

# SCIENTIFIC BASIS

## *for nuclear waste management*

The Sixth International Symposium on the Scientific Basis for Nuclear Waste Management brought together a large group of scientists, engineers, and representatives from Federal agencies to discuss research and objectives of virtually all aspects of nuclear waste programs in the U.S. and abroad. One hundred six presentations were divided into 54 oral and 52 poster contributions, which were delivered in eleven sessions (eight oral and three posters). All were informative, stimulating and well received.

Sixteen of the oral presentations were invited. A special Monday evening session on views of radwaste for several nations was held, with A.E. Ringwood of Australia, W.S. Fyfe of Canada, Torbjorn Westermark of Sweden and C.J. Northrup of the USA as panelists and Rustum Roy, USA, as moderator. The session was lively and informal.

The meeting proper was opened with the invited paper "The Scientific Basis for Long Term Prediction of Waste Form Performance Under Repository Conditions," by John Mendel of Battelle Pacific Northwest Laboratories, in which he carefully discussed and evaluated on-going research on the interaction of waste forms within the entire containment system. This was followed by a detailed look at Synroc, other ceramic waste forms, and a number of thorough papers on leaching studies, especially of glass. B.C. Bunker's presentation on the role of colloids in leaching studies was especially valuable here.

W.S. Fyfe opened Tuesday's schedule with an informative invited paper on the importance of geomedia as the ultimate waste barriers, and the need to more fully characterize these actual rocks in repositories, as well as to more fully investigate rocks and minerals important elsewhere in the waste containment system. Other papers on geologic topics followed, with S.J. Lambert's presentation on

the documentation of the integrity of the WIPP site rocks especially valuable. Overviews on the various nuclear waste forms, and on different governmental policies on radwaste, were presented by John Kircher (ONWI, USA), Annie Sugier (CEA, France) and H.J. Richards (Atomic Energy Commission, UK).

Poster sessions, held on Tuesday and Wednesday afternoons, allowed detailed examination of research papers in the areas of geologic topics, modelling, low level and transuranic wastes, engineering processes, high level waste form properties and processes, leaching studies and radiation effects. The poster sessions, held in a large room in an annex to the meeting hotel, were extremely informative and well received, in part because participants had ample opportunity to discuss research interests with each other at length.

On Wednesday, the Oak Ridge hydrofracture technique was discussed by H.O. Weeren (ORNL). D.R. McKenzie (BNL) reviewed alternate TRU technologies, and W.E. Weber (BPNL) and others discussed radiation effects on waste forms. Other papers on these topics and on related matters were presented during the morning session. In the afternoon session, new and often innovative modelling presentations were given by several investigators from Sandia National Laboratories (Erickson, Cranwell, Siegel and their co-workers) and from Lawrence Berkeley Laboratories (C.F. Chang).

The Thursday sessions were devoted to canisters and engineered backfill, led off by a stimulating paper on canisters by N.J. Magnani of Sandia. The impressive advances in our understanding of canister performance in a radwaste repository were obvious from the presentations of Ruppen (SNL), Mirschinka (West Germany) and South (University of Arizona). The "Thermal Conductivity of Waste Forms and Geologic Media" was given in the invited paper by

R.O. Pohl (Cornell) and some excellent papers on engineered backfill were given by Moss (SNL), Wood (BPNL), Nowak (SNL), Carnahan (LBL) and their co-workers.

For the second straight year attendance remained at about two hundred for the symposium, down from the peak several hundred participants from 1978 to 1980. Across the board, the technical content of the papers was impressive, and provided ample evidence of the conscientious theoretical, experimental and applied expertise of our participants. Most rewarding was the feeling that significant accomplishments in radwaste research have been realized in a short time, and the realization that the world community is coming to a much better understanding of how to deal responsibly with radwaste.

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