

IAEA CRP on “Behaviour of Cementitious Materials in Multipurpose Packaging for Transportation, Long Term Storage and Disposal”.

Bucharest-Cheile Gradishteii, Romania, 24-28.11.2008

The Second Research Coordination Meeting on IAEA CRP “Behaviour of Cementitious Materials in Multipurpose Packaging for Transportation, Long Term Storage and Disposal” was held on 24-28 November 2008 in Romania (Cheile Gradistei, 24-27.11.2008 and Bucharest, 28.11.2008). The venue for first four days was in the Cheile Gradistei, which is a small village in Transylvanian Carpathian Mountings. The meeting was actually held in the near vicinity of the famous but in reality mythological “Dracula Castle” which in reality appears to be the Bran Castle of the Quinn Marie of Romania.



Cheile Gradistei in Carpathian Mountings



A winter view of Bran Castle courtyard

The Meeting was hosted by the National Institute for Physics and Nuclear Engineering "Horia Hulubei" (IFIN-HH). On 28 November 2008 the hosts organised a Technical visit to the active facilities of IFIN-HH near Bucharest including the research reactor under decommissioning and active research laboratories.

25 researchers from 21 Member States presented the results of research and practices on use of cementitious materials. The working programme of Second Research Coordination Meeting included participants’ presentations followed by extensive discussions (Table I).

Table I. Member states, organisations involved, research topics and representative researchers of IAEA CRP on Cementitious Materials.

| MS, Organisation | Research topic presented | Researcher |
|-----------------------------|---|-------------------|
| Australia, ANSTO | Water Transport Through Cement-based Repository Materials and Sorptivity Processes – Preliminary Studies Using Neutron Imaging | Peter McGlenn |
| Belgium, SCK/CEN | Behaviour of cementitious materials and interactions with host environment in radioactive waste disposal | Evelien Martens |
| Brazil, IPEN- CNEN/SP | Assessment of the durability of cementitious materials in repository environment | Roberto Vicente |

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| China, NUDT | The immobilisation of radioactively contaminated soil in cementitious materials | Shuxin Bai, Shengliang Yang |
| China, INNET | Cementation of waste resins by calcium sulfoaluminate cement | Junfeng Li |
| Czech Republic, NRI Rez | Development of waste matrices for immobilization of problematic wastes from Czech nuclear power plants | Antonin Vokal |
| Egypt, AEAE | Evaluation of the Use of Synthetic Zeolite as a Backfill Material in Radioactive Waste Disposal Facility | Ahmed El- Kamash |
| France, CEA | Potential of calcium sulfoaluminate cements to immobilize ZnCl₂-containing wastes | Celine Cau Dit Coumes |
| India, BARC | Characterization, improvement and long term evaluation of cementitious waste products – an Indian scenario | R.G. Yeotikar |
| Korea, KHNP/NETEC | Long term behaviour of cementitious materials in the Korean repository environment | Joo Wan Park |
| Romania, NIPNE | Long term behaviour evaluation of cement conditioning matrices used for management of radioactive wastes at IFIN-HH | Felicia Dragolici |
| Russia, VNINM | Cementation of certain types of liquid radioactive waste of radiochemical plant | Leonid Soukhanov |
| Russia, SIA RADON | Cementitious composite for immobilisation of radioactive waste into final waste form | Andrei Varlakov Olga Batyukhnova |
| Serbia, Vinca INS | Behaviours of cementitious materials in long term storage and disposal | Ilija Plecas |
| Slovakia, AllDeco | Behaviour of aluminosilicate inorganic matrix SIAL[®] during and after solidification of radioactive sludge and radioactive spent resins and their mixtures | Milan Breza |
| Slovenia, ARAO | Assessment and measurements of degradation processes in the engineered barriers of LILW repository | Aljoša Šajna |
| South Africa, NECSA | Behaviour of Cementitious Materials in Multipurpose Packaging for Transportation, Long Term Storage and Disposal | Willie Meyer |
| Sweden, SKB | Cement waste matrix evaluation and modelling of the long-term stability of cementitious waste matrices. Thermodynamic modelling | Borje Torstenfeld, Lisa Almkvist |
| Switzerland, PSI | Long-term mechanical stability and leaching behaviour of a solidified radioactive sludge | Alexander Wallisch |
| Ukraine, IEG | Assessment of the Biodegradability of Containers for Low- and Intermediate-Level Nuclear Waste | Boris Zlobenko |
| UK, Aberdeen University | Cements in Radioactive Waste Disposal | Fredrik Glasser |

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| UK, Sheffield University | Acoustic emission monitoring of cementitious wasteforms | Michael Ojovan |
| USA NRC | Cementitious Barriers Partnership DOE Project Overview | Christine Langton |
| Finland, Fortum | Cementitious materials in handling of radioactive waste - Overview of activities in Fortum/Finland | Merkka Ek |

The presentations of country projects have shown an excellent progress in practically all topics covered by CRP researchers. It was agreed that the presentations done will be displayed on the IAEA Web-site (http://www.iaea.org/OurWork/ST/NE/NEFW/wts_crp_cement.html).



The 2nd RCM led by IAEA Unit Leader Z. Drace



Prof F. Glasser gives an overview lecture on cementitious systems.

The CRP final report to be prepared soon after the third CRP Meeting will be subsequently used as a draft technical document for publication (IAEA TECDOC). The final report will consist of an introductory overview on CRP and individual detailed research reports. While the individual reports will be focused on individual country projects the introductory part will give an overview of CRP and generalise the overall status of research and practices on cementitious materials and related issues. The scientific secretary suggested to group researcher activities in four generic topics for the final IAEA report. The generic topics could be: (1) Cementitious systems; (2) Novel materials and technologies; (3) Testing and WAC; and (4) Modelling long term behaviour. These should combine all activities carried out by CRP participants into four generic streams which will be easier to analyse and generalise. The researchers will be contacted in advance to think on generalising parts and information to be used from their project reports for the introductory part of overall CRP report.

We are most grateful for the enjoyable week in Romania to Felicia Dragolici and her hospitable colleagues.

Z. Drace and M. Ojovan (Bucharest, Vienna, Sheffield).