



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

October 6, 1978

OFFICE OF THE
CHAIRMAN

The Honorable Pete Domenici
United States Senate
Washington, D. C. 20510

Dear Senator Domenici:

Attached are the responses to questions posed by you and Senator Hart subsequent to the June 14, 1978 hearings held by the Subcommittee on Nuclear Regulation. These responses represent the collegial view of the Commission except where it is specifically noted.

Sincerely,

A handwritten signature in cursive script, reading "Joe Hendrie", is written over a horizontal line.

Joseph M. Hendrie
Chairman

Attachment:
As stated

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Question 1:

You indicated that your testimony was sent to OMB for comment, but no comments were received.

Is this your normal practice?

If not, what is your normal practice?

If so, how does this kind of OMB review differ from that carried out with regard to executive branch agencies?

What is the specific purpose of OMB review of NRC testimony?

Please provide specific examples, where possible, of changes in NRC testimony at Congressional hearings as a result of OMB comments.

Answer:

When time permits, draft testimony on proposed legislation prepared by the staff for Commission review is sent to OMB for comment. Comments timely received from OMB, if any, are considered by the Commission in its discussion of the draft testimony. The Commission does not regard OMB comments as "binding," as is generally the case with executive branch agencies. This procedure is consistent with OMB's requirement that independent agencies submit bill comments exclusively through them. Although the legal basis for this exclusive OMB role is less clear than for its exclusive role regarding budget submission,¹ the NRC generally complies with OMB requests to see advance copies of Commission testimony. This enables the Commission to keep itself informed about the development of Administration policy. This interagency review process also allows the Commission to know what positions other government departments and agencies propose to take on legislation, and avoids the possibility that NRC might inadvertently take an erroneous position on the effects of some pending measure.

We are not aware of any specific changes in NRC testimony as a result of OMB comments.

Question 2: Your testimony draws a distinction between the handling of short-term storage and long-term disposal of wastes.

- After how many years does short-term become long-term?
- Does this length of time refer to DOE's announced intentions, and/or the structural integrity of the facility?
- Does your definition factor in the technical retrievability and the cost?

Answer: The Commission has accepted storage periods of no more than twenty years as short-term. The 20-year period that has been in use to define short-term storage is derived from the legislative history accompanying appropriations for DOE waste tanks.* However, for the purposes of determining NRC regulatory authority, the distinction between short-term and long-term storage should not be based on a rigidly fixed number of years. Instead, the boundaries of Commission authority should be drawn on the basis of the potential hazard that the waste might present and on the practical limits of NRC regulation. The cut-off period of 20 years for short-term storage is not based on costs or the technical capability to retrieve the wastes from the facility. We have considered using a "proof of retrievability" standard for distinguishing between short-term and long-term storage. However, the definition of what would constitute proof in this case is not now clear. Further, it is not clear that the additional effort required to establish and apply such a standard would be justified by the potential improvement in protection of the public health and safety.

* S. Rep. No. 93-890, 93d Cong., 2d Sess. 59 (1974)

Question 3: Pages 15 and 16 of your testimony outline several general principles for authorizing and directing NRC licensing of DOE R&D waste facilities.

-- Would you please provide the Committee with specific legislative language that would encompass your recommendation?

Answer: We have prepared two alternative formulations for encompassing our recommendation regarding licensing of DOE R&D waste facilities.

Under both formulations Section 202(4) of the Energy Reorganization Act of 1974 should be amended by deleting all after the word Administration and by adding a period after the word Administration.

Alternative A. This alternative would give the NRC Licensing authority over facilities based on their receipt of licensable radioactive materials by adding a new subsection (5) to Section 202.

Section 202(5). Facilities which are used for or part of radioactive waste storage or disposal research and development activities and which could present potential long-term risks to public health and safety similar to the risks posed by other long-term storage or disposal of nuclear wastes. The Commission may by rule, regulation or order determine which facilities fall within the authority granted by this paragraph and require information from the Administration to make such determinations.

Alternative B. This alternative would give the NRC direct licensing authority over DOE R&D waste facilities. Add a new subsection (b) to Section 202.

Section 202(b). Notwithstanding exclusions contained in Section 110a or any other provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2140(a)), the Nuclear Regulatory Commission, except as otherwise provided by Section 110b of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2140(b)), or other law, is authorized to license Department of Energy ... [insert text of Section 202(5) from alternative A].

Question 4: On page 17 of your testimony you point out the difficulty of NRC requiring remedial action regarding existing DOE facilities to protect public health because "necessary technology may not be available."

-- What existing facilities do you have in mind?

-- If these facilities had been licensed originally would the current problems have been avoided? And, if so, doesn't this present a strong argument for licensing any new facilities of this type?

Answer: The carbon-steel tanks used by DOE to store high-level wastes from the defense program are often cited as existing waste facilities for which complete disposal technology may not be fully developed.

It is by no means certain that an original requirement for licensing would have avoided problems. An NRC licensing action does not necessarily advance the existing state of technology or knowledge. When the proposed activity is optional -- like the construction of a power reactor -- the licensing options are approval or disapproval. But when the operation proposed is the storage of an existing waste, the options are limited to the details of approval. The existing waste must be stored somewhere. Thus, it is entirely conceivable that the situation today would have been the same even if the facilities had been subjected to NRC licensing.

On the other hand, the "problems" alluded to might have been mitigated because licensing would have provided an independent assessment and a structured public review process. NRC licensing philosophy would probably have assured several avenues of defense against potential hazards. We believe, particularly with regard to new high-level waste tanks, that except where it would be inconsistent with national security, some safety review by the Commission should be provided.*'

*_/ Commissioner Gilinsky believes that new high-level waste tanks should be subject to NRC licensing authority.

Question 5:

On page 20 of your testimony, you argue against the provision in section 10 of S. 3146 which is intended to require the same level of site data for the site proposed by the applicant and for alternative sites. However, you argue in favor of NRC's current standard which requires a comparison of alternatives.

- Unless equivalent data is supplied for alternatives, how can the NRC make a judgment concerning the relative merits of these alternatives?

Answer:

The unique purpose of a waste disposal facility requires site selection and development to be performed in a way which maintains containment integrity. Two methods with substantially different costs are available. The more economical method is a two-stage process. In stage one, site comparison, a careful balance is struck between the need to obtain enough information to compare sites while preserving site integrity for long-term containment. Based on the stage one data, a site is chosen which appears to satisfy disposal safety standards and criteria and is environmentally acceptable. In stage two, site verification, the additional information required for proof that the chosen site meets safety standards is obtained by carefully sinking a shaft and excavating a substantial portion of the planned storage space. The far costlier alternative method of site selection would require the expensive careful excavation of several alternative sites followed by the choice of the most acceptable.

For either method of site selection described above, the DOE would compare equivalent site data for the purpose of selecting a disposal site. However, in the two-stage process, by the time the NRC would consider the proposed site and the rejected alternatives, the DOE would have developed more information for the proposed site.

Question 6: On page 12 of your testimony, you recommend amending Section 274 of the Atomic Energy Act to authorize minimum Federal standards for low-level wastes.

-- Is that recommendation an endorsement of Section 9(a) of S. 3146?

Answer: We agree with the minimum federal standard concept in section 9(a) of S. 3146. However, the scope of the section would be sharpened by defining the terms "low-level wastes" and "decommissioned facilities." Also, as drafted, section 9(a) could be read to limit the requirement of waste disposal on federal or state owned land to mill tailings. We suggest redrafting this section to leave open the possibility of requiring the disposal of other types of radioactive wastes on government owned land.

Section 9(b) implies that a state agreement could be terminated by the Commission only if a state failed to set standards equivalent to federal standards. We suggest that the reassertion of Commission authority be made explicit by suitably amending section 274j of the Atomic Energy Act, and that such reassertion be made separably applicable to the state activities which fail to qualify. Otherwise, the Commission would be required to reassert its authority over all aspects of an Agreement State program, even if only part of that program failed to meet minimum federal waste disposal standards.

Question 7:

There are certain areas where your testimony does not indicate a Commission position on what regulatory or licensing role NRC should have. Would you please indicate what role the NRC should have related to the following:

1. Naturally occurring and accelerator produced isotopes.
2. Foreign generated high-level waste and/or spent fuel stored in DOE facilities.

Answer:

NRC was requested by the Agreement States and by the Conference of Radiation Control Program Directors to look into the matter of regulating naturally occurring and accelerator-produced radioactive material (NARM). On March 4, 1976, the Commission approved formation of an internal task force to review this matter. The final report of this task force recommended that the Commission seek authority to regulate NARM. In response to serious reservations expressed by two Commissioners, the staff's recommendation to seek authority to regulate NARM was returned for additional staff analysis. The Commission requested that the new analysis be provided when a full Commission was available. The staff's response is expected in the near future.

With regard to foreign generated high-level waste (including spent fuel) if the material resulted from an activity licensed under the Atomic Energy Act (i.e., an export license for fresh fuel that is subsequently irradiated and returned, an import license for spent fuel or other waste, or generation of the waste in a facility exported under an export license) NRC already has authority to license DOE storage of that material under Section 202(3) of the Energy Reorganization Act. NRC should also have authority for those materials imported into the U.S. for storage but which are not covered by Section 202(3). As indicated in our testimony, NRC's authority should not be based on the origin of the waste, but rather on the principle that wastes which have comparable properties and hazard levels should be dealt with in ways which provide comparable levels of public protection. Therefore, the recommendations made in our testimony for any waste type should also cover foreign generated waste disposed of in this country.

Question 8: The Department of Defense complies with numerous "civilian" requirements without adverse effect on the military mission of the agency. Furthermore, a national security exemption could be made by the President if necessary in a particular case.

-- Is there any reason why NRC regulation shouldn't be extended to DOD nuclear waste facilities?

Answer: Except where it interferes with national security, NRC regulation should apply to DOD waste facilities at least to the same extent as to DOE facilities. In fact, the statutory exemption from licensing for DOD activities is much narrower than the exemption for DOE activities, and many DOD activities are currently licensed.

The DOD operates nuclear power reactors, has many decommissioned reactors, generates waste in clean-up of weapons maintenance areas, uses isotopes in research and medical facilities, operates accelerators and fast burst reactors for radiation effects testing, uses tailings from extraction of uranium as tuballoy for bullets and other purposes, and has other uses of radioactive materials. Essentially all of these facilities store wastes at some time and thus fall within the scope of S. 3146. However, the Commission believes that protection of public health and safety does not require NRC licensing of DOD short-term activities or facilities designed for small quantities of waste. NRC licensing of numerous small DOD facilities would also be impracticable because their diversity would require Commission resources incommensurate with any potential increase in the protection of public health and safety.

Question 9: It would be useful for the Committee for the Commission to clarify for the record its interaction with EPA in waste management activities. Specific points which should be discussed are:

1. EPA's authority in the waste management area -- what is it, how does this compare and relate to NRC authority, programming and time schedules?
2. EPA standards -- when are they expected, what will they encompass?
3. NRC/EPA interaction -- how do EPA and NRC interact in the area of waste management? Is there joint planning? Please provide for the record any agreements, Memoranda of Understanding, etc. How do you avoid duplication and overlay of activities? Would you recommend any changes with regard to NRC/EPA authorities or activities in this respect.

Answer: Under Reorganization Plan No. 3 of 1970, EPA is authorized to promulgate generally applicable ambient environmental radiation standards and, with the President's approval, broad radiation guidance to Federal agencies. EPA standards and guidance are binding on the NRC. The NRC implements the EPA standards by invoking the Commission's authority under the Atomic Energy Act of 1954 to regulate licensees' facilities and their possession of defined classes of radioactive material. This division of responsibility is reiterated in the Memorandum of Understanding of September 11, 1973 (38 Fed. Reg. 24936), and applies to waste facilities as well as all other licensed facilities. However, for those DOE waste facilities over which the NRC has no jurisdiction, the EPA will have to directly enforce its ambient radiation standards.

In spite of the division of authority, the EPA and NRC have duplicated some effort regarding radiation standards for nuclear reactor effluents. Because the EPA had not yet promulgated ambient standards, the NRC established limits on radioactive effluents to unlicensed areas as part of its responsibility to assure public health and safety when licensing power reactors. 10 CFR Part 50, App. I. These limits were superseded when the EPA established effluent standards for most aspects of the nuclear fuel cycle. 40 CFR Part 190. Such duplicative effort could occur again in the regulation of waste facilities unless the EPA acts first to establish general ambient environmental standards.

EPA also has limited specific authority in some waste management areas. Under the Marine Protection, Research, and Sanctuaries Act of 1972, EPA can grant permits for the ocean dumping of non-high-level waste. This permit authority appears to be exclusive. Under the Resource Conservation and Recovery Act of 1976, EPA can regulate hazardous wastes including radioactive wastes not covered by the Atomic Energy Act. This authority currently extends to uranium mill tailings, but may be modified by pending legislation.

EPA has additional potential authority under the Clean Air Act Amendments of 1977. If the Administrator declares radioactive effluents into the air to be hazardous, then EPA can limit not only their quantity but in some cases can impose operational requirements within the licensee's boundary. However, this authority might not affect waste facilities if they are designed to avoid any radioactive effluence into the air.

The Commission believes it should have authority over mill tailings and ocean disposal of radioactive wastes. We also believe that NRC and Agreement States should reassume what had generally been exclusive authority over emissions of radioactive materials into the air. When authority for ocean disposal was transferred from the AEC to EPA there was a compelling rationale for independently set standards because the AEC also had a promotional role. The creation of the NRC has obviated the rationale for disjointed Federal regulatory authority over waste disposal.

Although EPA has discussed some overall criteria for waste management, they have not as yet published numerical standards. The NRC is proceeding to develop waste management regulations in the absence of these standards. The Commission plans to publish the administrative part of a draft regulation for the disposal of high-level waste late this year, and the technical part by the middle of 1979. The regulations may include interim radiological performance criteria which will be subject to modification, if necessary, upon promulgation of EPA standards. NRC authority does not preclude the development of facility specific regulations in the absence of EPA standards.

NRC and EPA have both participated in a number of interagency working groups, including an earlier OMB task force, the ongoing Interagency Review Group on Nuclear Waste Management chaired by DOE, and a low-level waste working group which includes representatives from NRC, DOE, USGS, and EPA.

Question 10: Would you supply the Subcommittee with a list of reports, studies or analyses conducted by Federal agencies on nuclear waste management issues?

Answer: Because of the volume of reports relating to waste management which have been conducted for or by the Federal government over the years, it would be extremely difficult to supply a complete bibliography. For example, the 10 volumes of "Radioactive Waste Processing and Disposal" (TID 3311, TID 331-S1 thru S7; TID 3555, and TID 3555-S1), a cumulative bibliography of reports relating to waste management published by the DOE (formerly AEC and ERDA) contain references to 11,308 publications and take up six inches on a library shelf. The first volume was published in 1958. An eleventh volume is in printing. Not all of these reports were prepared for or by the Federal agencies, but we are not aware of any bibliography which is so restricted.

We requested clarification of the question and understand that one of the major concerns is whether there is sufficient technical information available for NRC to license the range of DOE facilities, which are beyond NRC's current authority, but are proposed for licensing by S. 3146. We believe that the answer to this question is yes. The primary facilities for which there is no licensing experience are those long term storage facilities for which we already possess regulatory authority. The HLW tanks, solidification facilities, and low-level waste burial grounds are not significantly different from actual or envisioned commercial facilities which we have licensed in the past or would license in the future.

RESPONSE TO NUCLEAR WASTE LICENSING HEARING
ADDITIONAL QUESTIONS FOR THE RECORD

Question 1: Why is the present materials licensing basis for licensing radioactive waste storage and disposal activities inadequate? What advantages are there in creating a separate category of waste facility licensing? Which alternative offers greater regulatory flexibility?

Answer: The present material licensing basis for licensing radioactive waste storage and disposal activities should be expanded for the following reasons. In a materials license it is not the facility which is licensed but only possession or use of material. Although present materials licensing actions for large facilities consider plant design, construction and operation, regulation is achieved indirectly. As a result, such licensing does not focus on the predominant licensing interest which is the purpose of the facility. In addition, for a geological repository, the ability of the surrounding geologic media to contain waste, as well as the facility engineering design and operator performance are important to safety. Thus, the advantage of creating a separate category of waste facility license is the ability to clearly specify NRC authority to regulate the facility and its location and design.

Under the existing materials licensing authority, the Commission has regulatory flexibility as to what procedures it imposes for particular materials licenses. Such procedures range from a simple exchange of letters for some uses of radioisotopes to procedures which are modeled on facilities licensing procedures under the Commission's regulations for reactors and other utilization and production facilities. 10 CFR Part 50. In spite of this flexibility, we believe that the designation of a new category of waste facility would enable the Commission to develop a specifically designed licensing procedure uniquely suitable to the special needs of waste disposal.

Question 2: How many DOE facilities and activities would be newly subjected to NRC licensing and regulation by S. 3146? Do your estimates of the resources needed to carry out these new responsibilities include inspection and enforcement activities as well as initial licensing and review work?

Answer: An accurate response to this question requires detailed information with regard to DOE activities. Such information has not currently been obtained by the NRC. However, we know that DOE has more than 1,000 facilities located on at least 23 different sites. These include low-level burial grounds (of which there are 14), high- and low-level waste tanks, waste ponds, reactors, accelerators, research laboratories, uranium enrichment plants, weapons facilities, medical research facilities, and others. Some of these facilities may have been storing radioactive waste for periods longer than 6 months. More than 600 of these facilities are considered as excess and are awaiting decontamination and/or decommissioning.

The Commission estimated that it would require 120 persons and \$4 to \$5 million dollars per year to carry out its suggested expansion of licensing and regulatory authority. These figures include inspection and enforcement activity but do not include monitoring remedial actions at DOE facilities. The Commission believes that the broader licensing authority proposed in S. 3146 would require significantly greater resources than were estimated for the Commission's recommendation.

Question 3: What benefits are to be gained by NRC licensing or regulation of DOE short-term waste storage operations? What are the costs and disadvantages of licensing or regulating these operations likely to be? Should NRC be given licensing and/or regulatory authority over any or all of these operations? Please specify.

Answer: The benefits of NRC regulation include an independent assessment of radiological hazards and the application of consistent standards for the protection of the health and safety of the public. The disadvantages include the financial costs associated with NRC's licensing reviews and the possible delay of (or interference with) DOE programs, some of which may be vital to the common defense and security.

In balancing these considerations, the Commission would emphasize such factors as the comparability of the DOE activities with those engaged in by other NRC licensees, the presence or absence of close functional ties with other DOE operations, and the potential hazard presented. Applying these criteria, we believe it appropriate for NRC to exercise licensing authority over away-from-reactor storage of spent commercial fuel elements. With regard to new high level waste tanks, we believe that except where it would be inconsistent with national security some Commission safety review should be provided.* Existing high-level waste tanks should be subject to safety overview. Other DOE short-term storage operations should be analyzed on a case-by-case basis to determine if they can continue to be conducted without NRC review.

* Commissioner Gilinsky believes that new high level liquid waste tanks should be subject to NRC licensing authority.

Question 4:

What potential impact would adopting either S. 3146 or the Commission's recommendations for additional regulatory authority have on its present efforts in the waste management area? Might such additional responsibilities detract from the Commission's present efforts to establish a regulatory framework for high and low-level disposal facilities?

Answer:

The NRC waste management staff is currently operating with no more than the minimum resources required to fulfill its currently designated responsibilities. Without additional resources at the level estimated in the testimony, the Commission would be unable to fully carry out the new responsibilities of either S. 3146 or the Commission's recommendations. The FY 1980 budget submitted by the Commission would increase the NRC waste management budget by about 75 percent and increase waste management personnel by about 36 percent. If approved by Congress, these additional resources would permit the NRC to undertake some of the additional responsibilities from the Commission's present effort. However, the impact would be partially alleviated if licensing were not initiated before FY 1981. By that time the NRC will have issued proposed regulations for low-level waste disposal and could transfer some of the staff to the licensing effort.

If appropriate resources are made available the only impacts on the current program would be the temporary ones associated with the current staff's efforts in recruiting new personnel and then orienting and directing the efforts of these personnel. Further, as discussed in the Chairman's testimony, with appropriate resources this additional authority could enhance the Commission's ability to carry on its present waste management programs by closing certain regulatory gaps.

Question 5: Regarding your recommendation that DOE waste solidification facilities be licensed by NRC, would not your concerns be fully satisfied by an NRC criterion for the form of solid to be disposed of in an NRC-licensed repository, together with NRC-imposed quality assurance requirements? Does NRC now have authority to impose such requirements, and wouldn't this approach be more efficient than a new licensing and regulatory requirement for such facilities?

Answer: The NRC could partially satisfy its concerns with regard to the form and quality of DOE solidified waste through the imposition of solidification criteria and quality assurance requirements. The requirement that the waste be in an appropriate form of high quality for disposal can (and will under current authority) be specified by an NRC criterion with appropriate quality assurance program requirements. (By analogy, an applicant for a power reactor license meets NRC requirements by imposing them on the fabricator of a reactor pressure vessel, even though the fabricator is not an NRC licensee). However, an extensive review of the process involved will be necessary to assure that the appropriate quality assurance requirements have been identified.

NRC licensing assures the safety of operations of a plant in addition to the quality of the product. Also, because the waste form is very important for predicting repository performance, knowledge and control of the solidification process is central to assuring waste form performance. Finally, the solidification process is a step between two other waste management processes which would be licensed or regulated if the Commission's suggestion or S. 3146 are adopted. For these reasons complete NRC licensing and regulation would be preferable.

Question 6: What specific means could be used to improve the opportunities for State participation in the process for siting, licensing, and developing nuclear waste disposal facilities?

Answer: The NRC held three regional workshops in September 1977 to solicit ideas from State executives and legislators on siting and licensing procedures for high-level waste repositories. One hundred seventy State officials representing forty-six States attended. Many issues and ideas concerning State involvement were raised.

As a result of the workshops and other discussions with State officials, a number of ideas which could be used to improve State involvement have been developed. Although neither the Commission nor the States have fully analyzed them, we suggest that the following mechanisms may be important to effective State participation:

1. Participation in developing and reviewing the scope and content of NRC and EPA regulations and standards.
2. Participation in NRC licensing procedures. The participation would be designed to encourage information exchange, and to identify technical, environmental, economic, societal, and institutional issues of concern to the State. It would also provide opportunities for the States to comment on all major DOE documents and help NRC develop the outline and scope of the required environmental assessment. We could also offer assistance and information to the States in forms such as public meetings, seminars, exchange of staff members, and training. Opportunity for participation could be afforded as soon as NRC receives notification of a pending application and continue until completion of the safety and environmental review. Participation would not diminish the opportunity for involvement in formal NRC hearings.

Question 7: Should the states be involved in the process for developing this country's national waste management plan, as well as in the decisions regarding specific waste disposal facilities?

Answer: States should participate in the development of a national waste management plan in addition to their involvement in site specific decisions. States which generate waste, and through which waste will be transported, also have legitimate concerns. These should be considered along with the concerns of states in which repositories will be located. NRC workshops have demonstrated state willingness and ability to contribute to waste management planning.

Question 8: Haven't numerous studies of the waste management program and nuclear waste disposal technology already been done by NRC and others? Is there a need for an additional study such as that proposed in S. 3146?

Answer: A number of studies of various aspects of waste management have been done by the NRC and others. These include studies by the American Physical Society, the Ford-Mitre Nuclear Energy Policy Study Group, the DOE technical alternatives study, ongoing efforts of the DOE on the Generic Environmental Impact Statement, and the current Interagency Review Group on Nuclear Waste Management. Although no one of these studies was specifically aimed at all the particular objectives of the study specified in S. 3146, a significant body of information has been developed. If the Congress wants a finding of the sort contemplated by Section 11b of S. 3146, we recommend that NRC be given discretion to determine whether a further study is a prerequisite to such a finding.