

WM DOCKET CONTROL
CENTER



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OPERATING PROCEDURE
FOR
ENVIRALLOY DISPOSAL CONTAINERS
WITH SERIES A (WEDGE) CLOSURE

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1.0 GENERAL SCOPE

1.1 Purpose

This document delineates several procedures that are required for personnel and property safety and adherence to the applicable regulations for containment and burial of an Enviroalloy High Integrity Container (HIC).

1.2 Content

This procedure describes the methods and techniques required to operate any container in the Ferralium family of High Integrity Containers from fabrication through burial. It is an all encompassing generic procedure unless specific site, customer, or application requirements are indicated by the procedure cover page and Section 1.3, Applicability.

Addendums may be attached as necessary. Any addendums are noted in the Table of Contents and Section 1.3, Applicability.

1.3 Applicability

This procedure applies to the related activities of all Nuclear Packaging, Inc. employees, their contract personnel, utility customers and their contract personnel. Any applicable personnel that handle load, procure, store, close and ship the container are bound by this procedure.

2.0 REFERENCES

- 2.1 United States Code of Federal Regulations Title 10 Part 61
- 2.2 United States Code of Federal Regulations Title 10 part 71
- 2.3 Nuclear Packaging Cask handling procedures
- 2.4 Nuclear Packaging Quality Assurance Program, NRC Approval No. 0192

- 2.5 Nuclear Packaging, Inc. Enviralloy High Integrity Containers Topical Report
- 2.6 NuPac Procedure CP-05, Cleaning of Enviralloy Containers
- 2.7 NuPac Procedure No. LT-17, General Procedure - Soap Bubble (Low Pressure) Test for Enviralloy Containers
- 2.8 Nupac Procedure NO. FS-01, Sec for Fab/Mach of Steel Parts
- 2.9 Criteria for High Integrity Containers, Washington State Radiation Control Program, August 25, 1983.
- 2.10 US NRC Final Waste Classification and Waste Form Technical Position Papers, May 11, 1983

3.0 DEFINITIONS

- 3.1 HIC: High Integrity Container
- 3.2 Liquid Free Waste: Dry waste such as dried filters, DAW, hardware etc.
- 3.3 DAW: Dry Activated Waste

4.0 LIFTING AND HANDLING PROCEDURE

4.1 Empty Container

The empty containers can be lifted by any one of the normal lifting connections (lifting slings, lifting padeye or lifting eye) or by lifting beneath the container with a forklift or other suitable device such as a lifting platform. Care should be taken not to drop or damage the container. The tare weights of the containers are noted in Table 4-1.

4.2 Loaded Container

Lift the loaded container only by the lifting sling assembly or the special lifting lugs designed for remote handling equipment or from beneath the container with a forklift or lifting platform. The maximum gross weight of each container is listed in Table 4-1.

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Table 4-1

| Model | Tare weight (lbs.) | Gross Weight (lbs.) |
|-----------|--------------------|---------------------|
| EA-210H | 3790 | 20000 |
| EA-210B | 3450 | 20000 |
| EA-190H | 3455 | 20000 |
| EA-190B | 3060 | 20000 |
| EA-142H | 2585 | 10000 |
| EA-142B | 2545 | 10000 |
| EA-140H | 2430 | 15000 |
| EA-140B | 2185 | 15000 |
| EA-7-100H | 2640 | 13000 |
| EA-7-100B | 2545 | 13000 |
| EA-6-100H | 2110 | 12000 |
| EA-6-100B | 2060 | 12000 |
| EA-50H | 1435 | 4200 |
| EA-50B | 1435 | 4200 |

5.0 STORAGE PROCEDURE

- 5.1 The containers shall not be stored where they will come in contact with an environment that violates the requirement of 7.4
- 5.2 Store the closure gasket in a cool dry place out of direct sunlight. Protect the closure gaskets from abrasion, cutting, harsh chemicals and fumes or excessive loaded pressure during storage.
- 5.3 Take precautions to prevent the container from filling with rain water.
- 5.4 Store containers in an area where they will not sustain impacts, abrasions, gouging, or other damage.
- 5.5 Vent must be covered during storage with a ultraviolet (UV) opaque cover (i.e., black polyethylene, black poly vinyl chloride tape, etc.).

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6.0 CLOSURE PROCEDURE

6.1 Manual Closure

- 6.1.1 Clean seal area both on container and on the lid to remove any dirt, grease, oils, or other debris.
- 6.1.2 Inspect gasket for any cuts or damage. Replace if necessary.
- 6.1.3 Place lid on gasket and align handles so they are between closure wedge holes on the series A containers.
- 6.1.4 Place wedges in holes and drive until secure. The wedges should be driven until the lid is metal to metal on the stops under the lid. Note: the wedges do not normally require driving to their full ramp length.
- 6.1.5 Remove vent UV cover.

6.2 Remote Closure

- 6.2.1 Perform steps 6.1.1 through 6.1.3
- 6.2.2 Drive wedges in place using a remote closure tool.
- 6.2.3 Remove vent UV cover.

7.0 WASTE COMPATIBILITY VERIFICATION PROCEDURE

NOTE: THIS PROCEDURE SECTION APPLIES TO ALL PERSONNEL AS OUTLINED IN SECTION 1.3, APPLICABILITY. THIS SECTION MAY BE PARTICULARLY APPLICABLE TO THE PLANT CHEMICAL MATERIALS COORDINATOR, RADWASTE OPERATIONS SUPERVISOR, RADWASTE TRANSPORTATION SUPERVISOR AND, SECONDARY, TO THOSE WHO USE THE CHEMICALS SUCH AS THE APPROPRIATE OPERATIONS, CHEMISTRY AND MAINTENANCE GROUPS.

7.1 Scope

7.1.1 Purpose

The waste material placed in the container must be compatible with the operation of the container in addition to the container's material corrosion properties. Verification of the compatibility of the waste and the processes performed on it is required to meet the applicable safety, transportation and burial requirements of a High Integrity Container (HIC).

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7.1.2 Content

The waste compatibility procedure is designed to require minimum steps and no plant chemical analysis. The procedure requires less than 5 steps.

7.1.3 Applicability

Waste compatibility verification applies to all waste placed in the container regardless of the nature of the material or mixture. It includes, but is not limited to:

- 7.1.3.1 Ion exchange resins
- 7.1.3.2 Cartridge filters
- 7.1.3.3 Cloth material
- 7.1.3.4 Paper wastes, other small containers and their contents,
- 7.1.3.5 Hardware and the liquids coating it
- 7.1.3.6 Stabilization media and the chemicals incorporated in the stabilization media.

7.2 Prerequisites

7.2.1 Utilities and Tools

No utilities or tools are required for this part of the procedure.

7.2.2 Other Procedures and Checklists

No other procedures are required. The checklist that is a duplicate of Figure 1 is required to complete this part of the chemical compatibility section of the container procedure.

The flow diagram, Figure 2, is to be used in conjunction with the chemical compatibility procedure found in Section 7.3.

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FIGURE 1 - ENVIRALLOY CONTAINER PROCEDURE CHECK OFF SHEET

A) CONTAINER PREREQUISITES PER THE PROCEDURE

1.0 User _____ Date _____

2.0 Model Number _____ Serial Number _____

3.0 Waste Description (cation resin, anion resin, DAW, filters,
etc.) _____

Verification

4.0 Containers handled per 4.0 of procedure. _____

5.0 Container stored per 5.0 of procedure. _____

6.0 Chemical Compatibility per Section 7.0. _____

Yes No

The waste is corrosive per
section 7.3.1 _____Temperature limits met
per section 8.0 _____

B) USAGE VERIFICATION

1.0 Container filled with dry waste or has
been dewatered per an approved dewatering
procedure. _____

2.0 Closure

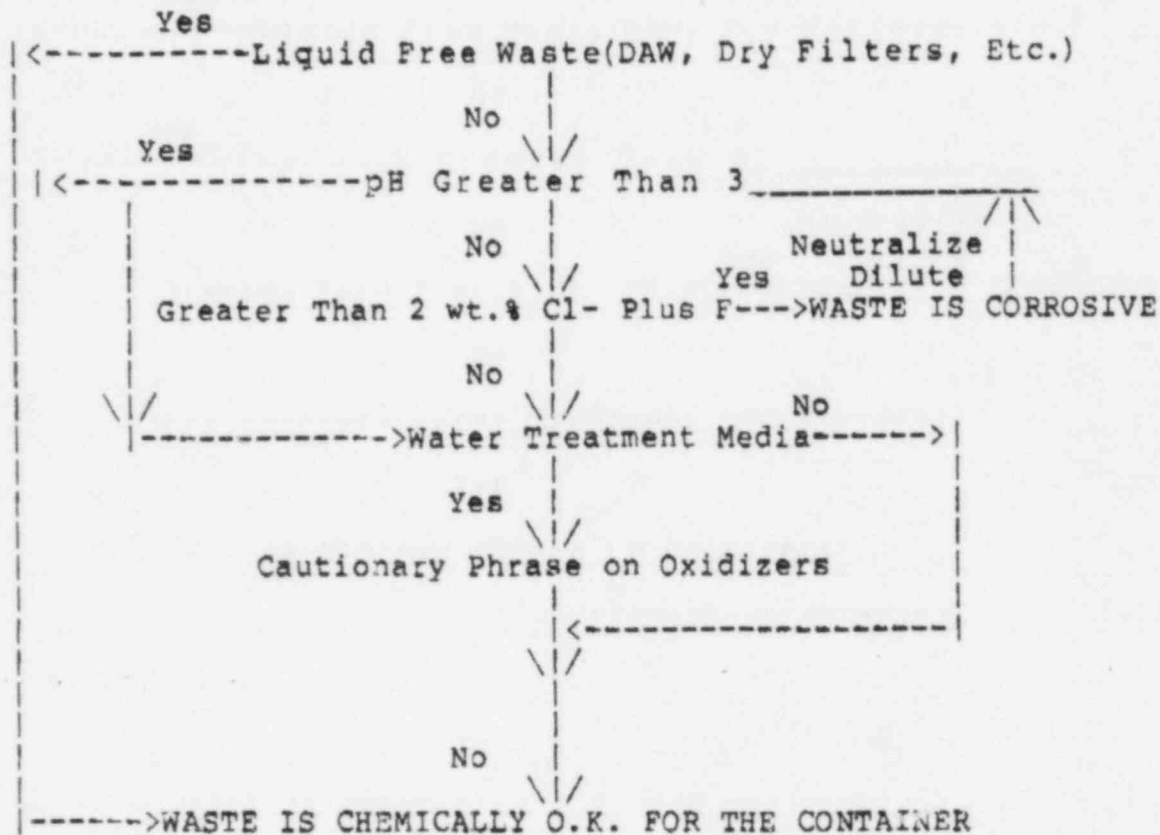
2.1 Seal area clean prior to closing. _____

2.2 Wedges secured per 6.1.4 of procedure. _____

NOTE: A COMPLETED COPY OF THIS FORM SHALL BE INCLUDED WITH
THE SHIPMENT OF EACH APPLICABLE LOADED CONTAINER. THE
ORIGINAL SHALL BE RETAINED BY THE USER IN ACCORDANCE WITH
THEIR RECORD KEEPING PROCEDURE.

Signature _____ Title _____

FIGURE 2 - CHEMICAL COMPATIBILITY PROCEDURE FLOW DIAGRAM*



*Work the flow diagram with the procedure found in Section 7.3.

7.3 Chemical Compatibility Check Off Procedure

The following check off procedure for chemical compatibility does not require specific chemical analysis or a plant wide chemical inventory. The check off procedure eliminates such analysis and inventories. The check off procedure considers the waste source and the operating function before its chemical composition.

7.3.1 Overall Chemical Compatibility

- a). Is the waste completely free of liquids?
(dewatered resins and damp cloths are considered wet)

Yes - the waste is not corrosive, note on the check list and go to 7.3.2.

No - continue.

- b). Does the waste liquid, or contact water, have a pH greater than 3?

Yes - the waste is not corrosive, note on the check list and go to 7.3.2.

No - continue.

- c). Does the waste liquid, or contact water, have greater than 2% by weight chloride plus fluoride ions?

Yes - the waste is corrosive, note on the check list and go to 7.3.4.

No - there are no corrosives, note on the check list and continue.

7.3.2 Water Treatment Media

- a). Is the waste media ion exchange resins?

Yes - continue.

No - go to 7.3.4.

7.3.3 Oxidizer Caution

NOTE: OXIDIZERS DO NOT POSE ANY PROBLEMS TO THE CONTAINER ITSELF. AN OPERATIONAL CAUTION IS INCLUDED IN THIS PROCEDURE APPLYING TO THE WASTE HANDLING AND PROCESSING THAT MAY BE PERFORMED IN CONJUNCTION WITH THE CONTAINER.

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CAUTION: ION EXCHANGE RESINS WHEN EXPOSED TO SUFFICIENT QUANTITIES OF OXIDIZING CHEMICALS (NITRIC ACID, ALKALINE PERMANGANATES, PEROXIDES, HYPOCHLORITES, ETC.) CAN PRODUCE REACTIONS RANGING FROM INCREASED TEMPERATURES UP TO EXPLOSIONS. SMALL AMOUNTS OF CLEANERS AND DECONTAMINATION SOLUTIONS USED IN NORMAL DAILY OPERATIONS WOULD NOT BE EXPECTED TO BE A PROBLEM. HOWEVER, LARGE HARDWARE DECONTAMINATIONS OR LARGE AREA CLEANINGS COULD POSE A PROBLEM. AN EXAMPLE WOULD BE THE TREATMENT OF THE RINSE WATER FROM A RECIRC PIPE DECONTAMINATION PROCESS. THE ION EXCHANGE RESIN VENDOR SHOULD BE CONSULTED WHEN THERE IS ANY POTENTIAL FOR LOADING OF OXIDIZERS ON ION EXCHANGE RESINS.

- 7.3.4 If the waste media is too corrosive for the container, the waste may be diluted, neutralized or rinsed to meet the corrosion criteria. Consult with NuPac personnel. Restart the entire procedure when the corrosive nature of the waste is corrected.

7.4 Chemical Corrosion

Chemicals on this list must not be present in the container in sufficient acidic concentrations to corrode the container past acceptable limits for a 300 year life. The use, or evolution of hydrochloric acid above a 2 wt.% chloride concentration and less than a pH of 3 is the situation to avoid. (pH < 3 and Cl⁻ + F⁻ > 2%wt.)

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TABLE 7.1 CORROSIVE CHEMICAL LIST

| Chemical Name | Possible Sources |
|---|---|
| Ammonium Chloride | |
| Anion Ion Exchange Resins | Treating seawater with the radwaste system |
| Carbon Tetrachloride | Lab Wastes |
| Cation Ion Exchange Resins | Unused or partially used hydrogen form resin |
| Chloroform | Lab Wastes |
| Degreasers | See Freons, Trichloroethylene, Trichloroethane |
| Freons R-10, 11, 12, 13, 14, 20, 21, 22, 23, 30, 40, 41, 113, 114, 115, 142, 152, 160, 216, 500's | Refrigerant systems, lab wastes, ultrasonic decon |
| Halogenated Hydrocarbons | |
| Hydrochloric Acid (Muriatic Acid) | |
| Hydrofluoric Acid | |
| Methylene Chloride | Solvents, degreasing |
| Muriatic Acid (Hydrochloric Acid) | |
| Refrigerants - See Freons | |
| Sea Water and acids | Sump intrusion+acid |
| Trichloroethylene | Solvents, degreasing |
| Trichloroethane | Solvents, degreasing |
| Trifluoroacetic Acid | |
| Chlorides and Acids | |

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8.0 TEMPERATURE LIMITS FOR WASTE MEDIA

- 8.1 For media that have a ph less than 7.0, but not less than 3.0, container-media contact temperature must be less than 180°F.
- 8.2 For the media container contact temperature to exceed 180°F and remain below 500°F the medium must have a ph \geq 7.0 and the media container contact temperature must be cooled to less than 120°F within four hours.
- 8.3 In no case shall the media-container contact temperature be above 120°F for greater than twelve hours.

9.0 DOCUMENTATION AND CHECK OFF

The use of the Enviralloy containers shall be in accordance with this procedure. Verification requires the use of the check off sheet provided in Figure 1. One sheet shall be filled out for each container. A copy of the sheet shall accompany the filled container. the original shall be retained by the user in accordance with their record keeping procedure.