

**Carbon Sequestration leadership Forum**

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**Risk Assessment Task Force**  
***Task Force Meeting***  
***Beijing, China***  
***20 September 2011***

George Guthrie (USA)



## *Agenda*

- **Welcome, review of agenda**
- **Introduction of Attendees**
- **Review of Edmonton RATF Notes**
- **IEAGHG Report**
- **Review**
  - **Original Charter and Phase II Goals**
  - **Edmonton Action Items**
- **Completion of Phase II Activities**
  - **EOR and Risk Issues**
  - **Project-Phases and Risk Issues**
  - **Performance Based Standards**
  - **Phase II Recommendation? RATF Phase III?**
- **Proposed Action Plan for Joint Risk-Liability Task Force**
- **New Business**
- **Adjourn**



## *IEAGHG Report (Tim Dixon)*

### **Risk Assessment Network Workshop, Pau, France June 2011**

- Talks on groundwater, induced seismicity, biosphere assessment
- Key recommendations from the meeting
  - Reinforcement that monitoring programs should be risk-based
  - Need for translation of risk assessment outputs to a common easily understandable language
  - Need for benchmarking of outputs of methodologies
  - Community asset values being included in risk assessment
  - Further investigation needed into microbial influences
  - Consideration of induced seismicity for larger projects
  - Importance of baseline data
  - Further work is needed on the evolution of risk through time
- Presentations from the Workshop and the detailed agenda are available on the IEAGHG Risk Assessment Network member's website—[www.ieaghg.org](http://www.ieaghg.org)



## *Review: Initial Charter of RATF*

- **Examine risk-assessment standards, procedures, and research activities relevant to unique risks associated with the injection and long-term storage of CO<sub>2</sub>**
  - **Risks associated with CO<sub>2</sub> near-term (injection) processes (including fracturing, fault re-activation, induced seismicity)**
  - **Risk associated with long-term processes related to impacts of CO<sub>2</sub> storage, including:**
    - health, safety, and environmental risks
    - potential impact on natural resources (such as groundwater, mineral resources, etc.)
    - return to the atmosphere



## *Review: Phase I Summary*

- **Initiated at London (Nov 2006)**
- **Recommendations finalized at Oslo (Apr 2009)**
- **Final draft to Secretariat (May 2009);  
circulated to TG for review/comments (summer 2009)**
- **Phase I report complete (fall 2009) (CSLF-T-2009-04)**
  - Overview of risk assessment methodologies for engineered geologic systems
  - Literature review of risk assessment for CO<sub>2</sub> storage
  - Identification of key potential risks
  - Overview of monitoring & mitigation options that support risk assessment
  - Summary of ongoing and emerging activities in CSLF countries
  - Proposed next steps



## *Review: Phase I Recommendations*

- **Risk assessment should be considered in the context of stakeholder outreach and communication.**
  - Recommendation passed to PG;  
Communication Task Force produced 5 outreach documents (approved by TG in Pau, Mar 2010)
- **The link between risk assessment and liability should be recognized and considered.**
  - Recommendation passed to PG;  
Joint task force formed (Warsaw meeting, Oct 2010);  
Proposed action plan submitted to Secretariat (Beijing meeting, Sept 2011)
- **Storage integrity goals (e.g., acceptable risk levels) for sites should be discussed**
  - White paper prepared on “Performance based standards...”



## *Review: Phase II Tasks*

1. **Gap assessment to identify CCS-specific tools and methodologies that will be needed to support risk assessment**
  - RATF will leverage IEAGHG Risk Assessment Network (Pau—Mar 2010)
    - presented CSLF-RATF phase II activity to Network Meeting (May 2010)
    - circulated outbrief from Network to RATF; used to inform gap assessment for PIRT (summer 2010)
    - new outbrief to RATF from IEAGHG Pau (2011) meeting (Sept 2011)
  - RATF will develop two short overviews (summer 2011)
    - Risk needs relative to EOR
    - Risk issues relative to project phases
2. **Feasibility assessment of developing general technical guidelines for risk assessment that could be adapted to specific sites & local needs.**
  - Complete reviews of white paper on “Performance-Based Standards for CO<sub>2</sub> Site Performance, Safety and Integrity”



## *Review: Phase II Tasks*

3. **Gather information on what other organizations are doing in the area of technical risk (recommended Warsaw, Oct 2010)**
  - Australia offered to provide list of organizations to Secretariat
    - (Do we want to complete this task for phase II activities? If so, path forward?)
4. **(Develop recommendations from RATF to TG)**
  - (Need to discuss today)





## *Completion of Phase II Activities: Risk & EOR (Task 1)*

- ***A gap assessment to identify CCS-specific tools and methodologies that will be needed to support risk assessment.***
  - Develop short overview of potential gaps relative to CO<sub>2</sub> storage relative to EOR operation
    - Draft developed by chair with input from Australia, Canada, France, Saudi Arabia, and GCCSI (done)
    - Circulated to Task Force (Beijing meeting)
    - Receive comments back from Task Force (???)
    - Integrate with RATF Phase II Report
      - Circulate Phase II Report to RATF for Comments (4 Nov 2011?)
      - Receive comments back from RATF (12 Jan 2012?)
    - Submit Phase II Report to Secretariat for circulation to TG (spring 2012)



## *Completion of Phase II Activities: Overview of Risk and Project Phases (Task 1)*

- ***A gap assessment to identify CCS-specific tools and methodologies that will be needed to support risk assessment.***
  - Develop short overview of technical risk-assessment considerations related to various phases of a project (development, injection, post-injection, long-term)
    - Draft developed by chair with input from Canada and France (done)
    - Circulate to Task Force (Beijing meeting)
    - Receive comments back from Task Force (14 Oct 2011?)
    - Integrate with RATF Phase II Report
      - Circulate Phase II Report to RATF for Comments (4 Nov 2011?)
      - Receive comments back from RATF (12 Jan 2012?)
    - Submit Phase II Report to Secretariat for circulation to TG (spring 2012)



## *Completion of Phase II Activities: Performance Based Standards (Task 2)*

- ***Assessing the feasibility of developing general technical guidelines for risk assessment practices that could be adapted to specific sites and local needs***
  - Complete reviews of white paper on “*Performance Based Standards...*”
    - Current draft to be re-circulated to Task Force by chair (done)
    - Comments back from Task Force to France (D. Bonijoly) (done)
    - Document sent to technical editor (done)
    - Integrate with RATF Phase II Report
      - Circulate Phase II Report to RATF for Comments (4 Nov 2011?)
      - Receive comments back from RATF (12 Jan 2012?)
    - Submit Phase II Report to Secretariat for circulation to TG (spring 2012)



## *Completion of Phase II Activities: Gather information on other organizations (Task 3)*

- **Gather information on what other organizations are doing in the area of technical risk**
  - Do we include for phase II?
  
  - If so, path forward?
    - Request list of key organizations from GCCSI
      - Circulate list of key organizations to RATF for possible augmentation
    - Develop summary-request form
    - Send requests to organizations for summary
    - Integrate with RATF Phase II Report
      - Circulate Phase II Report to RATF for Comments (4 Nov 2011?)
      - Receive comments back from RATF (12 Jan 2012?)
    - Submit Phase II Report to Secretariat for circulation to TG (spring 2012)



## *Concept Paper for Joint PG–TG Task Force on Risk and Liability*

### **Assessment for Geologic Storage of Carbon Dioxide: A Proposed Work Plan for the CSLF Proposed**

1. Establish CSLF Risk and Liability Task Force composed of representatives from PG Financing Task Force and TG RATF
2. Perform analyses including (a) a critical review of prior work on liability, and (b) a comparison of liability frameworks that have so far been established
3. Interview a sample of key experts from the different disciplines to identify their perspectives on risk, damages and liability. Evaluate the similarities and differences among these stakeholders
4. Conduct facilitated workshops to identify gaps and methods to address
5. Propose a path forward (phase II) to the PG and TG (joint meeting 2012)