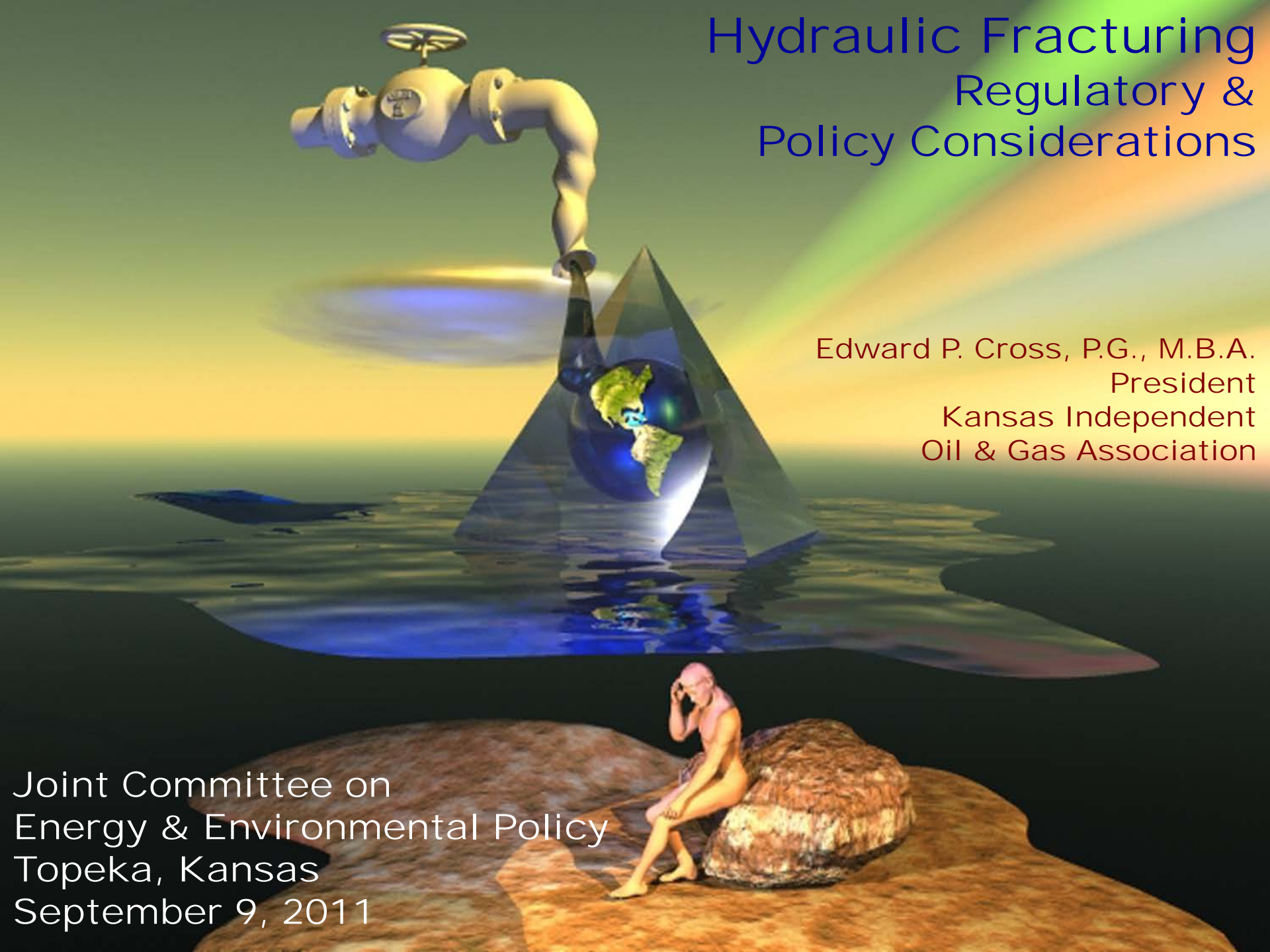


Hydraulic Fracturing Regulatory & Policy Considerations

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Joint Committee on
Energy & Environmental Policy
Topeka, Kansas
September 9, 2011



Hydraulic Fracturing

■ Kansas

- First HF operation in 1947
- Vast majority of wells fraced
- No verified or documented instances of harm to groundwater from HF
- HF designed to individual well characteristics

■ Why is HF Necessary

- To stimulate oil and gas production to increase Net present Value (NPV) of a well through:
 - Accelerating income through increasing production rates
 - Reducing well life operating expenses
 - Increasing total cumulative production

Hydraulic Fracturing Under Attack

- Environmental Issues Raised
 - Natural Resource Defense Council
 - Drilling Down
 - Propublica
 - Buried Secrets
 - New York Times
 - GASLAND

- Anti oil & gas development groups using a host of regulatory & environmental issues to establish barriers to responsible oil & gas development

Project BRIEF

- Bringing Real Information on Energy Forward (BRIEF)
- Comprehensive and quantitative research project that illuminates the real facts behind the oil and gas industry
- Compiled three reports
 - History & Progress of Effective State Regulation
 - Role of the Federal Government
 - Potential Economic Consequences of Proposed Regulations



ENERGYINDEPTH

- www.energyindepth.org
- Created to explain the oil and gas industry
- Takes the “scare” out of scare tactics employed by opponents of American energy production

GASLAND DEBUNKED

WRONG ON THE LAW

GasLand myth:

"What I didn't know was that the 2005 energy bill pushed through Congress by Dick Cheney exempts the oil and natural gas industries from the Clean Water Act, the Clean Air Act, the Safe Drinking Water Act...and about a dozen other environmental regulations." (6:05)

Actual truth:

- ✓ The oil and natural gas industry is regulated under every single one of these federal laws -- under provisions of each that are relevant to its operations.
- ✓ The 2005 energy bill was supported by nearly three-quarters of the U.S. Senate, including then-Sen. Barack Obama of Illinois. In the U.S. House, 75 Democrats joined 200 Republicans in supporting the final bill.

WRONG ON THE PROCESS

GasLand myth:

"The fracking itself is like a mini-earthquake... In order to frack, you need some fracking fluid -- a mix of over 596 chemicals." (6:50)

Actual truth:

- ✓ The fracturing process uses a mixture of fluids comprised almost entirely (99.5%) of water and sand. The remaining materials, used to help deliver the water down the wellbore, are typically found and used around the house. The average fracturing operation utilizes fewer than 12 of these components, according to the Ground Water Protection Council -- not 596.
- ✓ Over the course of its history, fracturing has not only been used to increase the flow of oil and natural gas from existing wells, but also to access things like water and geothermal energy. It's even been used by EPA to clean up Superfund sites.

WRONG ON DISCLOSURE

GasLand myth:

"Fracking chemicals are considered proprietary." (1:00:56)

Actual truth:

- ✓ The entire universe of additives used in the fracturing process is known to the public and the state agencies that represent them.
- ✓ Not only do individual states mandate disclosure, the federal government does as well. The Occupational Safety and Health Administration (OSHA) mandates this information be kept at every wellsite, and made readily available to response and medical personnel in case of an emergency.

WRONG ON FLAMMABLE FAUCETS

GasLand myth:

Methane in the water in Fort Lupton, Colo. said to be the result of natural gas development.

Actual truth:

- ✓ Colorado debunks the claim: "Dissolved methane in well water appears to be biogenic [naturally occurring] in origin. ...There are no indications of oil & gas related impacts to water well." (COGCC, 9/30/08)

Does HF Pose a Risk to Public Health?

- 2004 EPA report concluding the technology poses “no threat” to underground drinking water
- Clinton Administration EPA Chief Carol Browner testified in 1999, finding “no evidence that . . . hydraulic fracturing . . . has resulted in any contamination or endangerment of underground sources of drinking water.”
- On May 25th EPA Administrator Lisa Jackson stated, under oath,
 - “I’m not aware of any proven case where the fracking process itself has affected water, although there are investigations ongoing.”
- Other studies reinforce these conclusions
 - *GWPC Inventory and Extent of Hydraulic Fracturing in Coalbed Methane Wells in the Producing States* (1998)
 - *IOGCC States’ Experience with Hydraulic Fracturing* (2002)

Is HF Regulated?

- Federal Safe Drinking Water Act (SDWA) exempted HF from UIC regulation in 1974
- 1997 11th circuit opinion ruled contrary to EPA that HF constituted underground injection
- 2004 EPA study of HF concluded that HF did not adversely impact underground sources of drinking water
- Energy Policy Act of 2005 amendment subjected diesel based HF to UIC regulation and continued remainder of HF exemptions
- 2010 Congress asked EPA to study HF and report by 2012
- EPA developed scoping document in March 2010

Is HF Regulated?

- EPA formed Science Advisory Board in April 2010
 - KIOGA urged objective, scientific analysis that included participation from industry and state agencies.
 - Urged congressional action to halt until study completed
- EPA held stakeholder meetings across country in summer 2010
 - KIOGA participated in stakeholder meeting in Dallas in July 2010
- EPA Hydraulic Fracturing Study Plan issued in February 2011
 - Included life span of water in HF process
 - KIOGA expressed concerns to EPA in March 2011
 - Sweeping scope to include issues not unique to HF
 - Absence of a review of effective state regulation
 - Inclusion of non-science based references

Is HF Regulated?

- Effectively regulated by states since inception
- All laws, regulations, & permits that apply to oil and gas exploration and production activities also apply to HF
 - Well design - location - spacing - operation - abandonment - water management & disposal - waste management & disposal - air emissions - underground injection - surface disturbance - worker health & safety.
- 2009 GWPC Report underscored record of safety and performance at state level
 - “current state regulation of oil and gas activities is environmentally proactive and preventive.”
 - “regulation of oil and gas activities is managed best at the state level where regional and local conditions are understood and where regulations can be tailored to fit the needs of the local government.

A LOOK BACK: HF, SDWA, AND RECENT EFFORTS BY STATES TO FIGHT BACK



States remind Congress that regulation and risk management at the state level is, and always has been, the most effective approach.

Hydraulic fracturing first commercially employed.



SDWA amended, creates the authority for states to be granted primacy for regulating Class II injection wells, assuming they can show equivalent environmental protections in place; also clarifies that natural gas storage is not underground injection.

SDWA amended to regulate over 100 specific drinking water contaminants; hydraulic fracturing, in practice at this point for nearly 40 years, never considered for SDWA regulation.



Legal Environmental Assistance Foundation (LEAF) v EPA - arguing that fracturing of coalbed methane in Alabama should be regulated under SDWA, without considering any legislative history or environmental impacts.



EPA releases draft of hydraulic fracturing study, concludes the technology does not pose a risk to drinking water.



EPA releases its final report on the use of hydraulic fracturing in coalbed methane operations; reasserts that hydraulic fracturing poses "no threat" to drinking water.



Explosion occurs at home in Bainbridge, Ohio; incident blamed on hydraulic fracturing, which is rejected and corrected in subsequent investigations.

Alabama asks Congress to preserve state primacy to regulate hydraulic fracturing

Louisiana urges Congress to "take such actions as necessary" to preserve hydraulic fracturing

Oklahoma passes concurrent resolution urging Congress not to pass legislation that imposes federal regulation over hydraulic fracturing

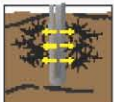
Pennsylvania introduces resolution supporting continued state regulation of hydraulic fracturing

Texas urges Congress to "maintain state regulatory coverage" of hydraulic fracturing

Rep. DeGette again introduces legislation targeting hydraulic fracturing; Sens. Casey (PA) and Schumer (NY) introduce companion bill in the Senate.

GWPC analysis finds state regulations associated with hydraulic fracturing protect drinking water

1948



1974



Safe Drinking Water Act (SDWA) enacted.

Aims to protect public water supplies and establishes new standards and regulations to protect underground sources of drinking water (USDW).

Despite having been commercially utilized for nearly 25 years up to this point, hydraulic fracturing never considered for regulation under SDWA.

1980

1986

1996 SDWA amended to emphasize sound science and risk-based standard setting; no suggestion that hydraulic fracturing be regulated under SDWA.



1996

1997

2000



LEAF challenges EPA's decision to allow Alabama to regulate hydraulic fracturing under its Class II well program. EPA initiates its own study of hydraulic fracturing.

2002

Major service companies sign memorandum of agreement with EPA, declare the use of diesel fuel off-limits in the fracturing of coalbed methane wells near USDWs.

2003

2004



2005 House passes bipartisan energy bill that, among other things, clarifies that Congress never intended hydraulic fracturing to be regulated under SDWA.

2005

2007

Outside interest groups expand efforts to attack hydraulic fracturing in mid-Atlantic United States (Marcellus Shale).

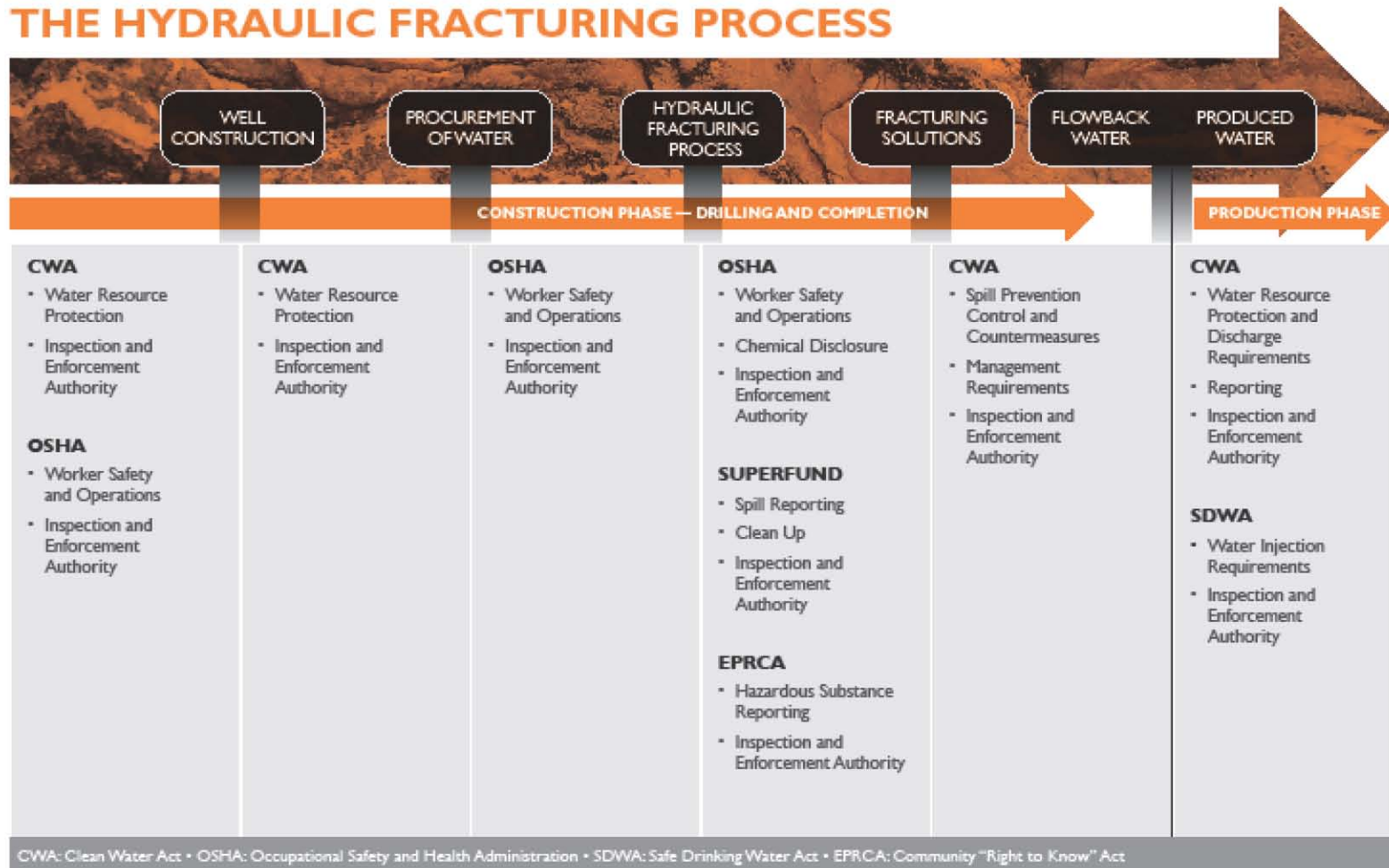
- HR 7271 (DeGette, Hinchey, Salazar) introduced in the House seeking to strip clarifying language in 2005 energy bill. Interest groups push for restrictions on hydraulic fracturing to be added to state regulations in New Mexico and county ordinances in Colorado and New Mexico.

2008

2009



FEDERAL STATUTES REGULATE EVERY STEP OF THE HYDRAULIC FRACTURING PROCESS



Hydraulic Fracturing Policy Considerations

■ Economic Impact

- Closure of over 50% of America's oil and natural gas wells
- Domestic oil production slashed by 183,000 barrels per day
- Domestic natural gas production slashed by 245 billion cubic feet per year
- National GDP lowered by \$374 billion by 2014
- \$785 million lost revenue to state treasuries
- 2.9 million jobs lost including 5,000-7,000 Kansas jobs

Sources: IHS Global Insight "Measuring the Economic and Energy Impacts of Proposals to Regulate Hydraulic Fracturing" 2009; www.EnergyinDepth.org

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In the time it will take you to read this message, America's small and independent oil and natural gas producers will have utilized advanced technologies and innovative engineering to safely produce enough energy to heat your home for 589 years, fuel your car for 159 years and, before the day is out, create 136 new jobs along the way.

Plenty of sites have been created to celebrate these accomplishments; others, to malign them. Energy In Depth was created to explain them -- to tell the real story of the people responsible for producing energy in America. Brought to you by thousands of small, independent, American energy producers, Energy In Depth separates fact from fiction by giving visitors a virtual, first-hand look at the production process: unvarnished, up close, and yes: in depth.

In the 150 years since Edwin Drake used a 32-foot iron pipe to develop America's first commercial oil well, those who produce America's energy have relied on cutting-edge science and technology to fuel our economy and improve our standards of living. As our country's energy needs have grown, so too has our commitment to meeting them, and meeting them safely.

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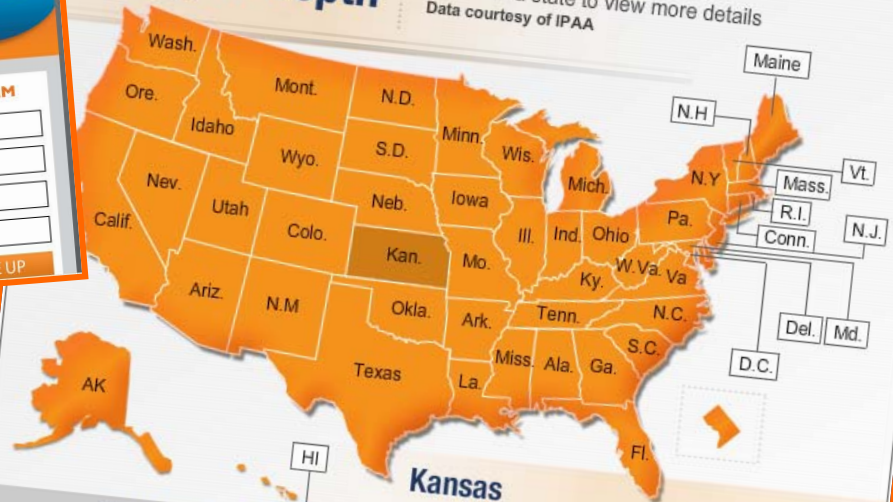
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www.EnergyInDepth.org

Energy In Depth

Roll over a state to view more details
Data courtesy of IPAA



STATE FACTS

Total number of Petroleum jobs: 26,021
Royalties paid: \$9,781,093
Total Severance taxes: 148,855 (in thous. \$)



LEGEND

- Total # of oil wells
- Total oil wells after regulation

Hydraulic Fracturing Policy Considerations

■ STRONGER

- Review state oil & gas regulations
- Review Team
 - State regulators
 - Environmentalists
 - Industry
- 21 states reviewed accounting for over 90% of production
- Unveiled HF guidelines for state regulatory programs
 - Not prescriptive regulatory standards, but outline of key elements for effective HF regulation
- PA - OH - LA - OK

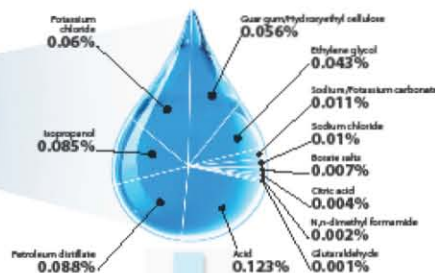
Hydraulic Fracturing Policy Considerations

- Fluid Disclosure
- Frac Fluid Registry
 - GWPC and IOGCC created web-based database
 - Frac Focus (www.fracfocus.org)
 - Voluntarily disclose chemical constituents of frac fluids
- Several states adopting some form of HF disclosure
 - MT - AR - WY - CO - OK - PA - OH - TX - IL
- E-Reference
 - Cross-reference state statutes that regulate HF and generate PDF report

A FLUID SITUATION:

TYPICAL SOLUTION* USED IN HYDRAULIC FRACTURING

0.49%
ADDITIVES*



On average, **99.5%** of fracturing fluids are comprised of freshwater and compounds are injected into deep shale gas formations and are typically confined by many thousands of feet of rock layers.

Source: DOE, GWPC Modern Gas Shale Development in the United States: A Primer (2008)

Compound*	Purpose	Common application
Acids	Helps dissolve minerals and initiate fracture in rock (pre-fracture)	Swimming pool cleaner
Glutaraldehyde	Eliminates bacteria in the water	Disinfectant; Sterilizer for medical and dental equipment
Sodium Chloride	Allows a delayed break down of the gel polymer chains	Table Salt
N, n-Dimethyl formamide	Prevents the corrosion of the pipe	Used in pharmaceuticals, acrylic fibers and plastics
Borate salts	Maintains fluid viscosity as temperature increases	Used in laundry detergents, hand soaps and cosmetics
Polyacrylamide	Minimizes friction between fluid and pipe	Water treatment, soil conditioner
Petroleum distillates	"Sticks" the water to minimize friction	Make-up remover, laxatives, and candy
Guar gum	Thickens the water to suspend the sand	Thickener used in cosmetics, baked goods, ice cream, toothpaste, sauces, and salad dressing
Citric Acid	Prevents precipitation of metal oxides	Food additive; food and beverages; lemon juice
Potassium chloride	Creates a brine carrier fluid	Low sodium table salt substitute
Ammonium bisulfite	Removes oxygen from the water to protect the pipe from corrosion	Cosmetics, food and beverage processing, water treatment
Sodium or potassium carbonate	Maintains the effectiveness of other components, such as crosslinkers	Washing soda, detergents, soap, water softener, glass and ceramics
Proppant	Allows the fractures to remain open so the gas can escape	Drinking water filtration, play sand
Ethylene glycol	Prevents scale deposits in the pipe	Automotive antifreeze, household cleaners, deicing, and caulk
Isopropanol	Used to increase the viscosity of the fracture fluid	Glass cleaner, antiperspirant, and hair color

*The specific compounds used in a given fracturing operation will vary depending on source water quality and site, and specific characteristics of the target formation. The compounds listed above are representative of the major material components used in the hydraulic fracturing of natural gas shales. Compositions are approximate.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	6/15/2011
State:	Kansas
County:	Finney
API Number:	15-055-22101
Operator Name:	OXY
Well Name and Number:	Strackeljohn #A-1
Longitude:	-100.8959
Latitude:	37.76917
Long/Lat Projection:	NAD27
Production Type:	Oil
True Vertical Depth (TVD):	5,020
Total Water Volume (gal)*:	11,550

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
XLW-22C	BHI	Crosslinker	Trisopropanolamine	122-20-3	7.00%	0.00339%	
			Ammonium Hydroxide	1336-21-8	5.00%	0.00242%	
			Zirconium Sodium Hydroxy Lactate Complex	113184-20-8	60.00%	0.02901%	
Frac Sand (All Meshes) [CWT]	BHI	Proppant	Crystalline Silica (Quartz)	14808-80-7	100.00%	33.93292%	
Water	Operator	Carrier	Water	7732-18-5	100.00%	65.03460%	
Enzyme G-VII	BHI	Breaker	Hemicellulase Enzyme Concentrate	9025-56-3	0.02%	0.00001%	
			Water	7732-18-5	99.98%	0.02536%	
FAW-4	BHI	Foamer	Ethylene Glycol Monobutyl Ether	111-76-2	10.00%	0.02199%	
			Isopropanol	67-63-0	20.00%	0.04397%	
GBW-5	BHI	Breaker	Ammonium Persulfate	7727-54-0	100.00%	0.01014%	
GW-38LF	BHI	Gellant	Petroleum Distillates Blend	CBI	70.00%	0.49915%	
			Guar Gum, Substituted	68130-15-4	40.00%	0.28523%	
High Perm CRB-LT	BHI	Breaker	Ammonium Persulphate	7727-54-0	100.00%	0.00678%	
			Crystalline Silica	7631-86-9	10.00%	0.00068%	
Infio 250W	BHI	Surfactant	Surfactants	CBI	80.00%	0.06424%	
			2-Butoxyethanol	111-76-2	20.00%	0.01606%	

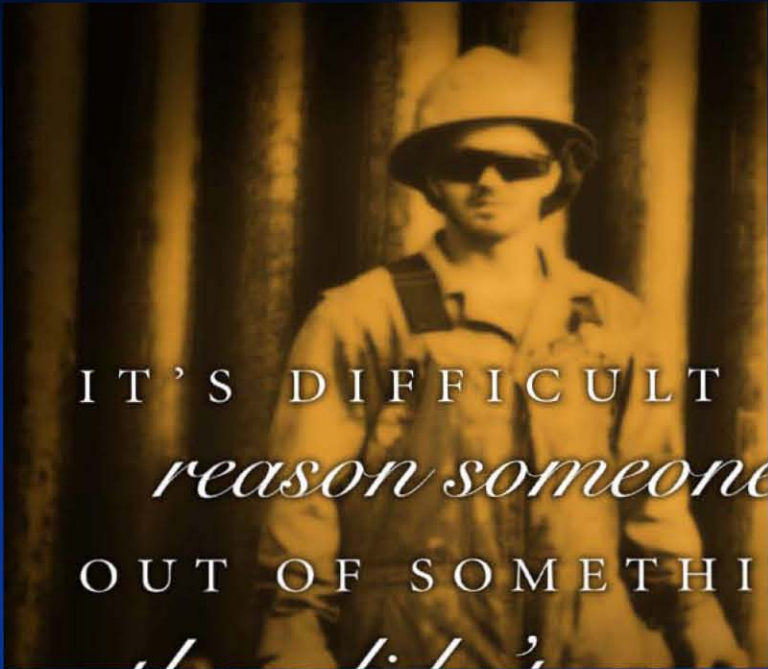
Hydraulic Fracturing Policy Considerations

■ KIOGA Effort

- Willing to work for transparency
- Oppose EPA involvement
 - Senator Udall (D-CO)
- Initial focus on Democratic Senators from oil producing states
 - Visited 12 in 2009
- Expanded to Democrats & Republicans in 2010 visiting 25 Senators and 41 Representatives
- 2011 = 22 Senators and 32 Representatives

■ Developed Credible Relationships

- Built bipartisan support
- Look to our group for credible information for working through sensitive energy issues
- We have earned the undivided attention of a number of key Congressional Members



IT'S DIFFICULT
reason someone
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Thank You

Kansas Independent Oil & Gas Association

www.kioga.org

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