

SUMMARY AND KEY AREAS OF INTEREST
SESSION V ON DISPOSAL ISSUES
4 JULY 2007

Four of the five presentations in this session dealt with disposal issues related to specific types of waste. A further presentation presented a summary of the Cordoba Symposium on low level waste in 2004.

The management of waste containing naturally occurring radionuclides was addressed in two presentations from South Africa.

One presentation on this subject described the management of waste from the gold and uranium mining industry in South Africa. Successes in the management of tailings were described. Major challenges which still need to be addressed were identified:

- Management options for waste rock with low activity concentration (< 0.5 Bq/g) but high volumes still need to be addressed;
- The long-term institutional control over the on-surface disposal facilities represents an important issue for future consideration;
- Challenges arise with regard to the interaction with stakeholders and their preparedness to agree to options for closeout / reprocessing of tailings;
- Materials arising in small quantities but with high activity concentrations (CAT III materials above 1000 Bq/g) are currently stored only and suitable disposal options still need to be identified.

The other presentation on NORM issues presented a case study for the management of tails from the processing of mineral sands. Options for their management (blending these tails with lower level wastes or burial of these tails beneath the other wastes) were discussed and analyzed with regard to their potential to achieve compliance with regulations. The analysis concluded that clarification is needed on how to apply regulatory criteria (in particular dose constraints) and on how to identify the 'best' option.

The panel discussion on these issues reached the main conclusion that further guidance seems to be required with regard to suitable criteria for waste containing naturally occurring radionuclides and their application. The issue of long-term (basically indefinite) institutional control over such wastes disposed of at or near the surface also appears to require further discussion in order to demonstrate compliance with the fundamental principles for waste management. Challenges related to the safety demonstration for such facilities and time scales also would warrant additional discussion on the international level.

A specific issue which is relevant, for example, for the CAT III waste in South Africa, is the question whether the dilution of such wastes by disposing them together with lower level waste (e.g. in tailings impoundments) would be considered as an appropriate management option. The conclusion was reached that this could represent a justifiable management option as long as materials of the same principle origin and with the same

principle radionuclide inventory are disposed of together. Nevertheless, such management options would require a case-specific justification in the safety assessment.

An important overall conclusion reached from the discussion of NORM waste relates to the new proposed waste classification scheme. Although important differences exist between the management of waste containing artificial and naturally occurring radionuclides, the workshop concluded that NORM should be seen as part of the waste classification scheme and not be excluded from the classification.

A presentation from Australia addressed the upper end of the classification scheme, namely the delineation between high level and intermediate level waste. The current waste classification contains a quantitative delineation between HLW and ILW (2 kW/m^3). This quantitative boundary is no longer present in the new draft version of the classification.

It was stated that from this change problems arise for Australia in terms of operational and contractual difficulties to accept wastes from reprocessing back to Australia if they are not, based on the waste classification, clearly to be seen as ILW. Since also negative stakeholder reaction are foreseen, the request was made to maintain consistency of the classification in this regard and to keep the above mentioned quantitative boundary.

During the panel discussions, reasons for not including this quantitative boundary in the new classification were explained. These are mainly based on the fact that the whole rationale behind the waste classification is based on linking waste types to appropriate disposal options. Since this linkage depends on the actual facilities available or planned in a country, quantitative delineations can, if at all, only be given as rough indications because the actual distinction between waste classes depends on the safety cases for these facilities. It was further noted that there does not appear to be any profound basis for the heat generation criterion of 2 kW/m^3 . Based on this discussion, the majority of workshop participants agreed to the approach taken in the new draft classification document to not mention an explicit delineation criterion between HLW and ILW.

A presentation from France first provided an overview of radioactive waste in France and the strategy to manage these. The presentation then focussed on the management particular wastes:

- Graphite waste from Gas-Graphite reactors
- TE-Norm (ore processing, enhanced Ra-226)
- Disused Sources

Requirements and options for their management in an intermediate depth disposal facility were discussed and long-term safety issues (e.g. performance of engineered barriers) were presented as important aspects to be addressed in the safety case for such facility.

A further presentation made on the main outcomes of the Cordoba Symposium on Low Activity Radioactive Waste made it apparent that a new urgency exists in many countries to develop or extend arrangements for low activity waste management and disposal because of the ongoing or imminent decommissioning phase of their commercial nuclear plants. The subject of low activity radioactive waste management is raising several issues of both a philosophical and a technical nature, such as the question of when a

waste is to be considered radioactive from regulatory perspective, the issue of suitable management strategies for waste that is both long lived and present in large volumes and of finding suitable routes for new types of low activity waste. A particular challenge to solve these issues arises for countries with limited resources.

In the panel discussion it was agreed that several of these outcomes of the Cordoba Symposium still require to be addressed further. Nevertheless, it was noted that progress has been made in several areas since 2004. In particular, IAEA initiatives supporting countries with limited resources were mentioned. Examples for concrete projects supported by the IAEA are the mobile processing facilities and the borehole concept for the safe disposal of sources.