

ICRP—International Commission on Radiological Protection
 KASAM—Swedish National Council for Nuclear Waste
 LLW—low-level radioactive waste
 MCL—maximum contaminant level
 MTHM—metric tons of heavy metal
 NAPA—National Academy of Public Administration
 NAS—National Academy of Sciences
 NEA—Nuclear Energy Agency
 NEI—Nuclear Energy Institute
 NRC—U.S. Nuclear Regulatory Commission
 NRDC—Natural Resources Defense Council
 NTS—Nevada Test Site
 NTTAA—National Technology Transfer and Advancement Act
 NWPA—Nuclear Waste Policy Act of 1982
 NWPAA—Nuclear Waste Policy Amendments Act of 1987
 OECD—Organization for Economic Cooperation and Development
 OMB—Office of Management and Budget
 RMEI—reasonably maximally exposed individual
 SSI—Swedish Radiation Protection Authority
 SNF—spent nuclear fuel
 SR—Site recommendation
 TRU—transuranic
 TSPA—Total System Performance Assessment
 UK—United Kingdom
 UMRA—Unfunded Mandates Reform Act of 1995
 U.S.C.—United States Code
 WIPP LWA—Waste Isolation Pilot Plant Land Withdrawal Act of 1992

Outline of Today's Action

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I. What Is the History of Today's Action?

Radioactive wastes result from the use of nuclear fuel and other radioactive materials. Today, we are proposing to revise certain standards pertaining to spent nuclear fuel (SNF), high-level radioactive waste (HLW), and other radioactive waste (we refer to these items collectively as "radioactive materials" or "waste") that may be stored or disposed of in the Yucca Mountain repository. (When we discuss storage or disposal in this document in reference to Yucca Mountain, we note that no decision has been made regarding the acceptability of Yucca Mountain for storage or disposal as of the date of this publication. To save space and to avoid excessive repetition, we will not describe Yucca Mountain as a "potential" repository; however, we intend this meaning to apply.) Pursuant to Section 801(a) of the Energy Policy Act of 1992 (EnPA, Pub. L. 102-486), these standards apply only to facilities at Yucca Mountain.

Once nuclear reactions have consumed a certain percentage of the uranium or other fissionable material in nuclear reactor fuel, the fuel no longer is useful for its intended purpose. It then is known as "spent" nuclear fuel (SNF). It is possible to recover specific radionuclides from SNF through "reprocessing," which is a process that dissolves the SNF, thus separating the radionuclides from one another. Radionuclides not recovered through reprocessing become part of the acidic liquid wastes that the Department of Energy (DOE) plans to convert into various types of solid materials. High-level waste (HLW) is the highly radioactive liquid or solid wastes that result from reprocessing SNF. The SNF that does not undergo reprocessing prior to disposal remains inside the fuel assembly and becomes the final waste form.

In the U.S., SNF and HLW have been produced since the 1940s, mainly as a result of commercial power production and defense activities. Since the inception of the nuclear age, the proper disposal of these wastes has been the responsibility of the Federal government. The Nuclear Waste Policy Act of 1982 (NWPA, 42 U.S.C. Chapter 108) formalizes the current Federal