

TO: Central Docket Section (6102)
ATTN: Docket A-95-12
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RE: Comments on EPA Proposed Rule – Environmental Radiation Standards
for Yucca Mountain, Nevada (40 CFR 197)

DATE: November 24, 1999

SUMMARY

We thank EPA for releasing its proposed radiation protection standards for the proposed national high-level nuclear waste repository at Yucca Mountain, Nevada. We much prefer EPA as the standard setter for Yucca Mountain than the U.S. Nuclear Regulatory Commission (NRC). For NRC to serve as the standard setter would constitute a particularly egregious case of the fox guarding the hen house. The EPA was charged by Congress with issuing standards that would protect public health and safety, as well as the environment, for present and future generations at Yucca Mountain. For this reason, we fully support the establishment of a separate groundwater protection standard that is consistent with the Safe Drinking Water Act.

Even though we support the separate groundwater protection standard, and much prefer EPA rather than NRC as the regulator, we still strongly criticize EPA for not doing its job well enough. There are several grave problems with EPA's proposed standards. These include an expiration date on standards that is much too short, a point of compliance that is much too far away from the repository, and an unacceptable false definition for the "reasonably maximally exposed individual."

If such substandard proposals have been forwarded in an attempt to lower standards so that Yucca Mountain might still qualify to serve as the national repository despite its already known severe shortcomings, this is unacceptable. EPA is charged by Congress and by its own mission statement to protect present and future generations at Yucca Mountain, not to cave in to pressures from the nuclear industry, Department of Energy (DOE), NRC, or the nuclear industry's proponents in Congress to lower standards so that Yucca Mountain would still

qualify to serve the repository despite its severe, disqualifying shortcomings. Standards exist in the first place to guard against developing a repository at an unsuitable site. An unsuitable site should not be used for high-level nuclear waste disposal. If Yucca Mountain cannot meet the standards, it must be disqualified from further consideration. To lower standards due to political and economic pressures so that a unsuitable site would still qualify would set a terrible precedent within EPA, across the nation, and even internationally.

GROUNDWATER PROTECTION

NRC jumped the gun on EPA and proposed its own radiation standards for Yucca Mountain in February of this year, despite having no legal mandate to do so. NRC's standards are much weaker than EPA's, especially concerning groundwater protection. Whether to establish a separate groundwater protection standard or not is a central issue differentiating EPA's and NRC's proposed radiation standards for Yucca Mountain. Leaks from the repository into the groundwater constitute the primary pathway that people downstream would be exposed to harmful radioactivity. Despite this, NRC does not even intend to establish a separate groundwater protection standard. NRC would allow up to 25 millirems per year from all exposure pathways, thus allowing for much higher exposures via groundwater than allowed under the Safe Drinking Water Act. EPA's proposal DOES include a separate groundwater protection standard, the 4 millirem per year limit found in the Safe Drinking Water Act. We fully encourage EPA to stand strong on its separate groundwater protection standard and to uphold the Safe Drinking Water Act.

TIME PERIOD FOR COMPLIANCE

EPA has decided to substitute DELAY of repository leakage in place of reduction or prevention of repository leakage. This abandons any inkling of waste isolation, which was supposedly the basis for pursuing geological disposal in the first place. EPA proposes to require compliance to their standards for only the first 10,000 years. But the DOE has projected that peak doses will occur at 100,000 years and after, and would be orders of magnitude higher than EPA's proposed standard. There is no justification for ignoring the period of greatest threat to public safety. EPA must protect people who live more than 10,000 years in the future. Given the projected doses, it is clear that EPA's standard that expires in 10,000 years will not protect future generations. To do extended projections of doses without extended standards is to know the danger without preventing it. This is like saying as long as the teenagers wait until their parents leave for the evening, it is ok for them to destroy the living room furniture, or even burn down the house.

LOCATION FOR POINT OF COMPLIANCE

Another problem is that EPA is floating out 4 scenarios for where they will allow DOE to measure the groundwater to see if it meets the groundwater protection standard. One of these proposals would effectively create a 20 kilometer (12 mile) sacrifice zone beyond the site boundary. What good is a site boundary if that is not where we measure the release levels of the site? Given that over thousands of years humans could very well settle near Yucca Mountain, the location for compliance should be right at the site boundary. Even EPA's compliance location at the Waste Isolation Pilot Plant is set at 5 km from the site boundary. Are Nevadans less deserving of protection than New Mexicans?

RIGHT TERMINOLOGY, WRONG DEFINITION: "REASONABLY MAXIMALLY EXPOSED INDIVIDUAL"

Correctly defining the human population to be protected downstream of Yucca Mountain's harmful radiation releases is critical, yet EPA's proposed standards fail on this basic point. All of EPA's scenarios for where to measure the rate of release of radioactivity allow a large amount of assumed dilution before anyone living downstream would ingest it. Besides the fact that dilution is not the solution to pollution, and that dilution violates the basic concept of waste isolation from the biosphere upon which geologic disposal was pursued, is another underlying issue: who does EPA mean when it talks about someone getting a dose? EPA talks a good talk in saying they are looking at the "reasonably maximally exposed individual" – "rmei". However, EPA acknowledges that their arbitrarily defined "rmei" gets only about half the dose that a subsistence farmer would -- someone who drinks and raises all his food with contaminated water. Thus, by definition, the maximally exposed individual is excluded from consideration. This is not protection of the biosphere. We once again affirm that radiation protection standards must be made to protect those most vulnerable parts of the human organism's life cycle, the fetus. We also call for the protection of other species, which may or may not be even more susceptible than the human in utero.

Use of the individual who draws water from deep wells and raises both crops and animals for consumption, who also consumes wild foods growing in the vicinity, who spends at least 12 hours a day outdoors, and who lives very close to Yucca Mountain will most adequately protect the maximally exposed individual. This takes into consideration the present day habits of Western Shoshone and other Native Americans who live a traditional life style, and who are under represented and even excluded from consideration by EPA, NRC, and DOE based on these agencies' concept of present day demographics.

The subsistence farmer has traditionally been used to set all previous radiation standards worldwide. Why does EPA not set protection standards with subsistence farmers in mind? It is actually a very good possibility that there will be subsistence farmers living downstream from Yucca Mountain over the course

of thousands of years into the future. A return to a traditional Native American life style in the vicinity of Yucca Mountain is also very possible in the future. The baby in the womb of a woman subsistence farmer would be the most vulnerable of all to radiation's harmful effects - this should serve as the definition for the "rmei" to be protected from releases from Yucca Mountain.

Further, we challenge the use of dose equivalent, effective dose equivalent, and committed effective dose equivalent in the formulation of a standard for the Yucca Mountain repository. This methodology of "pencil-whipping" or "book-keeping" radiation doses is yet one more example of an attempt to progressively relax permissible radiation exposure levels. The mere fact that the NRC now reports a 25 millirem exposure in millirems as only 15 millirems effective dose equivalent indicates that this is not a trivial increase in health risk associated with how the regulatory agencies calculate the dose attributed to the same amount of radiation exposure.

In addition, any radiological standard for a nuclear waste repository should consider the impact of the repository on the population. If the Congress of the United States sees fit to only protect at the level of the individual, it is still possible for the regulatory agency to require disclosure of the potential impacts of the repository at the population and global level. This broader requirement should be included in any regulation written for the proposed Yucca Mountain repository.

ADDITIONAL COMMENTS

EPA should lower annual allowed dose

Even though EPA's 15 mrem/per exposure standard is lower than NRC's 25 mrem/year exposure standard (and thus falls within the National Academy of Sciences suggested range of 2 to 20 mrem/year, while NRC's does not), EPA should still lower the annual dose of radiation allowed to the public. Today, peer-reviewed research is confirming increased concern about adverse effects from low-dose radiation exposure, environmental contamination, and alpha radiation. This is compelling evidence that radiation standards should be more stringent, not less. For this reason, there is no justification for setting radiation standards that are less protective of public health and the environment than current standards, as EPA seems to be attempting to do as cited in the numerous aforementioned points.

Human intrusion

Another weakness in EPA's proposed rule is that it seriously underestimates the potential dangers associated with future, unpredictable human intrusions over the next several centuries or millennia which could breach the proposed repository at Yucca Mountain. Why are the hazards to the intruders and to the public from the material potentially brought to the surface not

considered? The extreme potential adverse health consequences associated with such a possibility demand that it be considered. In addition, the possibility of multiple intrusions and their frequency and locations must be considered. Human intrusions resulting from exploration for or extraction of underground natural resources are not only possible, but may be likely over the course of centuries to come. As resources become more scarce on Earth, as exploration/extraction technologies advance, and as new demands emerge for raw materials for new technologies not in demand today, promising regions will be periodically revisited for mining. Mining for underground natural resources is a time-honored Nevada tradition. Mining could very likely continue even into the distant future. Thus, multiple bore holes breaching waste containers that go unsealed at different locations over a timeframe spanning centuries or millennia could have a very significant adverse affect on waste isolation at Yucca Mountain. Such bore holes could become pathways for increased amounts of water to reach the high-level waste, increasing the amount of radionuclides that leak and the rate at which they enter the biosphere. The proposed standards do not adequately address these issues.

CONCLUSION

It would be remiss when discussing the “science” of Yucca Mountain to not mention the politics and other pressures at play. Yucca Mountain’s selection as the only site in the country to be studied as the potential national repository for high-level nuclear waste disposal has been a politically driven process from the very beginning. Sound science has taken a back seat to the nuclear establishment’s money-driven demands and pressures. The location of the Nuclear Test Site in Nevada was based on the site’s remoteness and sparse, politically-weak population. Nearly 50 years and a thousand nuclear weapons test explosions later, the continental United States downwind of those tests has been blanketed with harmful radioactivity, the health consequences of which has yet to be determined.

Now, Nevada is targeted again for the national high-level nuclear waste repository. The push to open the repository at Yucca Mountain continues, despite damning scientific discoveries confirming Yucca Mountain’s unsuitability to serve as the repository. Standards have continually been lowered, in an attempt to keep the Yucca Mountain project alive. Currently, legislation in Congress would strip EPA of its role as radiation protection standard setter, handing those duties over to the NRC, infamous for its bias towards promotion of nuclear power at the expense of public health and safety.

Concerned citizens, environmental and public interest groups have fought these lowering of standards at every turn, and will continue to do so. The Clinton Administration has made clear that any attempt by Congress to strip EPA of its role will be vetoed.

Nuclear Information and Resource Service of course advocates that nuclear waste must be isolated from the environment for the full extent of its

hazardous life with zero release of radioactivity. The DOE's own studies already show that Yucca Mountain cannot deliver this. If engineered rather than natural barriers are our best option, then we should start over and talk about where is the most reasonable and viable place to accomplish this.

Once again, we have the gravest of risks -- over 95% of the radioactivity from ALL SOURCES of the nuclear industry in the US would be sent to this site if it's approved -- being given exemptions from even the already permissive level of regulation.

Instead of being more stringent and protective, EPA is participating in the politically-driven competition to see who can shoot the biggest loopholes in the standards so that Yucca Mountain can be approved NO MATTER WHAT.

It's hard to believe that anyone would advocate a repository designed to leak, and yet EPA's proposed standards would allow just that. Nuclear Information and Resource Service joins with thousands of other citizens and hundreds of other organizations across the United States in calling upon EPA to protect present and future generations of human health and the environment by setting much stronger standards for the proposed Yucca Mountain repository than those currently proposed.