The Role of Risk Communication in Shale Development

Ohio Shale Policy & Technology Symposium

Managing Risk in Shale Development Panel

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The Shale Gas Risk Management Dilemma

- **Shale gas developers, regulators, and policymakers must convince a community that:**
  - **While the community bears the risks, the risks are manageable to levels that are acceptable and**
  - **These community risks are justifiable based on benefits to the region and the nation**
- **Under circumstances where:**
  - **The public does not trust shale gas developers or regulators**
  - **The community perceives unaddressed local harms for disbursed benefits**
  - **The community feels a lack of power in the risk assessment, risk management, and decision-making processes**

The Shale Gas Risk Communication Dilemma

Scientific evidence provides high certainty that hydraulic fracturing risks are acceptably low.

Regulations and standards established to protect human health and the environment are being achieved.

That's not what I'm worried about!

Who is paying you to say that?

Carpetbagger!

Why tell us now? You already are doing it.

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Top-Down Strategy Problems

- Use government regulation and permitting to manage risks
- Require payments to communities for impacts to their resources and infrastructure

Regulations and standards established to protect human health and the environment to acceptable levels of risk are being achieved.

The operators will cheat when you aren't watching

Acceptable to who? Not to me!

ODNR reports to the Governor, and he wants shale gas development

Why tell us? You already decided.

Risk Communication Strategy Problems

- **Present a message about relative risks and benefits of shale development**
- **Communicate that risks are low and managed**

Scientific evidence provides high certainty that hydraulic fracturing risks are acceptably low.

That's not what I'm worried about!

Scientists disagree and change their minds a lot.

Benefits to who? Not to me!

Who is paying you to say that?

I resent you saying my fears are irrational!

What is Risk Communication?

Communication intended to supply laypeople with information needed to make informed, independent judgments about risks to health, safety, and the environment.

Source: Risk Communication: A Mental Models Approach; Morgan, M.G., Fischhoff, B., Bostrom, A., Atman, C.J.; Cambridge University Press, 2002.

My Corollary: Not just laypeople – regulators, legislators, industry, medical community… all stakeholders

Risk Communication is…

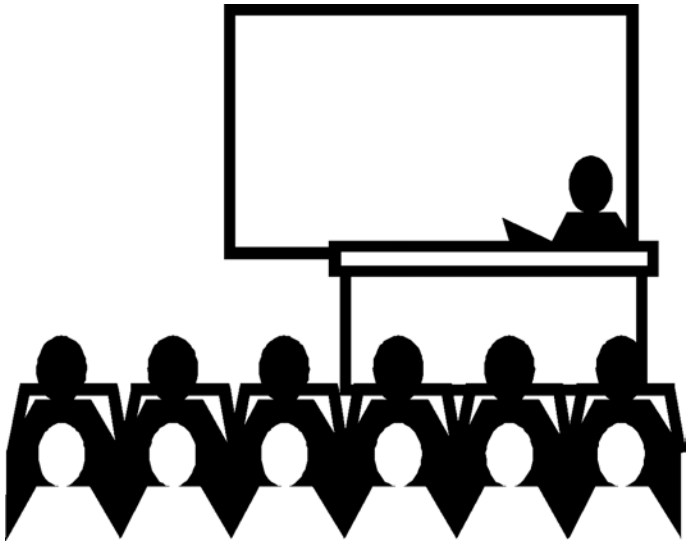
- **Meaningful interactions in which knowledge, experience, perceptions, values, and concerns about risks are exchanged among different stakeholders**
- **So they can put risks in perspective and be involved in choices and decisions about risks**

Risk Communication is NOT…

Trying to get people to understand “the facts”, in order to get them to behave “rationally”

Trying to get people to agree that the risks are small compared to the benefits

An expert standing in front of the public and "teaching" them about risks



Improvements Needed in Risk Communication for Shale Development

1. Change the definition of risk being used

2. Account for the biological, psychological, and sociological basis of risk perception and acceptance

3. Improve public involvement in risk problem formulation, risk assessment, and risk management choices

Change the Definition of Risk Being Used

Technical definition is usually used- Risks is a measurable probability of harm

- Probability x Consequence
- "10^{-6} increase in probability of cancer over a lifetime"
- Requires source, exposure, mechanism of harm (causality)
- Some take the position that this technical description of risk ought to be the authoritative basis for risk management decision making

Society for Risk Analysis - Risk is uncertainty about the consequences of an activity with respect to something valued

"Human" definition of risk - Sufficient reason to suspect the presence of a cause that may result in harm to something that is valued.

Technical measures of risk (1) presume what is the "harm" and (2) do not reflect values.

Science and facts alone cannot adequately address the human definition of risk.

Example – Class II injection wells – Different risk perspectives

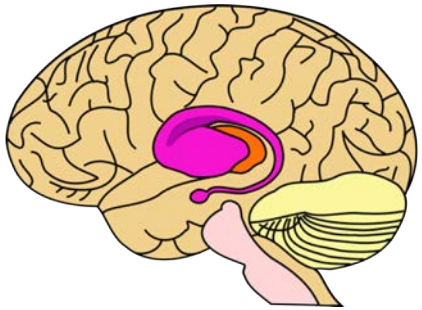
Communicating about technical risks alone may not be effective.

Moral Risk:	Is it acceptable to contaminate any kind of groundwater, whether it has future use to mankind or not?
Social Value Risk:	Will society ever want (need) to use groundwater from deep injection zones that contain water with high dissolved solids (i.e. brine)?
Science Trust Risk:	Is science is capable of determining where injected wastewaters will migrate over thousands of years and if they will induce earthquakes?
Institutional Trust Risk:	Will institutional controls ensure that injection well operators comply with permit conditions and regulatory requirements needed to manage risks?

Account for Biology, Psychology, and Sociology

BIOLOGY

- Survival is a powerful biological/genetic imperative
- It's in our DNA – survive and reproduce
- Only organisms that can recognize and respond to danger survive.
- We have a brain that is biologically constructed to fear first, and think second.



- Fear of harm (risk) is <u>not irrational</u>

Account for Biology, Psychology, and Sociology

PSYCHOLOGY

- **Risk perception and acceptance factors are well-documented and must be considered**

LESS RISKY/MORE ACCEPTED	MORE RISKY/LESS ACCEPTED
Voluntary	Involuntary
Natural	Industrial
Not dreaded	Dreaded
Constant	Catastrophic
Knowable/Familiar	Uncertain/Complex
Individually controlled	Controlled by others
Fair	Unfair
Trustworthy sources	Untrustworthy sources
Impacts Adults	Impacts Children
Low media attention	High media attention

Account for Biology, Psychology, and Sociology

SOCIOLOGY

- Power Perspective
  - *Hierarchical – "Decisions about risk should be left to the experts"*
  - *Egalitarian – "Risks should be eliminated regardless of cost."*
  - *Individualist – "I don't want the government to decide what is acceptable risk for me"*

- Fairness Perspective
  - *Research shows that risks perceived as "unfair" are less accepted*
  - *"We have to bear the risks while someone else gets the benefits"*
  - *"We have an unfair share of the risks."*
  - *"The jobs are temporary. We invest, then you leave."*

- Trust Perspective
  - *Industry and regulatory agencies are in the bottom third of the "trust and credibility hierarchy"*
  - *Public health officials and medical doctors are in the top third*

Example – Perceived Lack of Power

- **There is evidence that a significant source of community resistance is their feeling of lack of power in the risk assessment, risk management, and decision-making processes**

- **Controversies over risk can be surrogates for resentment about not being involved in the risk assessment and management process**

- **One can accept or reject a risk solely based on their perceived level of involvement and authority in the evaluation and decision process.**

- **Finding risks to be unacceptable can be an exercise in power. (David and Goliath)**

> ***"All things are subject to interpretation. Whichever interpretation prevails at a given time is a function of power and not truth."***
> *— Friedrich Nietzsche*

Example – Dimock, PA

Source: NPR State Impact

- 15 families sued Cabot Oil & Gas in 2009, claiming that fracking for natural gas had contaminated their drinking water wells with methane, causing turbulence.
- 13 families settled in 2012 after tests by EPA showed none of the methane in the wells were associated with gas drilling and the wells contained methane for years before drilling began and the wells met drinking water standards.
- 2 families went to trial and won a nuisance award of $4.24 million in March 2016. This verdict was overturned in March 2017. Since then a settlement was reached for an undisclosed amount.
- The trial judge wrote that the evidence "was spare, sometimes contradictory, frequently rebutted by scientific expert testimony, and relied in some measure upon tenuous inferences." He also wrote that the award "bore little or no relation to the evidence presented".

- So, why did the jury award the damages? They did not care about the technical risk
  - Power risk: Oil & gas corporations can't just do what they want in our community
  - Trust risk: No trust in EPA testing and experts
  - Children hot button: Defendant's lawyer put 3 children on the stand

Improving Risk Management through Better Risk Communication

1. **Paradigm Shift**
   - From “educating the public” with “the facts” to **dialogue** in which knowledge, experience, perceptions, values, and concerns about risks are exchanged among different stakeholders

   - Dialogue involves good listening, mutual respect and interactive conversation - rather than presentation and questions

2. **Use effective venue for a dialogue about risks**
   - Room set up for dialogue, not lecture and questions
   - Use facilitators and technical experts who are trained in risk communication
   - Invite respected “opinion leaders”

     Positional – e.g. school teacher, minister, public health department

     Recommended – persons who know community and values

     Sociometric – represent different affected social groups

   - Include public health officials and physicians (trust factor)

Most Trusted Sources

A new study reveals moms' most trusted sources of information.

The top 10 trusted sources are:

(1) Pediatricians (58%)
(2) Friends and family (55%)
(3) Evening news (39%)
(4) Internet searches (38%)
(5) Physician office (37%)
(6) Web sites (33%)
(7) Parenting books (32%)
(8) Morning TV talk shows (31%)
(9) Newspaper articles (28%)
(10) Magazine articles (25%)

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Improving Risk Management through Better Risk Communication

3. Proper framing of the risk issues

- Let the public frame the risk problem, with facilitator's help
  - Determine how they see something they value is threatened (how they define risk)
  - Make sure you understand their concerns, values, how they define harm
  - Be prepared - what they fear may not match technically assessed risks
  - Respect and never diminish their concerns and values

- Address psychological and sociological risk perception factors directly

- **GOAL**: Developing risk information in a format that combines the technical understanding with the concerns, beliefs, and values of all stakeholders

Improving Risk Management through Better Risk Communication

LISTEN TO PREPARE TO COMMUNICATE

What is your understanding of how you are at risk?

What are you are concerned about?

What is valued that you see as being at risk?

How did you hear about the hazard?

How do you feel about it?

How did you become involved in this issue?

What is your motivation in being involved in this issue?

What have been your sources of information about the risks?

What is your level of trust in these sources of information?

What do you want to see happen?

What do you expect will happen?

Improving Risk Management through Better Risk Communication

4. **Early and continuous community involvement and authority in risk problem framing, risk assessment, and risk management choices**

- This is NOT:
  - Public comment period on regulatory decision or legislation
  - Public meeting required after assessment has been completed and decisions have been made
  - Having people submit comments or step up to a microphone and comment

- This is:
  - On-going interactive participation in addressing risk issues, from problem framing to development of risk management plans
  - Respectful exchange of perspectives and appropriate level of authority over choices and decisions that may create risks, as perceived by the affected community
  - The final decision about managing risk will always disappoint someone – but they may be able to accept the decision if their concerns and values were included in the evaluation process

Effective communication is 20% what you know and 80% how you feel about what you know.

Jim Rohn