

US EPA ARCHIVE DOCUMENT

List of Key Assumptions

The Shielded Containers Project was initiated in April, 2007 and has seven main elements that are to be integrated. For the near term (April 2007 to September 2007) the bulk of the work activities will be primarily centered on elements 1, 2, and 3, however, some preliminary work activities will be performed under elements 4, 5, and 6. For the near term, the key assumptions associated with the main project elements are as follows:

1. Project Administration

- a. Project will be complete upon receipt of 1st shipment of shielded containers to WIPP in early- to mid-CY2009

2. Container/Transportation

- a. Shielded containers will have these characteristics:
 - i. overall external dimensions approximating those of a 55 gallon drum ($\approx 24''$ dia x $\approx 35''$ height)
 - ii. internal dimensions sufficient to install a 30 gallon drum with inside lever-lock closure and surrounding lift net/webbing ($\approx 20.375''$ dia x $\approx 29.75''$ height payload cavity provided by the shielded container)
 - iii. maximum loaded weight of $\approx 2,200$ lbs per shielded container (for 2.75 inch thick base and lid) or 2,260 lbs if thickness increases to 3.00 inches
 - iv. maximum empty weight of $\approx 1,756$ lbs (1,816 lbs if 3 inch thick ends used), contents of ≈ 444 lbs (405 lb of waste, 35 lb for empty 30 gallon drum and 4 lb for lift webbing inside the shielded container)
 - v. pass all DOT-7A tests (4 foot drop and stacking test expected to govern design)
 - vi. will be filtered
- b. Shielded containers are to be transported in the HalfPACT while retaining the currently approved HalfPACT design and certification bases (e.g., total decay heat in a HalfPACT is limited to 30 watts and 3 loaded shielded containers plus all surrounding dunnage, slip sheets, pallets, spacers, etc. will weigh no more than 7,600 lb)
- c. Shielded containers will be remotely loaded at user sites and will include design features to accommodate this
- d. Decay heat load of at least 10 watts per shielded container to be accommodated by design
- e. HAC activity limits will be imposed on the waste using methodologies paralleling those in the 72-B SAR
- f. Will be approved by NRC as an authorized payload container

3. Repository Performance

- a. For PA purposes, assume all waste is on the repository floor (i.e., randomly placed in the CH waste stack) and it is all contact handled
- b. The shielded containers will be placed with CH waste, randomly placed on the repository floor – no loading scheme is assumed. All waste in the repository will be stacked three high.
- c. Lead used in the shielding can come from DOE inventories, and any radiological component of the lead will be negligible in the context of the radiological characteristics of the inventory.
- d. Identify criteria for candidate waste streams for management in containers
- e. The maximum number of shielded containers to be emplaced in each panel will be **5909 containers** (assuming that all shielded containers overpack standard 30 gal drums each with an internal volume of 0.11 m^3), and the total volume of waste will be no more than 650 m^3 per panel.

- f. The maximum masses of materials in each shielded container will be:
 - i. Steel = 841 lbs for 2.75 inch thick base and lid, 901 lb if increased to 3.00 inch thick (includes the steel of the interior 30-gal drum)
 - ii. Silicone rubber = 0.14 lbs
 - iii. 30 gallon drum lift webbing = 4 lb
 - iv. Lead = 950 lbs
 - v. Waste = 405 lbs

4. Design Safety Analysis

- a. Criticality analysis will consider the impact of lead based on the proposed disposal configuration
- b. Safety analysis will consider the effects of current accident events involving shielded containers handled as three packs

5. Hazardous Waste Facility Permit

- a. The HWFP will require modification
- b. Assume Class 2 Permit Modification Request
 - i. Waste Handling Process
 - ii. Recordkeeping (emplacement position)
 - iii. Contingency Plan
 - iv. Inspections
 - v. other
- c. Stakeholder meetings will be required

6. Site Operations

- a. Waste is received and handled in 3-packs – no splitting apart of 3-pack assemblies
- b. Minimum impact to WIPP Waste Handling Procedures
- c. Waste is emplaced randomly in repository with CH waste
- d. MgO will be placed on top of the three-high stack
- e. Existing package handling equipment will be used to the greatest extent possible (new spaceframe pallet may be required to handle concentrated 3-pack of shielded containers)
- f. Separate slip sheet design will be required

7. Procurement

- a. Shielded containers and slip sheets will be available for purchase by generator sites by December, 2008.
- b. Slip sheets available through a central procurement purchasing agreement.
- c. Shielded containers will be available through a central procurement purchasing agreement