

The Role of Performance Assessment in the Development of Geologic Repository Sites in the US

Margaret S.Y. Chu
Sandia National Laboratories
Albuquerque, New Mexico

There are two deep geologic repositories in the U.S. for the disposal of nuclear waste: the Yucca Mountain site for high-level waste and the Waste Isolation Pilot Plant (WIPP) for transuranic waste. Both programs have been developed under stringent regulatory framework that required the demonstration of long-term safety from the disposal of the nuclear waste. In the development of the two repositories, performance assessment played instrumental roles throughout the lifecycle of the programs, from initial site selection, site characterization, scientific studies, engineering designs, to the final licensing and performance confirmation.

In this paper, the utilization of performance assessment are presented and discussed. Examples on how performance assessment was used at WIPP include:

- How PA was used to help in data collection during site characterization phase.
- How PA was used to prioritize its scientific and engineering research activities.
- The iterative nature of the usage of PA.
- How sensitivity and uncertainty analysis in PA was used as objective evidence of the decision-making process of issues with an impact on safety at the WIPP, a critical topic for the general public and the regulatory agencies.