

## WM2012 Conference Panel Report

### PANEL SESSION 70: International Deep Repository Progress

**Co-Chairs:** Enrique Biurrun, *DBE Technology GMBH (Germany)*  
Gérald Ouzounian, *Andra (France)*

**Panel Reporter:** Brendan Breen, *NDA, (UK)*

#### **Panelists:**

1. Marc Demarche, *Deputy General Manager, ONDRAF/NIRAS (Belgium)*
2. Hans Codee, *Managing Director, COVRA (Netherlands)*
3. Mariano Molina Martin, *Head of International Relations, ENRESA (Spain)*
4. Vladislav Kroselj, *Director Agency for Radwaste Management (ARAO) (Slovenia)*
5. Irena Mele, *Head of Waste Technology Section, IAEA (Austria)*

About 100 people attended this panel session which focused on the progress of deep geological repository programs worldwide. The session opened with four panelists presenting an up-to-date position on their individual national programs and **Irena Mele** provided an overview from the IAEA perspective. This was followed by a question and answer session which included questions on partitioning and transmutation, regional waste management considerations, addressing opposition to programs and challenges to the need for very specific controls (e.g. temperature).

**Marc Demarche** explained ONDRAF/NIRAS's cradle-to-grave responsibility, Belgium's RW. He explained the history of RD&D for radioactive waste management dating back to 1974 and the selection of reference concepts for disposal in clay (Ypresian or Boom) environments at a reference depth of 200 meters. He explained that the program to develop the underground research facility (URL) at Mol commenced in 1980 and extended with a second shaft and linkage between 1997 and 2007. He described the experiment (planned duration of 10 years) in the 40m long PRACLAY gallery where containers with heaters would simulate the heat generated by HLW, noting a planned design limit of 85°C at the gallery walls. He advised that plans were in place for S-L waste disposal at Dessel. For HLW, there has not yet been an institutional decision, but in response to a publicly-consulted waste plan by ONDRAF/NIRAS, the Belgian Government has committed to a "decision in principle" during this parliament.

**Hans Codee** summarized the situation for RW management in The Netherlands. COVRA was established as a waste management organization (WMO) in 1982. Nuclear power generation is small by comparison with Belgium (10%) and orders of magnitude smaller than France. As large parts of the country are below sea level, he advised that shallow disposal (for S-L wastes) was not an option. Geological disposal was considered for both salt and clay formations, but a decision was taken in 1984 to store waste on surface for 100 years before disposal. The reasons for this delay were low volumes of waste, the need to cool the wastes, the need to raise money and a desire due to the low volumes to look for opportunities for regional co-operation on disposal. He advised on COVRA's membership of European Repository Development Group (ERDO) which aimed for sharing of programs and consideration of a regional repository. He presented an option for disposal within salt deposits under the North Sea, suggesting that several of the neighboring nations could join.

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**Mariano Molina Martin** provided some background to the Spanish energy program, advising on how Spain consisted of several autonomous regions. He advised that a fund, held by ENRESA, was established in 1985. This had led to El Cabril being developed for LLW in 1992 and later for VLLW (2007) to optimise waste volumes. ENRESA are also managing decommissioning of NPPs. Geological studies were conducted to look at potential sites, but this stopped in 1996 following a nationwide campaign of opposition which was supported by regional authorities. He advised that agreement had however, been gained for centralized temporary storage (60-year life, 100-year design), enhancing safety, security and providing economic advantage, noting that the store acceptance was enhanced by combining it with a research and development facility.

**Vladislav Kroselj** presented some background to Slovenia's program with a single power plant, a research reactor, centralized interim store and uranium mine (closed). He advised that the potential for new NPP is being considered but noted that a final solution for SF and HLW is not expected before 2060. He advised that he expected a LLW repository to be operational within this decade. The NPP and the resultant waste are shared under a bilateral agreement with Croatia who share the power generation with Slovenia on a 50:50 basis. He advised that Slovenia, as a small producer, is considering regional solutions and is also a member of ERDO working group.

**Irena Mele** provided a more global perspective noting the encouraging progress for some European programs (Finland, Sweden & France) but that progress in member states was slow with 25 countries having L/ILW repositories, but there were still no facilities for SF or HLW disposal. She noted that in many countries there were still no clear policies and strategies for RW disposal and that many newcomers placed emphasis on NPP construction without consideration for SF and waste management needs. She noted that many newcomer countries required adequate regulatory frameworks, clear policies and strategies, necessary infrastructure and adequate funding for geological disposal urging that the burden is not left for someone else. She encouraged co-operation and the potential for some sharing of facilities, technology and resources. **Irena** explained that IAEA can assist in many ways, highlighting 5 RWM networks that were available addressing training, demonstration, comparison of approaches and costs. She placed emphasis on creating a new generation to continue our work beyond the next 15 years. She also advised that IAEA has established a CONNECT network platform of c. 1000 professionals to revolutionize training and engagement of member states.

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### Q&A

In response to a question on whether partitioning and transmutation was an option in the Belgian program, **Marc Demarche** replied that it provided some potential for optimization for fuel usage, but in the end there would always be some LL isotopes requiring disposal.

**Mariano Molina Martin** was asked how he thought they might address opposition to a programme when specific sites were proposed. He replied that he thought that the approach applied in the UK program was a good example and he supported steps such as: addressing options; taking account of public opinion from the outset; and not just relying on legislation.

**Hans Codee** was asked what legal framework would apply to his suggestions for a regional repository and who would be responsible for the safety case. He replied that this responsibility could be shared and that in his opinion, national borders could change in the future. When challenged about the technical difficulties of an offshore regional repository, **Hans Codee** replied that sometimes technical difficulties can be overcome more easily than winning public acceptance. Hans Codee also advised that the program should not get too far ahead and should draw on the experience in programs such as Finland, Sweden and France.

**Marc Demarche** was asked why the 85°C limit was applied. He responded that this had been set to avoid the complexity of resolving two-phase flow in addressing the safety case. In response to a challenge on setting such limits, **Gérald Ouzounian** added that we cannot communicate confidence if we have doubts ourselves.

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