wastes regulated under the Atomic Energy Act (AEA). Because section 1004 of RCRA excludes ''source,'' ''special nuclear,'' and ''byproduct materials,'' as defined under the AEA, from the definition of RCRA ''solid waste,'' there has been some confusion in the past as to the scope of EPA's authority over mixed waste under RCRA. EPA clarified this question in a **Federal Register** notice of July 3, 1986 (51 FR 24504).

EPA's clarification stated that the section 1004 exclusion applies only to the radioactive portion of mixed waste, not to the hazardous constituents. Therefore, a mixture of ''source,'' ''special nuclear,'' or ''byproduct materials'' and a RCRA hazardous waste must be managed as a hazardous waste, subject to the requirements of RCRA Subtitle C (that is, RCRA standards for the management of hazardous waste). EPA's oversight under RCRA, however, extends only to the hazardous waste components of the mixed waste, not to the source, special nuclear, or byproduct materials themselves. The exempted radionuclides are instead addressed under the AEA. DOE subsequently confirmed and clarified this interpretation in the **Federal Register** on May 1, 1987 (52 FR 15937).

## III. Proposed Exclusion

### *A. Background*

#### 1. Approach Used to Evaluate This Petition

This petition requests a delisting for listed hazardous wastes. In making the initial delisting determination, the Agency evaluated the petitioned wastes against the listing criteria and factors cited in § 261.11(a)(2) and (a)(3). Based on this review, the Agency agreed with the petitioner that the wastes are non-hazardous with respect to the original listing criteria. (If the Agency had found that the wastes remained hazardous based on the factors for which the wastes were originally listed, EPA would have proposed to deny the petition.) EPA then evaluated the wastes with respect to other factors or criteria to assess whether there is a reasonable basis to believe that such additional factors could cause the wastes to be hazardous. The Agency considered whether the wastes are acutely toxic, and considered the toxicity of the constituents, the concentration of the constituents in the wastes, their tendency to migrate and to bioaccumulate, their persistence in the environment once released from the wastes, plausible and specific types of management of the petitioned wastes, the quantities of wastes generated, and variability of the wastes.

For this delisting determination, the Agency used such information to identify plausible exposure routes (i.e., ground water, surface water, air) for hazardous constituents present in the petitioned wastes. The Agency determined that disposal in a land-based waste management unit is the most reasonable, worst-case scenario for DOE's wastes, and that the major exposure route of concern would be ingestion of contaminated ground water. The Agency notes that future land use on this site could change to private use and thus require protection of ground water resources (see the public docket for the final report on *The Future for Hanford: Uses and Cleanup*, December 1992). Therefore, the Agency is proposing to use a particular fate and transport model to establish maximum allowable concentrations of hazardous constituents for DOE's petitioned wastes. Specifically, the Agency used the model to estimate a dilution and attenuation factor (DAF) associated with the disposal of DOE's petitioned wastes in a land-based waste management unit, based on the estimated maximum annual volume of the wastes. The Agency used this DAF to back-calculate maximum allowable levels from the health-based levels for the constituents of concern.

EPA believes that this fate and transport model represents a reasonable worst-case scenario for disposal of the petitioned wastes in a land-based waste management unit, and that a reasonable worst-case scenario is appropriate when evaluating whether wastes should be relieved of the protective management constraints of RCRA Subtitle C. The use of a reasonable worst case scenario results ensures that the wastes, once removed from hazardous waste regulation, will not pose a threat to human health or the environment.

As an additional measure for evaluating this petition, the Agency believed that it should also consider the most likely disposal scenario for the petitioned wastes because these petitioned wastes are mixed wastes with limited disposal options. Therefore, EPA also evaluated the risks associated with the on-site disposal option selected by DOE, and accepted by the State of Washington, for the petitioned wastes. The preferred scenario is to pipe the treated waste effluents underground and discharge the effluents into a covered structure with an open bottom to the ground (i.e., a crib disposal system). DOE performed a ground water modeling study to assess the impacts of this disposal option. The results of DOE's ground water modeling study are discussed in Part III, Section C (Agency Evaluation).

The Agency also considers the applicability of ground-water monitoring data during the evaluation of delisting petitions. In this case, the Agency determined that, because DOE is seeking an upfront delisting (i.e., an exclusion based on data from wastes generated from pilot-scale treatment processes), ground-water monitoring data collected from the areas where the petitioner plans to dispose of the waste in the future are not necessary. Because the petitioned wastes are not currently generated or disposed of, ground-water monitoring data would not characterize the effects of the petitioned wastes on the underlying aquifer at the disposal sites and, thus, would serve no purpose. Therefore, the Agency did not request ground-water monitoring data.

DOE petitioned the Agency for an upfront exclusion (for wastes that have not yet been generated) based on descriptions of pilot-plant treatment processes used to treat samples comparable in composition to dilute aqueous hazardous waste streams at the Hanford facility, information about the sources of the dilute aqueous wastes that will be treated in the future, available characterization data for these wastes, and results from the analysis of treated effluent generated during studies of pilot-scale treatment processes.

Similar to other facilities seeking upfront exclusions, this upfront exclusion (i.e., an exclusion based on information characterizing the process and wastes) would be contingent upon DOE conducting analytical testing of representative samples of the petitioned wastes once the treatment unit is on-line at the Hanford site. Specifically, DOE will be required to collect representative samples from its full-scale 200 Area Effluent Treatment Facility (ETF), once it is operational, to verify that the treatment system is on-line and operating as described in the petition. The verification testing requires DOE to demonstrate that the ETF, once constructed and on-line, will generate non-hazardous wastes (i.e., wastes that meet the Agency's verification testing conditions).

From the evaluation of DOE's delisting petition, a list of constituents was developed for the verification testing conditions. Maximum allowable total constituent concentrations for these constituents were derived by back calculating from the delisting health-based levels through the proposed fate and transport model for a land-based management scenario. These concentrations (i.e., ''delisting levels'')