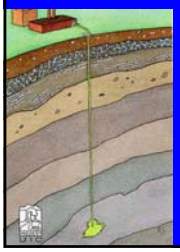
Initial Thoughts on Safe and Effective Deployment of Geologic Sequestration



Third Annual Conference on Carbon Sequestration

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Significance of GS

- Addressing climate change will require large emission reductions over the next century
- A portfolio of technologies is needed, and GS is expected to be a major part of the portfolio
- Attractions of GS:
  - Could mitigate substantial CO2 emissions
  - US has large storage reservoirs
  - Enables continued use of fossil fuels (especially coal) under a climate policy

Key Points

- If managed properly, GS may play a significant role in mitigating climate change
- There is a high level of U.S Government & industry commitment and projects are moving forward
- It is recognized that public acceptance of this technology is a key challenge
- A wide range of environmental health and safety issues need to be addressed in a rigorous and systematic way to build public confidence

Challenges for Geologic Carbon Sequestration

The need for accountability

- Scale & Storage Timeframe
- Monitoring & Archiving
- Liability & Economics

Scale & Storage Timeframe

- Scale
  - Significant sequestration will require thousands of wells
  - Diverse geologic & ecological settings
  - Proximity to population centers
- Storage Timeframe
  - How can we ensure permanence?
  - What is an acceptable time frame?

Monitoring & Archiving Data

- Monitoring
  - How are monitoring protocols established?
  - Different set of technical considerations for short- vs. long-term
  - How do we account for leakage?
- Archiving Data
  - No current national framework
  - What data and how?

Liability & Economics

- Liability
  - Short- and Long-term technical & institutional considerations
  - What framework should apply?
- Economics
  - How can the costs of GS be reduced?
  - How can projections about the future costs be made?
  - What are the costs of accountability?

Accountability

How do you ensure protection of human health and the environment?

- Risk management strategies
- Multi-media risk assessments
- Monitoring, measurement and verification
- Public Outreach

Raising Public Confidence

- Requires a large number of demonstration projects
- Assurance that the net environmental benefit is positive
- CO_2 is "permanently" stored
- Not damaging to the environment in other ways

Collaborative Efforts are Critical to Success

Don't avoid the uncomfortable questions, they are the appropriate place to start.

- There are a large number of stakeholders: DOE, EPA, Industry, Universities, State and Local Governments, NGOs, and other environmental organizations
- Use existing expertise and infrastructure
- Learn from past and existing experience
- Build government and public confidence that GS efforts will succeed

EPA Support

Existing EPA programs provide data, experience, & a sound framework for safe and effective implementation of GS

- Office of Water (UIC Program)
  - Safe Drinking Water Act authorized the **Underground Injection Control (UIC) Program**
  - Sound framework, but focused on drinking water protection
  - Hundreds of technical/regulatory guidance documents
- Office of Air and Radiation
  - National GHG Inventory
  - Voluntary Programs
  - Clear Skies/Clean Air Rules
  - Communication & outreach programs to convey highly technical information to States, industry & public