

**Citizen Alert's general comments on 40 CFR 197,  
Public Health and Environmental Radiation Protection Standards for Yucca  
Mountain, Nevada; Proposed Rule**

**November 21, 2005**

Level of Protection

Citizen Alert is alarmed that the EPA would propose a radiation protection standard, which clearly reverses the path and ideals of environmental protection established over the past 35 years. We encourage you to revisit the reason for the creation of the EPA and its mission to the citizens of the United States.

*The mission of the Environmental Protection Agency is to protect human health and the environment. Since 1970, EPA has been working for a cleaner, healthier environment for the American people.*  
- <http://www.epa.gov/epabome/aboutepa.htm#history>

The proposed 40 CFR 197 provides a level of protection for the first 10,000 years after the repository is closed, and less for those people after 10,000 years. In fact, the all pathway standard is weakened by a factor of approximately 24, and the groundwater standard is eliminated. Why should people living after 10,000 years be afforded less protection? This is a blatant disregard to future generations and an irresponsible policy. The 15 mrem/yr dose limit should be imposed through the period of peak risk, which is more like 300,000 years (according to DOE's calculations), and the Safe Drinking Water Standard should also extend through this period.

Another significant and inconsistent change proposed for 40 CFR 197 is how calculated doses are compared to the standard. Just as with the magnitude of the dose, the EPA has chosen to require the arithmetic mean expected dose of ensemble calculations for periods up to 10,000 years, but after which the median expected dose is to be used. The inconsistency is not well explained;

*"Today we are retaining, and more clearly specifying, the arithmetic mean of the dose projections for compliance within the initial 10,000-year period. We believe the arithmetic mean is a familiar and well-understood statistical concept, and that its application in probabilistic risk assessment is sufficiently established to support our decision." - 49042 Federal Register / Vol. 70, No. 161,*

but, for periods after 10,000 years;

*"We believe that for these very long term projections, a measure that represents a "central tendency" in the distribution of calculated doses is most appropriate to adequately consider the range of uncertainty in making dose projections over such very long time spans. Such a measure should not be strongly influenced by high or low-end projections that represent low probability situations. Today we are proposing to specify that compliance with the standard that will apply beyond 10,000 years should be measured against the median of the distribution of projected doses." - 49041 Federal Register / Vol. 70, No. 161.*

The reasoning here does not mesh. Why not use the same method for all times? It appears as though your agency is trying to be consistent with the National Academy of Sciences recommendation on one hand, which clearly states; "We recommend that the *mean* values of calculations be the basis for comparison with our recommended standards."(1995 NAS Report p. 123), and on the hand satisfy the "needs" of the DOE to allow higher doses for compliance after 10,000 years. By using the median, the

bar of what DOE must demonstrate is lower; by as much as 300 mrem/yr from the 2001 calculations. What is the EPA up to?

Executive Order 13045 requires federal agencies to explicitly address the potential impact to children's health and safety. We see no evidence in this proposed rule that your agency has addressed this executive order. Does the EPA actually believe that there exists no disproportionate impact to children?

This rule would also weaken substantially the intent of the NWPA by allowing a "barrier" definition to include engineered barriers that only "decrease the mobility of radionuclides" or "substantially delays the movement of water or radionuclides." Whereas, the NWPA defines an "engineered barrier" to be a manmade component that is designed to "prevent the release of radionuclides." Thus, the language in the proposed rule again appears to work in cooperation with the theme of delayed release, and doesn't stand alone as a regulation. Being that the purpose of the standard is to protect the public and the first measure of protection is isolation of the waste by not allowing it into the accessible biosphere Citizen Alert recommends that the barrier definition in the NWPA be retained.

Under the Individual Protection Standard the term "reasonably maximally exposed individual" is used, which is too ambiguous; later, loosely defined as having ". . . a diet and living style representative of the people who now reside in the town of Amargosa Valley, NV." This is a disturbing departure of the usual practice of the "subsistence farmer" scenario to assess maximum exposure. To be sure, such a lifestyle does actually exist in Amargosa Valley. The point is to define a "critical group", which according to the International Commission on Radiological Protection explicitly states that a critical group "represents an extreme" of radiation exposure "to insure that no individual doses are unacceptably high." (ICRP Publication No. 46, 1985, p.9) This reasoning is in the best interest of the public health of future generations unlike the definition in the current proposed rule.

Citizen Alert also feels that it is necessary and important for the EPA to take a progressive step in applying maximum exposure limits that are less than those in the current rule, which stems from the following considerations:

- The U.S. government is embarking upon a project that has never been tried before, and we do not have the luxury of previous experience; only time will tell whether this grand experiment will achieve the intended goal of waste isolation.
- Given the current data it seems clear that groundwater contamination will occur at some point in the future (~200,000 - 300,000 years if the DOE calculations are reasonable), and is an irreversible process requiring hundreds of thousands if not millions of years to decay away.
- The sheer scope of the Yucca Mountain Project in terms of the amount of waste, intensity of the radioactivity, and longevity affords special consideration. Otherwise, the small and possibly ignorable errors in design could be magnified resulting in potentially enormous impact.
- There are a number of other countries that have more stringent radiation protection standards than we do in the United States.

What do those countries know that we don't? Perhaps, they are looking ahead and predicting that as the body of information on the health effects of radiation expands, people will demand tighter standards. Certainly, the history of exposure standards in this country reveals a trend toward lower allowed exposure in nuclear facilities and the general public.

For these reasons it is necessary to have that extra margin for error. What if we are wrong, and the models don't predict as expected? To be sure, we have been wrong before: the Titanic, Exxon

Valdez, the Challenger, need we go on? Citizen Alert strongly urges the EPA to build in that extra “cushion” for the protection of all U.S. citizens.

## Public Process

Citizen Alert does not agree with the EPA’s preamble opinion that the agency need only accept comments that are related to the 10,000 year compliance period. The Court of Appeals vacated the core of the standard, and thus all aspects of the standard are subject to revision. It is the EPA that decided to revise the standard despite the court allowed option to merely extend the existing standard through the period of peak dose. As such the EPA has opened the door to any comments regarding any aspect of the standard. Indeed, the proposed standard contains numerous constraints on how it is to be applied. For example:

*“For performance assessments conducted to show compliance with §§ 197.25(b) and 197.30, DOE’s performance assessments shall exclude unlikely features, events, or processes, or sequences of events and processes.” - 40 CFR 197, 49064 Federal Register / Vol. 70, No. 161.*

Such directives according to EPA’s own interpretation of the court ruling would also be outside of the scope of revision to 40 CFR 197. The EPA doesn’t seem to even remember what was written in its own preamble, and appears to be selecting portions of the rule for revision, but not allowing the public the same discretion.

Citizen Alert sees the methods and actions of the EPA regarding the public as insulting and inadequate. Offering a meager 60 days for public comments is ridiculous for a standard of such importance and impact. While we appreciate the extension to 90 days, the comment period should have been at least 120 days, and there should have been public hearings across Nevada. Many other communities outside of Nevada also have a stake in the Yucca Mountain project and we feel that the EPA was also remiss in not having any hearings outside of Nevada other than in Washington DC.

## Tribal Engagement

The EPA also asserts that this standard has no “tribal implications.” Executive Order 13175 forces the agency to develop a process to receive input from tribal governments on any potential impact this standard may have. It appears as though the EPA has arrogantly ignored this order by declaring that this rule will have no “substantial effects on one or more tribal governments, or on the relationship between the Federal Government and Indian tribes.” How can you say this when Yucca Mountain sits on the sacred land of the Western Shoshone people and WILL adversely affect the indigenous population in surrounding areas?

## Role of the EPA

The Environmental Protection Agency has a difficult and vital role in our country delineated in its mission statement. It must turn away from political pressures inside and outside the administration to develop rules for protection based on our best understanding of the risks involved. Currently, the general consensus of national and international scientific community is that radiation doses above background should not exceed 100 mrem/yr effective dose for continuous or frequent exposure from radiation sources other than medical exposures. In the U.S., the accepted apportionment for

radioactive waste management is 15 mrem/yr. This, 15 mrem/yr, all pathway and the Safe Drinking Water Standard have been deemed by our society as the allowed dose (risk). While Citizen Alert would like to see more stringent standards, at the very least, these should be upheld through the period of peak risk; otherwise, the integrity of the EPA will be undermined. How are we to know when the EPA is developing a sound scientifically protective standard or just bending to special interests.

Relaxing the standard to accommodate greater uncertainties is not justifiable, and outside of the responsibility of the EPA. The preamble contends that since the results of performance assessment past 10,000 years are highly uncertain and that a higher allowed dose limit is necessary to satisfy a “reasonable expectation” of the goals of the standard. The REASONABLE EXPECTATION is that the EPA will act as an independent agency and advance protection standards that do just that, “... protect human health and the environment.” It is not the role of the EPA to cater to the “needs” of the Dept. of Energy (DOE) to have a standard that will apriori allow Yucca Mountain to be licensed.

One of the stated goals for the standard in the preamble for the Individual-Protection Standard is that it be “implementable by NRC in its licensing process.” This caveat is clearly the cornerstone upon which the EPA as built a case for the relaxing the standard after 10,000 years, which is arbitrary in the first place. Here, the EPA is doing the NRC’s job, and paving the way for the DOE to make its case for Yucca Mountain. By saying that the standard needs to reflect the uncertainties and lower confidence of projected doses past 10,000 years runs contrary to the concept of a standard in the first place. A standard is codified to assure a certain level of protect regardless of how well we can estimate future impacts; in fact, increased uncertainty is all the more reason *not* to relax the standards. A more stringent standard protects the public in the future from failures in our understanding of how the repository can contain the radionuclides. The “added” margin is critical as a compensatory measure against likely error. Of course 15 mrem/yr and the Safe Drinking Water Standard can be implemented, i.e., used as a measure of how well the repository **needs** to perform to protect the public. Failure of the DOE to demonstrate compliance is not a failure of the standard, but rather an illustration of deficiencies of the repository, which underscores the purpose of the standard: Will the repository protect the public from radiation exposure to a level deemed acceptable? 350 mrem/yr and no groundwater standard is not acceptable: period. You at the EPA know that. The EPA must not heed concerns over compliance, but rather *stay the course* of protecting the public.

### Further Technical Considerations

The State of Nevada as composed a detailed compendium of comments regarding various technical aspects of the proposed rule, which Citizen Alert sees no reason to duplicate here. Therefore, Citizen Alert is in full support of the State’s detailed comments.

In closing, Citizen Alert sees this proposed rule as a collusion with the DOE and the NRC as well to write a standard that superficially complies with the Court of Appeals ruling, and tailored to be within the DOE’s calculated expected doses. Thus, in effect, the Environmental Protection Agency is working on behalf of the DOE and nuclear industry, and abandoning its charge “...to protect human health and the environment.”