



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 26, 1999

Ms. Abigail Johnson
Nuclear Waste Advisor
Eureka County Yucca Mountain Information Office
P.O. Box 714
Eureka, Nevada 89316

Dear Ms. Johnson:

Thank you for participating in the U.S. Nuclear Regulatory Commission's (NRC's) public meeting in Beatty on March 25, 1999. In response to your request that the NRC extend the public comment period for the proposed rule on disposal of high-level radioactive wastes at the proposed repository at Yucca Mountain (10 CFR Part 63), my colleagues and I forwarded your request to the Commission. On May 5, the Commission extended the public comment period an additional 51 days, through June 30, 1999.

In view of the extension, the NRC staff will hold additional public meetings in Nevada during the week of June 14, 1999. We will send you the time and location of these meetings once arrangements are complete. Notice of the meetings will also appear in local newspapers. Please suggest any additional ways we can notify interested members of the public. Mindful of your concern about conflicting dates for public meetings, we are scheduling the additional Nevada public meetings in June during the extended public comment period on the proposed rule, before the U.S. Department of Energy begins its schedule of public meetings on its draft Environmental Impact Statement later this summer.

I wish to respond further to a number of your comments regarding the level of protection provided by NRC's proposed regulations. You noted that you find it difficult to explain to the citizens of Crescent Valley, why the Waste Isolation Pilot Plant (WIPP) has a 15 millirem per year standard with 4 millirems for groundwater and NRC has proposed a 25 millirems per year all-pathway dose for Yucca Mountain. You expressed particular concern about whether NRC's proposed all-pathway dose limit of 25 millirems per year will sufficiently protect infants and children. You also made several excellent points about the need for better interagency coordination.

First, let me explain why I believe that infants and children are adequately protected by the proposed all-pathway dose limit of 25 millirem per year. It is precisely because children and fetuses are, indeed, more susceptible to radiation injury than adults are, that this special vulnerability was addressed when overall public radiation protection standards were established. The international scientific and regulatory community, as well as U.S. Federal government regulators [including the U.S. Environmental Protection Agency (EPA)], has agreed for many years that all individuals, including infants, children, and pregnant women, are protected if their yearly exposure from all sources of man-made radiation (excluding medical), remains below 100 millirem. This 100 millirem per year limit was selected, assuming a lifetime of exposure (through all stages of life from birth to old age) and also taking into account the special sensitivity to radiation as a function of age and gender. In order to measure

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compliance, U.S. radiation standards, derived from consideration of that lifetime risk, set limits on the corresponding yearly exposure that an individual may safely receive. Consequently, the annual dose limit proposed for a repository at Yucca Mountain (25 millirem, which is a small fraction of the annual public dose limit of 100 millirem) is already protective of children as well as other age groups. For purposes of comparison, the average annual dose received in the U.S. from naturally-occurring sources of radiation (e.g., from cosmic rays, radon in soil, etc.) is 300 millirem.

Let me further emphasize that in 1991, in order to ensure the safety of the unborn children of radiation workers, the NRC broadened its occupational radiation protection standards to apply a specific limit on the allowable dose to the embryo or fetus due to the occupational exposure of the mother. The limit for a pregnant radiation worker is that exposure should not be in excess of 500 millirem over the course of her pregnancy. Thus, the annual dose limit in the proposed rule for Yucca Mountain is nearly 27 times lower for adults and children than the level NRC considers safe for pregnant radiation workers (based on a 500 millirem limit during a 9-month pregnancy versus a 25 millirem annual limit for the general public).

You have also expressed concern about the differences between the EPA standards for the WIPP at 40 CFR 191 and NRC's proposed regulations for Yucca Mountain. Despite the complex statutory and legal reasons that have contributed to these differences, let me assure you that protecting the health and safety of the public is the first and foremost goal of NRC's high-level waste (HLW) program. The standards applicable to WIPP and the regulations proposed by NRC for Yucca Mountain simply provide different strategies for protecting public health and safety. The approach taken by NRC relies on an all-pathways individual dose limit to protect the public health and the environment (including exposure through groundwater that might be used by the citizens of Nevada). This ensures that no single pathway will result in an unacceptable risk to the public health and that groundwater will remain a usable resource for the citizens of Nevada and will not pose an unacceptable risk to their health.

For the disposal of HLW at Yucca Mountain, the U.S. Congress directed EPA to develop different, site-specific standards that are based on and consistent with the recommendations of the National Academy of Sciences (NAS) report on the "Technical Bases for Yucca Mountain Standards," and that protect individuals in the vicinity of the site. NRC is required to implement those standards, and will do so, as soon as EPA promulgates them. EPA was required to have final standards in place in by August 1, 1996, and as yet, has not published draft standards. In the past three years, NRC has chosen to move forward and develop a technical basis for licensing, guided by the recommendations of the NAS report and our understanding of the best scientific information available.

NRC has proposed a dose limit of 25 millirem per year—a limit that is one-fourth of the overall public dose limit I mentioned earlier. NRC believes it is highly unlikely that a person in the group at greatest risk from a repository at Yucca Mountain would, at the same time, be a member of the group at greatest risk from each of 4 or more other major sources of exposure and sustain exposure to more than the overall annual public dose limit of 100 millirem. A 25-millirem limit is also consistent with recommendations of national and international radiation protection organizations (between 10 and 30 millirem per year) and is consistent with that level of protection required of other commercial fuel cycle facilities currently subject to EPA standards and NRC implementing regulations (e.g., spent fuel storage facilities and low-level waste disposal facilities).

Regarding groundwater protection, we agree that groundwater is important and believe it is adequately protected by an overall standard that assesses dose received through all pathways. NRC continues to believe that the separate groundwater protection requirements applied by EPA at WIPP are unnecessary, because individual protection criteria, which take into account all pathways (including groundwater), represent a much more uniform and comprehensive approach to protecting public health and safety, and these criteria are sufficiently protective of the groundwater pathway.

Further, NRC has consistently objected to EPA's use of the concentration levels specified in EPA's WIPP standards and their application to protect groundwater from HLW disposal. We believe these applications are fundamentally incompatible with the technical basis EPA used to derive them, and the use of these concentration levels has not been supported by appropriate scientific justification or cost benefit analysis. Furthermore, the application of these concentration limits does not, in fact, result in a uniform risk level for all radionuclides of 4 millirem per year, as is commonly believed. For the specific radionuclides important at Yucca Mountain, the corresponding risk levels can vary from 0.2 millirem per year to 40 millirem per year from drinking water alone, depending on the radionuclide.

Finally, I recall that at the Beatty meeting, a number of citizens from Eureka County expressed concern about the possible transport of spent nuclear fuel to Yucca Mountain. I have enclosed a brochure on the safety of spent fuel shipments and the regulations governing the transport of nuclear materials, as well as several other NRC publications of general interest on NRC's role and responsibilities in nuclear regulation.

Thank you again for your active participation in the rulemaking process, and for raising important issues for NRC to consider in its rulemaking. I hope you will attend the next round of meetings in mid-June. I also look forward to your written comments on the proposed rule. If you have further questions or if I can be of any assistance, please don't hesitate to call me toll-free through the NRC operator at 1-800-368-5642.

Sincerely,



Janet P. Kotra, Ph.D.
Senior Systems Performance Analyst
High-Level Waste and Performance
Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosures: As stated (12)

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[Original signed by:]

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Further, NRC does not believe that the application of the concentration levels specified in EPA's WIPP standards does, in fact, result in a uniform risk level for all radionuclides of 4 millirem per year, as is commonly believed. For the specific radionuclides important at Yucca Mountain, the corresponding risk levels can vary from 0.2 millirem per year to 40 millirem per year from drinking water alone, depending on the radionuclide.

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objection subject to edit and subject to staff responding to these comments in final rule.

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