

Radioactive Waste Management

Radioactive Waste Management Committee (RWMC)

The RWMC is assisting member countries in the area of management of radioactive waste and materials, focusing on the development of strategies for the safe, sustainable and broadly acceptable management of all types of radioactive waste, in particular long-lived waste and spent fuel, and on the decommissioning of obsolete nuclear facilities.

Highlights

- An RWMC collective statement on *Moving Forward with Geological Disposal of Radioactive Waste* was published.
- A workshop was organised in France on approaches and challenges for the use of geological information in safety cases.
- The Working Party on Decommissioning and Dismantling (WPDD) started a study on decommissioning cost elements, estimation practices and reporting requirements.
- A project on retrievability and reversibility in long-lived waste disposal was initiated.

Waste management policy and regulatory issues

An RWMC collective statement on *Moving Forward with Geological Disposal of Radioactive Waste* was published. The statement notes that national strategies for geological disposal should address not only the technical means to construct a facility, but also the framework to allow decision makers and the concerned public the time and means to understand and to evaluate the basis for the various decisions proposed. An important conclusion is that delaying work on geological disposal – i.e. by adopting a "wait-and-see strategy" – would require increasingly more demanding care for the waste and its storage facilities. Sufficient information now exists for taking the first steps and adopting a plan commensurate with the current generation's responsibility. Moving forward with implementation of geological disposal is desirable from both the ethics and safety points of view.

The collective statement also recognises that issues related to retrievability and reversibility (R&R) are prominent in a number of countries. Following on from a 2001 NEA report on this subject, a new initiative was started in 2008 to survey current views, issues and practices associated with R&R and to provide information that would be useful to national debates and programmes. A first workshop was held in Toronto, Canada, in September. More meetings and workshops are to take place culminating in an international conference in France in December 2010.

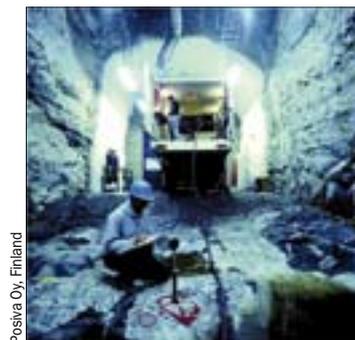
The RWMC Regulators' Forum (RF) continues to investigate issues connected with establishing long-term safety regulation for geological disposal. In 2008, final preparations were made for a workshop to be hosted by the Government of Japan in Tokyo, in January 2009, on the questions of transparent, proportionate and deliverable regulation. Regulators, implementers, R&D specialists, policy makers and social scientists were expected to attend.

Safety case for geological disposal

Through its Integration Group for the Safety Case (IGSC), the RWMC continues to define trends and best practices in developing and presenting safety cases. During 2008, the IGSC compiled and analysed international experience on safety case development. The results will be brought together in a state-of-the-art report that identifies areas of consensus as well as emerging trends and remaining challenges for safety case development.

A workshop was organised in France in April on approaches and challenges for the use of geological information in safety cases. The workshop explored the connections among site characterisation, safety assessment and repository design, and demonstrated the importance, in supporting a safety case, of having a coherent and comprehensive conceptual model of the geosphere. This was the third and final workshop of the Approaches and Methods for Integrating Geologic Information in the Safety Case (AMIGO) project. Outcomes and key messages from the project will be compiled in a forthcoming report.

As national programmes move towards licensing, there is a growing need to reconcile the demands not only for long-term safety of disposal facilities, but also for their engineering feasibility and operational safety. The IGSC



Posiva Oy, Finland

Part of the geological disposal facility under construction in Finland.

is exploring the links and trade-offs among the various technical requirements.

In 2008, the IGSC also initiated several new activities. Foremost among these are a desk study to review advances in safety assessment methods and a workshop to be held in 2009 on the role and performance of cementitious materials in geological repositories.

Forum on Stakeholder Confidence

The RWMC Forum on Stakeholder Confidence (FSC) continues to foster reflection on stakeholder dialogue as well as the improvement of decision-making processes for radioactive waste management. At the FSC annual meeting, three topical sessions were organised outlining experience related to links between research, development and demonstration (RD&D) and stakeholder confidence, reviewing the legal and policy framework for involving stakeholders, and addressing the symbolic dimension of some concepts promoted within waste management (for further details see page 40).

Preparations were also started for the FSC workshop to be held on the French national context in April 2009, in the region where a repository for high-level radioactive waste may be sited. Reversibility is one of the topics on the agenda.

Important efforts were made by the FSC in 2008 to produce plain-language flyers to be used for outreach and training. A general flyer describing the FSC as well as three thematic flyers – on principles for decision making, on the practice of stepwise decision making, and on ways to foster a durable relationship between a facility and its host community – are available online.

Decommissioning

The RWMC Working Party on Decommissioning and Dismantling (WPDD) undertook an activity to analyse lessons learnt from decommissioning and their impact on the construction of new nuclear plants. First findings based on practice and expectations by designers, utilities and regulators were discussed at a topical session. Completion of the study's report and preparation of a short policy document on the same issue in collaboration with the IAEA is expected during 2009.

To address issues relating to methodologies for estimating decommissioning costs, the WPDD established the Decommissioning Cost Estimation Group (DCEG). The first meeting of the DCEG in May included a topical session on dealing with risk and uncertainties in decommissioning cost estimates. The group also started a study on decommissioning cost elements, estimation practices and reporting requirements to be finalised in 2009. Findings suggest that different cost assessment methodologies will need to be used as the project advances, and should be continuously updated using cost data from actual decommissioning projects. An important conclusion so far is that scope changes and scope growth may have the greatest impact on cost estimates, and should be incorporated immediately if estimates are to be a viable benchmarking resource.

Finally, two WPDD reports were published in relation to regulatory practice. On *Regulating the Decommissioning*

of Nuclear Facilities, the WPDD concludes that regulatory requirements should be commensurate with the level of residual hazard in plants being decommissioned and that internal authorisation systems, whereby safety committees established by the licensee provide a first line of oversight, may have a role to play. On the *Release of Radioactive Materials and Buildings from Regulatory Control*, the WPDD notes that clearance policies are heavily influenced by the costs and availability of disposal pathways for low-level waste and that, although clearance levels are established by national legislation, a good level of international harmonisation exists, especially for key radionuclides.

The *Co-operative Programme for the Exchange of Scientific and Technical Information Concerning Nuclear Installation Decommissioning Projects* (CPD) has accepted four additional participating projects, from Canada, Italy, Japan and the United Kingdom – thus further expanding its information base. The work of the two currently operating specialised task groups – on the use of robotics in decommissioning and on techniques for the decontamination and dismantling of concrete – has progressed considerably and will be completed in 2009. (See page 35 for further details on this programme.)

Understanding the scientific basis

To secure the scientific basis of its work, the RWMC continued to support the development and maintenance of quality-assured databases and models for use in the implementation of repositories.

The Clay Club co-sponsored an international meeting on Fault Zones: Structure, Mechanics and Fluid Flow along with the Geological Society of London, the Geological Society of America and a number of other scientific organisations. The Clay Club's participation in this meeting was the fruition of ongoing efforts to improve information exchange regarding research and understanding of clays outside the radioactive waste field, notably in the petroleum industry and the broader academic community. Progress in modelling fault growth, shown in the meeting, may be of real interest for geological disposal.

The Clay Club is also continuing its investigation of processes that lead to self-sealing of fractures in clays, which could have important implications for the performance of deep geological repository systems because of the possibility to reduce or eliminate preferential pathways. A full technical report will be drafted and reviewed in the year to come to interpret recent important laboratory results and field tests in the context of geological disposal.

Work continued on the Thermochemical Database (TDB) Project, which entered phase IV covering the years 2008-2012. This NEA-sponsored joint project is described on page 36.

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