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**ORAL TESTIMONY AT SENATE HEARINGS
PROPOSED WASTE MANAGEMENT POLICY
HEALTH PHYSICS SOCIETY STATEMENT
PRESENTED BY DADE W. MOELLER**

Good afternoon, Mr. Chairman and members of the Committee:

As you well know, the development of the proposed repository is at a stand-still. So long as controversies over the dose rate limits, and the health effects of low doses of radiation, exist these delays will continue. In the meantime, spent fuel and high-level radioactive waste is being stored at more than 100 commercial nuclear power plants, and at multiple Department of Energy facilities. It will remain at these sites until this log-jam is broken.

The Health Physics Society Proposal

The key element of the Health Physics Society proposal is that, rather than seeking to “dispose” of the waste at this time, the waste should be “stored” in the proposed facility for 100 years. To ensure that the waste is not contaminating the environment, the facility would be equipped with monitoring devices that would provide, throughout the 100-year period, immediate warnings of the deterioration or potential leakage of any waste packages. Under the proposed policy, any waste packages showing signs of deterioration would be promptly retrieved and stabilized.

There are two bases for this policy:

1. Storing the waste for 100 years will enable our nation to take advantage of the many significant technological developments expected to occur during that time period. The most important of these would be the resumption of the reprocessing of spent nuclear fuel, using the latest in chemical techniques. To demonstrate the benefits of reprocessing, let me call your attention to the figure shown at the bottom of page 4 of my written testimony. I have some enlarged copies of the figure for any who desire one.
 - After 350 years of decay, the waste (assuming 99.5% removal of the plutonium through reprocessing) would be no more toxic than 0.2% uranium ore. This is typical of the concentration of uranium in the ores that have been mined in Grand Junction, CO.

- After about 1,000 years decay, the toxicity of the waste would be less than about one tenth of that of the original 0.2% ore. The reason for this rapid decrease in its toxicity is the fact that the Sr-90 and Cs-137, two of the major components in spent nuclear fuel, each of which has a half-life of about 30 years, are decaying.
- Although from about 2,000 years to one million years, the toxicity of the waste would increase to become equivalent to that of the original 0.2% ore, that is about as high as its toxicity can reach. And why do I say this? Because the uranium is simply decaying and, in so doing, it is building up its naturally occurring decay products, such as Ra-226 and Po-210. It is, in essence, resuming the status of the original uranium ore from which it was extracted.

What does this mean? It means that, with reprocessing, there is no need for a dose rate limit for more than about 350 years. Also of note is, while the original ore was at or near the surface of the earth, the reprocessed spent fuel waste would be sealed in thick alloy 22 steel containers more than 600 feet beneath the surface of the earth at Yucca Mountain.

2. Another technological advance, that leading cancer specialists predict will be developed within the next 50 years, at most, is a method for the prevention of – perhaps even a vaccine for – many of the cancers that are common concerns of society today. In this regard, the National Council on Radiation Protection and Measurements, an organization chartered by the U.S. Congress, has stated that “If ...an increased proportion of the adverse health effects of radiation prove to be either preventable or curable by advances in medical science, the estimate of long-term detriments (due to exposures to ionizing radiation) may need to be revised as the consequences (risks) to future populations could be very different.” Since the hereditary effects of radiation have been shown to be minimal, absent the fear of cancer, the potential health problems associated with the disposal of the waste would be significantly reduced.

Implementing the Proposed Policy

One of the key factors that must be recognized in implementing our proposed policy is that the disposal of high-level radioactive waste is but one part of a much larger group of issues. Because decisions regarding each aspect of the waste problem have far reaching implications, no single part of the problem should be addressed in isolation.

The examples that follow illustrate some of these far reaching implications.

1. Achieving a satisfactory solution to the waste disposal problem would reduce our dependence on foreign oil, because we would be generating copious supplies of electricity through the application of nuclear energy.

2. A satisfactory solution to the waste disposal problem would reduce our discharges into the atmosphere of the gases that cause global warming. Nuclear power plants do not emit these gases.
3. As noted above, reprocessing the spent fuel from our commercial nuclear power plants would remove the need for seeking to develop dose rate limits far into the future. The net result is that the problem of establishing dose rate limits for the proposed repository will have been converted from a long-range “fantasy” into a short-term “reality.”
4. The resumption of spent fuel reprocessing would reduce the amount of waste requiring transportation to, and disposal in, the proposed Yucca Mountain facility. Some estimate that newer waste processing technologies could result in an 80% reduction in the volumes of the waste.
5. During the 100 year storage period at Yucca Mountain, the adequacy of its capabilities as a *disposal* facility could be further documented. This would provide additional data to ensure that the proposed disposal facility will operate as anticipated, or to correct any misconceptions in its design.
6. Finally, our proposed policy would enable the Federal government to accept responsibility for high-level waste as mandated in 1998.

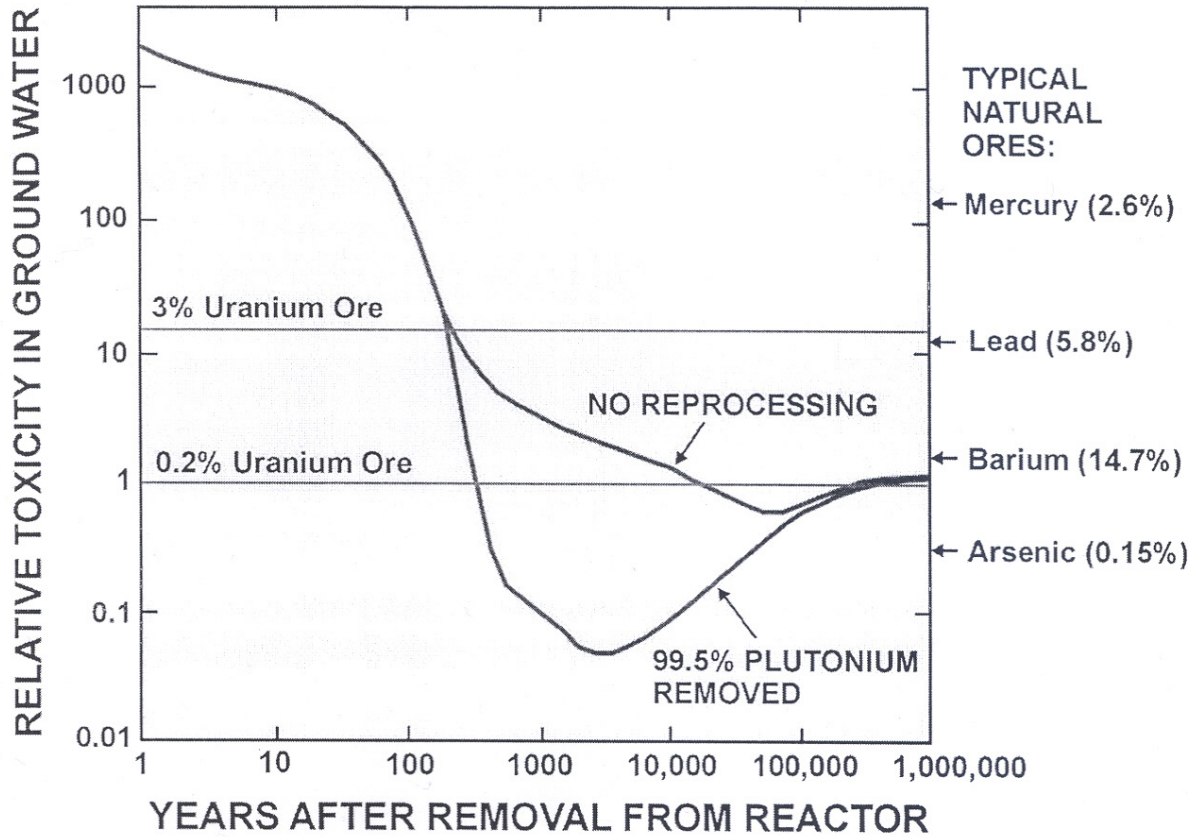
Undoubtedly, other policies will be proposed. All should be given careful consideration, including detailed reviews and evaluations, prior to making a final selection.

Conclusion

Thank you, Mr. Chairman, for the opportunity to appear at this important hearing. I will be pleased to answer any questions you may have relative to my remarks or on anything contained in the written testimony that I have submitted.

Figure

RELATIVE TOXICITY (IN GROUND WATER) OF USED NUCLEAR FUEL AND NATURAL ORES



Source: J. Boulton, Ed., "Management of Radioactive Fuel Wastes: The Canadian Disposal Program", AECL-6314, 1978.