

Transparency, Sustainability and Public Health

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Overview of Presentation

- Transparency has an important role in sustainability, in environmental protection, and in public health – and is required for citizen involvement
- Some industry and US state government policies related to hydrofracturing for shale gas represent environmental recidivism in their return to discarded practices that limit citizen's knowledge and input, particularly in relation to human health.
- The EU can not now depend on US information to estimate local or regional health risks of hydrofracturing for natural gas

Selected EU/US Policy Comparisons

- Ownership of the mineral rights
- Locus of control of public health infrastructure
- Role of toxic tort litigation

My View: What's the Rush to Drill?

- Unfortunately, there is no reasonable scenario in which non-fossil fuels or energy conservation will completely obviate our national need for fossil fuels in the next few decades
- During this time it is certain that virtually all of the US tight shale formations will be drilled for natural gas
- In contrast to the Gulf oil deposits, which might be tapped by other countries, the shale gas deposits of natural gas are ours
 - **So what's the rush?**

Potential Health Benefits of Natural Gas Development

- Replacement of coal in power generation leading to lesser emissions of particulates, sulfur oxides, nitrogen oxides and mercury
- Probable decrease in greenhouse gas impact of fossil fuels

Stockholm: Principle 10

- Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. ***States shall facilitate and encourage public awareness and participation by making information widely available.***
- United Nations Environment Programme (1972). Report of the United Nations Conference on the Human Environment. Stockholm. Principle 10
<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163>

Precautionary Principle

Primary Prevention

- Taking preventive action in the face of uncertainty
- Shifting the burden of proof to the proponents of an activity
- Exploring a wide range of alternatives to possibly harmful action
- Increasing public participation in decision making

Nussbaum RH, Hoover PP, Grossman CM, Nussbaum FD. Community-based participatory health survey of Hanford, WA, Downwinders: A model for citizen empowerment. *Society and National Resources* 17:547-559. 2004.

United Nations Global Compact

Principle 8: Businesses should undertake initiatives to promote greater environmental responsibility.

- Steps that the company could take to promote environmental responsibility would be the following:

Ensure transparency and unbiased dialogue with stakeholders.

United Nations. (2009, 12 February 2009). Businesses should undertake initiatives to promote greater environmental responsibility. *Global Compact Principle 8*. from <http://www.unglobalcompact.org/aboutthegc/thetenprinciples/principle8.html>

World Business Council for Sustainable Development

- “Governance also enables and guides markets by clarifying limits and establishing frameworks that promote transparency, inclusiveness, internalized externalities, and other characteristics of sustainability.”
- World Business Council for Sustainable Development (2010). Vision 2050. Geneva, Switzerland: 1-21.
<http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=219&nosearchcontextkey=true>

EPA's Mission Statement

- “all parts of society -- communities, individuals, businesses, and state, local and tribal governments -- have access to accurate information sufficient to effectively participate in managing human health and environmental risks.”

Environmental Protection Agency. (2013). Our Mission and What We Do.
<http://www2.epa.gov/aboutepa/our-mission-and-what-we-do>

Government's Role in Protecting Health and Safety

Potential Public Health Actions of a Responsive Government

- Promoting Free and Open Information
- Protecting Individuals from Harm Caused by Other People or by Groups
- Taking Societal Action to Protect and Promote Health

Frieden, T. R. (2013). Government's Role in Protecting Health and Safety. *New England Journal of Medicine*, 368(20), 1857-1859.

Government's Role in Protecting Health and Safety.

- “Free and open information empowers people to make informed choices and reduces the likelihood that misinformation or hidden information will endanger health. Laws may require disclosure of factual information (e.g., product content), provide for government transparency (freedom of information), or prevent dissemination of inaccurate or misleading information.” (emphasis added)

Frieden, T. R. (2013). Government's Role in Protecting Health and Safety. *New England Journal of Medicine*, 368(20), 1857-1859. doi: doi:10.1056/NEJMp1303819

Transparency Failures

- Keeping the information secret
- Placing impediments to obtaining non-secret information
- Hiding or obfuscating the underlying issue

COREXIT 9500 MSDS: NALCO

(edited)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous:

<u>Hazardous Substance(s)</u>	<u>(w/w)</u>
- Distillates, petroleum, hydrotreated light	10.0 - 30.0%
- Propylene Glycol	1.0 - 5.0%
- Organic sulfonic acid salt (Proprietary)	10.0 - 30.0%

post-gazette.com

Pittsburgh Post-Gazette

Court reveals how shale drillers, Pittsburgh-area family agreed

August 12, 2013 1:54 pm

By Don Hopey / Pittsburgh Post-Gazette

The previously confidential agreement to settle a Washington County family's claims that its health and property value were damaged by nearby shale gas development contains lifetime bans on what they can say and do, and also places restrictions on where they may live. ...

The 17-page settlement agreement also includes the Hallowiches' previously reported payoff of \$750,000, and notes they will continue to receive oil and gas royalties under the terms of a lease agreement entered into by the previous owners of their farm. It prohibits them from objecting to any drilling under any new property or residence they may own, and details the lifetime nondisclosure and nondisparagement clauses preventing them from speaking publicly about the settlement or protesting or challenging any gas development activity or lease by the operators.

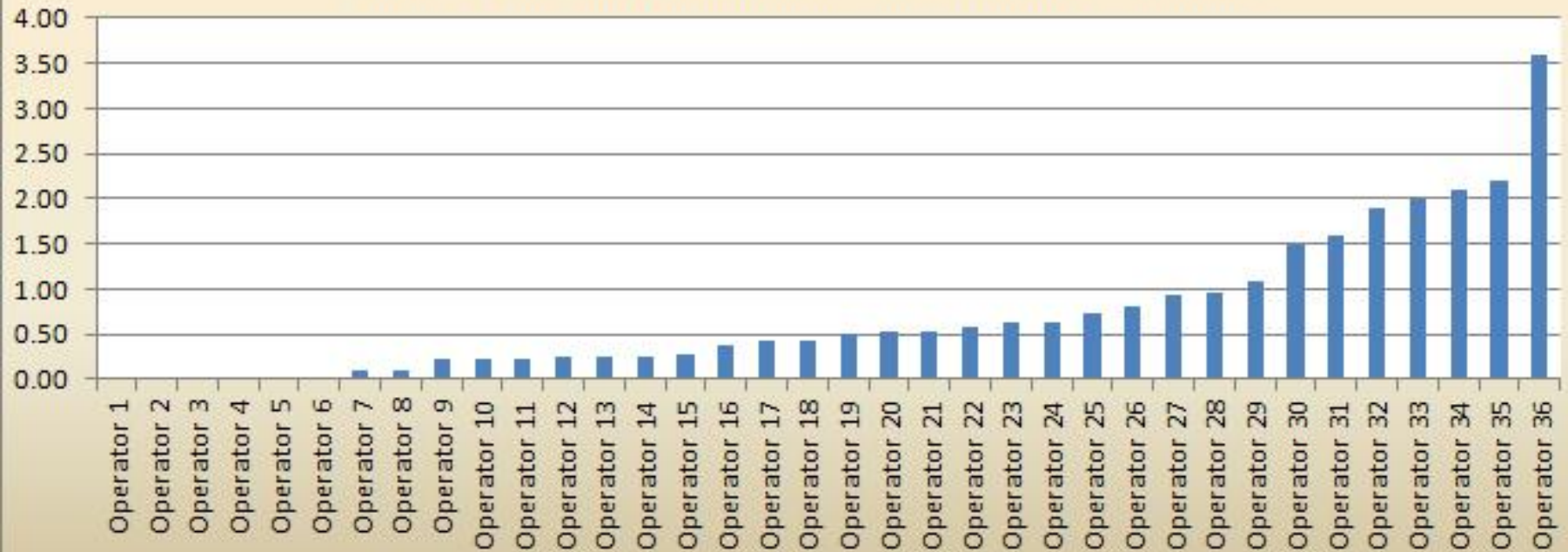
Why Exposure Can Vary Greatly From Site to Site

- Different safety culture
- Different geology
- Different site-specific issues
- Different drilling technology
- Different hydraulic fracturing chemicals
- Different shale gas collection and distribution techniques
- Different flowback disposal techniques

PA Marcellus Shale Violations per Well

Wells Drilled from 3/6/2006 to 10/31/11. Violations from 1/1/2010 to 9/30/2011.

Operators with 10 or more Marcellus Shale wells in Pennsylvania







Managing the Story

Does hydrofracturing cause groundwater contamination?

- 1) There is no proven incident in which hydrofracturing has caused groundwater contamination
- 2) Major water contamination with hydrofracturing agents has occurred as a result of unconventional shale gas drilling activities

Managing the Story Through Obfuscation

Is hydrofracturing old or new?

- 1) To the nation's benefit, new hydrofracturing-related technology now permits extraction of gas that we have long known is trapped in tight shale formations
- 2) We have been doing hydrofracturing for decades so there is nothing to worry about

Childhood Cancer Incidence in Pennsylvania Counties in Relation to Living in Counties With Hydraulic Fracturing Sites.

Fryzek et al JOEM 55:796-801, Jul 2013

(Response: Goldstein & Malone JOEM 55:1376-1378 Nov 2013)

Abstract

- “CONCLUSIONS: This study offers comfort concerning health effects of HF on childhood cancers”.

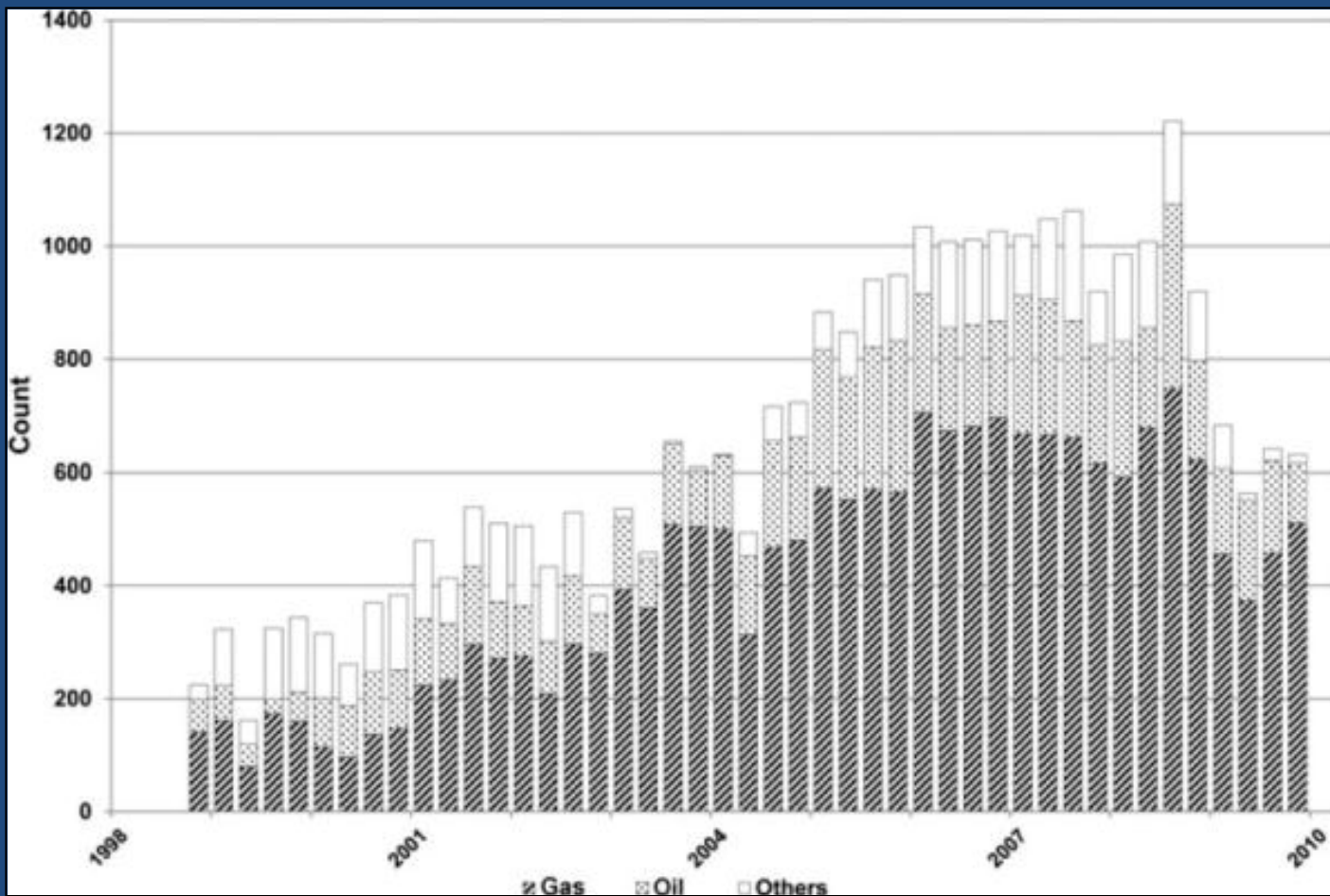


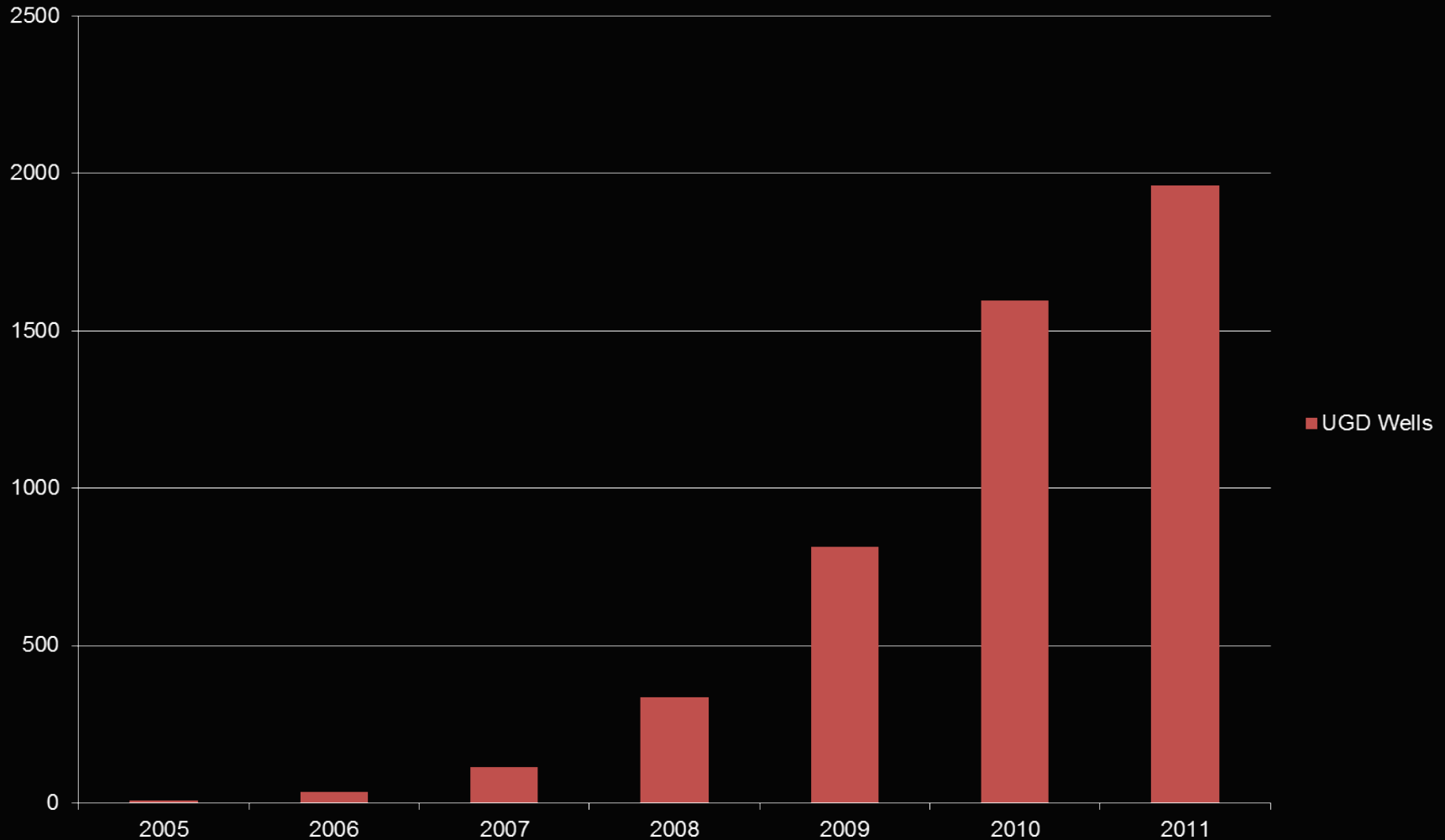
FIGURE 1 . Gas, oil, and other types of well drilling in Pennsylvania from January 1, 1998, to December 31, 2009.

Childhood Cancer Incidence in Pennsylvania Counties in Relation to Living in Counties With Hydraulic Fracturing Sites.

Fryzek, Jon; Pastula, Susan; Jiang, Xiaohui; Garabrant, David:

Journal of Occupational & Environmental Medicine. 55(7):796-801, July 2013.

UGD Wells in Pennsylvania



PA Department of Environmental Protection (DEP). (2013) Online Spud Data Report Database. Accessed 7-17-13
http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/Spud_External_Data

Many Agents of Potential Concern

- Three sources of toxicologically relevant agents
 - Hydrofracturing agents
 - Hydrocarbons and gases present in shale; methane, ethane, propane, BTEX, hydrogen sulfide
 - Natural constituents: brine components; barium, bromide, calcium, chloride, iron, magnesium, strontium; arsenic; radionuclides
 - ***Mixtures of any or all of above***
- Chemical reactions favored by higher temperatures and affected by other local conditions
 - Temperature in shale that favors natural gas production is ~480F
 - High pressure and salinity

Managing the Story

Industry is now supporting transparency in providing information about chemical agents related to unconventional shale gas drilling

- 1) Industry in CO, PA and other states has now agreed to be fully transparent about hydrofracturing chemicals at a local site except for the “minor” issue of Confidential Business Information
- 2) Industry need not tell us anything at all about naturally present chemicals brought up from underground; chemical reactants; or “unintentional” or “incidental” contaminants

Providing Information about Local HF Chemicals Benefits Industry

- There is virtually no disease or symptom that could not be caused by one of the more than 400 chemicals originally on the FracFocus list
- In contrast, there are many diseases and symptoms that would not be plausibly associated with a list that only contains a handful of chemicals.
- Relating a list of chemicals to a list of diseases requires exposure information

What his/her lawyer should tell a doctor who might want CBI

- Once you sign the document allowing you to obtain confidential business information (CBI):
 - If you release the information you are legally liable for any business loss sustained by the company. (Halliburton is said to value their hydrofracturing secrets at upwards of \$200 million)
 - It is highly unlikely that any such law suit will be covered by your malpractice insurance. So you would need to hire your own lawyers.
 - If you think the CBI chemical could be causing health problems, state law probably requires you to divulge this secret information to public health authorities. It is not clear whether you are liable if the public health authorities then release the secret information

It would take an exceptionally brave (or foolhardy) health care provider to request CBI

Environmental Recidivism: Disclosures Not Required Under PA Act 13

Notwithstanding any other provision of this chapter, a vendor, service provider or operator **shall not be required** to do any of the following:

- (1) Disclose chemicals that are not disclosed to it by the manufacturer, vendor or service provider.
- (2) Disclose chemicals that ***were not intentionally added*** to the stimulation fluid.
- (3) Disclose chemicals that occur ***incidentally*** or are otherwise ***unintentionally present*** in trace amounts, may be the incidental ***result of a chemical reaction*** or chemical process or may be constituents of ***naturally occurring materials*** that become part of a stimulation fluid.

Emphases added

Congressional Testimony of Michael L. Krancer, Secretary of the Department of Environmental Protection, Commonwealth of Pennsylvania

“There has been a misconception that the hydraulic fracturing of wells can or has caused contamination of water wells. This is false.

...hydraulic fracturing is only a temporary feature of natural gas development, which only lasts a few weeks.

Hydraulic fracturing of wells is not new in Pennsylvania, it has been going on here since about the 1950s and has been standard practice since about the 1980s.”

Managing the Story

- 1) We were appropriately told that the northeast is different than the west in that the scarcity of water for hydrofracturing is not a major problem
- 2) We were **NOT** told that the geology of the west tends to favor underground injection of flowback water while that of the northeast does not

Language of the Executive Orders Creating Unconventional Natural Gas Drilling Advisory Committees

(Goldstein et al, Env Hlth Persp 120:483-486, 2012)

“...task the Secretary of Energy Advisory Board (SEAB) with establishing a subcommittee...to develop, within six months, consensus recommended advice to the agencies on practices for shale extraction **to ensure the protection of public health and the environment**” (emphasis added)

-President Barak Obama in
Blueprint for a Secure Energy Future (March 2011)

The Marcellus Shale Safe Drilling Initiative will assist State policymakers and regulators in determining how gas production from the Marcellus shale in Maryland can be accomplished **without unacceptable risks of adverse impacts to public health, safety, the environment and natural resources**” (emphasis added)

-Maryland Governor Martin O'Malley in
Executive Order 01.01.2011.11: The Marcellus Shale Safe Drilling Initiative (June 2011)

“WHEREAS, the Commonwealth takes seriously its responsibility to ensure the development of natural gas in a manner that **protects the environment and safeguards the health and welfare of its citizens**” (emphasis added)

-Pennsylvania Governor Tom Corbett in
Executive Order 2011-011: Creation of Governor's Marcellus Shale Advisory Commission (March 2011)

Agencies, Sub-Agencies, and Commissions specified to receive funding from PA impact fee

(Goldstein BD; The Importance of Public health Agency Independence: The Marcellus Shale in Pennsylvania. Amer J Public Health December 12, 2013)

1. County Conservation Districts
2. State Conservation Commission
3. Pennsylvania Fish and Boat Commission
4. Public Utility Commission
5. Department of Environmental Protection of the Commonwealth
6. Pennsylvania Emergency Management Agency
7. Office of State Fire Commissioner
8. Department of Transportation
9. Natural Gas Energy Development Program (DEP)
10. Counties and municipalities
11. Housing Affordability and Rehabilitation Enhancement Fund
12. Commonwealth Financing Authority
13. Environmental Stewardship Fund
14. Motor License Fund (DOT)
15. Pennsylvania Infrastructure Investment Authority
16. Department of Community and Economic Development
17. Hazardous Sites Cleanup Fund

(BUT NOT THE PA DEPARTMENT OF HEALTH)

Top 6 stressors

Stressor	Session 1 (n=33)
Denied or provided false information	79%
Corruption	61%
Concerns/complaints ignored	58%
Being taken advantage of	52%
Financial damages	45%
Noise pollution	45%

Ferrar, K. J., Kriesky, J. K., Christen, C. L., Marshall, L. P., Malone, S. L., Sharma, R. K., Michanowicz, D. R., Goldstein, B. D., (2013). Assessment and longitudinal analysis of health impacts and stressors perceived to result from unconventional shale gas development in the Marcellus Shale region. *International Journal of Occupational and Environmental Health*. DOI: 10.1179/2049396713Y.0000000024

Risk Amplification

- “...personal experience of a hazard and trust—or lack of trust—in authorities and experts have the most substantial impact on risk perception. Cultural and individual factors such as age, gender, education, income, social status, and others do not play such an important role but act as mediators or amplifiers of the main causal connections between experience, trust, perception, and preparedness to take protective actions.”
- Wachinger, G., et al. (2013). "The Risk Perception Paradox—Implications for Governance and Communication of Natural Hazards." Risk Analysis **33**(6): 1049-1065.

“The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment.

Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.”

Pennsylvania Constitution, Art I, Sec 27

Anecdotal Evidence in Justice Castille's Decision

- 'the homeowner abandoned her family home because the exposure to the toxic water and air caused her and her children severe health problems such as constant and debilitating headaches, nosebleeds, nausea, difficulty and shortness of breath, skin rashes and lesions, bone and muscle pain, inability to concentrate, and severe fatigue'

Justice Ronald D. Castille, Robinson Township, etc. v. Commonwealth(Supreme Court of Pennsylvania Middle District, 2013).

Corbett administration asks justices to reconsider Act 13

January 2, 2014 11:32 PM

By Don Hopey / Pittsburgh Post-Gazette



Pa. files for reconsideration of Act 13 decision

Story

Comments

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Posted: Friday, January 3, 2014 10:55 am

Rachel Morgan, Shalereporter.com | 0 comments

HARRISBURG -- The state has officially responded to last month's Pennsylvania Supreme Court Act 13 decision.

Attorneys for Gov. Tom Corbett announced Thursday they had filed an appeal of the Supreme Court's Dec. 19 ruling on Act 13, asking the courts to reconsider.



AP photo by Keith Srakocic

A crew works on a drilling rig at a well site for shale-based natural gas in Zelienople, Pa.

Pennsylvania Supreme Court

- “the Commonwealth does not specify whether any independent scientific study has been commissioned or what data will be used to assess the impact. . . .”

Justice Ronald D. Castille, *Robinson Township, etc. v. Commonwealth* (Supreme Court of Pennsylvania Middle District ed., 2013). Footnote 60.



Photo source: <http://www.wired.com/wiredscience/2013/05/h5n1-h1n1-reassortment/>