

THE NRC PERSPECTIVE ON
LOW-LEVEL RADIOACTIVE WASTE DISPOSAL

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ABSTRACT

This presentation addresses the Nuclear Regulatory Commission's (NRC) actions in response to the Low-Level Radioactive Waste Policy Amendments Act (the Act) and NRC's assistance to States and Compacts working to discharge their responsibilities under that Act. Three of NRC's accomplishments which respond explicitly to direction in the Act are highlighted. These are: development of the capability of expedited handling of petitions addressing wastes below regulatory concern (BRC); development of capability to review and process an application within fifteen months; and development of guidance on alternatives to shallow land burial. Certain NRC efforts concerning special topics related to the Act as well as NRC efforts to assist States and Compacts are summarized.

INTRODUCTION

It is a pleasure to be here today to present NRC's perspective on the management and disposal of Low-Level Radioactive Waste (LLW). My remarks today address NRC actions in response to the Low-Level Radioactive Waste Policy Amendments Act (the Act) and NRC's assistance to States and Compacts working to discharge their responsibilities under that Act.

Low-Level Radioactive Waste is generated by commercial power reactors, fuel cycle facilities, private industry, hospitals, and research laboratories in all fifty states. In 1984, more than 22,000 licensees generated over 2,500,000 cubic feet of LLW. The NRC staff considers that proper implementation of the Act will promote safe disposal of such wastes and thereby increase protection of public health and safety.

As you know, Congress in passing the Act established specific schedules for the States, NRC, and DOE. Both incentives and penalties were included to encourage progress toward the siting and development of new disposal facilities. The States and Compacts were given the lead for the Act's success, including responsibility for site selection and development. We therefore intend to assist the States and Compacts to the extent practical to help them discharge their responsibilities.

The NRC is fully committed to meeting its obligations under the Act. We have implemented our portion of the Act on schedule so far, and we anticipate continuing to do so. To focus our efforts and to ensure management attention to our progress, the NRC is establishing the Division of Low-Level Waste Management and Decommissioning in the Office of Nuclear Material Safety and Safeguards. This new division will be responsible for discharging NRC responsibilities under the Act, for providing technical assistance to developing States and Compacts, and for ensuring the safe performance of facilities under NRC jurisdiction. This Division will be fully established by mid-April this year and Dr. Malcolm Knapp will be the Division Director.

NRC COMPLIANCE WITH THE ACT

Congress gave NRC explicit direction in a variety of areas. Today we will highlight three of these areas, and also discuss some special topics related to the Act which the NRC is addressing.

Three accomplishments for NRC called for explicitly by the Act are: (1) development of the capability of expedited handling of petitions addressing wastes below regulatory concern (BRC); (2) development of capability to review and process an application within fifteen months; and (3) development of guidance on alternatives to shallow land burial.

First we would like to address wastes below regulatory concern. The NRC published a Commission Policy Statement and Staff Implementation Plan for timely handling of BRC petitions in August 1986 (51 FR 30839). These documents established criteria and procedures for promptly handling petitions concerning such wastes. Such petitions are expected to propose a combination of treatment and disposal practices that would permit waste streams to be considered below regulatory concern, rather than to identify BRC waste streams based on their particular radionuclide concentrations alone. The Policy Statement and Staff Implementation Plan identify the information and analysis that petitioners need to provide for the NRC staff to move promptly to a BRC rulemaking. The NRC anticipates and strongly encourages groups such as the Electric Power Research Institute, the Atomic Industrial Forum, the Society of Nuclear Medicine, and the Association of American Universities to help generators pool resources to provide information addressing waste streams of national or generic interest.

The staff enhanced its capability to process such petitions by modifying and publishing a microcomputer code which both the staff and petitioners can use. This code can predict the doses resulting from the treatment and disposal practices that would permit a waste stream to be considered below regulatory concern (NUREG/CR-3585). In December 1986, the NRC published an Advanced Notice of Proposed Rulemaking (51 FR 43367) which seeks comment on ways to declare waste streams to be below regulatory concern, with particular emphasis on the above concept of arriving at such a finding based on a particular treatment and disposal method.

A second important activity for NRC is the licensing review of low-level waste disposal facilities. Specifically, the NRC must be able to complete its environmental and technical review of license applications within 15 months of submittal. In addition, the NRC must consolidate all required reviews and public hearings to the extent practical. In January, the NRC issued two guidance documents that are geared to the staff's reviewing license applications on that schedule. The Standard Format and Content Guide (SF&C) (NUREG-1199) provides explicit direction as to the kinds of information and analyses that the NRC staff considers necessary to support an acceptable license application. The Standard Review Plan (SRP) (NUREG-1200) closely corresponds to the SF&C and establishes detailed criteria and procedures for reviewing license applications. The SRP helps ensure a thorough and consistent NRC review of applications and permits potential licensees to prepare an application with full knowledge of how it will be reviewed.

Although these NUREG documents have been prepared in direct support of the NRC's licensing review program, they should be very useful to State and Compact agencies faced with similar situations. The SF&C should greatly ease a State's decisions on what information and analyses need to be included in a license application to the State. The SRP is a sound basis for establishing the skills and staffing levels that State regulatory agencies should have available to conduct the required evaluations.

Third, the Act requires NRC to develop guidance on alternatives to conventional shallow land burial. The NRC staff has been examining alternative methods of disposal for several years and has identified five concepts which constitute potential engineered enhancements. These are: augured holes, above and below ground vaults, earth mounded concrete bunkers, and mined cavities. We agree with the commenters on our draft guidance on alternatives published March 1986 that these concepts cover the range of alternatives that can realistically be considered. In December 1986, we published final guidance on these concepts (NUREG-1241).

Some States and Compacts are showing considerable interest in these alternatives. We understand that this interest is in part to prevent recurrence of problems such as those observed at Maxey Flats, KY, West Valley, NY and Sheffield, IL. We understand that some States and Compacts expect alternatives to shallow land burial to enhance overall facility performance; to prevent, to the extent possible, any contamination of the facility's environment; and generally to provide increased confidence in performance that will help obtain local acceptance of new disposal facilities.

The NRC staff appreciates this view. We do note, however, that all commercial LLW disposal facilities were licensed before promulgation of NRC's low-level waste regulation, 10 CFR Part 61. Part 61 was designed to preclude problems experienced in the past with shallow land burial. The NRC considers that shallow land burial, as licensed under Part 61, will properly protect public health and safety. Also, the staff considers that Part 61 will adequately accommodate alternative disposal techniques under consideration. Based on our experience to date the staff sees no need to develop additional regulations specifically for engineered enhancements.

Because we recognize that some States and Compacts may desire to make greater use of engineered approaches,

we are putting significant resources into developing regulatory guidance on such alternatives. The guidance we are now developing is directed toward such areas as structural stability and materials integrity applied to these concepts over intervals of up to 500 years. This guidance will be published in January 1988 in the form of revisions to our Format and Content Guide and Standard Review Plan.

As States, Compacts, and industry focus on particular designs and practices, we intend to develop more detailed guidance on the basis of specific disposal alternatives received for review. We will also develop more detailed guidance based on analysis of the generic disposal concepts previously studied by the NRC staff and the Corps of Engineers. We will give priority to developing guidance on alternatives and features in which States and Compacts express the most interest.

We want to work with States from the early stages of their consideration of particular alternatives and to interact with them frequently in order to provide guidance that is relevant and meets the schedules of the Act. Due to the tight deadlines in the Act and our limited resources, however, it is essential for us to set priorities for the alternatives which we will address in our development of guidance and our technical assistance efforts.

This brings me to the first of three special topics I wish to discuss today; standardization. The NRC staff strongly supports the standardization of facility designs which are alternatives to shallow land burial. Standardization will allow States, industry and the Federal Government to concentrate their resources and to share experience and expertise, permitting better analyses and earlier refinements in facility designs. Such a program could spare States and Compacts the necessity of developing highly individualized designs. It might also shorten the licensing process since it is likely to be easier to justify and license a design with features in common with other approved designs. NRC staff can review and approve standard design features or components. Such review and approval would provide preapplication guidance and resolve issues of concern at the staff level. Standardization could significantly enhance the likelihood of States and Compacts meeting the Act's milestones for the 1990's.

Consistent with the above thinking, the NRC staff now emphasizes two alternative facility designs as a result of internal discussions and public comments on the draft guidance on alternatives mentioned earlier. These alternatives are properly sited below-ground vaults and earth-mounded concrete bunkers. They share the desirable combination of using concrete and steel to enhance facility performance, and having earthen covers likely to withstand centuries of weathering. As a part of its technical assistance to States and Compacts, DOE is developing designs of two such facilities; the NRC expects to receive and review them in 1988.

The second special topic is storage. NRC staff is concerned that some States and Compacts may be considering deferring real progress on LLW disposal in favor of pursuing long-term storage options. The NRC staff is concerned that plans to store waste may not be considered by present host States to be an acceptable means of meeting the milestones of the Act which explicitly calls for development of new disposal facilities. For that reason, States or Compacts that develop storage facilities rather than disposal capacity face the real possibility of losing access to existing disposal facilities under the provisions of the Act.

NRC continues to consider that licensees should ship waste for permanent disposal to the maximum extent practicable. NRC's licenses for storage are issued on a 5-year renewable basis, and applications must include commitments and financial assurances for eventual disposal, in particular, disposal after 5 years, should the NRC not renew the storage license. Therefore, a State or Compact seeking to store LLW will generally have to present a plan for its disposal within 5 years, and such a plan will probably have to provide for disposal in that State or Compact.

For most situations then, NRC continues to hold the view that storage, particularly in a commercial facility, will only be possible as an interim contingency measure and cannot become *de facto* disposal. States and Compacts pursuing storage should devote the majority of their resources to ensuring the availability of true disposal capacity.

My last special topic is mixed low-level radioactive waste. Some States and Compacts have expressed concern that any LLW disposal facilities must be prepared to accept low-level wastes that also contain wastes considered hazardous under the provisions of the Resource Conservation and Recovery Act (RCRA). Since such RCRA wastes are regulated by the Environmental Protection Agency (EPA), some States and Compacts are concerned that dual regulation of these wastes will make it very difficult to meet both agencies' criteria and to meet the Act.

This is not the case. Although dual regulation will place additional burdens on all concerned, it should not preclude timely implementation of the Act. The NRC has been working and continues to work closely with EPA. The agencies are issuing jointly signed guidance on a number of mixed waste topics such as the definition of mixed waste (1/8/87), and location and design standards for mixed waste disposal facilities. Further, both agencies are committed to providing detailed guidance on this subject to States and Compacts who request it. For these reasons, the NRC and EPA agree that problems concerning mixed wastes should not prevent States and Compacts from meeting the provisions and timetables of the Act.

STATE AND COMPACT COMPLIANCE WITH THE ACT

Congress in passing the Act established challenging schedules for the development of new disposal facilities, and the development process itself is not an easy one.

States and Compacts must solve complex political and technical problems, frequently with limited resources, and occasionally with staff who are new to nuclear waste management issues. This situation has led to many requests for help from NRC, DOE and other Federal agencies.

For our part, the NRC staff has assisted individual States including California, Illinois, Maine, Massachusetts, Nebraska, New York, Nevada, North

Carolina, Pennsylvania, South Carolina, Texas, and Washington. We have also met with compact officials from the Appalachian, Central, Central Midwest, Midwest, Northwest, Rocky Mountain, and Southeast Compacts. We have provided written reviews of drafts of legislation, regulations, and site characterization plans for a number of these States and Compacts. We have provided seminars on the fundamentals of low-level waste management and on the basic concepts underlying 10 CFR Part 61. We are developing a plain language version of that regulation so that people without technical training or background can have an appreciation of the protection that would be provided by a newly-licensed low-level waste disposal facility.

We anticipate a continuing program of providing general guidance to States and Compacts, and we welcome suggestions as to what particular efforts will be most helpful.

Despite the progress mentioned above, however, the NRC is concerned about the overall success of the Act. As the staff testified during the hearings preceding the enactment of the Act, the deadlines are demanding, and States and Compacts must make rapid progress to meet all of them. At this time, we understand that about fifteen new facilities are presently contemplated. Of these, the staff has confidence that around three are well underway and appear to have the prospect of meeting all of the deadlines. The remainder may well have difficulty. The most important consequence of failing to meet deadlines will be loss of access to operating facilities. This possibility brings me to my last topic today, emergency access.

The Act requires NRC to act on petitions for emergency access to operating disposal facilities. The Act places stringent limitations on the availability of such access and requires consideration of a number of alternatives, including termination of the activity that produces the waste. Because of the severity of these restrictions, and the staff's anticipation that emergency access decisions may be controversial, the staff is developing appropriate regulations. A Notice of Intent to Develop Regulations was published in January 1987 (52 FR 1634). Proposed and final regulations are planned for September of 1987 and August of 1988, respectively.

This rulemaking will make it clear to unsited States and Compacts that the provisions for granting emergency access are stringent and that such access will not provide an alternative to timely development of LLW disposal capacity.

CONCLUSION

This summarizes NRC's actions in response to the Act and NRC's support of States and Compacts working to discharge their responsibilities. So far, the NRC has met its responsibilities on time, and we intend to do all that we can to help the States and Compacts do likewise.