

# Radioactive Waste Management

## Radioactive Waste Management Committee (RWMC)

*The RWMC is helping member countries to find long-term, sustainable solutions for radioactive waste management and is currently focusing its efforts on improving both technical and societal confidence in geological disposal. In addition to long-lived radioactive waste, materials from decommissioning are of specific concern for the RWMC.*

### Waste management policy and governance issues

Work in the area of radioactive waste has focused on the management of long-lived waste and decommissioning, with emphasis on institutional, regulatory and technical aspects. A very important conference on "Geologic Repositories: Political and Technical Progress", was held in December in Stockholm, Sweden, and hosted by the Swedish implementing organisation SKB. The NEA co-sponsored and helped organise this event, which followed the model of the "Denver conference" convened by the United States Department of Energy in 1999. Participants from implementing, regulatory and R&D institutions as well as high-level decision makers from NEA member countries and China reviewed national perspectives and addressed policy and decision making in this field.

A safety case that commands an adequate level of confidence and can usefully support decision making in the stepwise process can play a key role in demonstrating long-term safety. While the need for such a safety case is generally acknowledged, the detailed concept needs further clarification. The RWMC is preparing a short document to facilitate a common understanding of what a safety case is and to help explain the purpose and structure of a safety case to external audiences. This work as well as other RWMC experience also provides the basis for the draft of a new safety standard on geological repositories, which will be published as a joint IAEA/NEA Safety Requirements document.

To understand the very different and sometimes complex institutional arrangements set up by member countries for radioactive waste management, the RWMC Regulators' Forum compiled relevant country information and prepared a synoptic overview. The corresponding publication is due to be released in the beginning of 2004.

### International peer reviews

On request from member countries, the NEA organises peer reviews of national waste management

programmes in relation to geological disposal. In this context, a review of a comprehensive study by the Belgian implementer ONDRAF/NIRAS was delivered to the Belgian authorities. The peer review covered the research, development and demonstration activities of the Belgian programme for disposal in clay as described in the SAFIR-2 study. It was instrumental in identifying remaining uncertainties and specific needs of the R&D programme and was designed to help the Belgian government and the institutions involved in waste management to decide on the future work programme and its priorities.

In 2003, the NEA also organised an international peer review of the French "Dossier 2001 Argile", which was produced by the French National Agency for Radioactive Waste Management (Andra) to describe the research, development and demonstration activities on the disposal of high-level and long-lived waste in argillaceous formations. The study represents a milestone in the process of studies and research work leading up to support a parliamentary decision on the French waste management programme in 2006. The international team presented its views on whether the French R&D programme as described in the "Dossier 2001 Argile" was consistent with other international disposal programmes and international practices.

Another international peer review has begun on a report prepared by Nagra, the Swiss organisation for nuclear waste, presenting the safety aspects of a repository project in the Opalinus Clay in Switzerland. The NEA peer review will be used by the Swiss regulator as an input to its own review of the Nagra study. Preliminary findings have already been presented to the Swiss authorities and the final report is scheduled to be delivered in February 2004.

### Integration of sciences

Through its Integration Group for the Safety Case (IGSC) the RWMC further supported the development of geological disposal with two new projects: the EBS project, co-sponsored with the EC, and the AMIGO project.



NEA, United States

Long-term, sustainable solutions for radioactive waste management need to be found and implemented.

- The RWMC co-sponsored and helped organise a highly visible conference on geological disposal in Sweden. The conference was held as a follow-up to the 1999 "Denver conference" and took stock of recent developments in this area.

The engineered barrier systems (EBS) initiative is a series of workshops intended to improve understanding of how to achieve the integration needed for successful design, construction, testing, modelling and performance assessment of EBS's, and to clarify the role that an EBS can play in the overall safety case for a repository. A first EBS workshop was organised in Finland, in August 2003, to promote common understanding of design requirements and methodologies to develop detailed design specifications. The next workshop is planned to be held in the United States in September 2004. Future workshops will deal with process issues, the role of performance assessment, and design confirmation and demonstration.

The AMIGO project (Approaches and Methods for Integrating Geologic Information in the Safety Case) aims to understand the state of the art in the collection and integration of all types of geologic information (e.g. geophysical, hydrogeological, geochemical, structural) in performance assessment (PA) models and the overall safety case. A first workshop was held in Switzerland in June 2003 to address the interface between geosphere and site characterisation, and performance assessment. A second workshop is planned to be held in Canada in 2005.

To ensure the long-term safety of geological repositories, it is important to assess the stability of geosphere conditions throughout time and vis-à-vis external and internal perturbations. These issues were addressed by a workshop on "Stability and Buffering Capacity of the Geosphere for Long-term Isolation of Radioactive Waste" that took place in Germany in December 2003, and focused on the specific case of argillaceous media.

## Decommissioning

The detailed issues associated with decommissioning strategy selection were addressed at a workshop hosted jointly by the Spanish regulator and implementing agency. This workshop attracted a large array of specialists from 15 countries, including several mayors from municipalities with decommissioning projects. It revealed the parameters

- Under RWMC auspices important studies by Andra (France) and Nagra (Switzerland) were reviewed, representing major milestones in their respective national programmes.

- A workshop analysing national practices in selecting decommissioning strategies for obsolete nuclear

power plants was held in Tarragona, Spain.

- The Forum on Stakeholder Confidence (FSC) organised a workshop in Brussels to meet with local partnerships and learn about their interaction in the Belgian radioactive waste management programme.

considered for decommissioning strategy selection, from the regulator, implementer and stakeholder viewpoints. The RWMC also collected experience in its decommissioning groups to prepare a report on the status, approaches and challenges in decommissioning, which is meant to inform the interested public and to support specialists and policy makers in their work. Other ongoing work includes the safety case for decommissioning and the impact of regulations on the release of materials and sites on the decommissioning process.

## Stakeholder involvement

The NEA Forum on Stakeholder Confidence (FSC) published an international survey compiling national experience in *Public Information, Consultation and Involvement in Radioactive Waste Management* and held its third national workshop in Belgium. The workshop investigated "Dealing with Interests, Values and Knowledge in Managing Risk" in the Belgian context of Local Partnerships. As in previous cases, this workshop had direct interaction with local stakeholders and reviewed lessons learnt.

Modern societal demands in terms of risk governance and the widespread adoption of stepwise decision-making processes encourage a new set of behaviours and a new understanding of how regulators may best serve the public interest. The FSC therefore analysed the regulator's evolving role and image in radioactive waste management and published its findings in this area.

## Understanding the scientific basis

To secure the scientific basis of its work, the NEA continued to support the development and sharing of quality-assured databases and models – for example the Thermochemical Database, the Catalogue of Clay Characteristics, a general features, events and processes (FEP) database, and the co-operative project on sorption modelling – as well as the preparation of a reference book on the self-healing features of clays.



Energiewerke Nord GmbH, Germany

A decommissioned reactor vessel being transported to interim storage.



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