

## **The use of geologic models for groundwater modeling in radioactive waste disposal programs**

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In most countries, the permitting process for radioactive waste disposal generally requires performance assessment (PA) studies that attempt to predict the radioactivity dose to future generations. For geologic disposal programs, PA studies expend great effort on subsurface site characterization and incorporating the resulting conceptual models and data into groundwater models. There are good examples of directly using the geologic model in constructing the groundwater models, such as the inclusion of known structures and hydrostratigraphic units. The geologic model also is used indirectly to infer hydraulic properties and their spatial distributions, to confirm flow patterns, and to suggest processes that may affect the repository in the future. Uncertainties in the geologic model are handled both formally by stochastic simulation and informally by alternative modeling scenarios. The PA studies of several countries illustrate that the available computational resources, model code quality control, and organizational constraints commonly limit use of geologic models within PA groundwater studies.