



Risky Communications: the Hazards of Talking about Environmental Exposures

Environmental Exposure Grand Rounds

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- Context

- telephone counseling
- speaker for community groups
- research involving participants
- 1 on 1 in clinical setting
- public meetings with communities affected by Superfund sites
- emergency response

- Content

- toxic substances
 - well understood
 - emerging
- risks
- preventing, reducing exposure
- past exposures
- health promotion



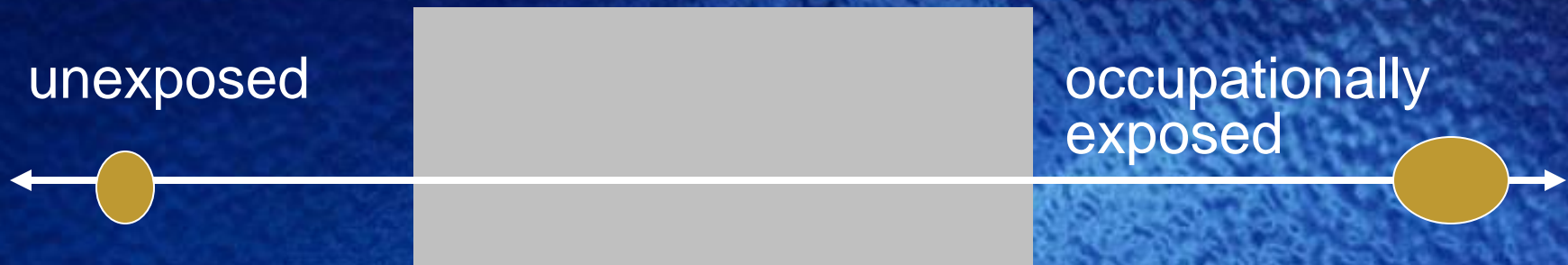
Recipients

- individuals
 - affected, unaffected
 - concerned, unconcerned
- individuals with defined roles
 - elected officials
 - government agencies
 - environmental advocates
- communities



Environmental Exposures

- in the GRAY



- link substance to symptoms, disease
- unknown dose
- lack of specificity of symptoms, disease
- often limited treatment
- sound science and professional judgment
- effects from exposures should be prevented
- exposure pathway – complete, incomplete

Risk Communication 101

Covello and Sandman

- risk = hazard + outrage
- trust and credibility, empathy
- message map
- teeter totter
- stay on message
- anticipate questions, prepare answers



Four factors that create believability and trustworthiness:

- **Empathy and caring**
- **Competence and expertise**
- **Honesty and openness**
- **Dedication and commitment**

(Covello, 1992, 1993)

Perceived Risk

More Acceptable	Less Acceptable
Voluntary	Involuntary
Controlled by individual	Controlled by others
Clear benefits	Little or no benefit
Fairly distributed	Unfairly distributed
Natural	Manmade
Statistical	Catastrophic
Generated by a trusted source	Generated by an untrusted source
Familiar	Exotic
Affects adults	Affects children

(Fischhoff, et al. 1981)

Clash of Two Cultures 1

People - - Qualitative

- Fear the unknown
- Want to maintain control
- Protect home and family
- Alienated by dependence on others
- Protect belief in a just world
- lay use of language

Clash of Two Cultures 2

Scientists - -Quantitative

- Scientific method
- Engineering solutions
- Technical knowledge
- Comfortable with uncertainty
- Depth of understanding of “safe” numbers
 - Nuances
 - Intentions
- Unique language
 - Screening
 - Significant
 - Conservative

Risk Communication...

sometimes counter-intuitive

- Mental models – lay versus expert
- People are not just empty vessels to be filled with facts.
- Need to start where they are
- Acknowledge their understandings, worldview, concerns

Morgan, et al



Mercury

as harmless as Silly Putty...Right?

"Most people my age played with mercury in science class when we were kids... what's the big deal, I am still here."

- Wrong
- Inhaled mercury vapor can cause adverse health effects
- Children are especially vulnerable due to their developing nervous system

Expert Model

- prepare components of the expert model then
- consult real people
 - current knowledge
 - incorrect beliefs
 - knowledge gaps that need filling
 - focus on what people need to know, but do not know already

Example: Exposure Pathway complete or incomplete?

- Source of Exposure
- Fate and Transport (media)
- Exposure Point
- Exposure Route
 - Ingestion
 - Inhalation
 - Dermal absorption
- Potentially Exposed Population



Exposure Pathway - Arsenic

- Source – CMC, residential activities
- Medium – soil
- Context – residential yards
- Point of Entry – ingestion
- Population – Residents, especially children who might eat dirt



- People involved in the communication process will “...transform each message in accordance with their previous understanding of the issue, their application of values, worldviews, and personal or organizational norms as well as their own strategic intentions and goals.”

Renn, 2003

Social Amplification of Risk

Kasperson, 1986

- Risks – found in social experiences and interactions of individuals, groups, and institutions
- How does social context influence risk communication?
- Meetings, media, informal word of mouth
- Send risk signals that cause
 - Amplification – increased perception of risk
 - Attenuation – decreased perception of risk

Northeast Minneapolis Community Vermiculite Investigation

Message:

If you were exposed to vermiculite processing waste or worked with the vermiculite product...

- Tell your physician
- Decide with your physician about next steps
- If you smoke, quit
- Avoid additional exposure to asbestos
- Keep your lungs healthy

Cleaning up elemental mercury

- Ventilate
- Keep it cool!
- Keep it together!
- Gather droplets and pick them up individually
- Remove unseen droplets
 - Duct tape
 - Cleanup kit
- Dispose of waste properly

Emerging Contaminants

- no clear definition...some “new” awareness
 - new chemical
 - new toxicological info
 - new level of detection
 - new media
 - new pathway
- large uncertainties
- health standard lacking or changing

Risk Migration...creep

Alcock and Busby, 2006

- attempts to mitigate produce new risk
- risks change as science and technology change
- change in knowledge
- may change individual's ability to mitigate risk
- more science may not provide more reassurance

Implications for Risk Communication

- anticipate change
 - new scientific developments may be perceived as past errors by public
- acknowledge uncertainty
- discuss the scientific method
 - “active area of research”
- explain differences in health guidelines
- serial/spiral health education

Our Messages

- We are taking a cautious public health approach
- This is a area of active scientific research
- As new knowledge becomes available, we will let you know.
- Granular activated carbon filters remove PFCs.

Effective Risk Communication (education...)

- Identifies and describes the hazard, and also places it in the context of an exposure pathway.
- facilitates awareness and understanding
- Supports informed decision-making

Effective Risk Communication cont'd **(education...)**

- Persuades to modify personal behaviors to prevent or reduce exposures
- reinforces other health promotion messages
- forms messages that translate well into informal education for family, friends and neighbors

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