

**Summary of Performance Assessment Community of Practice Technical Exchange
Richland, WA
April 13-14, 2010**

The general purpose for the Technical Exchange was to provide a venue for practitioners, managers, and regulators involved in performance and risk assessments and developers working on the Advanced Simulation Capability for Environmental Management (ASCEM) project and the Cementitious Barriers Project (CBP) to share experiences and to collect user ideas and identify user needs related to ASCEM and the CBP. The technical exchange also included topical discussions related to the Performance Assessment Community of Practice (PA CoP) in general and specific suggestions for future PA CoP activities were identified. The Technical Exchange also offered the opportunity for detailed discussions for integration of development efforts underway on the ASCEM project and the CBP. The technical exchange was attended by roughly 80 people representing DOE HQ and Field Offices; National Laboratories; DOE Contractors; NRC, EPA and State regulators; consulting firms and universities. The agenda, list of participants and streaming video from the presentations is available on the technical exchange website ([j w r <lsrnl.doe.gov/copexchange](http://www.nslrnl.doe.gov/copexchange)). Electronic versions of the presentations and podcasts of the video files will be available shortly.

The technical exchange began with opening remarks from Stacy Charboneau of the DOE Office of River Protection and Matthew McCormick from DOE Richland Operations Office. For the introductory presentations, Steven Ross, EM-31, provided a summary of activities and integration efforts underway in EM-30 and David Esh, US NRC, provided regulatory perspectives and experience based on reviews of modeling efforts for a variety of applications. These talks were followed by questions and group discussions regarding the role of the Performance Assessment Community of Practice and an overview of the plans for the technical exchange.

Most of the presentations for the technical exchange were focused on presenting status and plans from the ASCEM and CBP projects and providing a broad perspective of regulatory applications of modeling approaches for performance and risk assessments at a variety of DOE sites. A summary of projects from EM-30 International Programs was also provided which included many possibilities for ASCEM test cases and collaboration with international partners. There were a number of constructive discussions in conjunction with the presentations that provided the opportunity for dialogue between the user community and the developers of the new toolsets.

The afternoon of the second day included two parallel sessions: 1) a meeting between members of the ASCEM and CBP projects to discuss specific plans for integration of the technical work in the two activities and 2) a session with a few topical presentations (DOE Order 435.1 update, example of regulatory perspectives regarding disposal facility development in Belgium, information repository conceptual ideas) and a discussion to provide suggestions for future PA CoP activities.

SUMMARY OF CONCLUSIONS

User Suggestions for ASCEM and CBP

In the summary discussions, the more prominent suggestions were consistent with initial LFRG comments on the ASCEM proposal and needs identified in interviews recently conducted with specific users at several DOE sites. There were also many detailed suggestions captured in notes

from the meeting that will be added to the results of the interviews. The following key considerations were consistently present in the discussions and the interviews:

- Addressing Major Challenges in the Future - Recognizing that existing approaches have been adequate for regulatory decisions to date, ASCEM and CBP are intended to provide advances to existing approaches to allow improved computational efficiency and process modeling capabilities to help optimize decision-making for more challenging waste management activities in the future
- Integrated Approach - ASCEM and CBP modeling need to be effectively combined with field activities (e.g., sampling, demonstrations, characterization, monitoring) in an integrated approach for decision making
- Regulators and Reviewers - The Platform needs to facilitate: structured development of documentation, transparency of data and assumptions, and ease of use of tools (at some level) for a range of potential users from a regulator/reviewer perspective. Compatibility with currently accepted regulatory models, as needed, would also be a benefit
- Range of Complexity - Implementation of a graded and iterative approach that includes flexibility to consider a continuum of modeling complexity from screening models to detailed process representations (also within a single assessment, e.g., composite analysis)
- Source Term - Improved capabilities for source-term models (e.g., barrier and waste form degradation and reactive transport for release processes) will help with key challenges
- Computing Efficiency - Improved computing capabilities to leverage high performance computing for better efficiency of uncertainty analysis, increased grid resolution, reactive transport, and model dimensionality for complex problems
- Involving Users and Decision Makers – Seek opportunities for active involvement of users and decision makers in the development process, including design of Platform (especially decision toolsets), testing of modeling tools, and potentially using individual modules to demonstrate benefits for shorter term needs (e.g., supporting PA analyses)
- Exposure Assessment – Although initial efforts may focus on fate and transport aspects, capabilities to address the broad variety of processes associated with exposure analysis, including surface processes, need to be addressed in the toolset.

Suggestions for Future PA CoP Activities

During the discussion regarding future PA CoP activities, some priorities and refinements were identified for existing suggestions and some new topics were identified. The highest priority activities were:

- Workshops (individually or combined) – Higher level use of probabilistic modeling for decision making and interpretation of probabilistic results, PA Educational Forums for Sr. Management and Stakeholders, Use of PA as a risk communication tool and role of stakeholder involvement (it was also suggested to increase the use of webinars due to travel problems for many regulators)
- Technical Exchanges – Continue annual technical exchanges to provide opportunity for community to directly interact and share topical information (future suggestions for topics included lessons learned, development/application of waste acceptance criteria)
- PA Assistance Teams – Continue to facilitate assistance during the development of PAs (scoping meetings, technical support) – existing activities greatly appreciated
- Support for DOE Order 435.1 update – Continue to involve the CoP in the update process

- Sharing of information – Interest remains in providing a means for improving the sharing of information regarding PA activities via SharePoint, Wikis, newsletters, etc. and also providing better access to the wide variety of technical information that is available to support PAs.

Summary of ASCEM/CBP actions from the breakout meetings:

- 1) To aid in integration, we identified four areas where we should begin immediate collaboration and exchange of ideals between ASCEM and CBP.
 - a. Uncertainty quantification (Dave Higdon (dhigdon@lanl.gov) and Sankaran Mahadevan “Maha” (sankaran.mahadevan@vanderbilt.edu) at Vanderbilt)
 - b. Site Applications (Mark Freshley (Mark.Freshley@pnl.gov) and David Kosson(David.Kosson@vanderbilt.edu))
 - c. Process Models (Carl Steefel(cisteefel@lbl.gov), Peter Lichtner (Lichtner@lanl.gov) and Greg Flach (Gregory.Flach@srnl.doe.gov)
 - d. Software Design (David Moulton (moulton@lanl.gov) and Ian Gorton (ian.gorton@pnl.gov /Greg Flach and Kevin Brown (Kevin.Brown@srnl.doe.gov))
- 2) Set a ASCEM/CBP technical team integration telecon for May 26th (Heather Burns has the action to coordinate this telecon.
- 3) All go forward ACEM and CBP presentations will be integrated to make the combined integration efforts between ASCEM and CBP are highlighted.
- 4) Begin coordination with the larger ASCEM/CBP team on the development of the Integrated EM-30 Modeling Plan (Due to Yvette by July 1st). The small team that has started developing this plan (Paul Dixon (p-dixon@lanl.gov); Juan Meza (JCMeza@lbl.gov); Dawn Wellman (dawn.wellman@em.doe.gov); Eric Pierce (eric.pierce@pnl.gov); Bob Aylward (bob.aylward@srnl.doe.gov); Mark Williamson (mark02.williamson@srnl.doe.gov); Bill Wilmarth (bill.wilmarth@srnl.doe.gov); Paul Bredt (paul.bredt@pnl.gov); Monica Regalbuto (regalbuto@cmt.anl.gov); Steven Ross (steven.ross@em.doe.gov); Ming Zhu (ming.zhu@em.doe.gov); will be expanded to include Heather Burns (heather.burns@srnl.doe.gov) and David Kosson (David.Kosson@vanderbilt.edu) in its further development.
- 5) Paul Dixon, Heather Burns and David Kosson will work together to arrange a mid to late August two day technical workshop with the ASCEM and CBP teams.
- 6) The ASCEM and CBP efforts will be coordinated through a combined and integrated P6 schedule (FY11-15) to be developed this summer after the Integrated EM-30 Implementation Plan is completed.