Finding of No Significant Impact
Return of Isotope Capsules to the Waste Encapsulation and Storage Facility at the Hanford Site

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy has prepared an Environmental Assessment, DOE/EA-0944, to assess potential environmental impacts of a proposal to return cesium and strontium capsules presently leased to private companies to the Hanford Site for storage in the Waste Encapsulation and Storage Facility.

Based on the evaluation in the Environmental Assessment, the Department of Energy has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969, 42 U.S.C. 4321, et seq. Therefore, the preparation of an environmental impact statement is not required.

Addresses and Further Information:

Single copies of the Environmental Assessment and further information about the proposed project are available from:

Mr. J. L. Daily, Acting Division Director
Nuclear Materials Division
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352
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For further information regarding the Department of Energy National Environmental Policy Act process, contact:

Carol M. Borgstrom, Director
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Background: Beginning in 1974, cesium-137 and strontium-90 were removed from Hanford high-level radioactive tank wastes, encapsulated in double-walled metal capsules, and stored in the Waste Encapsulation and Storage Facility on the Hanford Site. Some of these capsules were taken out of storage and sent to offsite locations for use in research and development, as well as for commercial applications. One of the capsules being utilized offsite released cesium-137 to the water in a storage basin. Since the Department of Energy is uncertain what caused the capsule to leak, the Department needs to take action to assure the remaining capsules are safely stored and managed.

Proposed action: The Department of Energy proposes to return the isotope capsules located offsite to the Waste Encapsulation and Storage Facility at the Hanford Site where any leaking capsules can be safely reencapsulated and all capsules can be stored safely until final disposal. The isotope capsules to be returned from offsite locations are located at IOTECH, Incorporated in Northglenn, CO (309 cesium capsules); Applied Radiant Energy Company in Lynchburg, VA (25 cesium capsules); and Pacific Northwest Laboratory in Richland, WA (33 cesium and 5 strontium capsules). The capsules would be tested and inspected for integrity in an environment shielded from radiation (underwater or in a hot cell) and those passing the tests and inspections

would be loaded into certified packages (up to 16 cesium capsules in one package) designed to provide radiation shielding and containment during normal transportation and under accident conditions. The packages would be transported by truck to the Hanford Site, and the packages would be unloaded and the capsules stored inside the Waste Encapsulation and Storage Facility. The storage at the Waste Encapsulation and Storage Facility would be conducted under the Department's 1987 Record of Decision for the Final Environmental Impact Statement: Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes, Hanford Site, Richland, Washington.

Any capsule failing the integrity tests at the origin would be overpacked in a steel container, loaded separately into an approved package and transported to the Hanford Site. The radioisotopes would be reencapsulated at the Waste Encapsulation and Storage Facility and then stored there pending final disposition.

Alternatives considered: The Department of Energy considered alternative methods of transporting the capsules to Hanford, including air, rail and water carriage. Water carriage was found to be impractical, and air and rail carriage were found to offer no clear advantage over truck transportation.

The Department also considered a no-action alternative, which would leave the isotope capsules in their present locations. The no-action alternative would be inconsistent with the Department's commitment to return the capsules to Hanford for storage and would not allow the Department to monitor and control the integrity of the capsules.

Environmental impacts: The workers and public would be exposed to some radiation during the loading and transportation of the packages. The transportation packages would provide sufficient radiation shielding to limit exposures to workers and the public to low doses. Most of the worker exposure would be incurred while workers were in the vicinity of the transportation package while securing it to the truck. The expected exposure to each of these workers would be slightly more than 0.01 rem for the workers at IOTECH and approximately 0.001 rem for workers at Applied Radiant Energy Company. The dose to workers at the Waste Encapsulation and Storage Facility from routine operations would be too small to be measurable. It is most likely that no radiation induced health effects among workers or the public would result from these operations. The storage of the additional capsules in the Waste Encapsulation and Storage Facility is not expected to increase the dose to workers at that facility or the dose to the public due to operations of the facility. These doses would remain small. Small quantities of hazardous materials such as solvents may be generated during the proposed action, but these materials would be managed and disposed of in accordance with applicable regulations.

Radiation exposures resulting from transportation to the Hanford Site were calculated. The total dose to truck crews (2 persons) was 0.4 person-rem for all shipments, and the total public dose (about 5000 persons) was 6 person-rem. These doses are expected to result in about 2×10^{-4} cancer fatalities among workers and 3×10^{-3} cancer fatalities among members of the exposed public (i.e., no cancer fatalities) from the loading and transportation of the capsules to Hanford.

Cumulative impacts: The proposed return of isotope capsules would not have substantial cumulative impacts. The wastes generated by the packaging would be stored or disposed in existing facilities, and the return and storage of the capsules at Hanford would not substantially increase worker or public exposure to radiation.

Impacts from potential accidents: The Environmental Assessment considered a range of reasonably foreseeable accidents that might result during the transportation and storage of the capsules. These included both low probability, high consequence events and higher probability, lower consequence events.

The rupture of a strontium capsule during retrieval operations was found to result in the highest radiation dose of any event related to storage at the Waste Encapsulation and Storage Facility. The resulting 70-year committed dose for this potential accident was found to be 3×10^{-6} rem (2×10^{-9} latent cancer fatalities) for the maximally exposed individual and 1×10^{-2} rem (5×10^{-6} latent cancer fatalities) for the affected population.

The release of radioactive materials during a truck crash was analyzed. Such a release is considered unlikely, due to the design of the transportation packages. The total transportation impacts from accidents during the shipping campaign was calculated (using the RADTRAN 4 computer code) to be 2.0×10^{-4} person-rem (1×10^{-7} latent cancer fatalities).

It is most likely that none of the accidents analyzed would produce any cancer fatalities.

Determination: Based on the analysis in the Environmental Assessment, I conclude that the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act. Therefore, an Environmental Impact Statement is not required for the proposed action.

Issued at Washington, D.C., this 11th day of May, 1994.

for Tara O'Toole, M.D., M.P.H.
Assistant Secretary
Environment, Safety and Health