o Hanford Defense Waste Studies

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PNL is assisting Rockwell Hanford Operations to prepare a programmatic environmental impact statement for the management of Hanford defense nuclear waste. The Ecological Sciences Department is leading the task of calculation of public radiation doses from a large matrix of potential routine and accidental releases of radionuclides to the environment. The FY 1980 work was organized into two phases—high-level waste and low-level waste. These phases were originally scheduled as input to two separate impact statements that have since been combined into one.

High-Level Waste Dose Assessment Task

Public radiation doses were calculated for a number of postulated radio-nuclide-release scenarios. These scenarios included transport and mining accidents at a generic site and long-term radionuclide releases at the Hanford site. Calculations for two types of waste media were performed for a Hanford deep geological repository that had been subjected to faulting and flooding. Calculations were also performed for a climate-change scenario for high-level waste left in tanks on site. A special scenario for handling of strontium and cesium capsules was investigated. A section of a topical report on the release scenario analysis was prepared.

Low-Level Waste Dose Assessment Task

Because there are a great number of sites contaminated with low-level wastes on the Hanford site, a general method was developed to analyze them. Unit-release dose factors were prepared for most of the release scenarios. These included both routine and accidental releases from the 100, 200, and 300 Areas (ground-level and elevated) for the present and for times 100, 1000, and 10,000 years in the future. Other unit dose factors were prepared for accidental, routine, and long-term release of radionuclides to the Columbia River. Individual sets of dose factors were prepared for calculating doses resulting from contaminated well water and contaminated soil. A description of the dose-calculation method was prepared, including a discussion of the relative importance of each type of environmental exposure pathway for each radionuclide-release scenario.