



NETL-RUA Shale Energy Resources Alliance (SERA)

George Darakos, NETL



Agenda

- **Shale Gas Strategic Growth Area Background**
- **What is SERA and what does it do?**
- **Proposed research areas**
- **How to work with us?**

Agenda

- **Shale Gas Strategic Growth Area Background**

Shale Gas Strategic Growth Area Background

- **2011** – Shale Gas identified as one of a handful of strategic growth areas by NETL-RUA researchers
- **March 2012** - Stakeholder outreach (internal & external) and overall plan development
- Surveyed NETL – RUA Capabilities and interests
- **July 18, 2012** – Selection of research areas to focus efforts
- Research team development
- Overall plan and individual research team plans developed
- **Approximately Feb 2013** – approval to proceed by NETL – RUA Executive Committee

Agenda

- **What is SERA and what does it do?**

SERA Mission & Activities

Mission

To support the environmentally and socially sustainable development of shale resources through collaborative research and development among industry, university, and government partners on: resource characterization; drilling and extraction technology; near-term and cumulative environmental and social impacts; and empirically supported policy

Activities

- Advancing science and policy regarding shale energy development
- Developing and demonstrating advanced technologies supporting environmentally sustainable shale energy development
- Serving as a repository of data regarding shale energy exploration, development, technology, and effects
- Promoting information exchange among all interested parties

SERA Applies the Knowledge, Capabilities, and Resources of the NETL-RUA to Shale Energy

- Focus of SERA's initial work is in upstream segment of oil and gas industry
- NETL-RUA institutions have skills and experience across the core areas of the upstream segment

Activity	CMU	NETL	PSU	Pitt	URS	VT	WVU
Exploration		X	X	X	X		X
Site development and production	X	X	X	X	X		X
Technologies, materials, and resources	X	X	X	X	X	X	X
Environmental compliance and waste management	X	X	X	X	X	X	X

Agenda

- **Proposed research areas**

SERA Plans Research Activities in Three Areas

- **Air quality effects of shale energy development**
- **Shallow stray gas and well bore integrity**
- **Water resources and waste mitigation**

Air quality effects of shale energy development

- Quantify effects of shale energy development on air quality
- Quantify lifecycle greenhouse gas emissions of shale energy resources

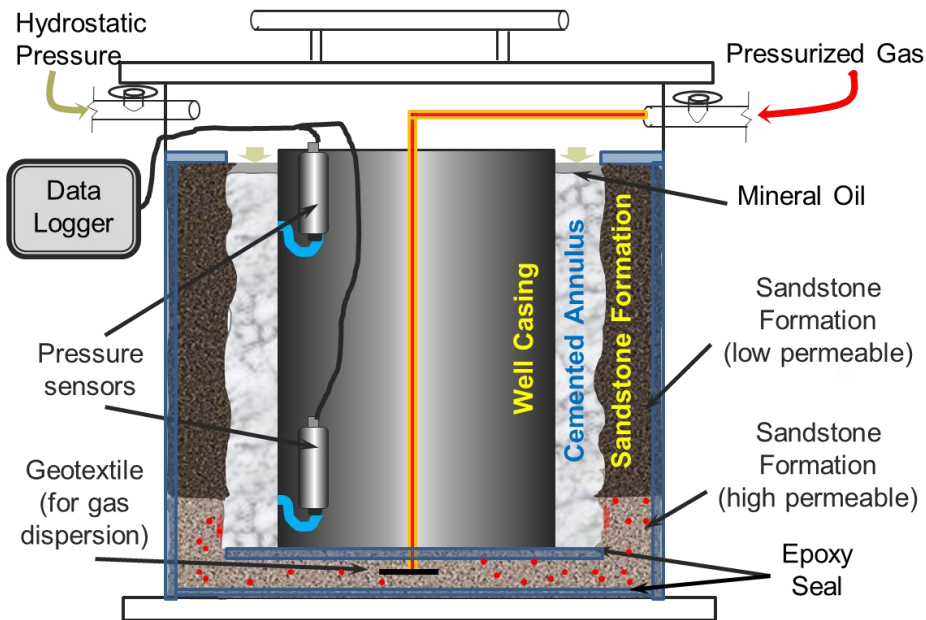


SERA - Air Quality Effects Team

NETL (Team Lead)	Natalie Pekney, PhD
Carnegie Mellon University	Albert Presto, PhD
University of Pittsburgh	Emily Elliott, PhD
West Virginia University	Daniel Carder, PhD
West Virginia University	Mike McCawley, PhD
West Virginia University	Greg Thompson, PhD

Shallow stray gas and well bore integrity

- Evaluate current practices of cementing and the impacts of gas flow from shallow gas formations on wellbore integrity
- Characterize stray gas, existence, and movement using isotopic signatures to identify methane sources.



SERA – Shallow Stray Gas and Wellbore Integrity Team

NETL (Team Lead)	Barbara Kutchko, PhD
Carnegie Mellon University	David Dzombak, PhD
University of Pittsburgh	Anthony Iannacchione, PhD
University of Pittsburgh	Julie Vandenbossche, PhD
West Virginia University	Shikha Sharma, PhD
West Virginia University	Brian Anderson, PhD

Water resources and waste mitigation

- To assist E&P companies and their contractors by improving the economics and performance of waste treatment and water reuse
- Develop innovative processes and procedures for characterizing, treating and utilizing residual wastes resulting from water treatment and solid wastes from the drilling process



SERA – Water Team

West Virginia University (Team Lead)	Paul Ziemkiewicz, PhD
Carnegie Mellon University	Kelvin Gregory, PhD
NETL (ORISE)	Jason Monnell, PhD
University of Pittsburgh	Radisav Vidic, PhD
URS Corporation	Timothy Murin, CPG, PG
Virginia Tech	Gregory Boardman, PhD

Agenda

- **How to work with us?**

How to work with us?

- **Research (participate, propose, stay informed of)**
- **Market insight**
- **Access to data, sites, and technology**

Questions & Contact Information



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Oil & Gas Production - Panel Discussion

Track 3A

Thursday at 10:30 AM

Panelists include:

John Cramer, Nabors Industries

Rick Hammack, U.S. DOE – NETL

Josh Hickman, EdgeMarc Energy

Dick Winschel, CONSOL Energy

Paul Ziemkiewicz, West Virginia University