



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 4 1985

MEMORANDUM

SUBJECT: Resolution of EPA Science Advisory Board Comments on the Agency's High-Level Radioactive Waste Analysis

FROM: *Joseph A. Cannon*
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for Air and Radiation (ANR-443)

Bernard D. Goldstein
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Assistant Administrator
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Terry Yost
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Executive Secretary
Science Advisory Board (A-101)

TO: The Acting Administrator (A-100)

THRU: Acting Deputy Administrator (A-101)

On November 27, 1984, we met with the Deputy Administrator and representatives of the Office of General Counsel and the Office of Policy, Planning, and Evaluation to discuss the appropriate course of action to deal with comments of the EPA Science Advisory Board (SAB) on the high-level radioactive waste (HLW) rule. The issues and options are described in the attached materials that were used at the meeting. The basic issue was how to treat an SAB recommendation to make the final HLW standards' societal objective ten times less stringent than in the proposed standards. This recommendation was made apart from those on the technical analysis methodology. The options considered were: 1) to conclude that this SAB recommendation is outside their basic charge and, therefore, not necessary to be followed; 2) to conclude that the recommendation should be an overriding consideration in formulating the final standard; and 3) to convene another scientific group to review the technical analysis undergirding the final standards. The following conclusions were reached unanimously:

1. It was not appropriate to make a final decision on the protection level of the standards at this meeting. A recommendation for such a decision should await the final clearance of the Steering Committee and Red Border review process.

2. The Science Advisory Board's recommendation for a less stringent societal objective than that in the EPA proposed standards, is a risk management matter and the Board's view should not be an overriding consideration in choosing the final level of the standards. This conclusion was based on two factors. First, the SAB report stated that the less stringent societal objective would be appropriate in addition to changes that would result from following technical recommendations. Second, the Subcommittee Chairman said in the report transmittal letter that this recommendation illustrated the Committee's inability to separate scientific and technical evaluations from matters of policy. The report also notes that SAB participation in the rulemaking process occurred after proposal of the standard, when a tentative risk management decision had already been made.

3. There is no need to establish any other scientific review body to evaluate the High-Level Radioactive Waste Standards. Rather, the responses to all Science Advisory Board comments and other facets of the technical analysis should be reviewed by the Steering Committee.*

Attachment

cc: Ms. Barbara Wauchope (A-101)
Mr. Jack M. Campbell (PM-219)
Mr. William F. Pedersen (LE-132A)

*It was determined at the initial Steering Committee review of the Final High-Level Radioactive Waste Standards that further consideration by the Committee can be limited to participation by the Offices of Air and Radiation; Research and Development; Policy, Planning, and Evaluation, and General Counsel.

HLW BRIEFING MATERIAL - MEETING OF 11/27/84

SUBJECT: Resolution of Science Advisory Board Review of Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes

BACKGROUND

The next radiation regulations that will be coming to you as a final rule are those for the management and disposal of spent nuclear fuel, high-level and transuranic radioactive wastes (HLW) (40 CFR Part 191). We have already missed the Nuclear Waste Policy Act deadline of January 7, 1984, for promulgating this rule. Similar delays in the Department of Energy's (DOE) siting program have thus far prevented our tardiness from becoming a major problem. Nevertheless, DOE will probably face many legal challenges if it proceeds to make its first site selection decisions in early 1985 without our rule (40 CFR Part 191) having been promulgated.

Recent experience in developing radionuclide standards under the authority of the Clean Air Act has heightened our awareness of the significance that Science Advisory Board (SAB) comments may have. We believe that the SAB comments on the proposed rule and associated technical analyses have all been adequately resolved, except for the one recommendation that the SAB chose to highlight. This issue requires your consideration now to reduce the chances for further delays in developing 40 CFR Part 191.

The final SAB report on the HLW standards was submitted to you on February 17, 1984. In general, the SAB was supportive of many facets of the EPA risk analysis and the formulation of the proposed standards. They agreed with the standards' basic structure--including the 10,000-year time frame of applicability and the focus on limits of total releases of radioactivity and their subsequent population risks rather than on individual risks.

For those areas of the risk assessments where the SAB had critical recommendations we believe we have complied with their recommendations and resolved these issues. For example, we are now using less conservative factors in that part of the analysis which relates releases of radioactivity to long-term population risks. This has resulted in an average factor of seven relaxation in the radionuclide release limits from the release limits in the proposed rule--while retaining the societal risk objectives of the proposed standards (no more than 1,000 extra health effects over 10,000 years, an average of one per decade).

However, the key comment by the SAB requires your personal consideration. We believe that both the proposed and the revised release limits are attainable without incremental cost increases, and certainly without increases observable within the uncertainties in the cost estimates themselves. At the same time, our studies show that this societal risk objective presents risks small enough that they are comparable to the risks that future generations would have been exposed to if the uranium ore used to produce the high-level wastes had not been mined to begin with. Thus, we believe that the risk objective in the proposed rule is both "acceptably small" (supported by a broad consensus in the public comment record) and presents no significant economic impacts. We recognize that the risk objective is quite stringent relative to other types of risk; however, we believe that the unusually long time frame involved and the extraordinary public concern regarding high-level waste disposal justify our choice. However, the primary SAB comment criticizes this societal risk objective.

Specifically, the SAB stated: "The Subcommittee recommends that the release limits specified in Table 2 of the proposed standards be increased by a factor of ten, thereby causing a related tenfold relaxation of the proposed societal objective (population risk of cancer)." This was not a unanimous decision by the SAB Subcommittee; two of the members chose to formally dissent in favor of our proposed societal objective.

The SAB Subcommittee gave three reasons for its recommendation. First, it asserted that the proposed societal objective was considerably more stringent than those standards generally required or adopted in today's society. Second, it noted that some of these cancer deaths would have resulted, at least in part, from the unmined ore from which the wastes were subsequently generated, and thus would be substitutional rather than additional in nature. Third, it judged that the compounding of conservatism in our risk assessments was not warranted. However, in a subsequent note relative to this third reason, the SAB Subcommittee indicated that any changes in the release limits due to changes in our technical analyses would be separate from the "tenfold relaxation" recommended for the proposed release limits. To clarify this further, the note stated: "The Subcommittee believes that the changes in the release limits, resulting from the changes to the predictive models, are independent of and would not lead to additional modification to the proposed societal objective beyond the tenfold increase discussed above."

These notes seem to clarify that it is the SAB's recommendation to increase the release limits by a factor of ten based on their judgment of risk management, rather than circumstances of the analysis. Indeed, in the SAB report's transmittal letter to the Administrator, the Subcommittee Chairman, Dr. Herman E. Collier, states "...given the timing of its review in the rulemaking process, the Subcommittee found it virtually impossible to separate scientific and technical evaluations from matters of policy, since they are so interdependent. Our consideration of and recommendation to relax the societal objective (1000 cancer deaths in 10,000 years) by a factor of ten exemplifies this point. In any event, as responsible scientists and concerned citizens, we feel it is essential that we provide you with a comprehensive report of our findings."

Public Review of SAB Report

On May 8, 1984, we announced that this SAB Report was available for public review and comment. The recommendation to increase the release limits and the societal risk objective by a factor of ten received by far the greatest response. Of the 35 commenters on this issue, 28 opposed the increase in release limits--including the Governors' Offices of Nevada, Texas, and Mississippi. Notable among those against increasing the release limits was the Nuclear Regulatory Commission (NRC), which indicated its belief that the proposed release limits could be achieved. The Department of Energy (DOE) did not submit comments on the SAB report. However, Sheldon Meyers and other Office of Radiation Programs staff have recently met with senior DOE staff to hear their comments on the EPA draft of the final rule. Although DOE raised several objections to this draft, the idea of increasing the release limits was never mentioned.

CONSIDERATION OF OPTIONS

Program Recommended Approach

Leave the high-level radioactive waste standards' release limits and societal objectives as they are in current drafts of the final rule--i.e., as they have been modified (an average factor of seven increase in release limits from the proposed rule) based upon the technical recommendations of the Science Advisory Board.

Other Options Considered

1. Increase the release limits and societal objectives by another factor of ten.
2. Convene another group of experts to review the standards and the feasibility of their implementation.

Rationale for Recommendation

There appears to be no technical or scientific basis for increasing the release limits. The Nuclear Regulatory Commission has based its own regulations on our proposed release limits and believes they can be achieved. The States that have been very active in following and commenting on these rules are very much against any increase in the release limits. We cannot determine any cost differential at the more stringent level within the considerable cost estimate uncertainties for high-level radioactive waste repositories.

One of the most crucial issues in successfully siting and building a repository for these wastes will be its public and State acceptability. To further increase the release limits (beyond the increases associated with responding to the SAB's technical comments) and the associated societal objective could be very deleterious to the confidence needed for such acceptability.

PROS

- o All technical and implementation considerations would be met at no discernable cost.
- o The present draft release limits and their societal objective (1,000 early cancer fatalities over 10,000 years) have been largely accepted by the Federal agencies, the public, and the States.
- o To weaken the societal objective could cause a loss of public confidence in the national high-level waste repository program with subsequent difficulties in siting and development.

CONS

- o This action would not comply with a recommendation of the Agency's Science Advisory Board.
- o Some might see this as a precedent for overly conservative risk management.

Rationale for Alternative Option 1: Increase the release limits and societal objectives by another factor of ten.

This option would show that we have complied with the Science Advisory Board's judgment on an appropriate risk. It could also be shown to have some elements of consistency with other Agency risk management judgments.

PROS

- o This would show conformance with the SAB judgment of an appropriate risk.

- o This can be argued to have better consistency with other Agency risk management judgments, such as those for arsenic and benzene emissions.
- o This would probably find favor with the six industrial and utility groups that commented favorably on this SAB recommendation.

CONS

- o Such an increase in release limits would probably create problems for the Nuclear Regulatory Commission's regulations. ?
- o This action would be opposed by numerous State governments and public interest groups.
- o This action could be interpreted as an absolution of the Administrator's prerogatives to make the Agency's risk management decisions.
- o This action could create a loss of confidence in the national high-level waste program and subsequent difficulties in its effort to site and build a repository.

Rationale for Alternative Option 2: Convene another group of experts to review the standards and the feasibility of their implementation.

The reasoning for such an action, which has been suggested by an ORD representative to the Work Group and Steering Committee, could be the controversy that exists over radiation matters. For instance, it could be pointed out that while the EPA Science Advisory Board recommended a relaxation of the standards, a National Academy of Sciences panel, which reviewed the national program, questioned whether the standards were adequately protective of individuals and whether they addressed a sufficiently long period of time. We would indicate that we were seeking a focused evaluation of the feasibility of the standards' implementation to aid in the decision-making process.

PROS

- o This action could assist the Administrator to make a difficult decision.
- o This action could enhance the perspective that the Administrator attaches great importance to science.
- o If the review was successful, it could create an explicit consensus that the Agency's technical analyses and expectations for implementation of the rule were adequate to support our decisions.

CONS

- o With two scientific reviews having already developed somewhat opposing views, there is no certainty as to what view a third group might develop or that it would agree with either of the other two (i.e., this action may not be helpful in resolving the problem).
- o This action could be interpreted as the Agency's having turned its risk management function over to the judgments of science review groups, a perception contrary to many public statements of the Agency management.
- o It may be difficult to find a group of experts who can address the implementation issue independently. Most of the experts available to evaluate this issue have been included in major efforts sponsored by NRC and DOE to study implementability. Therefore, the effort may be duplicative since we already have those points of view.
- o This action would delay the process of finalizing our standards and may, therefore, create perturbations in the overall national repository program.

DATE:

APPROVE PROGRAM RECOMMENDED APPROACH: _____

DISAPPROVE PROGRAM RECOMMENDED APPROACH: _____