SLIDES: Understanding the Impacts: Issues of Research

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MARTZ Summer Conference – Water & Air Quality Issues in O&G Development

“Understanding the Impacts – Issues of Research”

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Denver, CO
EPA’s Mission

To protect human health and to safeguard the natural environment -- air, water and land -- upon which life depends.

EPA accomplishes this mission by:

- Implementing federal environmental laws
- Developing and enforcing regulations
- Providing funding to states and local governments
- Conducting environmental research
- Facilitating partnerships between private and public sectors
- Providing information to the public
Environmental Research

• Science is the foundation that supports all of our work here at EPA.

• Strong, independent science is of paramount importance to our environmental policies.

• The quality of science that underlies our regulations is vital to the credibility of EPA’s decisions and ultimately the Agency’s effectiveness in protecting human health and the environment.

• One important way to ensure that sound scientific research underlies policy is to have an open and transparent peer review process.
Different Approaches to Research Assessments

- Field research
- Laboratory studies
- Modeling
- Data analysis
- Literature review

*EPA’s Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources uses all these approaches*
EPA’s Hydraulic Fracturing Study

- A state of the science synthesis of a comprehensive literature review, information provided by stakeholders and technical experts, and results from 17 EPA research projects.

- Research projects operate under approved quality assurance project plans (QAPPs).

- Study follows EPA’s Information Quality Guidelines

- Designated a Highly Influential Scientific Assessment (HISA)

- EPA's Scientific Advisory Board (SAB) has formed an ad hoc panel of independent experts
Field Research/Data Collection

- Operators are important elements to success of meaningful research
- Designing water quality sampling efforts is challenging when specific information about chemical use in well drilling and completion is not available
- Knowledge of the chemicals used on site helps inform the science
- Developing successful strategies to address ozone, especially in the unique wintertime circumstances, will require an investment in air emission measurement work
- Differentiate an outlier “fat tail” emitter from a routine intermittent event
- Citizen science
Laboratory Studies

• Knowledge of the chemicals used on site also helps inform
  – Development of appropriate analytical methods based on the matrix in which they are found
  – Selection of detection limits
Modeling

- In EPA’s Hydraulic Fracturing Study, modeling and scenario analysis with open source code has been done where possible thereby increasing transparency.

- Close collaboration on models used, input parameters selected, and sensitivity analyses conducted is transparent and helpful in comprehensive understanding of model outputs.
Data Analysis

- Large number of sources associated with oil & gas production
- Temporal and spatial variability of those sources
- Different operating and maintenance practices
Literature Review

• In EPA’s Hydraulic Fracturing Study:
  – EPA conducted a thorough literature review and data analysis process to understand the most current science related to hydraulic fracturing.
  – EPA received input through a variety of mechanisms at different stages of the study.

• With adequate care and perspective third party air & water measurement research can be used to inform policy making and to plan future research