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May 7, 1987

Secretary of the Commission
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Docketing and Service Branch

Dear Secretary:

Attached are the comments of the State of New Mexico Environmental Evaluation Group on the Advanced Notice of Proposed Rulemaking on the definition of High-Level Radioactive Waste.

The EEG, because of its role in providing a technical evaluation of the WIPP Project since 1979, is acutely aware of the problems that can arise because of the historical definition of HLW. We strongly support your effort to develop more comprehensive definitions of radioactive wastes that are more closely related to the radiological hazard and which clearly delineates the different types of waste.

There are three main conclusions from our review of the ANPR:

- (1) support for the concept of Clause(A), option 1 which could result in the de-listing of some waste types now defined as HLW;
- (2) support for the evaluations proposed under Clause (B) to define as HLW other wastes that are highly radioactive and require permanent isolation;
- (3) support for the extension of the proposed Clause (B) evaluation to include all other significant waste types, whether licensed by the NRC or not, that are either long-lived or highly radioactive.

Thank you for the opportunity to comment on this ANPR. If there are any questions please feel free to call Dr. James K. Channell or myself at (505) 827-0556.

Sincerely,

Robert H. Neill
Director

8707100304

IN providing an independent analysis for the New Mexico Health and Environment Department of the proposed Waste Isolation Pilot Plant (WIPP), a federal nuclear waste repository.

AGOR 2-6

WM Record File

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WM Project

Docket No.

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Issue 1. Options under Clause(A)

From a technical viewpoint we believe it is preferable to define HLW only by the concentrations of specific radionuclides (as proposed in option 1) and not by the origin of the waste. Furthermore, the definition should ideally determine the acceptable means of waste disposal. The concept of defining HLW and not having it related to acceptable disposal mode (as is referenced to in places in the ANPR) does not appear to serve any useful purpose. Why should NRC bother to redefine HLW if future disposal actions are still going to be evaluated on a case by case basis?

Because of the above considerations we can see no advantages to Option 2 which perpetuates the current definition. If there was not considerable dissatisfaction with the current definition NRC would not be proposing a redefinition. Option 1 is preferable although we share some of Commissioner Asselstine's concerns (see below). But Option 1 has the disadvantage of narrowing the scope of the HLW definition and ignoring other types of waste that probably require permanent isolation. Therefore, we believe the preferred approach is to use Clause (A) option 1 in conjunction with the proposed evaluation under Clause (B). Also, this evaluation should consider all major waste types, not just those that are both highly-radioactive and require permanent isolation.

Commissioner Asselstine's concerns

Despite the contention in Section II.A.3 that NRC designation of some defense wastes as non-HLW would not preclude their licensing by NRC we believe the adoption of Option 1 would complicate the issue of NRC licensing authority over the Hanford Waste tanks. According to data presented in Appendix A of the Draft EIS on Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes (DOE/EIS-0113) all of the tank waste would meet the definition of transuranic (TRU) waste (i.e. they all contain >100 nCi/g of TRU radionuclides and have ⁹⁰Sr

plus ¹³⁷Cs concentrations below the upper limit of Class C). There is no apparent reason why DOE could not designate these wastes as remote handled TRU (RH-TRU), concentrate them into a form that meets the WIPP Waste Acceptance Criteria and ship them to WIPP. There is a volume restriction (7100 m³ from all waste generating sites) for RH-TRU at WIPP that would preclude all of the tank wastes from being shipped to WIPP even after concentration. However, WIPP restrictions on total radioactivity concentration (23 Ci/l) and external gamma level (1000 rem/h) would permit a greater than tenfold concentration of the wastes.

2. Concentration Limits under Clause (B)

EEG believes the use of current Class C concentration limits of 10 CFR 61 to define "highly radioactive" is an appropriate starting point but the final concentration limits should be reassessed after the evaluation to determine the concentrations that "requires permanent isolation." However, there are several weaknesses in this proposed definition that should be recognized.

First, the proposed definition still includes the current definition of HLW and increases the definition to include additional material.

This definition probably is the best compromise from a regulatory point of view because it does not confuse the issue of whether NRC licensing authority would apply to DOE wastes that might be "declassified" as HLW under Clause (A), option 1. But, the clause (B) proposal ignores one weakness in the historical definition (that some wastes currently defined as HLW are not concentrated enough to require disposal as HLW) while attempting to partially correct the other weaknesses (defining some other highly radioactive wastes as HLW so they can be disposed of as HLW). Technical considerations alone would base the definition of HLW only on the concentrations of appropriate radionuclides that require permanent isolation, not on the origin of the wastes.

Another weakness in the proposed definition is that it is silent on defining how several types of waste which are greater than Class C wastes should be disposed of. For example: (1) any of the long-lived radionuclides in Table 1 (appropriate disposal methods for TRU wastes have been prescribed by DOE and recognized by EPA in 40 CFR 191 but not by NRC); (2) certain very concentrated "short-lived" radionuclides in Table 2 which do not contain Table 1 radionuclides (e.g. the 2200 cesium and strontium capsules at Hanford that would require 700-900 years to decay to Class A concentrations); (3) natural and accelerator produced radioactive materials, especially ^{226}Ra , which have never been addressed because they are not licensed by the NRC.

We believe that NRC should eventually define all greater than class C wastes and prescribe the acceptable method of disposal. This may be too big an evaluation task at one time. If it is, the NRC could define only HLW at this time and specify when and how they would address other wastes.

3. "Requires Permanent Isolation"

The proposed procedures of evaluating "alternatives, less secure, disposal facilities" to determine which wastes require permanent isolation is reasonable. As noted in section 2.e, the unavailability of such an alternative system will cause uncertainties in the evaluation but this problem has been dealt with in evaluating geological repositories, which also do not yet exist. This is likely to be a complex evaluation which will take considerable time and could result in changes in the values in Tables 1 and 2. We believe all waste that require permanent isolation should be determined in this evaluation even if they are not highly radioactive nor licensed by the NRC.

4. Environmental Consequences

Intuitively, one would expect that requiring greater treatment and isolation of wastes in order to prevent or minimize long term

contamination and continued maintenance will result in greater total costs, probably a greater occupational radiation dose, more injuries and fatalities from construction, operations, and transportation, and greater consumption of energy and materials. There may be off-setting environmental advantages from less restrictive use of land. This intuition is consistent with findings in DOE/EIS-0113 which concluded that stabilization of some or all tank wastes in place would not only be the least cost option but would result in less fatalities from non-radiological accidents and total radiation dose (occupational plus population) as well as less consumption of energy and materials than options which either took no disposal action or placed all tank wastes in a repository.

Cost and other non radiological factors have historically not been explicitly considered in the setting of radiological protection and waste disposal regulations. The recent movement toward establishing de minimus levels for waste disposal is an exception to the historical pattern. We believe it would be desirable for NRC to thoroughly evaluate the non-radiological factors when determining those wastes that require permanent isolation and those which can be disposed of in alternative facilities. The objective should be to choose the optimum disposal requirement (with other factors being considered) not necessarily the one that provides the absolute maximum long-term isolation.

5. Minimum quantities as well as minimum concentrations

The determination of a generic minimum quantity would seem to be difficult because of the wide range of types of material and multiple shipments that would come to a specific site. Since 10 CFR 61 has already increased maximum allowable concentrations for Class C wastes to allow for some dilution at disposal sites we believe that concentrations averaged over each shipment should not exceed the chosen maximum concentrations.

6. Legal, administrative, etc difficulties with expanded HLW definition

Because of EEG's role in evaluating the WIPP Project for the State of New Mexico our comments will be limited to the possible effect of an expanded HLW definition on the WIPP Project.

A choice of Clause (A) option 1 would declassify most or all of the Hanford tank wastes from HLW to TRU if the class C concentration limits were selected. It appears to us that this would permit DOE to dispose of some of these wastes in the WIPP as RH-TRU wastes without violating the WIPP legislation or any agreements between DOE and the State of New Mexico. Under their current definition as HLW the tank wastes could not come to WIPP.

The choice of Clause (A), option 2 would have no effect on the wastes expected to come to WIPP.

The choice of Clause (B) could affect a small fraction of the RH-TRU wastes that are projected to come to WIPP. The present agreement between the State and DOE limits the upper concentration of RH-TRU waste to 23 Ci/l of total radioactivity (including short-lived daughters). Since most of this radioactivity is expected to be either ^{90}Sr or ^{137}Cs the limits proposed under Clause (B) could be exceeded by factors of about 1.5 and 2.5. Presumably, any RH-TRU canisters that exceeded the final NRC concentration limit for ^{137}Cs and ^{90}Sr would not be sent to WIPP.

7. Required disposal facility.

We believe the definition of a waste type should determine the required disposal facility. For example HLW, TRU, and perhaps other long-lived by-products and NARM radionuclides would require isolation in a geologic repository. Low level waste could be disposed of by shallow level burial as permitted by 10 CFR 61. Wastes that were intermediate between LLW and HLW could be disposed of in a specified

alternative disposal facility. We do not see any reason to define HLW (or other waste types) unless the definition is tied to disposal requirements.

8. Inclusion of NARM in Analyses

We definitely believe NARM should be included in the proposed analyses. The appropriate disposal of ^{226}Ra has never been directly addressed and it should be. These analyses, when completed, should lead to a designation of disposal for all waste types, regardless of whether regulated by NRC or not. Analyses of waste types other than HLW could be carried out in subsequent phases if it appears their evaluation would significantly delay the definition of HLW.

9. Other Issues.

No other issues are apparent to us.