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

- The RWMC Regulators' Forum organised an International Workshop on Transparent, Proportionate and Deliverable Regulation for Geological Disposal.
- The Integration Group on the Safety Case (IGSC) held a workshop on the roles and performance of cement in geological repositories.
- An important Forum on Stakeholder Confidence (FSC) workshop was held in France on repositories and host regions. The FSC has completed studies on "partnering" for siting waste facilities and on the symbolic dimension of radioactive waste management.
- The Working Party on Decommissioning and Dismantling (WPDD) has completed studies on cost drivers and reporting practices in decommissioning, and on applying decommissioning lessons to the design and operation of new reactor systems.

Waste management policy and regulatory issues

The RWMC has a wide-ranging programme covering radioactive waste disposal safety, the decommissioning and dismantling of nuclear facilities, and stakeholder involvement as related to radioactive waste policy, implementation, research and regulation. At its March 2009 meeting, the RWMC examined the issue of human resources, identified steps for defining and presenting the waste management profession, and disseminated a document on knowledge consolidation and transfer. The RWMC also continued its efforts to provide lessons learnt in a concise flyer format for wide distribution. A new project on memory preservation is under consideration.

The RWMC Regulators' Forum (RF) continues to investigate issues connected with establishing long-term safety regulation for geological disposal and organised a workshop, hosted by the government of Japan in Tokyo, on the question of transparent, proportionate and deliverable regulation. The main lessons to be learnt from the workshop have been communicated, and a discussion document meant to engage all interested parties on the subject of optimising geological repositories has been produced. The radiological protection community is being invited to participate in further dialogue on disposal safety criteria. The RF also completed a survey on the R&D needs of regulatory organisations.

Issues related to retrievability and reversibility (R&R) in planning geological repositories are prominent in a number of countries. A recently started project is surveying current views, issues and practices associated with R&R and will provide information of use to national debates and programmes. Important progress has been made in developing a "retrievability scale" in repository development as a tool for informing and dialoguing with the public. The project began organising an international conference on R&R, to be held in France in December 2010, with the aim of discussing and better understanding commonalities and differences and to test and refine the findings of the NEA R&R project.

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. The results of the INTESC project were published in 2009. The report describes the state of the art for safety case development and identifies areas of consensus as well as emerging trends and remaining challenges.

The IGSC initiated a new project to review advances in methods for safety assessment (MESA), which form the technical core of a safety case. The group completed a desk study identifying important progress and major trends. Based on those results, the IGSC plans to hold a workshop on MESA and to produce a brochure on the topic.

Cementitious materials play an important role in construction and the barrier system of geological repositories. A workshop was organised in Belgium on the interactions of cementitious materials with other natural and engineered components of disposal systems. The workshop, which attracted specialists from academic, research, waste management and regulatory institutions, showed that there is good agreement regarding the processes relevant to performance and that methods exist to model them even when uncertainties remain.

The IGSC dedicated a topical session at its annual meeting to organisational aspects of developing safety cases. Aspects such as knowledge management, or broader issues such as organisational structure and inter-disciplinary coordination, have sometimes been viewed as peripheral, but this session demonstrated a growing recognition that

such factors have direct bearing on the quality of, and confidence in, the safety case.

The IGSC continues to emphasize knowledge consolidation and transfer by synthesising the main messages and lessons learnt from the recently completed multi-year projects on geological information (AMIGO) and on engineered barriers (EBS) in safety cases.

ANDRA

View of the underground research laboratory at Bure, France.

Forum on Stakeholder Confidence

The RWMC Forum on Stakeholder Confidence (FSC) continued its important role in fostering national dialogue by holding a workshop in France on the national context for high-level waste disposal. The workshop took place in April 2009 in Bure where a repository for high-level radioactive waste is to be sited. Particular attention was given to stakeholder insights regarding reversibility and retrievability (R&R).

The FSC continues to foster reflection on stakeholder dialogue as well as the improvement of decision-making processes for radioactive waste management. A study on "partnering" documents current practice of empowering repository host communities in 13 countries and reviews changes observed. Whereas organisational actions formerly concentrated on public information and outreach, today the pendulum has largely swung to giving stakeholders greater weight in formal or informal partnerships concerning facility siting and design, or monitoring. A second study enhances awareness of non-technical aspects of radioactive waste management and analyses the symbolic dimension of some of the key concepts that are dealt with in waste management, such as safety, landscape and community.

At the FSC annual meeting, two topical sessions were organised, investigating the role of regional elected authorities as stakeholders, and identifying concrete actions, procedures and legislation that foster a long-term relationship between local stakeholders and RWM actors.

Decommissioning

The RWMC Working Party on Decommissioning and Dismantling (WPDD) completed a study on the application of lessons from decommissioning to the design and operation of new reactor systems, concluding that decommissioning issues are already being considered to a large extent during the design process. Although many design provisions aiming at improved operation and maintenance will also be beneficial for decommissioning, designers still need to consider issues that are specific to decommissioning such as developing sequential dismantling sequences and providing adequate waste management strategies.

The WPDD formed new task groups on the management of large components from decommissioning and on R&D and innovation needs for decommissioning. It began updating the listing of standardised cost items for decommissioning, commonly known as the "Yellow Book".

The Decommissioning Cost Estimation Group (DCEG) analysed decommissioning cost elements, estimation practices and reporting requirements in various countries. Its findings suggest that cost methodologies need to be updated continuously using cost data from actual decommissioning projects, and systematic approaches need to be implemented to collect these data. It also found that changes and growth of project scope may have the greatest impact on project costs. The study notes that more needs to be done to facilitate comparison of estimates.

The Co-operative Programme for the Exchange of Scientific and Technical Information Concerning Nuclear Installation Decommissioning Projects (CPD) enlarged its membership and accepted two new participating organisations – the US Department of Energy's Office of Environmental Management and the European Commission's Joint Research Centre at Ispra (Italy). Two new projects have also joined the programme (see page 33 for more information on the CPD).

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 scientific conference on faults and seals in clays, and organised a special session of the conference on radioactive waste disposal. The Clay Club's participation in this conference reinforced links with relevant research programmes on clays performed outside the radioactive waste field. The group also continued its investigation of evidence and mechanisms for self-sealing of fractures in clays. Preliminary results show that the understanding of self-sealing has progressed to a point that justifies its inclusion in safety cases for geological disposal.

The Thermochemical Database (TDB) Project, which is run by the NEA Data Bank under the scientific guidance of the RWMC, continues to develop its database of recommended chemical thermodynamic data for the safety assessment of radioactive waste repositories (see page 34 for further details on this programme).

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