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Public Citizen

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Joan Claybrook, President

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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

December 7, 2005

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Rulemakings and Adjudications Staff

To Whom It May Concern:

Enclosed you will find Public Citizen's comments on NRC's "Implementation of a Dose Standard After 10,000 Years" (10 CFR Part 63), as published in the September 8, 2005 issue of the Federal Register (Docket ID No. RIN 3150-AH68).

Public Citizen is a consumer advocacy organization with more than 150,000 members nationwide. We were a member of the coalition of nongovernmental organizations that successfully challenged EPA's first standards for the proposed Yucca Mountain repository. As per our attached comments, we request that NRC withdraw its proposed rule implementing EPA's draft standard, and wait until EPA has taken public comment and issued a final standard before reissuing such a rule.

Please enter these comments into the official record on this proceeding.

Sincerely,

Michele Boyd

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Legislative Director, Energy Program

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Overview

On July 9, 2004, the DC Circuit Court of Appeals ruled that the Environmental Protection Agency (EPA) illegally set a 10,000-year compliance period for radiation protection standards at the proposed high-level radioactive waste dump at Yucca Mountain, Nevada. The EPA's 10,000-year compliance period and the Nuclear Regulatory Commission licensing rule that implemented it (10 CFR Part 63) were voided.

Congress mandated in the 1992 Energy Policy Act that EPA set public health and safety standards for allowable radiation exposure from Yucca Mountain "based upon and consistent with" the findings and recommendations of a National Academy of Sciences (NAS) study directed to identify the scientific bases for such standards at Yucca Mountain. The NAS study, which was issued in 1995, recommended "that compliance with the standard be measured at the time of peak risk, whenever it occurs," and found "no scientific basis for limiting the time period of the individual-risk standard to 10,000 years, or any other value." Yet, EPA "unabashedly rejected NAS's findings, and then went on to promulgate a dramatically different standard, one that the Academy had expressly rejected," according to the Court ruling.

Unfortunately, EPA's second attempt at drafting radiation standards is yet another example of setting regulations to guarantee that the site will get licensed, rather than setting health-based regulations that the site must meet. EPA's proposed standards do not protect public health, do not comply with federal law, and ignore the scientific consensus of the health effects of radiation. NRC's proposed rule, which is based on EPA's draft rule, is similarly deficient.

NRC's Rush to Implement EPA's Draft Standard Is Inappropriate

- **NRC's proposal to implement EPA's draft standard before EPA has taken public comment and issued its final standard is inconsistent with the DC Court of Appeals decision and the public comment process.**

In the court's decision, NRC's rule for implementing EPA's standard was vacated "*for reconsideration once EPA reviews its standard.*" In our opinion, and certainly the understanding of the public we represent, the court order means that NRC should propose an amendment to 10 CFR Part 63 to comply with EPA's standard once EPA has *finalized* a new standard.

Instead, NRC's proposal is being submitted for public comment at the same time as EPA's draft standard. Having both proposals in public comment periods at the same time is confusing and unmanageable, particularly for concerned citizens who are not completely familiar with the scientific issues and policy matters included in one or both of the proposals. Moreover, by releasing its draft before EPA's rule is final, NRC appears to believe that the draft EPA standard will become the final rule – meaning that public comment will have no effect on the rule. This directly contradicts the intention of the public comment process.

NRC's move to implement EPA's draft standard also raises concerns about government secrecy, the diminishing checks and balance system between various agencies, and the proper relationship between the regulator agency and the regulated agency. NRC met several times with both EPA

and DOE before the release of its proposed rule implementing EPA's standard. These meetings were not announced or made public. In fact, NRC presented its proposed rule to implement EPA's draft standard to the Commission almost two weeks before EPA published its proposed rule in the Federal Register.

NRC should wait until EPA has taken public comment and issued a final standard before proposing a rule to implement it.

NRC Should Not Accept EPA's Inadequate Draft Standard

By accepting EPA's flawed standard, NRC is abdicating its responsibility to regulate nuclear material and protect public health and safety. EPA's draft standard does not comply with the legislated requirements for protecting the public, and NRC is under no obligation to accept it.

❖ **EPA is proposing the least protective radiation standard in the world.**

No other U.S. or international radiation protection standard permits a dose of 350 millirems per year to individuals. Most other countries that are investigating sites for a geologic repository have proposed or established an unvarying radiation standard of 10 millirems per year. Swiss regulations explicitly set no "expiration date" on protecting future generations.

EPA itself has for decades declared any radiation dose above 15 to 25 millirems per year to be inadequate to protect public health. It has repeatedly gone on record that doses of 100 millirems per year produce unacceptable levels of risk. In its final rule for the first Yucca radiation standard, EPA wrote in its response to a comment proposing a 70 millirems-per-year standard:

> The risk level associated with 70 millirems (about 4×10^{-5}) is about five times as high as the risk level associated with the individual-protection limit. This is well above the NAS-recommended level *and unprecedented* in the current regulations of this and other nations for this activity.[1] [Emphasis added]

EPA regulates radioactivity in water at 4 millirems per year, air emissions at 10 millirems per year, and toxic waste site cleanup (under Superfund) at the equivalent of about 0.03 to 3 millirems per year. The EPA's proposed rule also exceeds:

- the maximum acceptable radiation exposure from man-made sources in all industrialized countries by a factor of 3.5 to 10.5;
- the National Academy of Sciences' recommended acceptable range of radiation exposure, which is 2 to 20 millirems per year;
- the U.S. Nuclear Regulatory Commission's radiation health standard for low-level radioactive waste disposal sites, which is 25 millirem per year;
- the U.S. Nuclear Regulatory Commission's radiation health standard for the Private Fuel Storage interim storage site, which is 25 millirem per year; and

[1] "Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada (40 CFR Part 197) - Final Rule, Response to Comments Document," pages 79 and 80 (Section 4, page 4 and 5)

- the maximum proposed cleanup standard for DOE sites by a factor of 3.5 to 10.5.

❖ **EPA inappropriately claims that the level of radiation is satisfactory as long as it does not exceed the highest levels of background radiation in the highest radiation-prone states. Moreover, EPA inflates those levels by improperly including radon exposure as part of natural background radiation.**

No U.S. or international regulations use background radiation to set public health standards for radiation exposure. According the National Academy of Science, any amount of radiation will increase an individual's risk for getting cancer.[2] In fact, about 3 percent of American public will get a cancer from background radiation, which is equivalent to almost 9 million people of the current U.S. population. Of the fatal cancers in the U.S., approximately 7% are attributable to exposure to background radiation.[3]

EPA incorrectly argues that a radiation standard of 350 millirems per year, in addition to the presumed background radiation level in Amargosa Valley near Yucca Mountain (350 millirems per year), is protective of the public, because the total (700 millirems per year) is equal to an inflated estimate of the current average background radiation in Denver, Colorado.

This is not a sound basis for a health standard, because not only is background radiation not a safe level of exposure, but background levels of radiation across the U.S. are highly variable, with Colorado being significantly above the average. EPA also improperly includes indoor radon exposure as part of its estimates of natural background radiation. Radon is normally never included as part of background dose, because indoor radon exposure is a man-made public health risk. EPA itself has classified radon as a known human carcinogen. Also according to the EPA, radon exposure is the second leading cause of lung cancer in the U.S.[4] When high levels of radon are detected in buildings, renovations are usually made to reduce radon that goes into the building. The EPA has found that radon comprises about 87% of the background radiation in Denver.[5]

❖ **EPA's proposed rule is unethical, because it would expose future generations to much higher levels of radiation than current generations.**

Intergenerational equity—the principle that the health of future generations should be as protected as current generations—has been the foundation of U.S. and international public health and safety laws. Yet, in its draft rule, EPA throws this fundamental principle out by applying a standard that is more than 23 times weaker for hundreds of future generations.

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[2] *Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2*, Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation, Board on Radiation Effects Research, National Academy of Sciences, 2005, http://www.nap.edu/openbook/030909156X/html/.

[3] Calculation is based on NAS risk figures in the table on page 28 of the BEIR VII report using EPA's background radiation figure of 350 millirems per year.

[4] EPA, *Health Risks: Exposure to Radon Causes Lung Cancer In Non-smokers and Smokers Alike*, http://www.epa.gov/iaq/radon/healthrisks.html.

[5] "Assessment of Variations in Radiation Exposure in the United States," Contract Number EP-D-05-002 Work Assignment No. 1-03, Prepared for: U.S. Environmental Protection Agency, July 15, 2005, Table 1, page 4.

The Court declared that the original 15 millirems per year standard was artificially cut off at 10,000 years, and required EPA to come out with a rule that would extend though the time when the radiation dose to the public would be highest (called "peak dose") as recommended by the NAS. EPA claims that "rising uncertainties justify adopting a different (higher) dose level" after 10,000 years. But in its study, NAS concluded that the uncertainty for one million years is manageable because of the known geologic processes affecting the site, clearly contradicting EPA's statements. Thus, EPA's reasoning for increasing the dose after 10,000 years is not substantiated. EPA is proposing to allow an action that will kill people for hundreds of thousands of years—people who had no say in the decision nor received any benefit from it.

It has long been resolved—both in the United States and internationally—that it is unethical to expose future generations to much higher levels of radiation than current generations. EPA stated as much in its Final Rule for its first radiation standard for Yucca Mountain:

> A guiding philosophy in radioactive waste management, as well as waste disposal in general, has been to avoid imposing burdens on future generations for cleanup efforts as a result of disposal approaches that would knowingly result in pollution in the future. With respect to radioactive waste disposal, we believe the fundamental principle of intergenerational equity is important. We should not knowingly impose burdens on future generations that we ourselves are not willing to assume.[6]

Yet, this proposed rule blatantly tramples on the principle of intergenerational equity. According to science ethicist Dr. Kristin Shrader-Frechette in her recent article in *Science and Engineering Ethics*, "E.P.A.'s double radiation standards for different generations...suggest that we merit more protection than our descendants. Yet we, not they, profit from nuclear power plants that produce the radioactive waste."[7]

- **EPA incorrectly uses the median dose to set its standard, which ignores cases of very high dose, rather than the mean (or average) dose. The result is that EPA's proposed radiation standard would allow 1 cancer in every 10 people exposed.**

In its draft rule, EPA determines exposures based on the projected median exposure instead of the projected mean exposure. Scientists around the world have rejected this approach for decades, as the projected median exposure does not take into account the higher of the possible doses, and thus artificially lowers the average. EPA itself has always used the projected mean exposure for its work in the past. According to DOE's Total System Performance Assessment for Site Recommendation, at the time of peak dose (after the waste packages corrode and fail), the mean dose of the many computer simulations is about 600 millirems per year, while the median dose is about 200 millirems per year. The repository could not meet a standard that required the mean to be less than 350 millirems per year, but would meet the standard if the median were used instead of the mean.

EPA's general position for decades has been to regulate exposures to keep the risk to the public

[6] *Ibid.*, page 35 of pdf.
[7] Kristin Shrader-Frechette, "Mortgaging the Future: Dumping Ethics with Nuclear Waste," *Science and Engineering Ethics*, November 2005.

at one cancer in one million people. In some circumstances, EPA has allowed workers to be exposed to a higher risk of cancer – one in one thousand. According to a recent National Academy of Sciences report on radiation health risks, 350 millirems per year over one's lifetime will cause cancer in approximately one out of every 36 people exposed—a risk 3 to 5 orders of magnitude greater than the range that EPA has always used before.

DOE calculations show that the mean exposure at the site would be more than 3 times the median exposure. Therefore, under EPA's 350 millirem per year standard, *some people will actually receive about 1,000 millirems per year, producing a cancer in 1 in every 10 people.* Because this is not a maximum, but rather an average dose, more people would get doses far higher, resulting in proportionately higher risks. Under this rule, there is no upper limit of dose for the half of the exposures that would be above the median. In other words, under these standards, significant numbers of people could legally be exposed to doses that would produce a statistical 100% chance of inducing a cancer in the exposed individuals.

❖ **EPA inappropriately abandons its groundwater protection standard after 10,000 years.**

The EPA has concluded that groundwater is the most likely pathway to lead to human exposure to radiation from the Yucca Mountain. The groundwater under Yucca Mountain provides drinking and irrigation water to Amargosa Valley, an organic farming community, and Southern California.

When the Nuclear Energy Institute challenged EPA's authority to set separate groundwater standards as supplement to the individual-protection standard, the court upheld EPA's right, agreeing that "EPA has offered an entirely rational reason for protecting water resources while they remain underground: *Preventing* ground water contamination is more cost-effective and environmentally protective, and applying [drinking water] standards will encourage a robust containment and isolation design."[8] EPA itself wrote in its Final Rule for its first radiation standard:

> We believe that there is no question that separate ground water protection standards are appropriate for deep geologic disposal facilities. We believe that the use of contaminated ground water for purposes that could result in exposures to individuals should be of concern, and that avoiding contaminating useable ground water resources is in the general interest of the public at large.[9]

Yet, the EPA proposes to discard the groundwater standard after the first 10,000 years—when the groundwater will become increasingly contaminated, according to DOE's models. The EPA claims that the public will be protected after 10,000 years by extending the concept of individual dose standard, but this standard is more than 23 times higher than the first 10,000 years.

The groundwater standard is integral to the protectiveness of the overall radiation standard. NRC

[8] Nuclear Energy Institute, Inc. v. Environmental Protection Agency, United States Court of Appeals for the District of Columbia Circuit, Decided July 9, 2004, page 50.
[9] 40 CFR Part 197, Public Health and Environmental Radiation Protection Standards for Yucca Mountain, NV Final Rule - Federal Register / Vol. 66, No. 114 / Wednesday, June 13, 2001, page 36 of pdf.

should extend the groundwater standard to 1 million years.

Conclusion

The Energy Policy Act of 1992 requires EPA to set "public health and safety standards for protection of the public from releases from radioactive materials...at the Yucca Mountain site... based upon and consistent with the findings and recommendations of the National Academy of Sciences."

EPA has not meet the requirements of the Energy Policy Act – neither protecting public health to commonly accepted levels nor following the recommendations of the National Academy of Sciences – and NRC should not accept its draft standard.

NRC's proposal to implement EPA's draft standard is utterly and completely inconsistent with its scientific, legal, and moral duty. NRC should withdraw its proposed rule and reissue a rule only after EPA has finalized a standard consistent with the requirements for protecting public health and safety.

From: "Melissa Kemp" <mkemp@citizen.org>
To: <SECY@nrc.gov>
Date: Wed, Dec 7, 2005 5:09 PM
Subject: Comments on NRC Proposed Rule to Implement EPA's Draft Yucca Standard (RIN 3150-AH68)

Attached are Public Citizen's comments in pdf form.

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