FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT ON THE IMPLEMENTATION OF THE AUTHORIZED LIMITS PROCESS FOR WASTE ACCEPTANCE CRITERIA AT THE C-746-U LANDFILL PADUCAH GASEOUS DIFFUSION PLANT PADUCAH, KENTUCKY

AGENCY: U.S. DEPARTMENT OF ENERGY

ACTION: FINDING OF NO SIGNIFICANT IMPACT

SUMMARY: The U.S. Department of Energy (DOE) has completed an environmental assessment (DOE/EA-1414) for the proposed implementation of the authorized limits process for waste acceptance at the C-746-U Landfill at the Paducah Gaseous Diffusion Plant (PGDP) in Paducah, Kentucky. Based on the results of the impact analysis reported in the EA, which is incorporated herein by this reference, DOE has determined that the proposed action is not a major Federal action that would significantly affect the quality of the human environment within the context of the *National Environmental Policy Act* of 1969 (NEPA). Therefore, preparation of an environmental impact statement is not necessary, and DOE is issuing this Finding of No Significant Impact (FONSI).

PUBLIC AVAILABILITY OF EA AND FONSI: The EA and FONSI may be reviewed at and copies of the document obtained from either of the following locations:

U.S. Department of Energy's
Public Reading Room
230 Warehouse Road
Oak Ridge, Tennessee 37830
Phone:(865)241-4780

U.S. Department of Energy's
Environmental Information Center
115 Memorial Drive
Paducah, Kentucky 42001
Phone: (270) 462-2550

FURTHER INFORMATION ON THE NEPA PROCESS: For further information on the NEPA process, contact:

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BACKGROUND: DOE plans to implement the authorized limits process for determining the acceptability of waste containing low levels of residual radioactive materials on both a surface-contaminated and a volumetric basis in accordance with established DOE requirements for disposal at the C-746-U Landfill. Certain authorized limits are described in DOE Order 5400.5 Chapter IV, *Residual Radioactive Materials*, and are limits approved by DOE to permit the release of property from DOE control, consistent with radiation protection standards for general employees, members of the public, and the environment. DOE Order 5400.5 also provides guidelines for determining authorized limits for waste streams that are not addressed by the

numeric authorized limits contained in DOE Order 5400.5.[1] Authorized limits determinations would be made in accordance with DOE Order 5400.5 and its associated guidance and would be both waste stream-specific and facility-specific. Waste streams containing residual radioactive materials below approved authorized limits would not require radiological control under the *Atomic Energy Act* (AEA) and would not be considered radioactive waste. DOE prepared an environmental assessment (EA) to assess potential environmental impacts of the project in accordance with NEPA.

The C-746-U Landfill is an existing, sanitary/industrial landfill that was constructed from 1995 to 1997 by DOE for disposal of solid wastes that are not regulated either as hazardous waste under *Resource Conservation and Recovery Act* (RCRA) Subtitle C or as waste containing polychlorinated biphenyls (PCBs) under the *Toxic Substances Control Act* (TSCA). The C-746-U Landfill is located north of DOE Paducah's main plant area and is permitted by the Commonwealth of Kentucky in accordance with the requirements of Kentucky solid waste regulations [401 Kentucky Administrative Regulations (KAR) 48, *Standards for Solid Waste Facilities*] and Subtitle D of RCRA. Waste streams that may be accepted for disposal at the C-746-U Landfill are generated from activities at the Paducah Site and include soils, wood, concrete, roofing and construction debris, certain remediation waste, and other nonhazardous sanitary and industrial wastes [e.g., paper, fly ash, treated medical waste, asbestos, cardboard, tires, animal carcasses, detectable PCB (less than 50 ppm) waste, personal protective equipment, plastic, alkaline batteries, and metals]. The proposed action would not affect designation of the landfill as a sanitary/industrial landfill that does not accept RCRA-hazardous, TSCA-regulated, or radioactive waste.

Proposed Action. The proposed action is to implement the authorized limits process per DOE Order 5400.5 to determine the acceptability of waste streams containing residual radioactive materials in mass or volume for disposal at the C-746-U Landfill on a waste stream-specific basis. These limits would be developed on a waste stream-specific basis and formally approved in accordance with the requirements of DOE Order 5400.5 (or successor documents) and associated guidance. Waste streams containing residual amounts of surface radioactivity would be accepted for disposal if below the generic authorized limits enumerated in DOE Order 5400.5 (Table IV-1). Any other authorized limits for surface radioactivity, as well as authorized limits for all volumetric radioactivity, would have to be formally evaluated and approved by DOE on a waste stream-specific basis in accordance with DOE Order 5400.5 requirements. The waste acceptance criteria for the landfill would be revised to specify that the authorized limits process must be used where appropriate to determine and document the acceptability of waste for disposal. As before, RCRA-hazardous, TSCA-regulated, and radioactive waste would not be accepted. The only offsite waste that would be accepted for disposal in the C-746-U Landfill would be waste generated as a direct result of PGDP operations and activities (e.g., concrete rubble from waste area grouping 17).

The cognizant DOE field office (i.e. Oak Ridge Operations Office) has chosen to use a 1 mrem/year dose level constraint in developing authorized limits for any wastes to be disposed of at the C-746-U Landfill. Approval of authorized limits for waste streams to be disposed of at the C-746-U Landfill would be based on a dose assessment to (1) demonstrate that the levels of residual radioactive materials in a given waste stream would satisfy criteria specified in DOE Order 5400.5 and associated guidance as well as to (2) satisfy the DOE dose level constraint of 1 mrem/year EDE to the public for the C-746-U Landfill.[2]

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[1] Throughout this EA, references to DOE Order 5400.5 also refer to any documents that might later succeed and, or, supplement DOE Order 5400.5 as it pertains to determinations regarding disposal of materials containing residual levels of radioactivity.

[2] The potential acceptance of a waste stream that results in a calculated dose estimate greater than 1 mrem/yr is not reasonably anticipated at this time. However, if such a situation should arise, DOE would initiate additional NEPA review, as appropriate, in the course of reviewing each waste stream for acceptability at the C-746-U Landfill.

The dose assessment would evaluate the potential dose to both workers and the public under current and potential future scenarios. Each analysis would be modeled for specific waste streams at the landfill using conservative assumptions to estimate the potential doses. Only those waste streams estimated to result in doses of 1 mrem/year EDE or less would be eligible for disposal at the landfill.

ALTERNATIVE: In addition to the proposed action, impacts were also evaluated for the no action alternative. In the no action alternative, DOE would continue to operate the C-746-U Landfill for disposal of wastes containing no residual radioactive materials distinguishable from background. Wastes containing, or suspected of containing, residual radioactive material would not be allowed for disposal unless:

- The wastes were surveyed; and
- There was reasonable assurance that residual radioactive material was not detectable in the waste (i.e., residual radioactivity was indistinguishable from background based upon measurements using appropriate, commercially available technology and a comparison with radioactivity levels of similar non-impacted materials).

The authorized limits process would not be used to determine acceptability of waste streams containing residual amounts of radioactivity at the landfill, and no such waste streams would be disposed of at the landfill. Waste generators would retain responsibility for proper management and disposition of the waste at alternate facilities. Waste streams accepted for disposal at the landfill would also have to meet all other WAC for the landfill. As in the past, RCRA-hazardous, TSCA-regulated, and radioactive waste would not be accepted. The only offsite waste that would be accepted for disposal in the C-746-U Landfill would be waste generated as a direct result of PGDP operations and activities.

ENVIRONMENTAL CONSEQUENCES: The impact analysis in the EA addressed the potential effects to workers, the public, biota, water quality and air quality resulting from radiological exposures; the potential for radiological releases to surface water and groundwater and air; and potential indirect effects related to cost-effectiveness of landfill operations.

No potential effects to several resources or areas would be anticipated as a result of implementing either alternative in the assessment. Climate, topography, geology, soils, seismicity, floodplain, wetlands, and cultural resources would not be affected because the alternatives do not involve excavation or construction activities or disturb previously undisturbed areas. Noise levels and transportation would not be affected because use of heavy equipment and truck traffic are already a part of operations at the landfill and on surrounding roadways. Similarly, area demographics and socioeconomics would not be affected as the action would occur at an existing facility. No disproportionate effects to environmental justice populations would be anticipated because no disadvantaged population aggregates have been identified in the area around the landfill.

ENVIRONMENTAL CONSEQUENCES RESULTING FROM ALTERNATIVE 1 - NO ACTION

Radiological Consequences under Alternative 1 - No Action. Under Alternative 1, no wastes containing above-background levels of residual radioactive materials would be disposed at the C-746-U Landfill. Accordingly, radiation doses to facility workers or the public would not be associated with the operation of the landfill, but would come only from background sources. Similarly, there would be no potential effects to biota, water quality, or air quality from exposure to radioactivity as a direct result of implementing Alternative 1 - No Action because no exposures in excess of background levels would occur. Results of a sitewide monitoring program are published annually, and potential radiological doses to the public and to biota are estimated in that annual report.

Other Environmental Consequences under Alternative 1 - No Action. Under Alternative 1, continued operation of the C-746-U Landfill might be determined not to be cost effective. As a result, all wastes generated at the Paducah Site (i.e., both wastes containing low levels of residual radioactive materials as well as wastes containing levels indistinguishable from background) would require alternate disposal. These wastes would have to be stored and managed pending development and approval of an appropriate disposition strategy. If waste generated at the Paducah Site that would otherwise be eligible for disposal at the C-746-U Landfill required offsite disposal, higher costs would be incurred for management and disposition of both waste streams containing radioactivity levels indistinguishable from background and waste streams containing small amounts of residual radioactivity.

ENVIRONMENTAL CONSEQUENCES RESULTING FROM ALTERNATIVE 2 - IMPLEMENT AUTHORIZED LIMITS

Radiological Consequences under Alternative 2 - Implement Authorized Limits Process. Potential radiological doses to workers involved in the active management and disposal of the proposed waste stream, to hypothetical future workers at the facility following closure, and to other potential future occupants, as well as to the offsite public would be individual doses less than 1 mrem/year and collective doses below 10 person-rem. The NCRP has identified a dose of 1 mrem/year as a "negligible" level of exposure to radioactivity (NCRP 1993). This means that the estimated risks from doses less than 1 mrem/year of radioactivity from a given source are so small that they would be difficult to differentiate from the risks from other exposure sources. Potential radiological effects to biota, water quality, or air quality would not be anticipated during routine operations because normal landfill operating procedures provide for dust suppression so any airborne release of material would be minimized, and the liner and leachate collection systems prevent releases to surface and groundwater. Results of a sitewide monitoring program are published annually, and potential radiological doses to the public and to biota are estimated in that annual report.

Other Environmental Consequences under Alternative 2 - Implement Authorized Limits Process. No environmental consequences, other than the potential for radiological exposures as discussed under the Radiological Consequences section above, have been identified under Alternative 2 - Implement Authorized Limits Process.

ENVIRONMENTAL CONSEQUENCES FROM NON-ROUTINE OPERATIONS - ACCIDENT SCENARIO: The integrity of the composite liner system could be damaged as a result of a seismic or other type of catastrophic event. In such a case, the potential for migration into the environment could be increased. Although the physical characteristics of the waste in the landfill (e.g., soils, construction debris) would generally preclude rapid release and transport of contaminants into environmental media, the dose assessment conducted for each potential waste stream considered for disposal at the C-746-U Landfill would include an analysis where containment of the disposed waste may be lost (e.g., the cover system and/or liner system may be breeched). Authorized limits resulting from this analysis would be protective of ecological receptors as well as human receptors. Results of this analysis would provide an upper bound on the potential impacts from a hypothetical seismic accident, and authorized limits would be approved only if no unacceptable impacts would be anticipated in the event of an accidental release.

CUMULATIVE IMPACTS: The EA considers the potential cumulative radiological impact of the proposed action and the potential cumulative impact of CERCLA-derived materials in conjunction with other PGDP activities. Other potential actions that could result in exposures to radioactivity at the Paducah Site include: continuing uranium enrichment operations; disposal of radioactive waste in a potential CERCLA disposal facility; and the presence of residual radioactivity below clean-up levels that will be established for contaminated media such as soil and buildings. The potential cumulative radiological impacts from the

proposed action and the no action alternative are estimated to be similar [i.e., in both cases, the potential radiation dose to the public attributable to the operation of the C-746-U Landfill would be a negligible fraction (less than 0.3 percent) of that from background sources of radiation exposure]. Since either Alternative 1 or Alternative 2 would result in negligible levels of exposure to radioactivity, the cumulative effects would be difficult to differentiate from the risks due to other exposure sources. Accordingly, neither alternative would result in unacceptable cumulative effect to humans, biota, water quality or air quality.

DETERMINATION: Based on the findings of this EA, DOE has determined that the proposed implementation of the authorized limits process for waste acceptance at the C-746-U Landfill at the PGDP in Paducah, Kentucky does not constitute a major Federal action that would significantly affect the quality of the human environment within the context of the NEPA. Therefore, preparation of an environmental impact statement is not required.

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