

WISMUT 2000 Conference Brings East and West Together

The United States and Germany have enjoyed 10 years of technology exchange related to the cleanup of uranium mill tailings. Last July, representatives from the U.S. Department of Energy (DOE) Headquarters Office and the DOE Grand Junction Office (GJO) further enhanced their relations at the WISMUT 2000 international conference held in the Federal Republic of Germany.

WISMUT is the German government-owned environmental remediation firm. Since the inception of the WISMUT cleanup in Germany, there has been a strong cooperative tie between the Uranium Mill Tailings Remedial Action (UMTRA) Project at DOE and the German uranium mining and mill cleanup. This cooperation has broadened to include Canada, Australia, South Africa, China, and the countries of the former Soviet Union, among others. Although the United States, Germany, and Canada are the three leaders in mill tailings cleanup, representatives were in attendance from almost every country that is addressing mill tailings remediation. "This conference brought Eastern and Western thinking together," said Donald Metzler, DOE-GJO Project Manager of the UMTRA Ground Water Project.

Dr. Ralph Lightner, Director of the DOE Headquarters Office of River Protection; Donna Bergman-Tabbert, DOE-GJO Manager; and Metzler represented the United States at the conference. They presented summary reports on the results of the UMTRA Surface Project, disposal cell cover system designs at UMTRA sites, and concepts and results of the UMTRA Ground Water Project, respectively.

The focus of the conference was on the international efforts to remediate environmental damage resulting from the mining and milling of uranium and avoid future potential health risks. "The conference provided an opportunity for interaction with scientists and engineers who are working on the worldwide problem of the remediation of uranium mining and milling wastes," said Lightner. The conference was also intended to show the progress that has been made in cleaning up the extensive environmental problems left in Germany as a result of the East German role in providing uranium for use in the former Soviet Union weapons program.

Lightner discussed lessons learned from the completion of the UMTRA Surface Project. Of paramount interest to participants was the idea of establishing risk-based standards. Lightner shared with the audience data that showed the correlation between the cost of performing the UMTRA cleanup versus the theoretical number of lives saved. The average cost of avoiding a potential cancer fatality was \$1.1 million. He said this expenditure approximates the experience of other such projects, which suggests that the UMTRA cleanup was, overall, a success for human health and the environment. "The numbers also tell us that at about half the sites, large sums were spent to meet the prescribed requirements, but that very little risk was avoided," said Lightner. "If we had established a risk-based approach, many sites would probably not have been remediated." He did note, however, that many factors other than risk existed that may have prompted action at some of these "uneconomic" sites.





Waste rock piles, such as this pile near Schlema, Germany, are candidates for remediation to prevent potential hazards to humans and the environment.

Bergman-Tabbert presented information on the evolution of mill tailings disposal cell covers. “The early designs focused on radon attenuation and longevity standards,” said Bergman-Tabbert. “With the development of groundwater quality standards and the awareness of ecological factors, later designs consisted of multiple layers with different types of soil, rock, and vegetation,” she said. Long-term stewardship is becoming a bigger issue to other countries. “Discoveries made in the long-term custody of closed disposal cells will hopefully lead to improved cover design guidance for the next generation of covers and be of value to the UMTRA Ground Water Project remediation activities,” Bergman-Tabbert said.

Metzler’s paper described the effective use of natural flushing (natural attenuation) over 100 years at UMTRA sites to reduce groundwater remediation costs. “The Germans are much more interested in groundwater today than they were 10 years ago,” said Metzler. “They used to be skeptical of natural flushing, but now they are finding it difficult to afford the costly pump-and-treat methods of active remediation,” he said. The UMTRA Ground Water Project has applied a risk-based model to groundwater cleanup similar to what Lightner alluded to. This means that before prescriptive standards are implemented, cleanup through natural flushing must not be possible and sufficient risk must be identified to warrant the expenditure of remediation.

Many benefits have resulted from the continued and expanded exchange of information and technology. “Sharing our lessons learned and continuing our dialogues in the area of contaminated groundwater and long-term surveillance are contributing efficiencies and innovative thinking to all of the participants,” said Lightner.❖