

# Technical Workshop on Analytical Chemical Methods

February 25, 2013

US EPA Research Triangle Park Campus  
"C" Building Auditorium  
Research Triangle Park, NC

## Workshop Agenda

- 8:00 am **Registration/Check-in**
- 8:30 am **Welcome** ..... *Glenn Paulson, Science Advisor, US EPA*
- 8:35 am **Purpose of Workshop and Introductions** ..... *Workshop Co-Chairs:  
Jennifer Orme-Zavaleta, US EPA  
Wilma Subra, Subra Company*

### Session 1: Analytical Methods for Chemical Analytes

- 8:45 am **Panel:**
- **EPA Analytes and Current Analytical Methods** ..... *Brian Schumacher, US EPA*
  - **Analytical Considerations During Natural Gas Fracturing Activities** ..... *Rock Vitale, Ruth Forman and David Thal  
Environmental Standards, Inc.*
  - **Considerations for Determining the Source of Groundwater Contamination Associated with Hydraulic Fracturing** ..... *Glenn Miller, University of Nevada-Reno, and Ann Maest, Stratus Consulting, Inc.*
  - **Indicator Parameters** ..... *Ileana Rhodes, Shell Global Solutions (US), Inc.*
  - **Alternative Methods to RSK 175 Using Purge and Trap Concentration and Automated Headspace for the Analysis of Dissolved Gases in Drinking Water** ..... *Nathan Valentine, Teledyne Tekmar*
  - **Important Considerations in the Use of Carbon and Hydrogen Stable Isotopes to Determine the Origin of Hydrocarbons in Groundwater – A Case Study from Pre-Shale Gas Tioga County** ..... *Kinga Revesz  
U.S. Geological Survey*

### Questions of Clarification

### Break (10 minutes)

### Facilitated discussion among workshop participants focusing on key questions:

- What other/different/new methods should EPA consider for their analytes, and why (i.e., what limitations do these other methods overcome)?
- What other analytes should EPA be testing for, and why? What methods would we use for other analytes?
- What considerations arise relative to the differences between various matrices (injection fluids, groundwater, surface water, produced and flowback water) and the effects of high TDS, radionuclides, interference?
- What levels of sensitivity are needed for analytical methods to detect effects, serve as indicators of connection to hydraulic fracturing?

*Moderator: Jennifer Orme-Zavaleta, US EPA*

- 11:45 am **Summary of Session 1**
- 12:00 pm **Lunch and Poster Session**

## Session 2: Future Trends in Hydraulic Fracturing Chemical Usage and Implications for Analytical Methods

1:30 pm

### **Panel:**

- **Emerging Technologies and Increasing Data Interpretation Concerns** ..... Johnny Mitchell  
*TestAmerica Laboratories, Inc.*
- **Beneficial Reuse of Produced and Flowback Water** ..... David Stewart, *Energy Water Solutions, LLC*
- **Monitoring Subsurface Fluid Flow Using Perfluorocarbon Tracers: Another Tool Potentially Available for Subsurface Fluid Flow Assessments** ..... Tommy Phelps, *Oak Ridge National Laboratory*
- **New Isotopic Tracers for Shale Gas and Hydraulic Fracturing Fluids** ..... Avner Vengosh, *Duke University*

### **Questions of Clarification**

#### **Facilitated discussion among workshop participants focusing on key questions:**

- What is changing in the chemical makeup of hydraulic fracturing injection fluids, and what are the implications for chemical selection or field sample analysis?
- What has been your experience with artificial tracers for tracking hydraulic fracturing fluids? What analytical methods are suitable?

*Moderator: Wilma Subra, Subra Company*

3:45 pm

### **Summary of Session 2**

3:55 pm

**Closing Remarks** ..... Ramona Trovato, *US EPA*

4:00 pm

Adjourn

## **Poster Session**

*Hydraulic Fracturing Fluid Analysis for Regulatory Parameters – A Progress Report*  
Kesavalu Bagawandoss, *Accutest Laboratories, Inc.*

*Laser Induced Breakdown Spectroscopy (LIBS) for Rapid Monitoring of Metals in Produced Water and Its Precipitates*  
Helen Boylan, *Westminster College*

*Using Integrated Noble Gas and Hydrocarbon Geochemistry to Constrain the Source of Hydrocarbon Gases in Shallow Aquifers in the Northern Appalachian Basin*  
Thomas Darrah, *Duke University*

*Potential Use of Passive Sampling for Environmental Monitoring of Petroleum E&P Operations*  
Paul Edmiston, *College of Wooster/ABS Materials, Inc.*

*Hierarchical Analytical Approaches for Unraveling the Composition of Proprietary Mixtures*  
Jennifer Field, *Oregon State University*

*Analysis and Treatment of Waters from Hydraulically Fractured Oil and Gas Wells*  
Lawrence Wackett, *University of Minnesota*