

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.

Highlights

- The RWMC played an important role in co-organising the International Conference on Geological Repositories: A Common Goal, A Variety of Paths held in Switzerland in October.
- An international symposium organised by the NEA on "Safety Cases for the Deep Disposal of Radioactive Waste: Where Do We Stand?" reviewed progress made on safety cases over the last decade.
- The RWMC Forum on Stakeholder Confidence (FSC) finalised a report on what contributes to *Fostering a Durable Relationship Between a Waste Management Facility and Its Host Community*.
- The RWMC Working Party on Decommissioning and Dismantling (WPDD) reviewed regulatory arrangements during the decommissioning of nuclear facilities by analysing operators' and regulators' experience.

Waste management policy and regulatory issues

The RWMC was instrumental in co-organising the International Conference on Geological Repositories, which was held in Berne, Switzerland in October. As during the previous conferences in this series, held in Denver in 1999 and in Stockholm in 2003, the Berne Conference gave high-level decision makers and opinion leaders an opportunity to discuss at the highest political and regulatory levels ongoing and planned activities to develop geological repositories. In line with the conference's subtitle "A Common Goal, A Variety of Paths", high-level politicians, top regulators and heads of waste agencies discussed in plenary presentations and panel discussions the various political frameworks and factors influencing the decision-making process. The NEA will publish the proceedings of the conference.

Regulatory criteria are paramount in evaluating the safety of waste management facilities. However, the extremely long timescales over which the regulations are meant to apply make the framing of regulation especially difficult. The RWMC has addressed these issues in a new report on *Regulating the Long-term Safety of Geological Disposal*, which builds on the outcomes of several initiatives, including a 2006 workshop in which specialists in sociology and

philosophy participated alongside technical experts. The report stresses that it is important that differences in national approaches be understood and explained in order to establish confidence in national repository programmes. It also upholds that developing a common understanding of obligations to future generations and of how to integrate these obligations in regulatory criteria for long-lived radioactive waste would make comparisons of regulatory approaches in national and international contexts more meaningful and useful.

Safety case for geological disposal

The NEA hosted an international symposium on "Safety Cases for the Deep Disposal of Radioactive Waste: Where Do We Stand?" in Paris in January. The symposium, co-sponsored by the IAEA and the EC, provided an opportunity to review progress and to identify emerging trends and challenges. It brought together experts in the field of radioactive waste disposal from 16 NEA member countries, international organisations and the Russian Federation. The symposium showed that there has been significant evolution in terms of the analytical tools, lines of evidence, range of performance indicators and communication of the safety case.

Through its Integration Group for the Safety Case (IGSC), the RWMC continues to further define trends and best practices in developing and presenting safety cases. Building on the success of the international symposium held on this topic, a workshop in early October explored safety case issues in depth. The results will support a state-of-the-art report.

Another workshop held in the United Kingdom in November addressed Stability and Buffering Capacity of the Geosphere for Long-term Isolation of Radioactive Waste: Application to Crystalline Rock. Using specific examples from relevant national programmes, the workshop explored the key processes affecting such rocks as host environments for geological disposal; the lines of evidence to support their stability and robustness over long timescales; and their resilience to natural disruptive forces.

Finally, the IGSC updated its programme of work to ensure that the NEA will continue to effectively support safety and scientific understanding of disposal programmes in member countries.

Forum on Stakeholder Confidence

The RWMC Forum on Stakeholder Confidence (FSC) summarised six years of learning by the FSC and the WPPD in *Stakeholder Involvement in Decommissioning Nuclear Facilities*, a report that reviews stakeholder concerns and best practice in addressing them. The lessons learnt can contribute *inter alia* to better foresight in siting and building new facilities.

In another activity, the FSC explored what contributes to *Fostering a Durable Relationship Between a Waste Management Facility and Its Host Community*, noting that the societal durability of an agreed solution is essential for the success of any long-term RWM project. The report shows how technical and architectural design can contribute to the quality of life of the host community, and how the process of deliberating about the facility can also bring added value. Finally, a report on *Cultural and Organisational Changes in Radioactive Waste Management Organisations* was issued based on a survey of 17 FSC members in 11 countries, case histories and theoretical input. Set in a framework which helps to understand the different environments in which waste management organisations work, the report sheds light on changes observed in mission, values, culture and structure, and identifies the triggers and main agents of change as well as ways of overcoming resistance.

To better define and gain new momentum for the next phase of its work, the Forum on Stakeholder Confidence held a brainstorming workshop in December to discuss possible new themes for investigation and to further improve its modus operandi and outreach. The workshop was also an excellent occasion to strengthen ties with FSC constituencies, for example with municipal stakeholder organisations, government task forces, other stakeholder-based study groups and academia.

Decommissioning

Following a seminar organised by the Working Party on Decommissioning and Dismantling (WPDD) in late 2006, a report on "Regulatory Arrangements during the Decommissioning of Nuclear Facilities" has been prepared to assist regulators in adapting regulation from the plant operation phase to that of decommissioning. The report, to be published in 2008, draws conclusions on emerging issues, such as an increasing emphasis on conventional industrial hazards and environmental matters and managing the changing nature of work patterns. The WPDD is also currently finalising a state-of-the art report on the regulatory release of buildings and materials, which will review international criteria for clearance and analyse national approaches to this issue. This report complements an earlier published report on releasing the sites of nuclear installations.

At its annual meeting in November, the WPDD hosted a special topical session on Human and Organisational Factors, addressing organisational arrangements, planning and contracting schemes, project management and personnel issues, skills assessment and training, safety culture and knowledge management. The meeting also included a special session on strategies, regulation and practices



UKAEA, United Kingdom

Decommissioning at Windscale, United Kingdom.

adopted in the United Kingdom in the field of decommissioning. Next steps for the WPDD include conducting a study on cost estimates and exploring the scope for more standardisation in their reporting.

The Co-operative Programme for the Exchange of Scientific and Technical Information Concerning Nuclear Installation Decommissioning Projects (CPD) expanded its basis for information exchange by including two new decommissioning projects. It also established two specialised task groups to analyse the experience gathered with the use of robotics in decommissioning and with various techniques for the decontamination and dismantling of concrete. (See page 34 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 CLAYTRAC Project, a major NEA Clay Club undertaking, has analysed data on natural tracer elements to improve understanding of transport processes and their implications for the performance of deep geological disposal systems. Preliminary results provide convincing evidence that diffusion is the dominant transport process over geological timescales for the formations studied. The project was highlighted in the opening session of a recent international conference on clays in France. A final report will be available in 2008.

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. An expert team completed a comprehensive review of the topic and confirmed that there are recent important laboratory results and field tests that reinforce empirical observations of self-sealing. A full technical report, synthesising and interpreting the conclusions in the context of geological disposal, will be prepared in 2008.

Work continued on the Thermochemical Database (TDB) Project, which moved into phase IV covering the years 2008-2012. This NEA-sponsored joint project is described on page 34.

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