



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

JUN 06 1979

(NRC PUBLIC DOCUMENT ROOM)

Mr. Hugh G. Nolan :  
1003 Park Avenue  
Spring Lake Heights, NJ 07762

Dear Mr. Nolan:

We have received your letter expressing views on nuclear power, the Three Mile Island nuclear power plant accident, and the disposal of nuclear waste. We appreciate your concerns and assure you that every effort is being made to ensure the continued protection of public health and safety, not only at Three Mile Island, but at all nuclear plant sites. A complete investigation of the Three Mile Island accident is being conducted and the results will be given wide dissemination. Enclosed for your consideration is a discussion of NRC's role in the solution of the nuclear waste problem.

Thank you again for your expression of interest.

Sincerely,

A handwritten signature in dark ink, appearing to read "H.R. Denton".

Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

Enclosure:  
As stated

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ENCLOSURE

DISPOSAL OF RADIOACTIVE WASTE

Radioactive materials which result from the nuclear fuel cycle can be separated into two main categories:

1. Effluents - those materials discharged to the environment as gaseous or liquid effluents (the radioactive content of these effluents must fall within established NRC and EPA limits and must be as low as reasonably achievable) - and,
2. Wastes - those materials which are of sufficient potential radiological hazard that they require special care.

Radioactive wastes (the second category) are separated into two broad classifications: "high-level wastes" and "other than high-level wastes." High-level wastes are radioactive wastes produced in the first solvent extraction cycle of fuel reprocessing operations and spent fuel elements should they be discarded. They are highly radioactive and require shielding and remote handling. NRC regulations (Appendix F of 10 CFR Part 50) require that the inventory of high-level liquid waste at a fuel reprocessing plant be limited to that produced in the prior five years and that it be converted to solid form and transferred to a federal repository within ten years of its separation from the irradiated fuel.

With the reorganization of the Atomic Energy Commission into the Energy Research and Development Administration (now the Department of Energy [DOE]) and the Nuclear Regulatory Commission (NRC), NRC was given regulatory authority over storage and disposal of all commercially generated wastes and those DOE generated high-level radioactive wastes which are subject to long-term storage and which are not used for, or as part of, research and development activities. To implement this authority and to provide prompt guidance to DOE, the industry and the public, the NRC is new or revised regulatory standards and guidelines for such storage and disposal. The regulations will require conformance with a fixed set of minimum acceptable performance standards (technical, social and environmental) for waste management activities while providing for flexibility in technological approach. These standards and guidelines will be designed to assure public health and safety and protection of the environment. Facilities for storage and/or disposal of high-level wastes licensed by NRC will be designed and operated in accordance with NRC standards.

DOE was pursuing a program designed to accommodate the anticipated need for disposal of high-level waste or spent fuel that is expected to accumulate as the nuclear power industry continues to grow. This program included, among other things, plans to develop several operations for disposal of high-level wastes in stable geological formations. The purpose of these facilities would be to demonstrate the acceptability of a specific geological formation for permanent disposal of high-level and

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transuranic wastes. These facilities will be treated as permanent disposal repositories. DOE is now awaiting a Presidential direction of policy and plans which will occur following completion of studies recommended by an interagency task force formed by the President.

There are several methods of high-level waste disposal which are technologically feasible. DOE is expected to continue to investigate options to determine whether superior disposal alternatives can be developed. For specific information concerning plans and programs, contact the Director, Division of Waste Management, Department of Energy, Washington, D.C. 20545.

In parallel with DOE's research and development activities, NRC is developing performance criteria for solidified high-level wastes. These criteria are being developed based on a systems analysis model which considers the normal and potential accident environments to which high-level solid matrices could be exposed during interim storage, transportation, handling, emplacement and post-emplacement. Repository site selection criteria are being developed and will encompass a broad spectrum of concerns including earth science, geographic, demographic and socioeconomic factors. A study to determine the design and operating requirements for high-level waste repositories will provide a basis for the development of standards and staff review methodologies.

Radioactive wastes other than high-level are buried in near-surface shallow trenches, usually in the containers in which they are shipped. There is no intent to recover the wastes once they are buried. There are presently six commercial facilities in the United States licensed to bury low-level radioactive wastes. They are located in West Valley, New York; Morehead, Kentucky; Sheffield, Illinois; Beatty, Nevada; Hanford, Washington; and Barnwell, South Carolina. At the present time, only the latter three sites are receiving waste for burial. The West Valley and Maxey Flats sites are closed. The Sheffield site is filled to its licensed capacity. A contested application for expansion of the Sheffield site is currently under review. Burial of transuranium nuclides is limited at all but one of the sites.

Five of the six commercial burial grounds are located in Agreement States and are regulated by the states. However, at two sites, the NRC licenses special nuclear material because the quantities authorized for possession by the commercial operator exceed those which the Agreement States may license under their agreements. The Sheffield, Illinois site, located in a nonagreement state, is regulated by the NRC although the state licenses and controls activities at the site concerning naturally occurring and accelerator-produced radioisotopes which are not subject to NRC control. The sites are all commercially operated. The states have assumed responsibility for long-term care of the sites.

Since the formation of NRC's waste management program in mid-1975, efforts have been underway to identify regulatory needs for low-level waste management and to perform technical studies to support those regulations. This effort was accelerated in mid-1977 with the creation of a Low-Level Waste Branch (LLWB) within the Office of Nuclear Material Safety and Safeguards (NMSS) and increased resources throughout NRC. The LLWB was assigned responsibility for technical analyses to prepare a regulatory base, review license applications and coordination of NRC's technical and policy efforts for low-level wastes. A preliminary low-level waste management program plan, NUREG-0240, was issued in October 1977.

The NRC staff has continued to refine our concept of the low-level waste program. In addition, a number of supporting technical studies have been initiated and preliminary results are being considered in program planning. Additional studies have been defined to support our regulation development efforts and these have been initiated or will be in the near future.

The principal objectives of the low-level waste (LLW) program are to develop a framework of criteria and regulations for long-term management of commercial low-level waste disposal sites and to provide the tools for applicants to prepare license applications and for NRC to make uniform, timely licensing decisions.