

THE NECESSITY OF GEOLOGIC DISPOSAL

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Nuclear wastes are the radioactive byproducts of nuclear power generation, nuclear weapons production, and other uses of nuclear material. Experts from around the world agree that deep geologic disposal of nuclear waste in a mined repository is the most environmentally sound means of removing these potential sources of radiation from interaction with the biosphere. Of the 360 millirem of background radiation received annually by the average American, from both natural and man-made sources, less than 1 millirem results from the nuclear fuel cycle.

Spent nuclear fuel and high-level radioactive waste, destined for geologic disposal, are located at 126 sites in 39 states. The proposed repository site at Yucca Mountain, Nevada, is far more isolated from the general population than any sites where these radioactive materials are presently located. Only solid forms of high-level wastes will be transported for disposal in a geologic repository. For more than 50 years, nuclear materials have been safely transported in North America, Europe, and Asia, without a single significant radiation release.

Since the 1950s, select panels from the National Academy of Sciences-National Research Council and interagency advisory groups, and international experts selected by the OECD/Nuclear Energy Agency, have examined the environmental, ethical, and intergenerational aspects of nuclear waste disposal, plus alternatives to geologic disposal. All have concluded that deep geologic disposal in a mined repository is clearly the preferred option. The concept of deep geologic disposal is based on the analogy to ore deposits, which are formed deep within the Earth's crust, commonly remain isolated from the biosphere for millions to billions of years, and are, generally, extremely difficult to detect.

Before selecting the unsaturated tuffs at Yucca Mountain, DOE evaluated salt formations, basalts, and both crystalline and sedimentary rocks. Other nations generating nuclear power also plan to use deep geologic disposal, and are evaluating sites in granites, argillaceous rocks, and salt formations.