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Secretary  
US Nuclear Regulatory Commission  
Washington, DC 20555-0001

December 8, 2005 (9:08am)

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Attn: Rulemakings and Adjudication Staff

Re: RIN 3150-AH68. US Nuclear Regulatory Commission, Proposed Rule, "Implementation of a Dose Standard After 10,000 Years," 10 CFR Part 63, 70 Fed. Reg. 173, pp. 53313-53320, September 8, 2005.

On August 22, 2005, the US Environmental Protection Agency (EPA) published its revised radiation protection standards for the proposed Yucca Mountain high-level nuclear waste dump.<sup>1</sup> On September 8, 2005, the US Nuclear Regulatory Commission (NRC) published its proposed rule implementing those standards. These public health and safety standards are important because they set the maximum allowable levels of radiation to which humans can be exposed and the maximum level of radiation that can be in groundwater as well as how those levels are calculated. The US Department of Energy (DOE) uses this standard in its licensing process; DOE must demonstrate to the NRC that it can meet the standards before it can be granted a license.

EPA's proposed standard is wholly inadequate, does not meet the law's requirements and does not protect human health and safety. NRC's hasty and wholesale adoption of this rule in its proposal likewise fails. Instead of sticking to the commitment that Yucca Mountain would proceed only if it were based on sound science and protection of public health, sound science and human health continue to be cast aside in favor of the reckless pursuit of Yucca Mountain.

EPA issued its first radiation standard in August of 1999.<sup>2</sup> NRC issued its rule implementing those standards more than two years later, in November of 2001.<sup>3</sup> These rules were challenged in court on several fronts. In 2004, the DC Court of Appeals vacated both the EPA rule and its corresponding NRC standard because they were not "based upon or consistent" with the National Academy of Sciences' findings and recommendations and did not protect against peak radiation risks. EPA and NRC were directed to issue new standards that comply with the law and protect public health.

Unfortunately, EPA, where possible, chose the laxest methods and standards. NRC is

<sup>1</sup> US Environmental Protection Agency, "Public Health and Radiation Protection Standards for Yucca Mountain, Nevada; Proposed Rule," 40 CFR Part 197, 70 Fed. Reg. No. 161, August 22, 2005. Docket ID No. OAR-2005-0083.

<sup>2</sup> US Environmental Protection Agency, "Environmental Radiation Protection Standards for Yucca Mountain, Nevada," 64 Fed. Reg. 46976, August 27, 1999.

<sup>3</sup> US Nuclear Regulatory Commission, Proposed Rule, "Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada; Final Rule," 10 CFR Part 63, 66 Fed. Reg. 55732, November 2, 2001.

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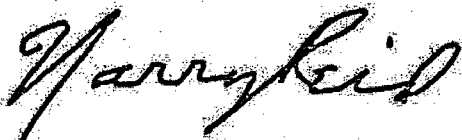
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proposing to accept these faulty standards and assumptions unquestioningly. This is a project rife with scientific and technical problems and uncertainties. Any analysis of the proposed repository project demonstrates that we should be taking a conservative approach, not the weakest possible, to the protection of human and environmental health and safety.

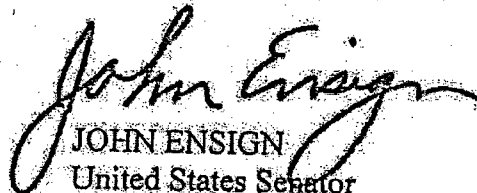
The State of Nevada, Office of the Governor, Agency for Nuclear Projects has submitted extensive comments on both the EPA and NRC rules detailing the many problems. We completely endorse the state's substantive comments and urge NRC to implement Nevada's recommendations. In addition, we have attached our comments on the EPA proposal, which provides an overview of the myriad legal, technical, and ethical problems with both proposals.

The NRC proposal, like EPA's, is unacceptable and will needlessly expose people to the risk of horrible adverse effects for generations. NRC must go back to the drawing board and issue a rule that is consistent with the law and the recommendations of the 1995 NAS report and that protects human and environmental health and safety.

Sincerely,



HARRY REID  
United States Senator



JOHN ENSIGN  
United States Senator

encl: Comments of United States Senators Harry Reid and John Ensign, US Environmental Protection Agency, "Public Health and Radiation Protection Standards for Yucca Mountain, Nevada; Proposed Rule," 40 CFR Part 197, 70 Fed. Reg. No. 161, August 22, 2005. Docket ID No. OAR-2005-0083.

cc: Kenny C. Guinn, Governor of Nevada,  
Bob Loux, Executive Director, Nevada Agency for Nuclear Projects  
Brian Sandavol, Attorney General, State of Nevada  
Samuel Bodman, Secretary, Department of Energy  
B. John Garrick, Chairman, Nuclear Waste Technical Review Board  
G. Paul Bollwerk III, Chairman, Atomic Safety and Licensing Board  
Stephen Johnson, Administrator, Environmental Protection Agency

November 21, 2005

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Air and Radiation Docket  
US Environmental Protection Agency  
EPA West, Mail Code 6102T  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Attn: Docket ID No. OAR-2005-0083. US Environmental Protection Agency, "Public Health and Radiation Protection Standards for Yucca Mountain, Nevada; Proposed Rule," 40 CFR Part 197, 70 Fed. Reg. No. 161, August 22, 2005.

On August 22, 2005, the US Environmental Protection Agency (EPA) published its revised radiation protection standards for the proposed Yucca Mountain high-level nuclear waste dump. These public health and safety standards are important because they set the maximum allowable levels of radiation to which humans can be exposed and the maximum level of radiation that can be in groundwater. The US Department of Energy (DOE) uses this standard in its licensing process. Through a series of model simulations, DOE must demonstrate to the US Nuclear Regulatory Commission (NRC) that it can meet the EPA standards before it can be granted a license.

EPA's proposed standard is wholly inadequate, does not meet the law's requirements and does not protect human health and safety. Instead of sticking to the commitment that Yucca Mountain would proceed only if it were based on sound science, EPA has cast sound science aside in favor of political expediency in the myopic pursuit of Yucca Mountain.

In the *Energy Policy Act of 1992*, Congress mandated 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.<sup>1</sup> The NAS completed this study, *Technical Bases for Yucca Mountain Standards*, in 1995.<sup>2</sup>

EPA issued its first radiation standard in August of 1999.<sup>3</sup> This rule was challenged in court on several fronts. In 2004, the DC Court of Appeals vacated both the EPA rule and its corresponding Nuclear Regulatory Commission (NRC) radiation protection standard because they were not "based upon or consistent" with the NAS findings and recommendations and did

<sup>1</sup> *Energy Policy Act of 1992*, Pub. L. 102-486.

<sup>2</sup> National Academy of Sciences, National Research Council, *Technical Bases for Yucca Mountain Standards*, 1995.

<sup>3</sup> US EPA, "Environmental Radiation Protection Standards for Yucca Mountain, Nevada," 64 Fed. Reg. 46976, August 27, 1999.

not protect against peak radiation risks.

One of the most critical recommendations in the 1995 NAS report dealt with the time period during which public health and the environment must be protected. The 1995 NAS study recommended "compliance with the standard be measured at the time of peak risk, whenever it occurs," finding "no scientific basis for limiting the time period of the individual-risk standard to 10,000 years." Protective regulation at peak dose, which could last hundreds of thousands of years, is essential.

In its first public health and safety radiation standard, EPA's human dose standard was set at 15 millirems per person per year for 10,000 years. But since EPA arbitrarily determined that this standard needed to be in place only during that period in which no leakage is expected from the repository -- the first 10,000 years -- the DC Court of Appeals voided both the EPA rule and its corresponding NRC radiation protection standard. Specifically, the Court found that EPA had abused its discretion when it "unabashedly rejected NAS' findings, and then went on to promulgate a dramatically different standard, one that the Academy had expressly rejected;" the 10,000-year compliance period is inconsistent with the congressionally-mandated recommendations of the NAS. EPA was directed to issue new standards that comply with the law and protect public health.

EPA's revised standards would keep the 15 millirems per person per year radiation dose limit for humans during the first 10,000 years of the repository's operation, the time period when the least exposure to radiation is expected. But after that period, the 10,000 to 1,000,000-year time period when leakage and peak exposure are certain to occur, EPA proposes to set the standard at 350 millirems per person per year, a level nearly 25 times more lenient. EPA's standard parallels, while staying below, DOE's projected dose curves.

However, the true gap between these two standards is even greater because the statistical method that EPA proposes for calculating the 350 millirems per year standard, the median, is significantly weaker than the method EPA proposes for determining the 15 millirems per year, the mean. According to DOE's calculations, the difference between the mean and the median is a factor of three. The result is that the post 10,000-year standard is in reality a 1050 millirems per person per year standard, a level 70 times higher. Not only is this statistically questionable and misleading, it is contrary to the 1995 NAS report's recommendation that the mean be used in these calculations.

In addition, EPA's proposal would discard the groundwater protection standard at the time when peak exposure is expected to occur, after 10,000 years. Groundwater is the primary route of radiation exposure from the proposed repository. The groundwater under Yucca Mountain provides drinking and irrigation water to the tens of millions of people who live in the Amargosa Valley and Southern California. In its original rule, EPA's groundwater standard was set at 4 millirems per person per year for 10,000 years. The Court voided this standard. Yet, in its revised proposal, EPA leaves this standard in place, with no groundwater standard or protections after 10,000 years.

Moreover, the EPA has declared that it will not consider public comment on this aspect.

and many other aspects, of the proposed regulation, which EPA discusses in its rulemaking, despite the fact that this decision is integral to the overall radiation standard. Not only is this more shoddy science, but also it is under administrative procedure requirements; EPA must accept and respond to all comments on its proposed rule.

EPA's role in this rulemaking and its overall mission is to protect public health and the environment. A recent NAS study has confirmed that there is a linear dose relationship between radiation exposure and cancer.<sup>4</sup> In other words, there are adverse effects from radiation even at the lowest levels, and the higher the levels of exposure, the greater the adverse effects. These effects can be devastating and include sudden death, cancer, birth defects, mental retardation, and developmental defects – both physical and mental. Unfortunately, although EPA purports to agree with the NAS conclusion, this rule flies in its face, allowing greater levels of exposure while not acknowledging the increased health effects from these levels.

In fact, nowhere in the revised proposal does EPA discuss the increased risk to human health and safety from the higher levels of exposure at the 10,000-year mark, despite the director of EPA's Office of Radiation and Indoor Air's acknowledgement that the risk to public health increases at the higher level. EPA does not assume that humans are somehow better able to handle doses of radiation in the future. Rather, EPA admits that the 350 millirems number is not based on public health, which is EPA's purview, but on uncertainties with the repository past 10,000 years, which is not EPA's concern. EPA sets the public health and safety standard; DOE addresses if and how it can be met. In an attempt to craft a standard that DOE can meet rather than one based on sound science, EPA has ignored its most basic responsibility, the protection of public health and safety.

In addition, it is unethical to expose future generations to 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 US and international public health and safety laws for decades. Yet, in its draft rule, EPA throws this fundamental principle out by applying a standard that is 70 times weaker for future generations. EPA is proposing to allow an action that will kill and harm people for hundreds of thousands of years, people who had no say in the decision nor received any benefit from it.

EPA is proposing the least protective radiation standard in the world. No other US or international radiation protection standard permits a dose of 350 millirems per year to members of the public. Most other countries proposing a geologic repository have proposed or established a radiation standard of 10 millirems per year. Swiss regulations explicitly set no "expiration date" on protecting future generations. Calculations done for Nevada's Agency for Nuclear Projects demonstrate that this standard is "ten times greater than what EPA, NRC and other regulatory bodies have previously allowed for all non-medical sources combined."<sup>5</sup> Instead of leading the world to the top in protecting public and environmental health and safety, EPA is charging to the bottom with this proposed rulemaking.

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<sup>4</sup> National Academies of Science, National Research Council, *Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII-Phase 2*, 2005.

<sup>5</sup> State of Nevada, Office of the Governor, Agency for Nuclear Projects, 'Comments on Docket ID No. OAR-2005-0083,' November 17, 2005: 2.

EPA has for decades declared radiation doses above 15 to 25 millirems per person per year to be inadequate to protect public health, which is reflected in its standards. For example, 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.

EPA has also gone on record that doses above 100 millirems per year produce unacceptable levels of risk. We urge EPA not to abandon this position, which is embraced by the 1995 NAS report and international consensus, that exposures from all nonmedical man-made sources be limited to 100 millirems per person per year.

The EPA's proposed rule also exceeds the National Academy of Sciences' recommended acceptable range of radiation exposure, which is 2 to 20 millirems per year, and the NRC's radiation health standard for low-level radioactive waste disposal sites, which is 25 millirems per year.

EPA's proposal to set a public health standard based on inflated estimates of natural background levels is deceptive and sets a dangerous precedent. First, EPA misleads the public by implying that the level is set at truly "natural" background levels. EPA's own documents show that EPA has included man-made sources of radiation, such as indoor radon exposure, in its estimates. To call this "natural" is simply misleading.

Even if it were not misleading, it is an ethically unacceptable method to set public health and safety standards based on levels in the particular vicinity. We believe that all US citizens deserve the same level of protection regardless of where they live. We embody that belief in the underlying principles of our democracy, principles of equal protection and fairness. Breaching these principles and setting human health and safety levels based on background levels is dangerous and unacceptable. Are we next going to allow higher levels of arsenic in drinking water in some areas of the US than in others? Higher levels of mercury in some areas than others? After all, levels of these toxicants vary across the US.

Overall, EPA has, where possible, chosen the laxest methods and standards. Any analysis of the proposed repository project demonstrates that we should be taking a conservative approach, not the weakest possible, to the protection of human and environmental health and safety. This is a project rife with scientific and technical problems and uncertainties. Only this year, we learned that employees falsified water infiltration data and models. Water infiltration is key to calculating corrosion and radiation exposure.

Unfortunately, this problem is not limited to data on water infiltration. Just last week the DOE Inspector General informed us that DOE has known of additional problems with the falsification of data and information and left them unaddressed.<sup>6</sup> We were gravely disappointed

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<sup>6</sup> US Department of Energy, Office of Inspector General, Inspection Report on "Quality Assurance Weaknesses in the Review of Yucca Mountain Electronic Mail for Relevancy in the Licensing Process," DOE/IG-0708, November 9, 2005.



to see that DOE's practice of ignoring quality assurance continues. Quality assurance is critical because this data and these models are what DOE will use to attempt to demonstrate compliance with the EPA standards. Yet DOE's pervasive problems with quality assurance, faking and falsification of information, and poor contractor work performance, are a clear sign of unsound science and biased conclusions. The problems with the proposal that grow out of these mistakes cannot be corrected after the fact. Even if it were not already EPA's responsibility to protect public health and the environment, in the face of these pervasive and long-term problems, it would be its duty.

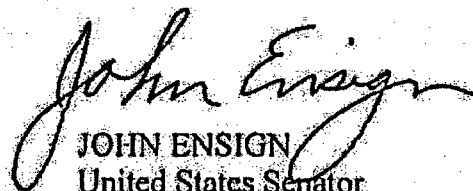
This is only an overview of the myriad legal, technical, and ethical problems with this proposal. The State of Nevada, Office of the Governor, Agency for Nuclear Projects has submitted extensive comments detailing the many problems. We completely endorse the state's substantive comments and urge EPA to implement of Nevada's recommendations.

This proposal is unacceptable and will needlessly expose people to the risk of horrible adverse effects for generations. EPA must scrap this proposal and issue one that is consistent with the law and the recommendations of the 1995 NAS report and that protects human and environmental health and safety.

Sincerely,



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United States Senator



JOHN ENSIGN  
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Cc: Kenny C. Guinn, Governor of Nevada,  
Bob Loux, Executive Director, Nevada Agency for Nuclear Projects  
Brian Sandavol, Attorney General, State of Nevada  
Samuel Bodman, Secretary, Department of Energy  
B. John Garrick, Chairman, Nuclear Waste Technical Review Board  
G. Paul Bollwerk III, Chairman, Atomic Safety and Licensing Board

**From:** "Schubert, Sandra (Reid)" <Sandra\_Schubert@reid.senate.gov>  
**To:** <SECY@nrc.gov>  
**Date:** Wed, Dec 7, 2005 6:10 PM  
**Subject:** Comments on RIN 3150-AH68

Please find attached the comments of Senators Reid and Ensign on RIN 3150-AH68, US Nuclear Regulatory Commission, Proposed Rule, "Implementation of a Dose Standard After 10,000 Years," 10 CFR Part 63, 70 Fed. Reg. 173, -----pp. 53313-53320, September 8, 2005. Please call if you have questions or there are any difficulties with this transmission.

Sandra Schubert

Counsel

Senator Harry Reid

United States Senate - Nevada

202.224.6996

**CC:** "Bayer, Alexis (Ensign)" <Alexis\_Bayer@ensign.senate.gov>, "Schubert, Sandra (Reid)" <Sandra\_Schubert@reid.senate.gov>



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