

CH2M HILL Hanford Group, Inc.	Manual	HNF-IP-0842
USE OF TYPE A METAL BOXES FOR TYPE B WASTE	Volume	18, Waste Management
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1.0 PURPOSE AND SCOPE

This procedure provides guidance to implement WHC-SD-TP-SARP-018 in CH2M HILL, Inc. (CHG) facilities. Quality system requirements and controls are included as guidance for the specific tasks of loading, tie-down, and transport.

This procedure applies to the use of U.S. Department of Transportation 7A Type A metal boxes for Type B shipments of radioactive material in accordance with DOE orders and WHC-SD-TP-SARP-018.

2.0 RESPONSIBILITIES

2.1 Waste Management Services Lead

1. Performs a preliminary assessment of the equipment to be packaged to determine whether it complies with the latest controlled copy of WHC-SD-TP-SARP-018.
2. Verifies that all conditions, limitations, and requirements of the SARP and this procedure and all facility-specific requirements are completed before shipment occurs.
3. Determines the need for, and schedules crafts, quality system, and radiological control technicians.
4. Discusses WHC-SD-TP-SARP-018 requirements and limitations with personnel involved.

2.2 Waste Management Services Engineer

1. Characterizes the material that will be loaded in the box.
2. Completes the appropriate storage/disposal paperwork in a timely manner to avoid shipment delays.
3. Provides marking and labeling instruction.

2.3 Authorized Shipper

1. Performs the shipment and verifies the shipment complies with applicable regulations.
2. Completes required shipping papers and the pre-shipment checklist.

2.4 Operators

1. Package the waste in accordance with WHC-SD-TP-SARP-018
2. Inspect the packaging before transportation and unloading.
3. Mark and label package per instruction.
4. Support loading package.

2.5 Radiological Control

Provides qualified technicians to survey equipment and packaging for compliance with the radiological control limits of WHC-SD-TP-SARP-018.

3.0 REQUIREMENTS

3.1 Safety

1. Personal protective equipment, as identified in the Radiological Work Permit, must be worn, when specified, for handling or inspecting waste. Work shall be performed to an approved Radiological Work Permit, as applicable.
2. Industrial Hygiene and Safety must be involved in pre-job planning. The need for development of an Automated Job Hazard Analysis will be determined at that time.
3. Shielding may be used in the construction of the box or added to the interior of the box to reduce exposure.
4. Transportation maximum dose rates are as follows:
 - 200 mrem/hr on contact
 - 10 mrem/hr at 1 meter
 - 2 mrem/hr in any normally occupied space in or on the transport vehicle.
5. External contamination limits are 22 dpm/cm² beta gamma and 2.2 dpm/cm² for alpha.
6. Only one box may be transported per vehicle.
7. If the gross weight of the box exceeds 10,000 pounds, an engineered tie-down system must be developed.
8. Packages cannot be transported in adverse weather conditions.
9. The Hanford Fire Department and Hanford Patrol shall be notified of the time and location of each shipment governed by the safety analysis report for packaging.
10. The transport vehicle may carry only the minimum practical amount of fuel on board.

11. No other cargo can be shipped with boxes governed by the safety analysis report for packaging.
12. Road closures are required to keep all unauthorized personnel away from the shipment.
13. Speed limitations are as follows:
 - a. Speed is limited to the posted speeds when transporting quantities described in WHC-SD-TP-SARP-018, Table A3-1.
 - b. Speed is limited to 20 mph when transporting quantities described in WHC-SD-TP-SARP-018, Tables A3-2 and A3-3.

NOTE : Escort vehicles are required for these shipments.
14. General safety considerations and responses to abnormal releases of hazardous materials are covered in the following administrative procedures:
 - HNF-IP-0263TF, "Tank Farms Building Emergency Plan."
 - HNF-IP-0842, Volume 9, Section 2.7, "Safety Responsibilities."
 - HNF-IP-0842, Volume 9, Section 2.6, "Job Hazard Analysis."

3.2 General Recovery Action

If any specification limit in this procedure is violated, immediately notify the supervisor of the condition unless a specific recovery action is stated with the limit.

1. Contact the supervisor for clarification whenever additional information is needed or if unable to complete this procedure.
2. A pre-job meeting shall be conducted with all personnel required to complete the job.
3. Special transfer requirements affecting transport must be addressed by the authorized shipper, including informing the transporter in writing of any applicable administrative controls on the shipment and (when required) notifying emergency responders before the shipment (WHC-SD-TP-SARP-018, Section 4.3).
4. Transport will not take place when extreme fog, ice, or adverse snow conditions are present (WHC-SD-TP-SARP-018).
5. Before unloading, the authorized shipper shall inspect the package to ensure that it is in good condition and that there is no evidence of defects or loss of containment.

3.3 Pre-Use Evaluation

1. Before using a Type A box for Type B quantities of radioactive material, an evaluation will be performed to ensure that the radionuclide inventory and the Type A metal box are consistent with the requirements of the safety analysis report for packaging.

NOTE: To remedy major discrepancies between the material and/or packing requirements in WHC-SD-TP-SARP-018 and operating facility resources, contact Duratek Federal Services ~~Waste Management Technical Services~~ about obtaining an Engineering Change Notice to the safety analysis report for packaging.

2. Container certification information must be attained, reviewed for completeness, and retained. Container certification includes:
 - Certificate of compliance statement
 - Quality system documentation
 - Type A testing results
 - Materials of construction
 - Special closure instructions
 - Maximum gross weight and vent port size.

3. The following is a list of controlling limitations that will determine if the radioactive material intended for shipment meets the criteria allowing the use of WHC-SD-TP-SARP-018. The outcome of this determination will be used for administrative control requirement decisions.
 - The material must be in the form of equipment and other debris-type waste.
 - The material cannot be liquid, sludge, soil, powdered materials, or ion exchange resins.
 - The material cannot be classed as flammable by the Department of Transportation or be capable of producing 50% of the lower flammability limit of hydrogen gas.
 - The maximum radiation level from the unshielded material shall not exceed 1 rem/hr at 1 meter.
 - No chemical waste residue may be packaged in the box that will adversely affect the containment features of the packaging during its expected service life.
 - The radioactive material inventory must conform to the bounding source term in WHC-SD-TP-SARP-018, Tables A3-1, A3-2, or A3-3.
 - Contaminated item will be double-wrapped with a nominal 4-mil or greater yellow plastic sheet. The box shall be lined with a sufficient amount of plastic (10-mil or greater) to completely cover the contents prior to lid installation.

4. The following is a list of controlling limitations that will determine if the packaging intended to be used for shipment meets the criteria allowing the use of WHC-SD-TP-SARP-018.
 - The box must be a Department of Transportation Specification 7A Type A certified container.

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- The box must be constructed of 12-gauge steel (minimum), and all seams must be welded.
 - The box must be built with a vent hole that will accept a vent filter meeting the requirements of the safety analysis report for packaging.
5. The loaded box gross weight cannot exceed the designed and tested gross weight of the package or of the transport vehicle.
- The materials loaded into the box must be double-plastic wrapped with 4-mil (minimum) plastic and horse-tailed or heat-sealed closed.
 - The box must be lined before use with 10-mil (minimum) plastic so that it will fold over the contents of the box completely.

4.0 PROCEDURE

4.1 Pre-Shipment Review

An authorized shipper performs the following activities before loading and shipping (see Figure 1):

1. Inspect the box lid, including the lifting devices, to ensure there is no damage or cracking.
2. Inspect the sealing surface between the lid and the body of the box to ensure there is no damage and to verify the integrity of the gasket.

NOTE: Defects greater than 1.60 mm that affect the sealing of the box must be repaired prior to use.
3. Verify that all bolts are installed, in good condition, and torqued to the manufacturer's specifications.
4. Verify that the weight of the package does not exceed the "maximum gross weight" identification marking indicated by the container manufacturer on the box and that the following requirements can be met:
 - If the package weighs 10,000 lbs or less, the standard tie-down requirements of Section 4.2 of WHC-SD-TP-SARP-018 apply.
 - If the package weight exceeds 10,000 lbs, an engineered tie-down system must be developed. Notify the supervisor for additional guidance.
5. Verify that a Nuc-Fil (or equivalent) filter is installed and is in good condition.

4.2 Loading

Loading operations are found in WHC-SD-TP-SARP-018, Section 6.0. An authorized shipper performs the following activities by conforming to DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual."

1. Ensure that escort and road closure requirements are met, when required.
2. Ensure that the package is loaded onto a vehicle with a bed of sufficient dimensions so that the equipment does not hang over the sides.
3. Verify the radiological control technician has surveyed the package to ensure that the dose rates are within the parameters described in this procedure.
4. Verify that the radiological control technician has surveyed the package to ensure that the surface contamination does not exceed the limits described in this procedure.
5. Verify that the tie-down system meets the requirements of WHC-SD-TP-SARP-018, Section 4.2, or the engineered tie-down system, as applicable.

5.0 SOURCES

1. 49 CFR 173.441, "Radiation Level Limitations."
2. HNF-IP-0263TF, "Tank Farms Building Emergency Plan."
3. HNF-IP-0842, RPP Administration.
Volume 9, Section 2.6, "Job Hazard Analysis."
Volume 9, Section 2.7, "Safety Responsibilities."
4. WHC-SD-TP-SARP-018, "Safety Analysis Report for Packaging (Onsite) for Type B Quantities of Radioactive Material in Type A Boxes."

Figure 1. Example Pre-Shipment Checklist.

This form is an example of the information that should be completed by the authorized shipper and the person in charge.

ACTION	SIGNATURE	DATE
The facility person in charge has read and understands this procedure.		
The facility person in charge has read and understands Part A of the SARP.		
The person in charge has previewed the items intended to be packaged to determine if they are SARP compliant.		
The person in charge has overseen the radiological surveys of the items to be packaged.		
The size of container required, amount of void space filler needed, additional shoring or shielding, and the need for crafts personnel is in accordance with the SARP.		
The appropriate Type A box to be used is in accordance with the SARP. Enter the information below: <ul style="list-style-type: none"> • Manufacturer • Model/serial number • Container Identification Number bar code number • QA inspection date • Maximum gross weight • Tare weight • Box dimensions 		
QA certifies that the Type A box and the Nuc-fil (or equivalent) filter meets the SARP requirements.		
The pre-loading inspection of the container has been completed.		
The dose rate does not exceed 200 mrem/hr at any spot on the container.		
Weigh and record actual gross weight of box.		
COMMENTS:		