

# Battlement Mesa HIA Stakeholder Report

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# Agenda

- Purpose of today's meeting
- State the objectives of the HIA
- Review of stakeholder meetings
- Review of Risk Assessment (HHRA)
- Going forward: Recommendations
- Important dates

# Purpose of Today's Meeting

1. Clarify the objectives of the HIA
2. Inform all stakeholders of highlights of January meetings
  - Will not provide response to comments at this time
  - Response to comments will be incorporated into next draft
3. Put HHRA results into perspective
4. Describe next steps for HIA

# Objectives of the HIA

- Identify possible ways that the Antero NG project can affect health of residents in BM
- Prioritize the ways in which the Antero project could affect health
- Identify and prioritize ways that the Antero project could be modified so that it is less likely that health will be impacted

# Objectives of HIA, 2

- Describe baseline health in Battlement Mesa
- Describe baseline environmental conditions in Battlement Mesa
- Identify information gaps
- Provide recommendations for filling gaps
- Provide baseline for future efforts to measure/model exposures and health effects

# The HIA does NOT do these things:

- Does not to predict how many people will get sick
- Does not to predict specific diseases
- Is not a tool to endorse the natural gas industry
- Is not a tool to stop the natural gas industry

# January 2011 Stakeholder Meetings

- Battlement Mesa Residents
- Antero
- CDPHE
- WSCOGA

# January 2011 Stakeholder Meetings

- Review/clarify HIA comments
- Address distinct and disparate points of view
- Identify commonalities
- Provide time for interaction and discussion of responses
- Integrate information into next draft to improve document

# Varying Views of the Use of the HIA

	<b>Citizens</b>	<b>Antero</b>	<b>CDPHE</b>	<b>WSCOGA</b>	<b>CSPH</b>
<i>Use of HIA</i>	<ul style="list-style-type: none"> <li>- Identify data gaps</li> <li>- Guarantee that there will be no adverse health outcomes</li> <li>- Delay project until more data is gathered or health protection can be guaranteed</li> </ul>	<ul style="list-style-type: none"> <li>- Inform Battlement Mesa drilling plan</li> </ul>	<ul style="list-style-type: none"> <li>- May inform state rulemaking efforts</li> </ul>	<ul style="list-style-type: none"> <li>- Send positive message about the industry</li> </ul>	<ul style="list-style-type: none"> <li>- Provide rec's to reduce possible health effects</li> <li>- <i>information gaps</i></li> <li>- <i>monitor environment and health</i></li> <li>- <i>baseline conditions for future studies</i></li> </ul>

# Diverse Interpretation of Similar Concerns

	<b>Citizens</b>	<b>Antero</b>	<b>CDPHE</b>	<b>WSCOGA</b>	<b>CSPH</b>
<p><i>Data Gaps</i></p> <p><i>For example: Concentration of chemicals in the air at distance of homes is unknown</i></p>	Risk may be higher than stated	Antero is sampling to fill data gaps	Regulations address ambient air	Risk may be lower than stated	<ul style="list-style-type: none"> <li>- Steps should be taken to lower air emissions, despite lack of explicit data</li> <li>- Obtain more data</li> </ul>

# Agreement...

	<b>Citizens</b>	<b>Antero</b>	<b>CDPHE</b>	<b>WESCOGA</b>	<b>CSPH</b>
<i>Future studies</i>	Should be undertaken to understand health impacts better	Antero is willing to work with CSPH to understand air emissions	Needed to understand local environmental conditions and exposures	Needed to characterize hydrogeology	Needed to provide data about exposures and health impacts

# Highlights of Citizen Meeting

## Citizen Remarks

1. Residents living closer than ½ mile to one or more well pads
2. Full disclosure of industry chemicals
3. Concern about location of water storage facility
4. Hydrogeologic study to characterize secondary water supply needed
5. Negative economic and community consequences are causing people to move out
6. Accidents could have serious consequences
7. HHRA does not adequately describe chemical gaps and cancer risk is likely higher

## CSPH Response

1. Residents living up to ½ mile away assumed be exposed round the clock
2. Full disclosure may change risk estimates, may not change recommendations
3. Need more specific information from Antero
4. Agree
5. Decrease uncertainty and improve communication. Further data collection is warranted.
6. Primary prevention with thorough verification
7. The HHRA uses available data; more thorough discussion of data gaps; no way to tell if risk is higher /lower.

*Importance?* →

# Highlights of Antero Meeting

## Antero Remarks

1. New BMP will decrease odor events during flowback
2. Many BMP will address topics of concern
3. Some BMP go beyond regs
4. Will continue to monitor emissions
5. Antero will work with community on improvement projects

## CSPH Response

1. CSPH applauds and encourages efforts to modify existing practices. New BMP should be tested for effectiveness
2. BMP specific to BM will be incorporated into HIA
3. Regs are not necessarily health based
4. Specific actions should be tied to monitoring results
5. Antero and BM community should develop ongoing means of interactive communication

# Highlights of CDPHE Meeting

## CDPHE Remarks

1. CDPHE rules in accordance with Clean Air Act (CAA) standards, which is based on health
2. CDPHE may request add'l monitoring in consultative role
3. NG industry is one of major contributors to ozone precursors
4. Comparison of risk may help put additional risk into perspective
5. Based on data available for HHRA, likelihood of health impacts from air emissions is low

## CSPH Response

1. CSPH focused on local air quality, not covered by the CAA
2. CSPH would support a CDPHE consultative request for more monitoring
3. Prevention of ozone formation is a health priority; needs to be discussed at a county/regional level
4. Voluntary and involuntary assumed risk is not comparable
5. HHRA was not the only method used to determine likelihood of health impacts from air emissions

# Highlights of WSCOGA Meeting

## WSCOGA Remarks

1. Industry is subject to many layers of rules and regs
2. Most people are not concerned about the Antero project
3. Health complaints are from Watson Pad a minority of citizens
4. Hydrogeological study is needed to characterize source of secondary water wells
5. The HHRA should have been done in a way that estimates lower (more realistic) exposures; risk is likely lower

## CSPH Response

1. Many rules are not health based
2. Information about numbers/percent of people concerned are not available
3. Studies to determine rates of health effects have not been conducted; rates are unknown. Also HIA addresses potential impacts beyond odor events
4. Agree- hydrogeological study could determine if secondary wells could be compromised by development
5. The HHRA used standard methods developed by the EPA, to be used when exposure information is not known; no way to tell if risk is

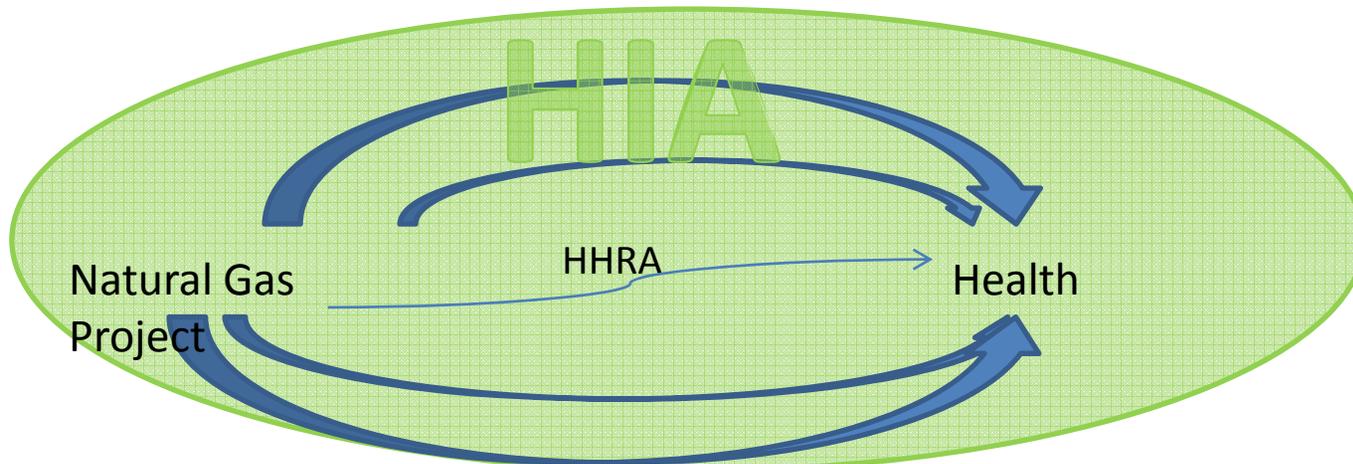
*Importance?* → higher/lower

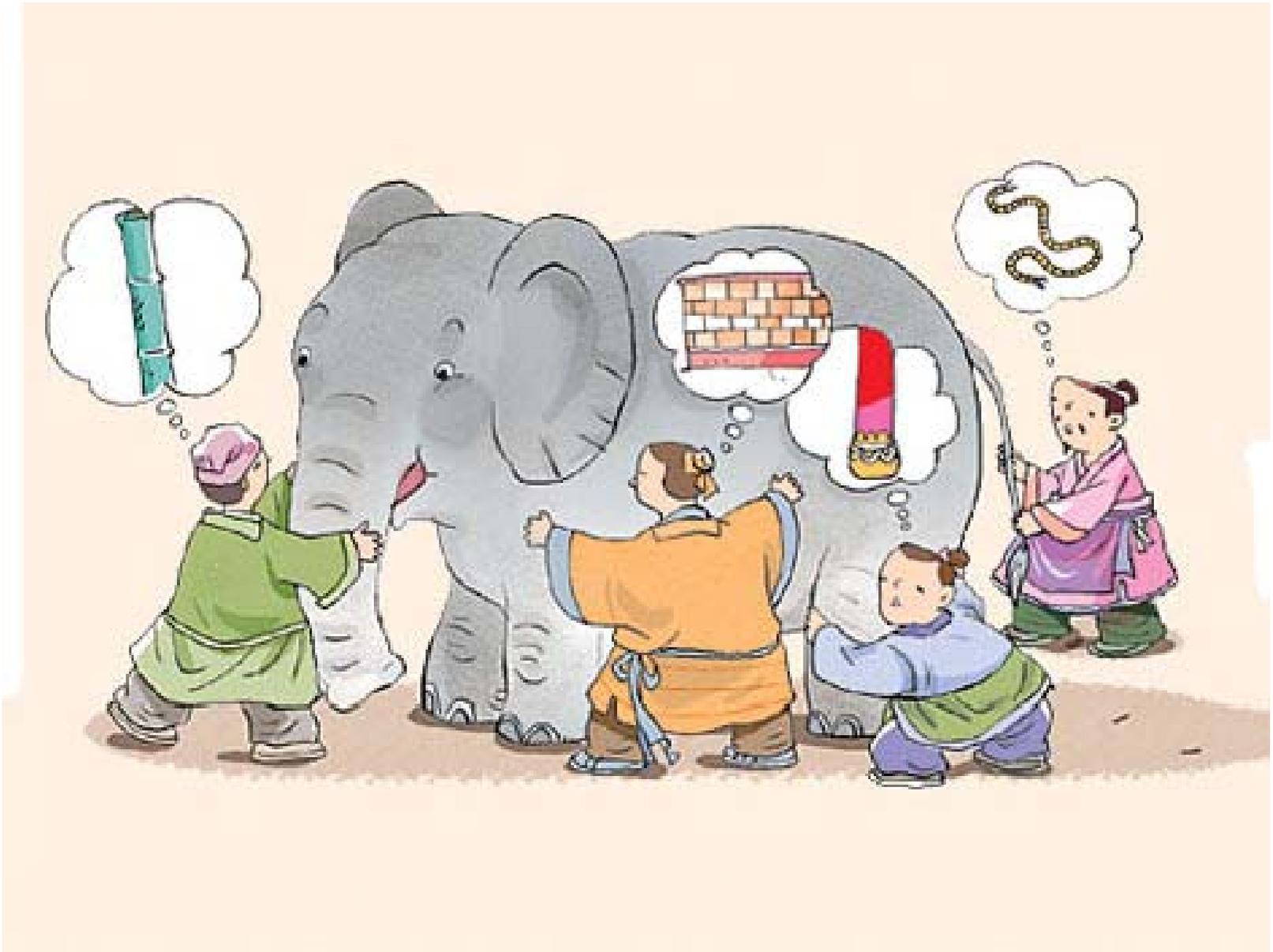
# HIA ≠ HHRA

Many (most?) comments focused on the HHRA



- HHRA connects some available environmental and population information to health
- HHRA is not comprehensive
- HHRA does not give definitive answer





# Risk Assessment Useful for...

Limited  
and  
Incomplete!

Chemicals with available information

Determine which chemicals/pollutants can  
cause the most harm

Ball park estimate of excess  
cancer risk

Estimate of potential for other  
health effects

Decide which chemicals to  
monitor

Aid decisions about reducing  
exposures

# Usefulness of HHRA is limited because...

Chemicals with available information

Limited  
and  
Incomplete!



Not all potential exposures are included

Not a good tool for intermittent exposures that can lead to episodic or short term health effects

Not a good tool for exacerbation of existing health problems

Not precise or predictive

# Interpreting Cancer Risk Numbers



This interpretation is only valid when doing EPA screening level RA (like the in the HIA)  
This interpretation is not valid if using other risk assessment methods

<b>Calculated additional lifetime cancer risk</b>	<b>Interpretation</b>
Less than 1 in a million	Target risk set by EPA. Excess risk is low enough that actions to reduce exposures are unnecessary
Between 1 in a million and 100 in a million	Excess risk is low to moderate, some community risk managers may decide to take actions to reduce exposures
Over 100 in a million	Level at which actions are needed to reduce exposures

# The Battlement Mesa HHRA

Concludes that:

- Additional cancer risk falls into the category of “low- moderate, **but consider exposure reduction**”
- There is a potential for other health effects, especially during well completion activities
- Which chemicals to focus on
- Which chemicals should be monitored
- Some of the information gaps

← *Importance!*



# The Battlement Mesa HHRA

Does NOT tell us:

- How many cancers will occur because of the Antero project
- Which other diseases people may experience
- What the potential short term health effects are
- What health effects are associated with odors
- If the Antero project is safe or not safe
- How other chemicals and exposures affect health
  - Particulate matter, ozone, PAHs, unknown chemicals

# Air emissions

## What we know

- Natural gas activities emit air pollutants
- Higher levels and more air pollutants are emitted during well completion activities
- These air pollutants can cause long term effects like cancer, birth defects, etc.
- These air pollutants can cause short term health effects like headaches, cough, etc.
- Some people have experienced some of these short term effects during odor events up to 1/2mile from the Watson Pad

# Air Emissions

## What we DON'T know

- How much of each chemical in the air is due to natural gas operations
- Concentration of chemicals at peoples homes, schools, etc
- Emission levels of chemicals at different NG operations
- Long term effects that result from natural gas activities
- The health effects of many chemicals
- If mixtures of chemicals cause different/ worse health effects
- Levels of other exposures (particulate matter, ozone, PAHs)
- How wind, temperature, etc. affect dispersion of air borne chemicals
- How long residents live in Battlement Mesa, how much time are they in PUD

**More work is needed to answer these questions!**

# What else is in the HIA?

LOTS MORE

- The HIA covers many other potential exposures
- Attention to the other concerns is needed:

**Traffic**

**Accidents**

**Community**

**Economics**

- Less data is available → Qualitative analysis



Improving these areas of concern will improve health and quality of life

# Recommendations!

## 1. Pollution Prevention

- Attention to preventing pollution will decrease air emissions, water contamination, truck exhaust

## 2. Safety

- Attention to safety will decrease traffic accidents, well site accidents, pipeline incidents

## 3. Community Effects

- Attention to community effects will improve quality of life, preserve property values, decrease noise

# Recommendations, 2!

How do we get there?

1. Use best possible technology to decrease emissions and continually upgrade
2. Monitor air and water
3. Determine actions to be taken if monitoring detects a problem
4. Model future exposures and health effects
5. Reduce traffic within the PUD as much as possible
6. Regular inspection of operations and systems
7. **Develop communication and interaction plans for the next 30 years**

# Recommendations, 3!!

## **Community Advisory Board (CAB)**

- Antero and Battlement Mesa will have a 30 year long relationship
- Success of the project will be measured, in part, by the quality of the relationship
- Quality of life will depend, in part, on the quality of the relationship
- Frequent, interactive communication is needed
- No amount of planning will foresee every concern
- CAB can provide means to address issues as they occur
- CAB can decrease uncertainty
- CAB can provide means for resolution

# Important Dates for the HIA

<b>Feb 28</b>	2 <sup>nd</sup> Draft HIA
<b>March 1- March 26</b>	Public Comment
<b>~ Week of April 5</b>	Brief report to BOCC
<b>April 30</b>	Final HIA
<b>~ Week of May 15</b>	Presentation to BOCC and Presentation to Public