t believe the toxic chemicals pumped into the ground during fracturing are likely to end up in water supplies the same way the methane did. “I’m not ready to use the word impossible,” he said, “but unlikely.”

In [a white paper](#) the group issued along with the journal article, Jackson and the others acknowledged the uncertainty and called for more research. “Contamination is often stated to be impossible due to the distance between the well and the drinking water,” they wrote. “Although this

seems reasonable in most (and possibly all) cases, field and modeling studies should be undertaken to [confirm this assumption](#). ... Understanding any cases where this assumption is incorrect will be important—when, where, and why they occur—to limit problems with hydraulic fracturing operations.”

A hydrogeologist closely affiliated with the drilling industry raised questions about the study. “It’s possible, assuming their measurements are accurate, that all they have done is document the natural conditions of the aquifer,” said John Conrad, president of Conrad Geosciences in Poughkeepsie, N.Y. Conrad spoke with ProPublica at the suggestion of Energy In Depth, a drilling industry advocacy group, but said that he did not work for EID.

He said that the thermogenic methane—which many scientists say comes from the same deep gas layers where drilling occurs—could be naturally occurring. He also said the researchers didn’t test enough wells to support their conclusions, though he could not say how many wells would have been appropriate.

Conrad said the most likely cause for the contamination identified by the Duke researchers—that the gas was leaking out of faulty well casings—seemed implausible.

“For their assumptions to hold up there would have to be more than just the occasional bad cement job,” he said. “They are implying that where you see hydraulic fracturing you should expect to see elevated methane. We are aware of faulty cement jobs. But we don’t believe that it is common and we certainly don’t believe that it is universal.”

The Duke study precedes a national study by the Environmental Protection Agency into the dangers of hydraulic fracturing that is expected to be finished sometime next year. Last year [the EPA found that](#) some chemicals known to be used in fracturing were among the contaminants detected in 11 residential drinking water wells in Pavillion, Wyo.—where more than 200 natural gas wells have been drilled in recent years—but that investigation is continuing and the scientists haven’t concluded that the contamination is linked with drilling or hydraulic fracturing.

The release of the Duke research could immediately shape the increasingly intense public debate over drilling and hydraulic fracturing, especially in some of the areas where the research was conducted. Pennsylvania, which holds drilling companies liable for drinking water contamination within 1,000 feet of a gas well, might consider the fact that the Duke researchers found the contamination extended to about 3,000 feet, Jackson said. New York State has a moratorium in place for hydraulic fracturing of horizontally drilled wells—which cover more area and require more chemicals—through the end of June to allow for more consideration of the risks. “I would extend that at least temporarily,” Jackson said.

Congress, too, is taking note.

“This study provides eye-opening scientific evidence about methane contamination and the risks that irresponsible natural gas drilling poses for drinking water supplies,” said Congressman Maurice Hinchey, D-N.Y. “It provides yet another reason why more study of the environmental and health risks associated with hydraulic fracturing is needed.”

Hinchey is one of several Democratic members of Congress who recently re-introduced the [FRAC Act](#), which calls for public disclosure of the chemicals used underground. The bill, which is currently languishing in the House, would remove an exemption in federal law that prohibits the EPA from regulating hydraulic fracturing.

**May 9:** This story has been updated to include information from John Conrad that was received after publication.

## Fracking: The Music Video

By [Eric Umansky](#)

May 12, 2011, 10:29 a.m.

Have you been curious what all the hubbub on “fracking” is about? Here is a fabulous music video explaining it:

[http://www.youtube.com/watch?v=timfvNgr\\_Q4&feature=player\\_embedded](http://www.youtube.com/watch?v=timfvNgr_Q4&feature=player_embedded)

Here’s [more about the video](#), which was done by David Holmes and other talented journalism students at Jay Rosen’s [NYU’s Studio 20](#). It was part of their [collaboration with us](#) to build better explanations for stories. For more on fracking, its lack of regulation, and the potential for drinking water contamination, check out our now nearly [three-year running investigation](#).

## PA Officials Issue Largest Fine Ever to Gas Driller

By [Nicholas Kusnetz](#)

May 17, 2011, 4:19 p.m.

*A drilling rig in Pennsylvania. (Wikimedia Commons)*

Pennsylvania officials fined Chesapeake Energy more than \$1 million on Tuesday, the state’s largest fine ever to an oil and gas company. In a statement, the Department of Environmental Protection [said Chesapeake’s drilling operations](#) had contaminated water supplies for 16 families in Bradford County.



The announcement came just days after the Pittsburgh Post-Gazette reported that the administration of Gov. Tom Corbett, who took office in January, [has issued far fewer](#) environmental fines than its predecessor.



“It is important to me and to this administration that natural gas drillers are stewards of the environment, take very seriously their responsibilities to comply with our regulations, and that their actions do not risk public health and safety or the environment,” DEP Secretary Mike Krancer said in [the statement](#) on Tuesday.

The fine also cited Chesapeake for a fire at a well site that injured three workers in February. The announcement didn’t mention [the blowout](#) at a Chesapeake well in Bradford County last month. That accident leaked a still-undisclosed amount of brine and hydraulic fracturing fluid onto nearby fields and into a creek. The department issued Chesapeake a [notice of violation](#) for that incident and is continuing to investigate.

The DEP said the water contamination in Bradford County, which occurred last year, was caused by failures in the casing and cement that surround gas wells, allowing methane to leak into water wells from shallow gas formations. Chesapeake issued a statement saying the company agreed to pay for water treatment for the affected families. The company also said it has enhanced its casing and cementing designs.

“We have worked in coordination and cooperation with the PADEP from the moment we learned a potential problem existed,” Chesapeake spokesman Brian Grove said in the statement. Grove added that although the company has agreed to settle the matter, it hasn’t admitted that it caused the contamination.

The DEP has been under increasing pressure from critics and the federal government to tighten its oversight of the gas industry. Last month, the department [asked drilling companies](#) to voluntarily stop sending their wastewater to treatment facilities that discharge the waste into rivers after only partial treatment. But that move only prompted further federal involvement. Last week the EPA ordered the largest drilling companies in the state to disclose where they plan to put the wastewater, indicating that agency officials saw the state’s voluntary request as inadequate.

“Since there was not a requirement that they notify DEP or EPA of the new disposal methods, we wanted to ensure that we all had this information,” EPA spokeswoman Terri White wrote in an email last week. “We want to track these wastewater activities regularly to ensure the protection of public health and the environment.”

The EPA also [asked the DEP](#) to improve the way it tests wastewater discharges.

So, is the DEP sending a message with the Chesapeake fine? The department hasn’t returned our request for comment yet, but in the statement Sec. [Krancer said](#), “The water well contamination fine is the largest single penalty DEP has ever assessed against an oil and gas operator, and the Avella tank fire penalty is the highest we could assess under the Oil and Gas Act. Our message to drillers and to the public is clear.”

# Gas Drilling Companies Hold Data Needed by Researchers to Assess Risk to Water Quality

By [Abrahm Lustgarten](#)

May 17, 2011, 1:14 p.m.

*Photo by Abrahm Lustgarten/ProPublica*

For years the natural gas drilling industry has decried the lack of data that could prove—or disprove—that drilling can cause drinking water contamination. Only baseline data, they said, could show without a doubt that water was clean before drilling began.



The absence of baseline data was one of the most serious criticisms leveled at a group of Duke researchers last week when they published the first peer-reviewed study linking drilling to methane contamination in water supplies.

That study—which found that methane concentrations in drinking water increased dramatically with proximity to gas wells—contained “no baseline information whatsoever,” wrote Chris Tucker, a spokesman for the industry group Energy in Depth, in a statement debunking the study.

Now it turns out that some of that data does exist. It just wasn’t available to the Duke researchers, or to the public.

Ever since high-profile water contamination cases were linked to drilling in Dimock, Pa., in late 2008, drilling companies themselves have been diligently collecting water samples from private wells before they drill, according to several industry consultants who have been working with the data. While Pennsylvania regulations now suggest pre-testing water wells within 1,000 feet of a planned gas well, companies including Chesapeake Energy, Shell and Atlas have been compiling samples from a much larger radius—up to 4,000 feet from every well. The result is one of the largest collections of pre-drilling water samples in the country.

“The industry is sitting on hundreds of thousands of pre and post drilling data sets,” said Robert Jackson, one of the Duke scientists who authored the study, published May 9 in the Proceedings of the National Academy of Sciences. Jackson relied on 68 samples for his study. “I asked them for the data and they wouldn’t share it.”

The water tests could help settle the contentious debate over the environmental risks of drilling, particularly the invasive part of the process called [hydraulic fracturing](#), where millions of gallons of toxic chemicals and water are pumped underground to fracture rock. Residents from Wyoming to Pennsylvania fear that the chemicals will seep into aquifers and pollute water supplies, and in some cases they complain it already has. But the lack of scientific research on the issue—including a dearth of baseline water samples—has hindered efforts by government and regulators to understand the risks.



The industry has two reasons to collect the data: to get to the bottom of water contamination problems, and to protect itself when people complain that drilling harmed their drinking water.

“Unless you have the baseline before the analysis you can argue until the sky turns green,” said Anthony Gorody, a geochemist who often works for the energy industry. “The only real way to address this without anybody bitching and moaning is by doing this before and after.”

Chesapeake Energy alone has tested thousands of private water supplies in the Marcellus Shale, and the company says its findings demonstrate that much of the water was contaminated before drilling began.

“Water quality testing ... has shown numerous issues with local groundwater,” wrote the company’s spokesman, Jim Gipson, in an email to ProPublica. “One out of four water sources have detectable levels of methane present ... and about one in four fail one or more EPA drinking water standards.”

Gipson declined to elaborate on the findings or share Chesapeake’s test results, making it difficult to verify whether the companies had, indeed, found the water was contaminated before drilling began. But he did note that Pennsylvania does not regulate water quality in private wells and that water sampling is typically not done by homeowners.

“This fact substantially explains why many of these pre-existing issues have not been previously identified or resolved by landowners,” he wrote.

It is also unclear whether Pennsylvania state environment officials—who declined to answer questions for this story—have been allowed to review the industry data or are using it when they investigate drilling accidents in the state.

That leaves open questions about who will see the water data, whether it has been verified by independent labs and how it might be useful in the public debate. The Environmental Protection Agency’s study of hydraulic fracturing is due to be completed next year, and the Department of Energy recently appointed a review panel to assess the risks of drilling.

Energy in Depth’s Tucker and others expect the industry will eventually make its data public.

“There has been talk about releasing it and putting it in the public domain,” said Fred Baldassare, a former Pennsylvania environment official and expert on underground gas migration who now consults for the industry. Baldassare said the drilling companies were concerned that releasing water test results could affect property values for residents and amounted to a violation of their privacy. “How do you identify these points while maintaining some confidentiality?”

Jackson said the data should be made available now to independent researchers and to agencies investigating the hydraulic fracturing process. But even without the data, he stands behind his study. The Duke report said that the link between drilling activity and water degradation was clear and said the contaminants could be migrating through manmade underground fractures or, more likely, were coming from cracks in the well structure itself. The researchers said the wells they analyzed had been hydraulically fractured, but that more study of that process was needed to understand whether fracturing might be causing the contamination. No indicators of fracturing fluids were found in the samples.

Jackson likened the questions about drilling risk to those about the link between smoking and lung cancer.

“In an ideal study you follow people through their lives. You take measurements on them in their lungs as they start smoking and as you grow old. That’s what you need to prove cause and effect,” he said. “But instead they asked: ‘If you smoke, did you get lung cancer?’ That doesn’t prove that smoking is the cause, but it’s a pretty good step.

“That’s all we did here. If you live near a gas well are you more likely to have methane contamination? That answer is yes. It’s not proof, but it’s a good first step.”

## Forced Pooling: When Landowners Can’t Say No to Drilling

By [Marie C. Baca](#),  
Special to ProPublica  
May 19, 2011, 12:01 a.m.

*Workers adjust a drilling rig at Anschutz Exploration Corp.’s natural gas well in Big Flats, N.Y. (Peter Mantius/[DCBureau.org](#))*



As the shale gas boom sweeps across the United States, drillers are turning to a controversial legal tool called forced pooling to gain access to minerals beneath private property--in many cases, without the landowners’ permission.

Forced pooling is common in many established oil and gas states, but its use has grown more contentious as concerns rise about drilling safety and homeowners in areas with little drilling history struggle to understand the obscurities of mineral laws.

Joseph Todd, who lives in rural Big Flats, N.Y., wasn’t especially concerned when he learned in 2009 that his half-acre property had become part of a drilling unit. But when methane gas showed up in his drinking water well after the drilling began, he became outraged, describing forced pooling as “eminent domain for gas drillers.”

“We never wanted to be a part of the drilling,” he said. “To have something like this happen is beyond frustrating.” Todd and some of his neighbors are now suing the company that is drilling near their neighborhood, even though no link has been proven between drilling and the contamination of their water.

People who see forced pooling as an infringement of property rights also tend to oppose the practice, including Pennsylvania's Republican governor, Tom Corbett, who has otherwise been a staunch supporter of the drilling industry.

"I do not believe in private eminent domain, and forced pooling would be exactly that," Corbett [told a group](#) of nearly 400 drilling industry representatives and supporters last month. He also said he won't sign pending legislation that would allow forced pooling for drilling in Pennsylvania's gas-rich Marcellus Shale.

Forced pooling compels holdout landowners to join gas-leasing agreements with their neighbors. The specific provisions of the laws vary from state to state, but drillers are generally allowed to extract minerals from a large area or "pool"--in most states a minimum of 640 acres--if leases have been negotiated for a certain percentage of that land. The company can then harvest gas from the entire area. In most cases, drillers aren't allowed to build surface wells on unleased land, so they use horizontal wells or other means to collect the minerals beneath those parcels.

Thirty-nine states have some form of forced pooling law. West Virginia and Pennsylvania each have measures that don't apply to drilling in the Marcellus Shale, and proponents are trying to expand the laws in those states. (Check out [our chart of forced pooling laws](#) across the United States.)

In New York, the owners of 60 percent of the acreage in the proposed drilling unit must agree to lease their land before the state oil and gas board will consider a driller's petition for compulsory integration, as it is known there. In Virginia, only 25 percent of the land must be leased. In all states with such laws, drillers must notify all the landowners within the prospective drilling area of their right to participate in a hearing before the oil and gas board, or whatever regulatory agency the state has set up for that purpose.

If the board approves the driller's petition, holdout landowners typically have three choices: contribute to the cost of the well and share profits from the sale of the gas; don't pay for the well and share the gas profits after a "risk aversion" penalty is subtracted, or receive a state-mandated minimum royalty payment. Landowners who choose none of these options are automatically enrolled in the last plan. Opting out is not a possibility.

Gas companies argue that forced pooling allows them to build [fewer wells](#) and harvest gas efficiently, creating tidy drilling parcels as opposed to a patchwork pattern of leased and unleased land.

Forced pooling is also supported by landowners who fear that drilling companies will place wells near their property and siphon off their gas without payment. Another group of supporters includes people who own the surface rights to their property while someone else owns the mineral rights--a situation known as a "split estate." Although these landowners usually aren't entitled to any payment, some forced pooling laws compel drillers to compensate them, too.

The complexities of forced pooling can be seen in Big Flats, a town of about 7,000 in Chemung County, in the southern tier of New York. Gas drilling has provided a huge boost to the county's economy, said budget director Steven Hoover, bringing in \$30,000 to \$40,000 a year in royalties and more than a million dollars in bonus payments from land the county has leased to drilling



companies. That money, along with savings in other areas, has allowed Chemung County to cut property taxes over the last few years, Hoover said.

But Joseph Todd thinks struggling communities like his are too willing to accept the erosion of residents' property rights in exchange for an influx of cash.

In 2009, he and his wife Bonnie received a letter from the state informing them that Anschutz Exploration Corporation would be allowed to extract gas from beneath their land.

*Big Flats, N.Y., resident Joseph Todd turned to bottled water after his well water suddenly turned murky and smelly, shortly after gas drilling began. (Peter Mantius/[DCBureau.org](http://DCBureau.org))*

At first, the Todds didn't think much about it. No construction crews visited the modest ranch house where they had lived for more than 20 years. No heavy equipment materialized in their backyard. A horizontal well was built less than a mile away, but from the road its operations were almost invisible.

Then in September 2010 the couple discovered mud and methane in their private water well. Methane, the largest component of natural gas, isn't toxic, but it can be explosive if it accumulates.

"We've lived in this house for 22 years without any problems, and suddenly the water turns dirty and fizzy and can be lit with a match," said Todd, a firefighter.

After hearing about similar water problems near drilling operations in Pennsylvania, the Todds began to wonder if their dirty water--and the water problems that had simultaneously cropped up at nine neighboring homes--could be traced to the nearby drilling.

Denver-based Anschutz and the New York Department of Environmental Conservation both say the water problems aren't related to drilling. But in February, the Todds and their neighbors filed a lawsuit in Chemung County State Supreme Court, accusing Anschutz and its subcontractors of negligence in the drilling, construction and operation of the wells, causing the families to be exposed to combustible gases and toxic chemicals, and reducing property values. They are seeking millions in damages.

Anschutz spokesman Jim Monaghan said the company abides by state law and has committed no wrongdoing.

Joseph Todd says he's angry, not just about his contaminated well water but about the compulsory integration law that made it easier for drilling companies to move into his neighborhood. He said he has spent thousands of dollars on bottled water and laundromat fees--and that the royalty payments he's supposed to receive, even as an unwilling participant in the nation's natural gas boom, haven't begun arriving yet.

*ProPublica's Nicholas Kusnetz contributed to this report.*

**Correction (May 19):** This story has been corrected. It should have made clear that state regulations in New York and Virginia require drillers to lease a certain percentage of the acreage in a drilling unit before forced pooling or compulsory integration can occur, rather than a percentage of the landowners. **May 20:** This story originally said 38 states have some form of forced pooling law. Actually, 39 states do.

## Exxon Ad Makes Gas Drilling Seem Simpler—and Safer—Than It Really Is

By [Nicholas Kusnetz](#)

May 25, 2011, 12:44 p.m.

*From an Exxon Mobil ad that ran in the New York Times and the Washington Post.*

ExxonMobil has been running a [series of ads](#) aimed at assuring people that shale gas drilling is safe. One of those ads, a [full-page spread](#) in Monday's New York Times and Washington Post, shows what a well looks like as it extends more than a mile and a half beneath the surface. It includes a close-up of the layers of steel and cement that are supposed to protect the surrounding earth from the gas and fluids inside the well pipe.



The ad, which depicts a gas well in the Marcellus Shale, implies that these layers of protection extend all the way down the well. But in the vast majority of horizontal wells, they do not. An Exxon spokeswoman acknowledged that fact in an email.

“The ad is a graphic that compresses over a mile into 18 inches and the enlarged area depicts the casing layers protecting the fresh water aquifer,” she said, adding that all of Exxon’s Marcellus wells are surrounded by multiple layers of steel and cement near the surface.

The ad makes for a good moment to remind people that most states require multiple layers of casing for only a short distance underground, so they can protect shallow aquifers. After that, a well may have only one casing layer for a short way, and then no casing at all. Some wells run for thousands of feet through rock and dirt with no cement or additional steel barrier at all. Only at the very bottom are they again encased in protective cement.

Check out [our gas well diagram](#) to see which parts of a well are usually encased. The Exxon ad, while meant to be a simple summary of how a well is built, looks the same all the way down.

Even multiple layers of casing don’t always protect drinking water sources. Casing and cement failures were responsible for most of the recent gas drilling accidents in the Marcellus Shale, as well as previous contaminations in [Colorado](#) and [Ohio](#). Pennsylvania’s Department of Environmental



Protection recently issued [its largest oil and gas fine ever to Chesapeake Energy](#) after casing and cement failures on its wells allowed methane gas to seep into the water supply for 16 homes.

Cementing failures [also contributed](#) to the blowout of BP's Macondo well in the Gulf of Mexico last summer, the largest oil spill in U.S. history.

The Exxon ad has also drawn attention from the [Natural Resources Defense Council](#), which campaigns for more oversight of gas drilling. The organization sent a letter to the editor to the Washington Post yesterday, disputing the ad's claim that thousands of feet of rock protect groundwater from contamination.

## Critics Find Gaps in State Laws to Disclose Hydrofracking Chemicals

By [Nicholas Kusnetz](#)  
June 20, 2011, 4:36 p.m.

*In this April 23, 2010 photo, a Chesapeake Energy natural gas well site is seen near Burlington, Pa. (AP Photo/Ralph Wilson)*



Over the past year, five states have begun requiring energy companies to disclose some of the chemicals they pump into the ground to extract oil and gas using the process of hydraulic fracturing.

While state regulators and the drilling industry say the rules should help resolve concerns about the safety of drilling, critics and some scientists say the requirements fall short of what's needed to fully understand the risks to public health and the environment.

The regulations allow companies to keep proprietary chemicals secret from the public and, in some states, from regulators. Though most of the states require companies to report the volume and concentration of different drilling products, no state asks for the amounts of all the ingredients, a gap that some say is disturbing.

"It's a shell game," said Theo Colborn, an environmental health analyst who has testified before Congress about the dangers of drilling chemicals. Colborn and her organization, TEDX, examine

the long-term health risks of chemicals and have opposed the expansion of drilling in Colorado and elsewhere. “They’re not telling you everything that there is to know.”

Others say the regulations, despite some flaws, are moving in the right direction. “It’s just a step in the process,” said the Sierra Club’s Cyrus Reed, who worked on a bill [signed into law in Texas on Friday](#).

Most drillers have supported the measures. Some say more complete disclosure isn’t necessary because the information that remains secret involves only nonhazardous chemicals or trade secrets that are a small fraction of products they inject. Energy companies recently have begun [voluntarily disclosing some of the chemicals they use on FracFocus](#), a web site run by two groups representing state regulators.

“While we support disclosing our ingredients, it is critical to our business that we protect our recipe,” Tara Mullee Agard, a spokeswoman for Halliburton, one of the world’s largest oil and gas service companies, told ProPublica in an email.

Gas drilling has surged across the country over the past few years due to technological advances that include hydraulic fracturing, in which drillers pump millions of gallons of water, sand and chemicals underground to free up trapped deposits of natural gas. Energy companies are increasingly using the technique, dubbed “fracking,” in oil recovery, particularly in Texas and North Dakota.

ProPublica [first began reporting](#) on health and environmental concerns surrounding fracking three years ago. Gas companies are exempt from federal laws protecting water supplies, leaving it up to states to decide what sort of regulations are needed to protect ground and surface water.

## **Wyoming takes the lead**

Wyoming’s rules are the strongest in place, although it’s unclear how thoroughly they are being enforced. The rules require public disclosure of all the chemicals except for trade secrets, which drillers must submit for regulators’ eyes only. The only thing the rule lacks, critics say, is a requirement to report the concentration of the individual chemicals.

Three reports that were selected at random and reviewed by ProPublica appeared to leave out some of the chemicals used. Tom Doll, the state’s oil and gas supervisor, said his agency has two staff members reviewing each of the reports.

“They’ve obviously missed some of these,” he said.

In Arkansas, manufacturers are not required to disclose proprietary fracking chemicals to regulators. Rules in Texas, Michigan and Pennsylvania have similar exemptions. ([See a summary of the state rules](#).)

Some environmentalists and toxicologists say the state rules give energy companies too much discretion.



Companies can get trade secret protection, for instance, simply by asserting that disclosure would hurt their business and showing that details about a chemical are not otherwise public. More than 100 such exemptions have been granted in Wyoming, though most of the exempt products haven't been used, Doll said.

Advocates of disclosure say that, at a minimum, proprietary information should be on file with state regulators, as in Wyoming, so it can be accessed quickly in an emergency.

Federal law already requires chemical manufacturers to share trade secrets with health care providers in emergency situations, but getting the information into the public domain can be a slow process, said Daniel Teitelbaum, an adjunct professor of toxicology at the Colorado School of Mines.

"If you call someone on Saturday ... it may be Tuesday before you can find someone who has the actual formula," said Teitelbaum, who has worked for environmental groups on disclosure and chemical safety. "It is not a straightforward process by any means."

On April 19, [fracking fluids spilled during a blowout at a Chesapeake Energy well in Pennsylvania](#). While no one was directly injured, Brian Grove, a company spokesman, said [a full ingredient list](#) was provided to state regulators the following day and to the U.S. Environmental Protection Agency a week after the spill. Chesapeake voluntarily posted the list to FracFocus on May 13.

The mixture of fluids used to fracture a well generally contains several different products, which themselves can contain multiple chemical ingredients. While the industry has used hundreds of chemicals to frack wells across the country, the mixture regularly includes ingredients such as hydrochloric acid, methanol, a disinfectant called glutaraldehyde and petroleum distillates.

These chemicals usually comprise a tiny fraction of the overall mix, but since wells are injected with millions of gallons of fluid, the mix can include thousands of gallons of a chemical that can be toxic at low doses.

## **Deciding what's hazardous**

Colborn and other toxicologists say one area of concern involves how "nonhazardous" chemicals are treated. Pennsylvania, Michigan and the FracFocus web site only disclose hazardous substances as determined by a product's Material Safety Data Sheet.

Chemical manufacturers are required to list health hazards and ingredients that contribute to those hazards on these sheets, which are filed with the U.S. Occupational Safety & Health Administration.

The sheets don't have to list ingredients that are not considered hazardous, however, or chemicals that may damage the environment but haven't been shown to harm humans. In determining what to report, manufacturers are not required to do their own testing and may rely on existing research that many toxicologists consider inadequate.

"We have just extraordinarily poor information on the whole portfolio of health effects that are possible from industrial chemicals," said Michael Wilson, director of the Labor Occupational

Health Program at the University of California, Berkeley. “In the great majority of cases, that information is not going to appear on a [Material Safety Data Sheet], in most cases because it’s not known.”

OSHA [acknowledged as much in a 2004 report on chemical hazard communication](#). “Even the best available evidence may not provide sufficient information about the hazardous effects or the way to protect someone from experiencing them,” the report said. The report noted in particular a lack of research on chronic health effects.

Chris Tucker, a spokesman for Energy in Depth, a drilling industry group, said chemical suppliers evaluate every product, so if an ingredient doesn’t make it onto a safety data sheet, it doesn’t pose a threat to human health. “That’s why it’s nonhazardous,” he said.

There are more than 80,000 chemicals registered for commercial use with the EPA, and Wilson said there is enough research to identify potential hazards for less than 2 percent of them.

Researchers with TEDX, Colborn’s organization, have [reviewed Material Safety Data Sheets for 980 products used in natural gas production](#) and found that for more than 400 of them, manufacturers listed less than 1 percent of the product’s total composition.

“What’s there is what the product manufacturer wants you to know,” Colborn said. Without knowing all the ingredients, she said, it’s impossible to anticipate the chemical reactions that can occur as the products mix and react not only with each other but with whatever is present underground.

## **Volume, concentration are keys**

Colborn and other scientists say that knowing the concentration or volume of the individual components is also important to measure toxicity, and because various concentrations may behave differently as chemicals break down and react with others underground.

Texas, Arkansas and Wyoming, while requiring disclosure of all chemicals used, do not require companies to provide the concentrations.

The federal government regulates oil and gas drilling only on federal lands, and Interior Secretary Ken Salazar said in November that he was considering requiring disclosure of fracking fluids for wells under federal jurisdiction. No action has been taken so far.

Some environmental groups and members of Congress have pushed for a nationwide database. Currently, drillers are not required to report fracking chemicals to the federal government unless they contain diesel, but the proposed [FRAC Act](#) would require disclosure across the country.

So far, more than 40 oil and gas companies are voluntarily disclosing some of their chemicals on the [FracFocus](#) website. Using the site, anyone can identify individual wells and find out the hazardous chemicals that were injected into them, including the maximum concentration at which they were used.

Mike Paque, executive director of the Ground Water Protection Council, an association of state regulators that is overseeing the site, said the organization is discussing whether to expand the disclosures to include nonhazardous chemicals. The site does not list proprietary chemicals, although it [notes when they are used](#). (See [our annotated fracking disclosure form](#) for a closer look.)

## Chart: States With Drilling Disclosure Rules

Five states have passed laws or administrative rules requiring drilling companies to reveal some of the chemicals they use when injecting fluids to free natural gas and oil from underground rock formations.

State	What's reported	Volume or concentration used	Proprietary chemicals	Posted online
Wyoming*	All chemicals used in fracking.	Volume and concentration of the products are disclosed, but not of individual ingredients in chemical mixtures.	Disclosed to regulators; secret to the public.	Yes, via state website.
Arkansas	All chemicals used in fracking.	No.	Exempt.	Yes, via state website.
Pennsylvania	All hazardous chemicals used at an individual well after fracking is complete. Must submit Material Safety Data Sheets for hazardous chemicals.	For hazardous chemicals only.	Unclear.**	No; available by request.
Michigan	Must submit Material Safety Data Sheets for hazardous chemicals.	For hazardous chemicals only.	Exempt.	Yes, via state website.
Texas***	All chemicals used in fracking.	For hazardous chemicals only.	To be determined.	Yes, via state website and FracFocus, an industry website.

\* Wyoming was the first state to require disclosure of fracking fluids.

\*\* Pennsylvania officials did not return calls or emails seeking clarification.

\*\*\* The Texas legislature passed the law in May 2011, but state regulators have until 2013 to complete the actual rules.

**Source:** *Reporting by Nicholas Kusnetz/ProPublica*

**Correction (June 24, 2011):** The original version of this story misidentified Theo Colborn as a toxicologist. Colborn refers to herself as an environmental health analyst. Her doctoral work was in zoology, with a distributed curriculum in water chemistry, epidemiology and toxicology.

# EPA Fracking Study to Focus on Five States— But Not Wyoming

By [Abrahm Lustgarten](#)

June 24, 2011, 2:07 p.m.

*An oil rig drilling into the Bakken Formation near Stanley, N.D. (Karen Bleier/AFP/Getty Images)*



The Environmental Protection Agency will focus its national study of hydraulic fracturing on seven areas in five states but will exclude the two Wyoming gas fields where agency researchers have already collected some of the most in-depth data on drilling’s environmental impacts.

[The study](#)—which was announced last March, without specifics on research sites—[will investigate](#) alleged water contamination from drilling in five areas in Texas, Colorado, North Dakota and Pennsylvania. It also will encompass cradle-to-grave research projects in Pennsylvania and Louisiana, where the agency will track drilling’s effects on water quality from before the drill bit hits the ground to after hydraulic fracturing has been performed.

“This is about using the best possible science to do what the American people expect the EPA to do—ensure that the health of their communities and families are protected,” said Paul Anastas, assistant administrator for EPA’s Office of Research and Development, in a statement.

Conspicuously absent from the list are sites in Sublette County and Pavillion, Wyo., where EPA scientists began testing water and collecting data three years ago in response to allegations of drilling-related contamination. In [Sublette County](#), one of the most active drilling fields in the country, researchers discovered benzene in 88 water wells in 2008 and have been testing ever since. [In Pavillion](#), the EPA found metals, methane, hydrocarbons and traces of compounds related to fracking chemicals in residential water wells in 2009.

Research in both areas is ongoing and may still inform the EPA’s work, but it will not play a central role in the nationwide investigation into whether hydraulic fracturing is safe or presents a risk to drinking water. The EPA did not immediately respond to questions about the role of the Wyoming research.

Fracturing is a process used to extract trapped oil and gas from thousands of feet below ground by injecting a mixture of water, sand and chemicals under enough force to shatter the rock and allow the oil and gas to flow out. Advancements in the technology have made large, deeply buried natural gas deposits in the Marcellus Shale and elsewhere accessible for the first time. But the process is exempt from federal regulation, and there is little research showing where the chemicals wind up after they are pumped underground or how they can be safely disposed of after the drilling is finished.

A [series of articles](#) by ProPublica beginning in 2008 found a pattern of groundwater water pollution across states where fracturing is used to tap natural gas. Residents in these areas complained they could light their faucets on fire and had suffered health effects they worried were caused by the drilling processes.

Now Congress is weighing bills that would lead to regulation of fracturing, and the EPA is undertaking the first national study to evaluate the effects of fracturing on drinking water.

On Thursday, [the EPA](#) said it had narrowed down more than 40 prospective research sites to seven based on factors ranging from the size of the population and the proximity of drinking water supplies to drilling, to health complaints and the extent of alleged contamination.

Five research projects will take a forensic approach, retroactively investigating places where drilling has already occurred and where contamination has been alleged. The sites for these projects are:

- Kildeer and Dunn Counties in North Dakota's Bakken Shale
- Wise and Denton Counties in Texas' Barnett Shale
- Bradford and Susquehanna Counties in Pennsylvania's Marcellus Shale
- Washington County, also in Pennsylvania's Marcellus Shale
- Las Animas County in Colorado's Raton Basin

At two additional sites—in DeSoto Parish, La., in the Haynesville Shale and a separate site in Washington County, Pa.—the EPA will attempt to observe and measure the changes drilling brings to an area as it happens.

These prospective studies could prove the most interesting and the most challenging. To gain access to drilling sites, EPA researchers have partnered with two companies that have agreed to allow agency scientists to be present before a drill pad is cleared, as it is drilled and as it is hydraulically fractured. In a public conference call Thursday, EPA officials mentioned Chesapeake Energy and Range Resources as possible partners but did not confirm these were the companies it had begun working with. Chesapeake is the predominant drilling company in the Haynesville Shale, and Range is active in central and western Pennsylvania.

The lifecycle study will allow the EPA to test water quality near the drilling sites before any activity takes place and then monitor for changes as the companies drill their wells. It also will allow the EPA to collect and test fracturing fluids and other waste that flows back out of the well, providing an exact chemical portrait that can be compared to water contaminants if they are discovered. According to an EPA official, the agency is considering “tagging” the hydraulic fracturing fluids with a benign tracer, a technique that could finally make it possible to see exactly where the injected fracturing fluids wind up.

# New York Proposes Permanent Ban on Fracking Near Watershed and State Land

By [Nicholas Kusnetz](#)

June 30, 2011, 4:53 p.m.

**5:31 p.m.:** This post has been [updated](#).

The New York Times reported today that New York's Gov. Andrew Cuomo [is planning to lift a "ban" on hydraulic fracturing](#). But whatever the governor announces tomorrow, it's unlikely to change the de facto moratorium on drilling in the state that began nearly three years ago, when the state committed to a fresh environmental review.

New York Department of Environment Conservation officials have repeatedly said they cannot issue any new drilling permits until the state completes the environmental review, ordered in 2008 by Cuomo's predecessor, David Paterson. The final review will not be complete for a few months at the earliest.

Despite the department's assurances, Paterson signed an executive order last year stating that large-volume hydraulic fracturing will not be allowed until the review is complete. As we reported at the time, [Paterson's move was largely symbolic](#). His executive order never used the word "moratorium," and the law requiring environmental review was already in place.

It appears as though it's that symbolic ban that is at play now.

Cuomo has asked the DEC to complete its review by tomorrow. According to Michael Bopp, a DEC spokesman, the department will give the governor a version of the revised environmental review, as requested. But that update will not be the official draft that still has to work its way through the legal permitting process, Bopp said. He did not say when that draft will be released.

Once it is, state law requires that the draft go through a public comment period of at least 30 days before regulators can write the final rules.

All of which means it will likely be at least a few months—perhaps next spring—before the type of hydraulic fracturing used in the Marcellus Shale can be allowed in the state, with or without a ban from the governor.

We've put out emails and a call to the governor's office but haven't received a response yet.

**Update:** New York's Department of Environmental Conservation [just announced](#) it will recommend prohibiting high-volume hydraulic fracturing in and around the watersheds serving New York City and Syracuse. It will also recommend banning the practice on state-owned lands and in primary aquifers. Elsewhere, drilling would be allowed once the final rules are in place. In the release, the department said it plans to hold a 60-day public comment period on the proposal,



beginning in August. The proposal would also require public disclosure of chemicals used in fracking.

# Oil and Gas Drilling Surges Despite Increased Oversight

By [Nicholas Kusnetz](#)

June 30, 2011, 12:15 p.m.

*(David McNew/Getty Images)*



Energy companies have spent the last couple of years fighting off added government regulation, saying red tape is slowing development.

But recent data show that the pace of drilling is just short of the 20-year high it reached before the recession. Gas drilling has dropped off as the price of natural gas has stayed low, but high oil prices (and the widening price gap between oil and gas) have spurred enough oil drilling to more than make up the difference.

There were 1,882 rigs drilling wells around the country last week, up 21 percent from a year ago and up more than 50 percent from the beginning of 2010. There are now [more rigs drilling for oil than at any time since 1987, according to Bloomberg News](#).

The numbers show that when prices are right, changes in policy or regulation are unlikely to stand in the way of new drilling, analysts and regulators say.

“I don’t think, short of moratoriums, regulations materially impact the pace of drilling,” said John Hanger, who tightened a number of drilling regulations in Pennsylvania when he led the state’s Department of Environmental Protection until January.

The Marcellus Shale Coalition, a group representing the area’s natural gas industry, warned last year that new rules covering the release of wastewater into streams would hurt growth. While acknowledging a “need for common sense regulations,” [a press release from the group said](#), “Unfortunately, these rules will make responsible shale gas development more difficult, and the jobs and economic benefits created throughout this process less likely.”

Yet gas drilling has continued to expand in the Marcellus Shale. Pennsylvania still ranks among the fastest-growing states for drilling, according to Baker Hughes, one of the largest oil service companies in the world, which also publishes a widely used rig count.

Instead of suppressing development, the new regulations have driven innovation and led to greater recycling of wastewater, Hanger said. Earlier this month, the state [announced that drillers had stopped discharging wastewater into streams](#).



Patrick Creighton, a spokesman for the Marcellus Shale Coalition, did not comment on the wastewater rule's effects but noted that his group supported a number of other changes the state implemented over the past year.

Andy Radford, a senior policy adviser for the American Petroleum Institute, said that while federal policy has stifled some drilling, much of the new activity is on private, state-regulated land in Texas, North Dakota and Pennsylvania. In Wyoming, where much of the drilling is on federal land, drillers have argued that [federal policy has hurt growth](#).

Radford said rules passed in the states have not been overly burdensome, and energy companies have supported some new state regulations, including [rules requiring disclosure of chemicals used in hydraulic fracturing](#).

But drillers have fought some major state regulatory changes over the past few years, and even in those states growth remains strong despite industry predictions that it wouldn't.

After Colorado rewrote some of its drilling rules in 2009 under Gov. Bill Ritter, the Colorado Oil and Gas Association said the new regulations would force drillers out of the state and filed a lawsuit to invalidate the changes.

Instead, Colorado drilling has increased 31 percent in the last year, outpacing the nation in that period, the Baker Hughes rig count shows. Overall, drilling in the state has recovered to about two-thirds of what it was in June 2008, before the recession decimated drilling across the country.

"We're very pleased to see this kind of recovery," said Tisha Schuller, president of the Colorado Oil and Gas Association. Schuller said drilling companies and the administration of the new governor, John Hickenlooper, have worked together to help industry comply with the rules without hurting business. Her organization dropped its lawsuit earlier this year.

In New Mexico, the industry has continued to fight a 2008 rule aimed at stopping water contamination from waste pits. When then-Gov. Bill Richardson championed the rule, drillers warned that compliance would be expensive. The current governor, [Susana Martinez, has continued to voice those concerns, saying the rule drives jobs out of the state](#). But in the months after the rule was implemented, drilling in New Mexico increased until the recession took hold. Now the rig count is slightly higher than it was three years ago, when the rule took effect.

John Bemis, New Mexico's secretary of energy, minerals and natural resources, said the 2008 rule has slowed gas drilling in parts of the state, but that new oil drilling in other areas has more than compensated for the loss.

Bemis said some energy companies are pressing the state to revise the rule. He would not comment on what changes the companies want or whether the state will consider them. He referred these questions to the governor's office, which has not replied to a request for comment.

Nationally, drilling has rebounded to more than 90 percent of where it was before the recession. According to Baker Hughes, much of the recent growth is happening in Texas and North Dakota, where drillers are tapping into two shale oil formations. They are using horizontal drilling in concert

with hydraulic fracturing, an approach similar to the one drillers have used to access the gas in the Marcellus Shale.

A combination of technology, timing and price has made these among the hottest spots in the country, said Julia Haggerty, a policy analyst with Headwaters Economics, a nonpartisan research organization. Haggerty wrote a report released last week detailing the drilling trend.

Energy companies have developed techniques to extract more oil from deep shale formations than had previously been possible. When the price of oil tripled after the recession, using that technology became viable despite its higher costs.

Haggerty's report said drilling has increased four-fold in North Dakota over the past two years, primarily into a formation called the Bakken Shale, and has doubled in Pennsylvania. She said there's little evidence that policy changes have slowed growth.

"It's hard to argue that the industry doesn't have the flexibility it needs to respond to these market signals," Haggerty said.

## Lawsuits Predicted as New York Towns Ponder Whether to Block Fracking

By [Nicholas Kusnetz](#)

July 8, 2011, 9 a.m.

*A New York Hydraulic Fracturing prevention press conference (D Dipasupil/Getty Images)*

New York environmental officials have released a blueprint for regulations that eventually would allow hydraulic fracturing to begin in most parts of the state—except for key watersheds and aquifers and on state land.



Drilling is still months away at the earliest, but talk has already begun about legal challenges from energy companies and landowners in the areas where high-volume hydraulic fracturing, or fracking, would be prohibited.

"I think some of the bans and setbacks are legally questionable," said Tom West, an oil and gas attorney in Albany, N.Y., who represents a number of drilling companies in the state. "When they start putting areas off limits to drilling or production that raises a significant legal issue."

West said the ban would deprive landowners and leaseholders of the right to develop their property.

Energy companies may be more likely to challenge the growing number of local bans. Over the last year, several New York towns have either [issued local fracking bans](#) or [begun the process of doing so](#).

State law says only the Department of Environmental Conservation can regulate drilling. But towns are allowed to zone their own land, and many have been using zoning laws to try to keep fracking outside municipal limits.

Ithaca's town supervisor Herb Engman said streams and a lake within town limits provide drinking water to more than 90,000 people in the area. He said the water deserves the same protections as those proposed for the watersheds for New York City and Syracuse, where drilling would be banned under the state's blueprint.

"I don't see the difference between the concerns for their watershed and the watershed for the people of Ithaca," he said. "We need to keep our waterways pure."

Engman said the town's zoning laws prohibit any industrial practice that is not explicitly allowed, including gas drilling. He said 12 percent of the town is currently leased by drilling companies, but that he and the town's attorney are confident that courts would uphold their zoning rules if the town is sued.

On Wednesday, DEC Commissioner Joseph Martens [told a local newspaper that the issue is likely to end up in court](#).

West said zoning is not an appropriate way to limit drilling and that it's only a matter of time before a lawsuit is brought against one of these towns. But Michelle Kennedy, a lawyer who represents several towns that have zoned against fracking, said state courts have upheld local efforts to prohibit mining. Judges would likely look to those rulings as the closest precedent in a fracking case, she said.

"The towns have prevailed when they've tried to apply their land-use laws," she said.

Towns have been moving to ban drilling or fracking across the country. As we reported in January, [similar uncertainties were raised in Pennsylvania as well](#). One energy company recently [sued a West Virginia town](#) that banned horizontal drilling within a mile of town limits.

It's only a matter of time before the same happens in New York, said Kate Sinding, senior attorney for the Natural Resources Defense Council in New York City.

"There are very smart, experienced lawyers who have made the case both ways," she said. "Most folks agree there's enough ambiguity that it's going to be up to the courts to decide."

The DEC said a 60-day public comment period on the state proposal will begin in August. The department will then need to review and reply to those comments before incorporating any changes they see fit into the final rules. In a news conference last week, Martens said it's unlikely that the process would be complete this year.

# State Fracking Rules Could Allow Drilling Near New York City Water Supply Tunnels

By [Nicholas Kusnetz](#)

July 14, 2011, 1:04 p.m.

*The Ashokan Reservoir, part of the New York City watershed. (Wikimedia Commons)*



The latest draft of guidelines for hydraulic fracturing in New York could open the door to drilling within 1,000 feet of aging underground tunnels that carry water to New York City—a far cry from the seven-mile buffer once sought by city officials.

The draft environmental impact statement, [released last week by state officials](#), is a crucial step toward allowing high-volume hydraulic fracturing, or fracking, in New York. The gas drilling technique was put on hold three years ago so the state could assess any environmental effects of the practice.

If the proposal is adopted in coming months, the state would allow drilling near aqueducts but would require a site-specific environmental review for any application to drill within 1,000 feet of the water supply infrastructure.

That's not enough to protect New York City's water, said Kate Sinding, a senior attorney with the Natural Resources Defense Council, which is based in the city.

"There needs to be a buffer area in which there's no drilling whatsoever," Sinding said. "Just having elevated review doesn't cut it."

City spokesman Farrell Sklerov wouldn't say whether the city's position on the buffer zone had changed, only that officials are updating their recommendations. When the state advanced a similar proposal two years ago, city officials said it could expose tunnels to damage and allow explosive gases and pollutants to leak into the water.

State spokeswoman Emily DeSantis said a separate proposal to prohibit drilling in the New York City watershed was enough to address the city's concerns about threats to the water supply.

John Conrad, a spokesman for the Independent Oil and Gas Association of New York, an industry group, said the guidelines' provision for drilling near infrastructure was adequate to ensure safety. "It seems to be more than would be necessary to be protective," he said.

At the center of the debate is a system of tunnels constructed in the mid-20th century that carries 1.2 billion gallons of water a day from upstate reservoirs to New York City and nearby counties. The network is already fragile—tens of millions of gallons of water leak out each day. One repair [project is expected to cost more than \\$1 billion](#).

In [comments on a previous draft of the state fracking guidelines](#), the city said brittle rock surrounds many of the tunnels. Drilling nearby could shift the earth, exerting pressure on tunnel walls that they weren't designed to withstand. Natural fractures extend as far as seven miles out and 6,000 feet down through the earth; gases and fluids already have a tendency to migrate through those fractures and toward the aqueducts, according to the city.

These geologic features, together with [drilling errors like the ones that have contaminated water wells in Pennsylvania](#), “could result in significant surface and subsurface contamination,” the city wrote.

Though state environmental experts have concluded that gas, natural fluids and fracking fluids—a mixture of water, sand and chemicals used to crack open the earth—would not migrate beyond the targeted rock, city environmental officials have argued there isn't enough evidence to prove this couldn't happen. This debate is at the center of the disagreement.

The city and state use a similar 1,000-foot zone to govern the drilling of geothermal wells near the infrastructure. The state has said this policy should apply to gas wells, too, because fracking occurs thousands of feet below the tunnels, which would isolate any effects. The city, however, has expressed concern that the pressure exerted by fracking could alter pre-existing faults and damage the tunnels.

Moreover, city officials have said there are areas where the Marcellus Shale, the zone of rock the drillers are targeting, is in direct contact with the tunnels. The shale is deeper to the west and south but nears the surface in parts of New York.

In addition to banning drilling in the New York City and Syracuse watersheds—both of which provide high-quality, unfiltered water—the state has proposed setbacks of varying distances from these watersheds and other sensitive areas where drilling would be prohibited.

Drillers who want to sink a well within 1,000 feet of the aqueducts would need to conduct a study to identify whether drilling poses significant adverse environmental effects. If any potential effects are identified, the driller would need to initiate a full environmental impact study before drilling could be approved. The state has said it would not approve drilling unless the city is satisfied, but the state would hold ultimate authority over whether drilling would proceed.

Sinding worries that the layers of protection guaranteed on paper won't get much use in practice. A similar process has existed for conventional drilling in sensitive areas for more than two decades, yet the state has never required the full review, she pointed out.

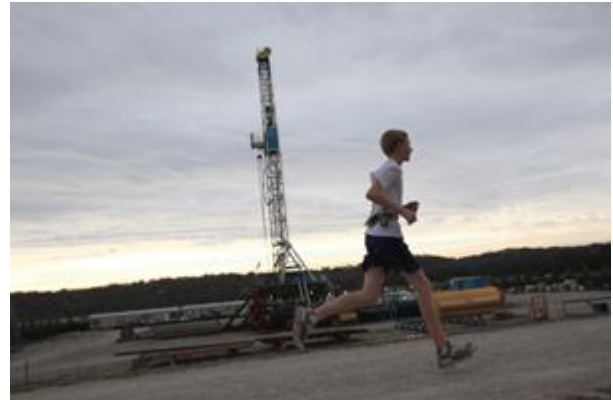
The 60-day public comment period on the state's proposals is scheduled to start in August, after which officials will issue final guidelines, a process unlikely to be completed this year. Drilling cannot begin until the process is complete.

# EPA Proposes New Rules on Emissions Released by Fracking

By [Nicholas Kusnetz](#)

July 29, 2011, 4:23 p.m.

*A jogger runs past a 150-foot derrick positioned over a natural gas well site along a trail at a Trinity River embankment on Dec. 19, 2008 in Fort Worth, Texas. (Robert Nickelsberg/Getty Images)*



Prohibited from regulating hydraulic fracturing under the Safe Drinking Water Act, the EPA took to the air yesterday, proposing federal regulations to reduce smog-forming pollutants released by the fast-spreading approach to gas drilling.

If approved as currently written, the rules would amount to the first national standards for fracking of any kind, the EPA said. The agency sets guidelines when companies inject fluids underground for various purposes, but in 2005 Congress prohibited the EPA from doing so for fracking. Regulation has been left to the states, some of which compel companies to report what chemicals they use and have imposed tougher well-design standards.

The new EPA proposal would limit emissions released during many stages of natural gas production and development but [explicitly targets the volatile organic compounds released in large quantities when wells are fracked](#). Drillers would have to use equipment that captures these gases, reducing emissions by nearly 95 percent, the EPA said.

Environmentalists said the proposed rules represent an important step by federal regulators amid a growing controversy over fracking's safety.

“The EPA has a terrific opportunity here to provide the public with some assurance that the industry has to meet certain performance standards that are protective of public health,” said Ram

ón Alvarez, a senior scientist with the Environmental Defense Fund in Texas.

The American Petroleum Institute, the country's main oil and gas lobbying group, has requested that the EPA delay finalizing the rules for at least six months beyond the current February 2012 deadline. Asked to comment on the proposal's likely effects, API spokesman Reid Porter said only that the organization was reviewing it.

The Marcellus Shale Coalition, a group representing gas drillers in the Northeast, [issued a statement criticizing the proposed regulations, saying they would “undercut” gas production](#).



The EPA contends that the measure would actually be a moneymaker for drilling companies. Though it might compel them to invest in new equipment, this equipment would allow them to capture methane gas currently lost in the drilling process, which they could then sell.

The EPA proposal is the result of a successful 2009 lawsuit brought against the agency by WildEarth Guardians and another advocacy group alleging that the agency had not updated air-quality rules as required. The EPA is supposed to review such rules at least every eight years, but in some cases it had not done so for 10 years or more.

While the rules affect the oil and gas industry as a whole, growing awareness about environmental and health risks associated with fracking seems to have played a role in their formulation.

During an interview at the Aspen Ideas Festival in June, EPA Administrator Lisa Jackson called natural gas a critical bridge fuel to a lower carbon future but [acknowledged that drilling had led to poor air quality in some areas](#). Smog was worsening in rural communities where drilling had increased sharply, she said, and the agency was concerned that without better regulation those problems would grow.

“People’s health will be affected,” Jackson said, adding that the EPA was developing rules—the ones announced yesterday—to address this issue.

Hydraulic fracturing is a major source of emissions because when fluids used to frack a well return to the surface, they carry gases that can be vented into the air, said Jeremy Nichols, the climate and energy program director for WildEarth Guardians.

“Just imagine opening a bottle of soda,” he said.

Instead of carbon dioxide, in fracking’s case the soda can contain methane, volatile organic compounds and toxic chemicals such as benzene, which generally spray into the environment. Some areas in the West, where emissions from [drilling are particularly high, no longer meet federal air quality standards](#).

The EPA proposal also calls for reducing emissions of toxic chemicals, such as cancer-causing benzene, produced by processing, transmitting and storing natural gas. An exemption in the Clean Air Act prohibits the EPA from requiring similar reductions for fracking. Nevertheless, the agency said that a byproduct of new limits on volatile organic compounds produced by fracking would be reductions in other emissions.

Some environmentalists said they were disappointed that the proposed rules do not target methane, a potent greenhouse gas that is also the primary ingredient of natural gas. The oil and gas sector accounts for nearly 40 percent of all methane emissions nationwide, according to the EPA.

While the EPA said such emissions would be reduced by one-quarter as a result of new limits on the release of other gases, Alvarez said greater cuts would have been possible if methane reductions had been mandated.



The EPA issued its emissions-reduction proposal soon after saying [it would not meet a July 29 deadline for tougher national ozone standards](#).

Doing one without the other may not be enough to improve air quality in busy drilling areas such as Wyoming's Upper Green River Basin, Nichols said.

"That's a hard realization that's going to sink in," he said. "We're definitely going to be able to take a bite out of it through some of the standards that are coming on line, but we're going to reach a point where something else needs to be done."

## Does an Old EPA Fracking Study Provide Proof of Contamination?

By [Abrahm Lustgarten](#)  
Aug. 4, 2011, 12:43 p.m.

*This post has been updated with the industry's response.*

*A 24-year-old EPA report uncovered this week adds to a list of examples of how water supplies are polluted in natural gas drilling areas. (Abrahm Lustgarten/ProPublica)*



For years the drilling industry has steadfastly insisted that there has never been a proven case in which fracking has led to contamination of drinking water.

Now Environmental Working Group, an advocacy organization engaged in the debate over the safety of fracking, [has unearthed a 24-year-old case study](#) by the U.S. Environmental Protection Agency that unequivocally says such contamination has occurred. The [New York Times reported](#) on EWG's year-long research effort and the EPA's paper Wednesday.

The [1987 EPA report](#), which describes a dark, mysterious gel found in a water well in Jackson County, W.Va., states that gels were also used to hydraulically fracture a nearby natural gas well and that "the residual fracturing fluid migrated into (the resident's) water well."

The circumstances of this particular well [are not unique](#). There are several other cases across the country where evidence suggests similar contamination has occurred and many more where the chemicals used in hydraulic fracturing have contaminated water supplies on the surface. ProPublica has written about many of them in the course of a [three-year investigation](#) into the safety of drilling for natural gas.

But the language found in the EPA report made public Wednesday is the strongest articulation yet by federal officials that there is a direct causal connection between man-made fissures thousands of feet underground and contaminants found in well water gone bad. The explanation, presented in the EPA's own words, stands in stark contrast to recent statements made by EPA officials that they

could not document a proven case of contamination and a [2004 EPA report](#) that concluded that fracturing was safe.

“This is our leading regulatory agency coming to the conclusion that hydraulic fracturing can and did contaminate underground sources of drinking water, which contradicts what industry has been saying for years,” said Dusty Horwitt, EWG’s senior counsel and the lead researcher on the report.

A spokesperson for the EPA would not directly address the apparent contradiction but said in an email that the agency is now reviewing the 1987 report and that “the agency has identified several circumstances where contamination of wells is alleged to have occurred and is reviewing those cases in depth.”

The contamination debate has intensified as tens of thousands more wells are being drilled in newly discovered shale gas deposits across the country. The EPA and some scientists have long warned that when rock is hydraulically fractured, there is an increased risk of contaminants traveling through underground cracks until they reach drinking water. Many geologists have countered, however, that migration over thousands of feet is virtually impossible.

Although the EPA, along with West Virginia officials, concluded that fracturing caused the contamination studied in its 1987 paper, the documents from the agency’s investigation contain many of the same ambiguities that have allowed the industry to continue to deny a link between water contamination and fracking. In the West Virginia case, for example, officials did not collect chemical samples of the drilling fluids used for fracturing and therefore could not test the contaminated water for the presence of those chemicals. Officials noted that they did not have sufficient time to fully investigate that case.

“No one at the time tested the gel to see its chemical composition so you can’t know for sure where it came from,” said Horwitt.

Such scientific stumbling blocks have prevented regulators from reaching more definitive conclusions in several cases that have roused concern about fracturing.

In 2006 — [according to a ProPublica report](#) — a residential drinking water well in Garfield County, Colo., spewed gas and polluted water into the air after a nearby gas well was hydraulically fractured. Tests detected a chemical called 2-butoxyethanol (2-BE), commonly used in hydraulic fracturing, in the drinking water well. The EPA never studied the case, and Colorado officials did not pursue an in-depth investigation before the gas company reached a multimillion-dollar settlement with the homeowner that included nondisclosure agreements.

In 2009, when [the EPA began investigating](#) a pattern of residential well water contamination in Pavillion, Wyo., the agency identified a close chemical relative of the 2-BE compound identified in the Colorado case. It is also likely that 2-BE was used in fracking in Pavillion, but the EPA’s investigation is ongoing, and the agency has not decided whether fracking was the cause.

In many of the contamination cases ProPublica has documented across the nation — including [dozens in which methane contamination](#) reached water wells and at least a thousand in which water was otherwise contaminated in fracking areas — the drilling industry and environment officials have blamed well construction, rather than the fracking process. The industry has used this finding

to argue that better well construction is enough to make drilling safer [and to argue against federal regulation of fracking](#).

In the case studied in the EPA's 1987 report, Horwitt said, nothing in the record indicates that there was a leak or other problem in the well casing, leaving an abandoned well as the likely pathway for contaminants to migrate into drinking water. There are [millions of such abandoned wells](#) around the country.

The industry group Energy In Depth disputes the clear-cut language of the EPA's 1987 report and arguing that state regulators were far less certain about the cause of contamination in West Virginia than the EPA's summary report conveyed. "It says an awful lot about fracturing's record of safety that the best these guys could come up with after studying the issue for an entire year is a single, disputed case from 30 years ago that state regulators at the time believe had nothing to do with fracturing," said Lee Fuller, vice president of government relations for the Independent Petroleum Association of America, in a statement published on EID's website. "Three decades later, the technology today is better than it's ever been, the regulations are broader and more stringent, and the imperative of getting this right, so that we can take full advantage of the historic opportunities made possible by shale, has never been more apparent."

Last year the EPA launched its first comprehensive study into the effects of fracking on drinking water. Its findings are due out in late 2012.

*ProPublica's Nick Kusnetz contributed to this report.*

## **N.Y. Enviro Commissioner Expects Little From EPA Fracking Study**

By [Abrahm Lustgarten](#)  
Aug. 9, 2011, 1:49 p.m.

*New York State Department of Environmental Conservation Commissioner Joe Martens points to a slide during a presentation at a news conference in Albany, N.Y., in July. (Mike Groll/AP Photo)*



When Joe Martens became commissioner of New York's Department of Environmental Conservation in March, he expected an unusual challenge. The department oversees everything environmental in the state, from managing 4.5 million acres of land to regulating ship ballast water in the Great Lakes.

But no contemporary issue is more dominant — or more controversial — than whether and how to allow energy companies to drill for natural gas in New York using hydraulic fracturing, or fracking.

Drilling in New York could access vast resources of gas, boosting local economies. However, across the country, drilling and fracturing have been linked to complaints about water contamination, air pollution and health problems. New York halted in-state drilling development in 2008 after [an investigation by ProPublica revealed that the state was not prepared](#) to handle the waste from the process or the chemicals that would be injected underground. New York launched an in-depth environmental analysis of the risks of drilling, with the goal of setting new standards for how drilling would be permitted if it goes forward in the state.

Now that environmental review is close to completion, and it will fall to Martens, formerly president of a land conservation group called the Open Space Institute, to decide how the drilling will be governed and how quickly it might progress. The state could begin issuing permits to drill early next year. I spoke with Joe Martens on Aug. 3. The following questions and responses have been edited for length.

**Q: Fracking has become a national issue. By circumstance, New York is at the center of it. What extra responsibility does this put on the DEC, and what should New York's role be in that national debate?**

I don't think New York has faced an issue like this in a long period of time. It's a huge environmental issue, one of the biggest of my day.

I think we are setting the national standard, and that is the responsibility that I am comfortable with. The proposed requirements in our SGEIS (the generic environmental impact statement that will dictate drilling conditions) are the most stringent in the country. We have taken a very cautionary approach. We have set aggressive setbacks from water supplies; we have taken state land off the table; we are recommending prohibiting drilling in the New York City watershed.

**Q: The Environmental Protection Agency is in the midst of its own national study of the risks of hydraulic fracturing, but the results won't be known until after New York's review is finished. What if the federal government's findings contradict New York's?**

We obviously look at everything that is going on, and the EPA is an important player. If they find something that we have missed, absolutely we will incorporate it into our program. We don't have blinders on.

**Q: Why not wait a few more months to see what they determine?**

EPA is coming at this a bit later than we are. I think DEC is ahead of the game. I think we looked at the very things that EPA is looking at and we think that we have incorporated the problems that have occurred around the country. You can always wait for new information, but I don't expect the EPA study will add measurably.

**Q: One of the greatest environmental fears around fracking is that pressures exerted deep underground will allow chemicals used in the process to migrate into drinking water supplies. Has New York evaluated this risk, and how is it being addressed?**

There is no evidence that we found that fracking fluids can migrate through that ... distance and those zones. That is not to say that there aren't shallow migration problems. We just don't see any

risk from the deep horizontal well that is very far underground and migration up to the lowest level of fresh water.

Obviously, lots of technically competent people are looking at this. I think they looked at virtually everything that is out there.

**Q: [Our investigations](#) have identified a number of cases where deep underground migration may have caused well-water contamination, and just last week Environmental Working Group reported on an old EPA study of a case in West Virginia. Are these cases of concern?**

The case studies are inconclusive. DEC has reviewed the EPA contractor's 1987 report and additional information regarding the West Virginia incident where a gel contaminated a drinking water well. The report gave no explanation of how the gel found in the water well got there. Our counterpart agency in West Virginia in fact concluded that the most likely cause was not fracking but rather the use of gel at relatively shallow depths in drilling the gas well in the first place and completing or cleaning it out for operation.

One theory that has been discussed is that abandoned wells in the area were not properly plugged and may have allowed gel used in fracturing to migrate upward. Our revised draft SGEIS assessed this type of potential problem and would require drilling companies to survey the land generally within one mile of the proposed well location. If an unplugged deep well is found, the department would require the operator to properly plug and abandon it before fracturing begins.

The draft SGEIS does address the risks associated with underground gas migration through stringent well construction requirements and other protections.

In addition, the revised SGEIS would require hydraulic fracturing pumping operations to be monitored for pressure and flow during pumping and an immediate suspension of fracturing if any anomalous pressure occurs.

**Q: How did the DEC arrive at its various buffer measures—one safe distance from an aquifer, another different distance from a watershed boundary?**

We didn't have a formula. In general I'd say we erred on the side of caution for increased setbacks.

The department considered the nature of the potential environmental impact under the circumstances posed at each type of aquifer or water supply. For example, the risk of surface spills in the New York City and Syracuse watersheds includes the potential loss of an EPA Filtration Avoidance Determination and the resulting crushing potential cost to those two cities of filtering their drinking water.

Where the wetlands law might have proposed a 100-foot setback, we increased it in some cases by an order of magnitude just out of caution. Other states don't have nearly as generous setbacks as we do.

**Q: And what is the primary purpose of the setbacks then?**

It was basically to keep any activity sufficiently away from the area around the two watersheds (the New York City and Syracuse public water supplies) and a variety of other natural resources. It is surface activity, not the drilling 5,000 feet underground that we are concerned about, but the trucks carrying chemicals on the surface. We don't believe there is any risk of migration from the well bore to the underground aquifer above it.

**Q: Health complaints are emerging in drilling areas, and health impacts are both a growing concern and represent a significant scientific gap in the study of drilling's impacts. Pennsylvania is considering a health registry to track related complaints. What steps is New York taking?**

We are not planning to have a health registry. The main approach of the SGEIS is to prevent exposure of the public and any resulting health impacts. We are also requiring that private drinking water wells be monitored. DEC and DOH (Department of Health) have been coordinating in assessing public health risks associated with the drilling and gas extraction activities. In the unlikely event that contamination of groundwater occurred, the state and county health departments would first determine whether the public has been or might likely be exposed. Those agencies are also fully equipped to conduct epidemiological studies of exposed populations.

**Q: In 2008 ProPublica [reported that New York state was not prepared to handle the wastewater that would be produced from drilling. Later we wrote that \[drilling waste was likely to be dangerously radioactive\]\(#\). Originally, New York planned to permit water treatment plants to accept the waste. Where do things stand today?](#)**

Currently, no wastewater treatment plants in New York are equipped to treat or permitted to accept wastewater with the range of contaminants expected to be in fluids produced from high-volume hydraulic fracturing. These plants would need to make modifications or additions to the treatment systems at their facilities. These plants would need an SPDES (environmental discharge) permit from New York state. ... The plants would be required to perform a "headworks analysis" demonstrating they can safely treat the waste before DEC would grant or modify the permit. It is possible that these plans could include exporting waste to Ohio.

**Q: As more drillers recycle their wastewater, more of those fluids are left permanently underground in the well. Will New York have any requirements limiting how much fluid can be discarded underground before the drilling is considered "underground injection," a process extensively regulated by the federal government?**

DEC is currently examining this issue as part of its environmental and rule-making process. There should be more details once the draft SGEIS and accompanying regulations are finalized.

**Q: Can you explain the recent controversy about "lifting New York's ban" that was reported in the national press? I never knew about a ban on fracking in New York.**

A moratorium certainly hadn't been lifted because a moratorium hadn't been in place. I think of a moratorium as an act of the legislature that says a state can't do something for a period of time, by law. Nothing about the situation changed other than we revised the draft. The revised draft was expected all along. And we are required by law not to consider applications to drill until the



[environmental review] is completed. Everybody knew this was just another revision that had been promised for months.

I took exception to the way The New York Times reported the story when they heard we were coming out with our revised draft. It was a very misleading headline ... that the governor was trying to slip one by on people.

**Q: The DEC has a multitude of responsibilities and has faced severe budget and staff restraints. Will the drilling issue define the department and consume the state's environmental regulatory resources?**

We still have a large staff that deals with mining (which oversees drilling), and it is not going to dwarf any of the other functions of the agency. But we will need to be properly staffed. We are going to need the people to properly oversee it. I don't think this will ever dominate the agency's mission or focus.

**Q: Speaking of staff, New York has just 14 gasfield inspectors and has cut its staff by more than 20 percent since 2003. By comparison, Pennsylvania—which continues to be challenged by environmental problems from drilling—has doubled its inspection staff to more than 200. Your predecessor at the DEC was fired after warning that cuts would interfere with drilling oversight. How does New York now expect to be able to oversee drilling in the state?**

I've put together an advisory panel that's going to meet in August. One of the main focuses will be to look at the resource issues. They will look at Pennsylvania and how they have staffed it and how we have staffed. The advisory panel's work will flow into a budget process here in New York.

I'm not just talking about the mineral division, I'm talking about the water division, staff in lands and forests; it's across divisions that we will need additional resources to address issues around high-volume hydraulic fracturing.

If we don't get those resources, we will only review applications that we have the capacity to review at any given point in time. We are not going to approve permits just because we have lots of them.

**Q: The country appears on the verge of a second recession, and drilling could bring revenue. How do today's economic troubles affect New York's decision about whether to allow Marcellus Shale drilling?**

The fact that the economy is in recession is one factor, but it's certainly not the most important factor for the DEC. It hasn't affected the environmental review process. Our primary objective is to figure out how this can be done in an environmentally protective way.

**Q: What preferences have the governor and others outside the DEC expressed?**

I can say categorically that no one has exerted any pressure on me. There is a provision in the environmental conservation law that requires us to promote the efficient use of the state's oil and gas resources, so we have a legal obligation to try to use these resources efficiently. At the same time, we have air, water and solid-waste laws that make sure things are done in a way that meets



national and state environmental standards. So, it is a balancing act, but the objective is to see if they can be simultaneously met and we have concluded that they can.

**Q: New York drilling regulations say that state authority usurps municipal authority when it comes to regulating drilling, yet a number of communities are considering local bans or limits of their own. How will New York address these conflicts and is it prepared to fight them in court?**

It is likely that the courts will need to decide these issues in a lawsuit between the town and the drilling company, not the state.

## Report for Obama Questions Effectiveness of Gas Drilling Regulations

By [Nicholas Kusnetz](#)

Aug. 12, 2011, 10:16 a.m.

*(Photo: Abrahm Lustgarten/ProPublica)*

In sharp contrast with gas industry portrayals, the draft report [released yesterday by a federal panel on shale gas drilling](#) explicitly acknowledges that current regulations may be insufficient to protect the environment and public health.



For years, the gas industry has said that drilling with hydraulic fracturing, or fracking, into deep shale formations is safe. The federal government has been caught in an awkward position, limited from regulating the industry by exemptions written into federal environmental laws, while also working to promote domestic energy production.

The draft report continues to promote drilling, but it comes down squarely on the side of stronger oversight. It notes serious environmental impacts from shale gas drilling and says it is “far from clear” whether federal and state regulations are protecting the public.

“If effective environmental action is not taken today,” the report says, “the potential environmental consequences will grow to a point that the country will be faced (with) a more serious problem.”

Many of the panel’s recommendations already have been adopted by some states and members of the drilling industry over the last couple of years, including disclosure of chemicals used in fracking and better well construction.

Some go further. The report recommends that companies monitor air quality on drilling sites and publish those results. It also calls for limits on emissions of methane, a potent greenhouse gas and the primary component of natural gas.

“I think we’re lifting the bar a bit,” said John Deutch, chairman of the panel. Deutch is a former CIA director, has worked for the Energy Department and also sits on the board of two energy companies.

Across the board, the panel recommended making more information available to the public in order to create transparency and give a sense that progress is being made, Deutch said.

President Obama commissioned the report in March from Energy Secretary Steven Chu, who later appointed the seven-member panel. The panel was given 90 days

—ending Thursday—to come up with immediate steps that can be taken by regulators and drillers.

The report released yesterday doesn’t recommend any specific regulations, leaving that to state and federal agencies. Many recommendations rely on industry cooperation.

“Whether and how these recommendations will be implemented is absolutely the critical question,” said Matt Watson, senior energy policy manager at the Environmental Defense Fund. That organization’s president, Fred Krupp, was the panel’s only member from an environmental group.

The report is notable in part because of the makeup of the panel. Some environmentalists, academics and state lawmakers have criticized the group, saying that [six of the seven members have financial ties to oil and gas companies](#). Watson, who was not among that group of environmentalists, said the members’ biographies could make the recommendations carry more weight.

“Some of them are quite bold,” he said of the findings, “and it’s noteworthy that a group like this panel, which is made up of members with very diverse backgrounds, would come to consensus.”

Some aspects of the report are in clear conflict with industry characterizations. For example, the report says that the oft-repeated industry line—that fracking has been performed safely for decades—is insufficient to quell concerns. Instead, it says, the industry must monitor its own activities and make those results public.

The Independent Petroleum Association of America, an industry group, issued a statement calling the report a “useful starting point” for achieving improved safety. The group did not respond to a request for comment.

On the central question in the debate over fracking—whether millions of gallons of fluids injected deep in the earth can migrate through cracks and contaminate aquifers—the panel took a nuanced view. The report says there is a slight chance of that happening, but it does not rule out the possibility, saying “few if any” cases have been confirmed. Deutch said they chose the wording out of caution, not because they are aware of any cases.

“This all depends upon how prudent a person you are,” he said. “If you say ‘no cases,’ one is going to turn up.”

Some advocates said the panel’s recommendations fell short of what is needed to protect the public. Dusty Horwitt, senior counsel for the Environmental Working Group, said he was disappointed that

the report made no mention of the many exemptions for oil and gas companies from major environmental laws like the Safe Drinking Water Act and the Clean Air Act. While he supports many of the recommendations, he said it is unclear how they will translate into better practices.

“The question is, who is going to enforce some of these reforms that the panel is calling for?” he said. “We have laws on the books that could prevent some of the problems that the panel and others are interested in solving, but the panel was silent about those laws.”

The report comes amid a robust public relations effort from the industry arguing that drilling and fracking are safe. As concerns have grown, [companies have been running full-page spreads in newspapers](#) and putting ads on TV.

ProPublica has been reporting on the safety and environmental risks of gas drilling for three years. Previous investigations have detailed many of the problems addressed in these recommendations, including [doubts over the climate benefits of natural gas](#), [gaps in the disclosure of fracking chemicals](#) and [problems with wastewater disposal](#).

Although many of the panel’s recommendations have already been adopted or considered by state governments and the EPA, the report is significant in its acknowledgement of the threats, said Amy Mall, a senior policy analyst with the Natural Resources Defense Council.

“What’s important here are the underlying findings: that there are problems that need to be fixed, and that they can be fixed.”

Two of the most significant recommendations involve water use and air quality. The [EPA proposed rules last month that would reduce emissions](#) of smog-forming and toxic air pollutants from many stages of the drilling process. The report calls for a broader approach that would encompass more operations and that would also limit methane emissions.

The panelists also called for a systemic approach to water use that would track every step from withdrawal to disposal. Most states do not track exactly how much of the fluids pumped underground in fracking returns to the surface as waste—as much as 90 percent can remain.

Other recommendations call for the creation of a public database linking to disparate sources of information on fracking and shale gas drilling, and for more research and development from the government ([the Energy Department recently announced \\$10.3 million in grants for shale gas research](#)). Deutch said the proposals call for about \$75 million in new federal spending on these initiatives.

The draft will be reviewed by an Energy Department committee next week before being finalized. Over the next 90 days, the panelists will use the recommendations to come up with specific advice for the Department of Interior, which regulates drilling on federal land, and the EPA. It will be up to those agencies to pursue any rulemaking they decide is necessary.