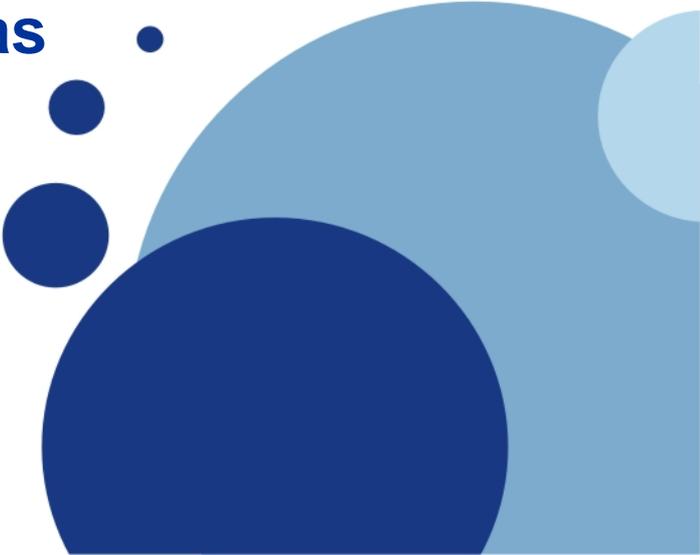


Health Consultation

**Public Health Implications of Ambient Air
Exposures to Volatile Organic Compounds as
Measured in Rural, Urban, and Oil & Gas
Development Areas**

Shannon Rossiter, MPH

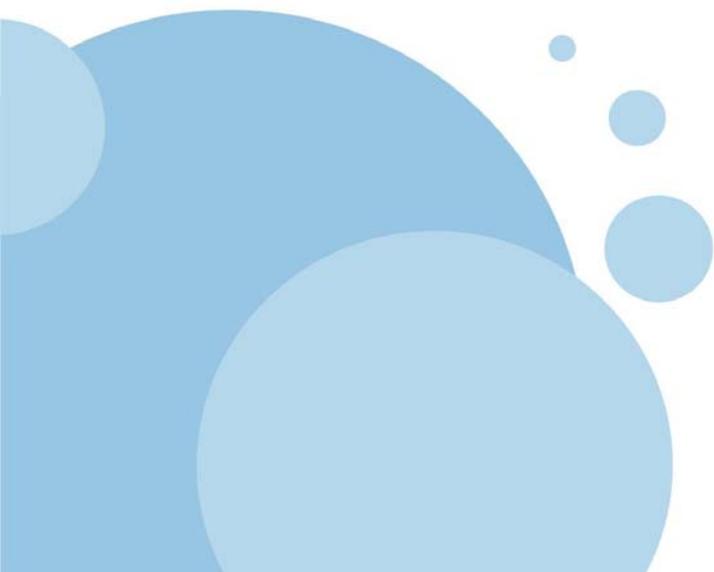
**Colorado Department of Public
Health and Environment**



Topics for Today's Presentation



Introduction

- What is a health consultation?
 - What did this health consultation find?
 - What do the findings mean?
 - What's next?
 - Questions?
- 

ATSDR in Partnership with Colorado

- Who is ATSDR?
 - Atlanta based federal public health agency
 - Assess the presence and nature of health hazards at various sites
 - Prevent or reduce further exposure and illnesses
 - Increase knowledge about the health effects of exposure to hazardous substances

- How does ATSDR work with CDPHE?
 - Funding and technical assistance through cooperative agreements and grants
 - Enable CDPHE to further investigate environmental health concerns and to educate communities

What is a
Health

Consultation?

Why do a health consultation?

- Provide advice on a specific public health issue related to real or possible human exposure to toxic material
- Respond quickly to a need for health information
- Make recommendations for actions to protect the public's health

What is a
Health

Consultation?

Why do a health consultation?

- The purpose of this health consultation is to identify any potential public health implications resulting from inhalation of volatile organic compounds in Garfield County and recommend actions to reduce the exposure, if necessary.

What is a
Health

Consultation?



What information goes into a health consultation?

- Health Consultations may consider:
 - The levels (or “concentrations”) of hazardous substances
 - If and how people might be exposed to contamination
 - The hazard the substances might cause to people
 - If and how living or working nearby might affect people’s health
 - Other dangers to people

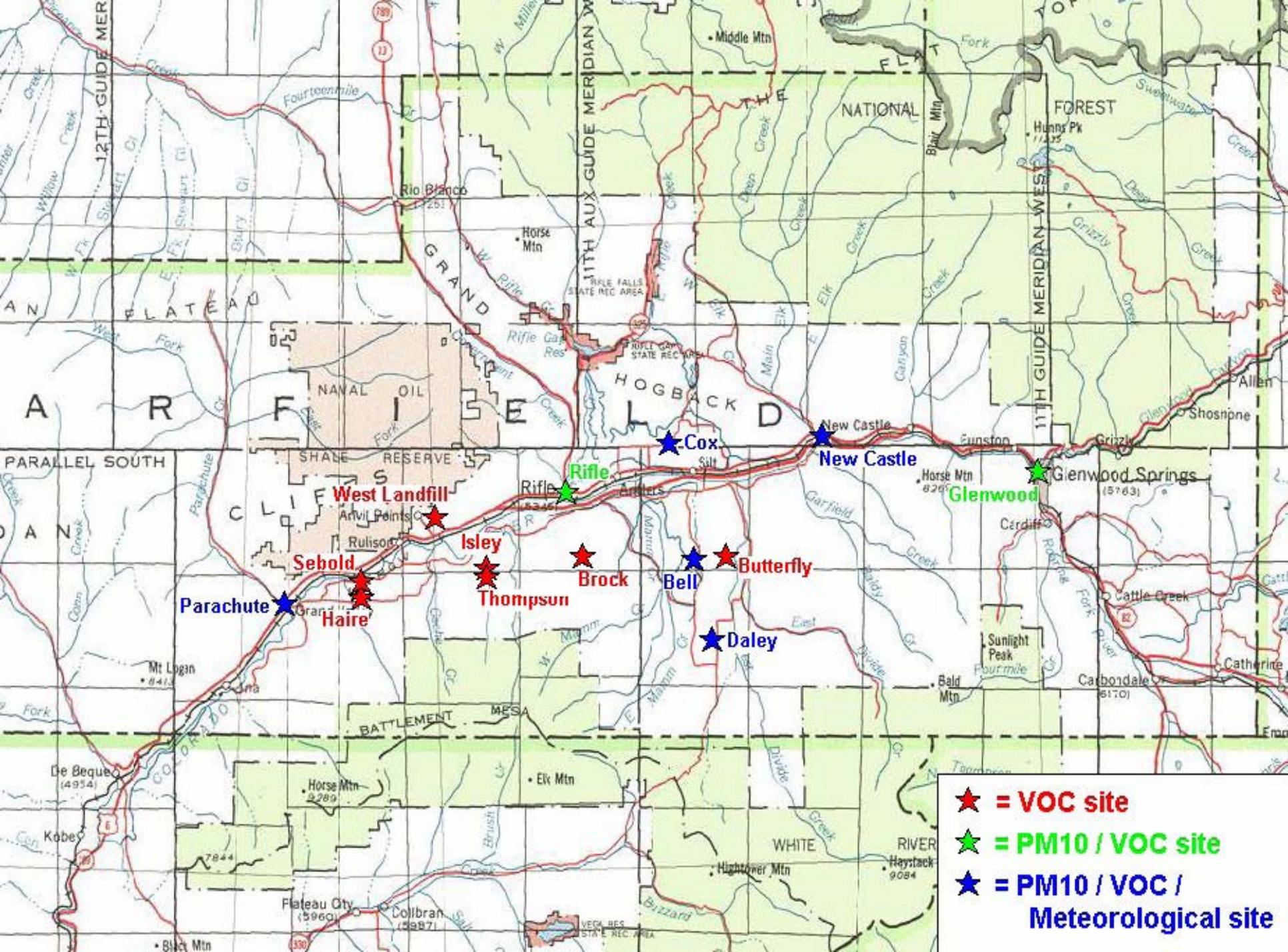
What is a
Health

Consultation?

The data used in this health consultation

What did this
Health
Consultation
find?

- From an ambient air quality monitoring study conducted by Garfield County and CDPHE
- Data collected from 14 fixed air monitoring sites
 - Sampling done either monthly or quarterly
 - Detect the presence of VOCs
 - 3 categories of sites
 - 8 Oil and Gas Development sites, 4 Urban sites, 2 Rural background sites
- Data collected from grab samples
 - Taken outdoors for 10-15 seconds
 - Taken in response to odor complaints



- ★ = VOC site
- ★ = PM10 / VOC site
- ★ = PM10 / VOC / Meteorological site

What are VOCs and how could they be related to the oil and gas industry?

What did this
Health
Consultation
find?

- Volatile organic compounds (VOC's) are a class of carbon-based compounds that readily evaporate at room temperatures
- VOCs are released to the air at all stages of oil and gas operations:
 - Exploration and drilling, processing, dehydration, and compression
 - Leaks from equipment
 - Evaporation of produced water from ponds
 - Evaporation of wastes from open pits



Conclusions

What did this
Health
Consultation
find?

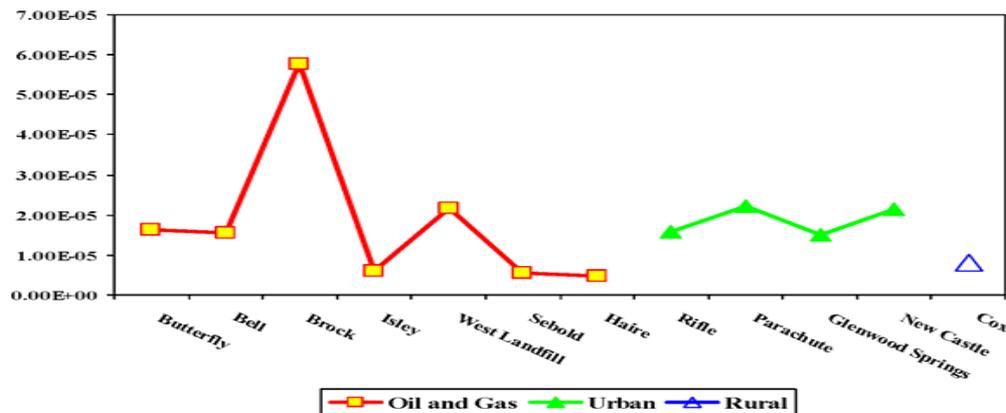
- Ambient air quality in Garfield County poses an indeterminate public health hazard
- Some potential concern for the elevated levels of Benzene detected at Brock
- Future exposures are considered to represent an indeterminate public health hazard

Why the potential concern about Benzene at Brock?

- Brock is a monitoring site located in the oil and gas development area
- Theoretical cancer risks and noncancer hazards for benzene at Brock appear to be significantly higher than those in the urban and rural areas

What did this
Health
Consultation
find?

Figure 1. Theoretical Cancer Risks for Benzene Across all Monitoring Sites



Why should I be concerned about benzene?

What did this
Health
Consultation
find?

- Benzene is a colorless liquid with a sweet odor
 - Widely used in the United States; it ranks in the top 20 chemicals for production volume
- The major effect of benzene from long-term exposure is on the blood
 - Breathing high levels can cause: drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness
- Benzene is a known carcinogen



What is an indeterminate public health hazard?

What do the findings mean?

- ATSDR defines an indeterminate public health hazard as a situation in which *critical* data are *insufficient* with regard to extent of exposure
- A professional judgment that critical data are missing and ATSDR has judged the data are insufficient to support a decision
- Does not necessarily imply all data are incomplete
 - Some additional data are required to support a decision

What critical data are insufficient here?

What do the findings mean?

- Here, the available data are considered limited for the following reasons:
 - Samples were taken on either a monthly or quarterly basis - many days where the air is not sampled and the air quality is unknown
 - Impossible to realistically and continuously monitor ambient air at all places of interest
 - The inability to adequately capture short-term peak exposures
 - Some of the monitoring locations may detect emissions from other sources

Recommendations and Next Steps

What's Next?

- Garfield County has already implemented CDPHE recommendation to redesign the air monitoring study and has begun collecting air data at four sites
 - See the Garfield County webpage for details
- CDPHE will evaluate any additional environmental data that may be collected in the future
- CDPHE will provide requested health education activities



CDPHE

**Speak now...or contact me at your
convenience**



Questions?

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