

Health Studies and Setbacks

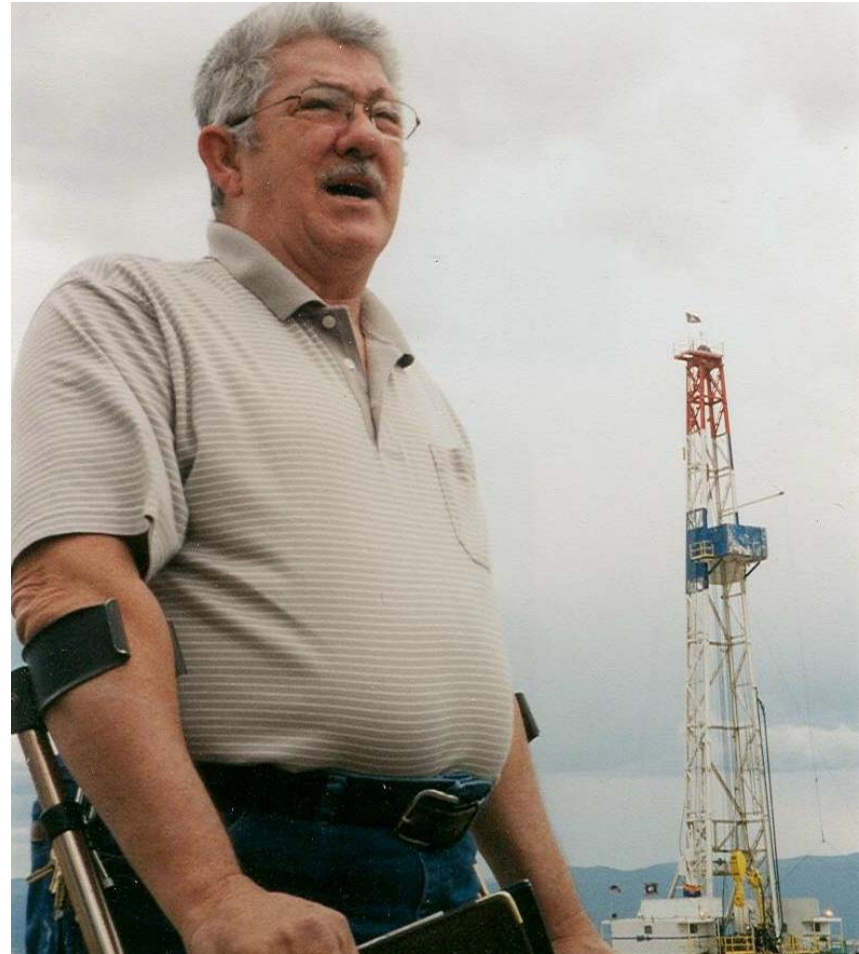
Western Colorado Congress

Aug 23, 2012



Health Studies & Setbacks

- Garfield County Health Risk Assessment. Coons, et al. 2008. Saccomanno Institute, Saint Mary's Hospital, Colorado Department of Health & Environment
- Draft Battlement Mesa Health Impact Assessment. Witter, et al. 2009. Colorado School of Public Health, University of Colorado-Denver.
- Gassed! Citizen Investigation of Toxic Air Pollution from Natural Gas Development. Global Community Monitor. 2011.
- Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources. McKenzie, et al. 2012.



GarCo Health Risk Assessment, 2008

- Referred to as the “Saccomanno Study”
- “Provide(s) a comprehensive dataset that may be used as a starting place for monitoring health trends or more quickly identifying new trends.”
- “(P)rovides source data for more specific analyses, should other researchers or public health officials wish to delve more deeply into any aspect of the health outcomes.”



GarCo Health Risk Assessment

- Results indicate EPA's acceptable value for cancer risk can be exceeded for benzene in air.
- Flow back with no gas recovery, the 70-year exposure exceeds the acceptable range for distances up to 500 meters (550 yards) downwind of the well.
- Identifies: acetone, vinyl acetate, 2-butanone (MEK), benzene, toluene, and *m,p*-xylenes



GarCo Health Risk Assessment

- “If multiple well pads are in development at the same time in the same vicinity, their effects will be additive for any site that receives pollutant emissions from each site.”
- Recommends:
 - *Conduct a thorough study of air emissions during drilling*
 - Monitor meteorological conditions.
 - *Green completions and applicable best management practices*



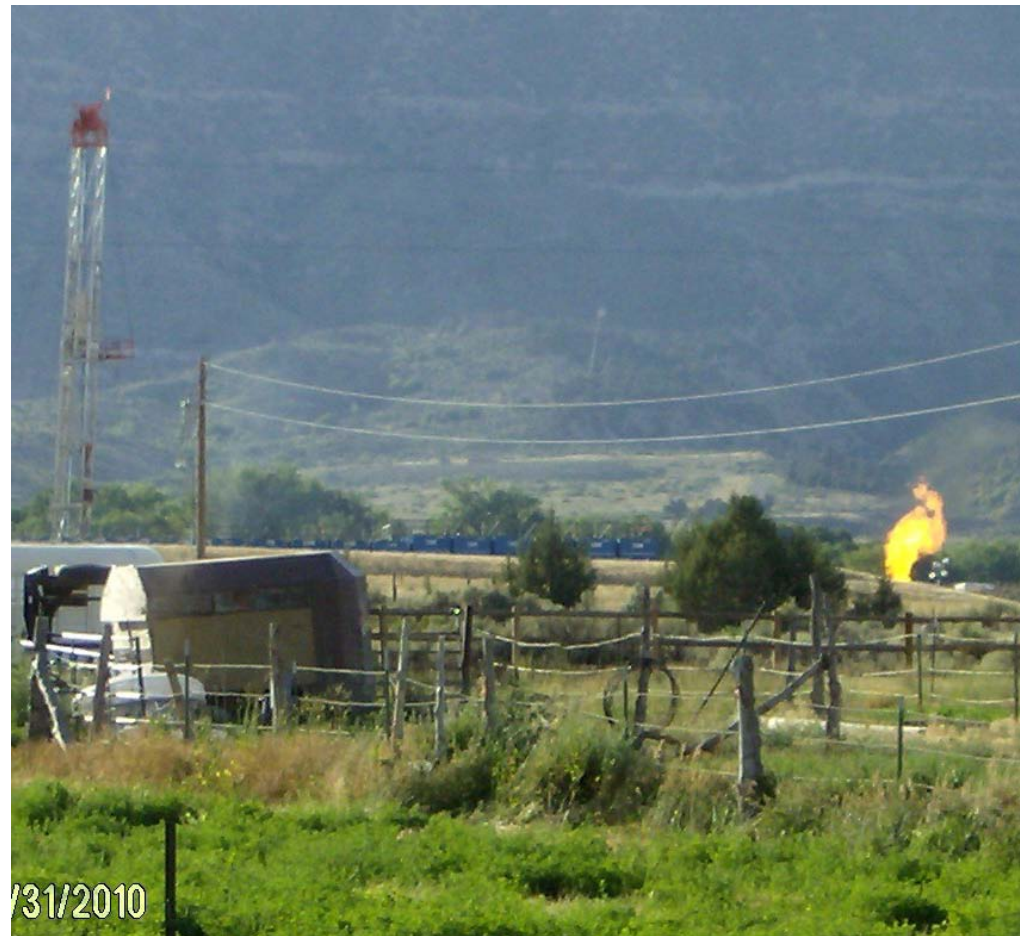
Battlement Mesa HIA, 2009

- CO School of Public Health.
- “Natural gas permitting decisions within the residential community of Battlement Mesa has the potential to adversely affect health.”
- “Natural gas development and production is known to produce a variety of physical and chemical hazards that may cause negative health effects.”



Battlement Mesa HIA

- “Likely to change air quality and produce undesirable health impacts in residents living in close proximity”
- “Long term compromise of air quality is possible if fugitive emissions from production equipment are not controlled.”
- “Natural gas development and production may have some impact on localized air quality at residences near the well pad”
- “The highest risk is projected for residents living adjacent to well pads through acute exposure to air contaminants emitted during well completion activities”



Battlement Mesa HIA

- Over 70 recommendations:
 - Conduct air & noise monitoring at 150, 300, 500 & 1000 ft during well installation, completion, production
 - Corrective action when odor events occur, notify local govt & residents to reduce impacts
 - Review pipeline routes to avoid proximity to homes, schools or other areas.
 - Require green completion practices, with no variances,
 - EPA natural gas STAR program to reduce VOC emissions to the lowest level technically possible
 - Establish a system for short-term odor monitoring and reduction during gas well completion.
 - **Enhance Current Regulations:** Utilize findings of the HIA and future studies to complement ongoing state and local efforts to protect public health.



Gassed! Citizen Investigation

- July 2011, Pilot Study.
- Piceance and San Juan Basins.
- “Residents living near oil and natural gas sites may be exposed to highly toxic chemicals on a regular basis, with their health at risk.”
- *22 toxic chemicals* were detected in nine air samples, including *four known carcinogens*, benzene, acrylonitrile, methylene chloride, Hydrogen sulfide



Gassed! Citizen Investigation

- “Highly toxic chemicals are permeating the air near homes, farms, schools, playgrounds, and town centers.”
- “Lack of appropriate air monitoring near production sites”
- “As the natural gas industry continues to grow, so will the number of families neighboring and affected by the emissions.”
- “Neighbors of the natural gas operations in the target communities are breathing multiple chemicals that can cause an increased risk of cancer and other serious health effects.”



Gassed! Citizen Investigation

- “Any new sites –whether drilling, fracking, refining, or disposal – should be located at least one-quarter mile from homes, farms, schools, playgrounds, and businesses.
- “Have air monitors near all operations and equipment. All data should be made available to the public.”



McKenzie, et al.

- It is increasingly common for unconventional natural gas development (NGD) to occur near where people live, work, and play
- Residents living $\leq \frac{1}{2}$ mile from wells are at greater risk for health effects from NGD than are residents living $> \frac{1}{2}$ mile from wells.
- Exposure to trimethylbenzenes, xylenes, and aliphatic hydrocarbons
- Benzene is a major contributor to the risk
- Risk management should focus on reducing exposures to emissions during well completions
- Preliminary results indicate health effects from air emissions & unconventional NGD warrant further study



How Close is too Close?



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