

ANALYTICAL METHODOLOGY FOR ESTIMATING THE ENVIRONMENTAL IMPACTS OF THE TRANSPORTATION OF NUCLEAR WASTE*

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The U. S. Department of Energy Offices of Defense Programs and Civilian Radioactive Waste Management are in the process of locating fixed facilities for the processing and/or storage of radioactive wastes. To support the Environmental Assessments (EA) for these programs, Sandia National Laboratories, with the assistance of Battelle Pacific Northwest Laboratory and Oak Ridge National Laboratory has developed and utilized a system of computerized models and databases for the estimation of transportation-related costs and risks. This presentation outlines the major components of the system and the interactions between the components.

The interactions of these models (as applied to the user-defined input assumptions for the system to be analyzed) allow national transportation costs and risks to be compared for the scenarios of interest. A recent analysis performed for the first U.S. repository, in which this modeling structure was used, is described. Summary output tables for occupational and nonoccupational risks are presented for normal and accident cases.

In order to perform cost and risk analyses of the impacts of transportation for a future nuclear-waste-management system, a number of assumptions must be made regarding the physical, operational, and geographical characteristics of the system to be analyzed. For this reason, many of the analyses performed to provide the systems simulations required by the National Environmental Policy Act or the Nuclear Waste Policy Act are comparative in nature during the EA stage. An increasing level of specificity will be required for the final Environmental Impact Statement as well as for actual budgeting and operational forecasting.

These analyses have been performed to obtain comparative costs and risks as opposed to absolute or anticipated costs and risks. Future development and refinement of the models and their interactions will focus on the calculation of the regional and route-specific costs and risks of transportation. Calculation of the impacts of transportation on these subareas is required for the preparation of Environmental Impact Statement(s) for facility siting.

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