EMRAS II Plenary Meeting
WG3: Waste Working Group

Progress at 24 January 2011

Tobias Lindborg

SKB

WG3: Waste Working Group

WG Objectives:

- To agree on approaches for developing reference biosphere models appropriate for assessments of exposures to humans in performance assessment studies of repositories for disposal of solid radioactive waste.
- To allow that the approaches should take into account changes of the exposure conditions as e.g. due to changes of the climate, the use of land, agricultural practices and changes in living habits. {Extending BIOMASS and BIOCLIM}
- To derive a set of models that covers a wide range of environmental situations.

Sub-groups addressing different aspects

- SG1 Analogue approach

Using present conditions from different climate classes to apply to a generic model

- SG2 Soil-plant systems

Exploring how environmental change affects processes and parameters

- SG3 Dynamic modelling at a specific site

Applying system modelling on climate and landscape change

- SG4 Demonstrating compliance with protection objectives

Implications of different stages of repository development taking into account environmental change

Interim meeting at Helmholtz Zentrum, Munich, October 2010

Presentation and discussion of progress in the subgroups and further work carried out

Cross-cutting points raised:

- In each country consideration has been given to critical FEPs for their assessment. Are the factors universal or specific to a site; is it a case of changing parameter values or model processes, or entire conceptual approaches.
- There is scope to learn from recent assessments which include practical examples of how environmental change issues have been addressed. The same applies to how that work has been reviewed relative to the need to demonstrate safety.

More cross-cutting issues

- Changes in the biosphere will occur before and after release commences, resulting in redistribution of activity which has already been released. Those changes need not be addessed in the same way.
- Study of dynamics and snapshots of situations can both help in demonstrating safety.
- How long is a transient and what do we mean by equilibrium? Analogue sites are not in equilibrium, all are dynamic to some degree, even if we can only observe them directly with a snapshot taken today.
- To be able to tell a “main story” is an important factor in safety assessments. You can change that story to demonstrate effects on specific worst cases.

More cross-cutting issues

- How can we determine the relevant temporal and spatial averaging required for particular assessment endpoints?
- There is always a credibility issue with long term assumptions, so refer to this work as describing or developing relevant “reference futures” at site level (the “story” again)
- What are the constraints which limit the range of possibilities? Should we develop a range of “what if” questions to identify possible outcomes?
- Future environmental change will affect both the geosphere (and repository?) and the biosphere. So any work on future change must be done together with the geosphere guys.

More cross-cutting issues

- One approach could be to identify conservative constraints using very stylised approaches. The corresponding criteria against which to consider the results, in terms of safety demonstration, would be correspondingly rough indicators of safety, such as comparisons with radionuclide fluxes
- If all these ideas were put together, we might say we are developing Constrained conservative reference futures (CCRF). Is another acronym environmentally sustainable?
- The scientific society has a pretty good understanding on historical environmental change (both local and global). Can this be used to build a common referens future for our needs?

WG3: Meeting objectives

- Review progress and extend the WG3 Interim report.
- Several additional presentations on specific aspects of dose assessment for solid waste repositories
- Develop plan for completion of WG3 Report