Community Health Risk Assessment

An Assessment of Risk Related to the Oil and Gas Industry in Garfield County

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Risk Perception, Assessment, & Management

- **Risk Perception**: “Human health is at risk [or has been damaged] because of the proximity of the industry operation.”
  - Commonly, within communities, all health problems or conditions are attributed to the perceived “health hazard”
  - Perception versus Reality (Is it important?)
Risk Perception, Assessment, & Management

- **Risk Assessment**: “Are there health problems within the community, and can these health problems be related to pathways of exposure?”
  - Probability of harm (injury, disease, death) under specific circumstances
  - What is the probability that the health problems are directly related to the industry operation?
Bottom Line Question:
Has human health been affected?
Risk Perception, Assessment, & Management

- **Risk Management**: “How can/should the community and the industry deal with these problems?”
  - What do we need to do to deal with any current problems and prevent future health problems?
  - Is there a need for changes in public policy, new infrastructure, medical screening and surveillance programs?
“The Big Picture”

Relating SOURCES of contaminants and their PRESENCE in the environment to human EXPOSURE, ABSORBED DOSE, SUSCEPTIBILITY and HEALTH EFFECTS.
Hazard Identification

Characterize the “sources”

- Natural Gas Operations
- Other sources of potentially toxic materials (e.g. mines, mill tailings, landfills, agricultural spraying)?

Characterize the “contaminants”

- What are the potentially toxic materials?
- How much is present?
Exposure Assessment

- Exposure potential
  (hazard assessment)

  Identify [all]
  potential hazards to
  human health.

  Determine the type and
  magnitude of potential
  human exposures to
  toxins
Toxicity Assessment

- Is the contaminant harmful?

- Characterize the “community” (Who is at risk?)
Risk Characterization

- Develop “probability statements” about risk to individuals within the community (current or future risk)
  - Exposure potential
  - Risk factors related to age, health status, etc.
- Draw conclusions about relationship between exposure and observed health conditions
Health Assessment

- Exposure potential (risk assessment)
- Exposure pathway for individual (risk assessment)
- Health assessment

impact on individuals - drawing conclusions about relationships between exposure & health status
"There could be any number of causes for this condition. Perhaps he broke a mirror or walked under a ladder or spilled some salt..."
Garfield County Community Health Assessment: Inception

- Request for proposals: Encana fine to be used for projects to benefit residents of Garfield County

- Proposals reviewed by citizen committee: recommendations forwarded to Garfield County Commissioners for review and final selection

- Projects approved by Garfield County Commissioners funded by vote of Colorado Oil and Gas Conservation Commission (COGCC)
  - All-day educational forum for Garfield County residents
  - Hydrogeological study
  - Community Health Risk Assessment
Community Health Assessment: Scope of Work

GATHERING DATA FROM THE PUBLIC --

- Conduct public meetings (explain study/get feedback)
- Conduct focus groups and interviews to characterize the range of symptoms and illnesses of concern to community residents (public perception)
- Conduct in-home survey of random sample of households to assess the health status of adults and children living in the study area
GATHERING STATISTICAL HEALTH DATA --

- Review community demographics and health status data available from public sources
  - CDPHE, Garfield County health survey, Garfield County socio-economic survey
- Gather “comparison” data (e.g., Weld County/La Plata County) data
- Result is a picture” of the health of residents of study communities (“snapshot” vs. trend data)
Community Health Assessment: Scope of Work

GATHERING ENVIRONMENTAL (RISK) DATA --

- Acquire existing data on contaminants in the air, water, and soil
  - Air Quality Monitoring study
  - Hydrogeological Study
  - Other baseline studies
- Identify data “gaps”
- Collect samples to fill gaps
Community Health Assessment: Scope of Work

Characterize human health risk --

- Develop conceptual model: exposure pathways, calculations of dose and risk
- Draw conclusions for current and future health impacts of oil and gas drilling in Garfield County
Community Health Assessment: Limitations

- Funding: study may uncover issues or areas that need more in-depth research than can be performed with existing funding
- Lack of baseline health data with which to determine trends or changes
- Relatively new presence of the industry in the region: health outcomes may not yet be apparent