

General Packaging Instructions for Waste with Envirocare Endpoint

Rev.0, 1/21/04

Page 1 of 3

Contact: [Greg Larson](#), Laboratory Waste Services, Radioactive Waste Management Team Leader

Email Address: larsongr@ornl.gov

1. The following items are prohibited by Envirocare and shall be segregated from this waste stream.
 - For radioactive waste meeting process knowledge (PK) form RPK-02 requirements only, no Resource Conservation and Recovery Act (RCRA) or polychlorinated biphenyl (PCB) waste. RCRA and PCB waste is acceptable under the mixed waste (MPK) series of PK forms.
 - Class B or C or greater than Class C waste as defined in Utah Administrative Code (UAC) R313-15-1008. Note that radium-226 is included as a Table I radionuclide.
 - Sealed sources or radioactive material that is permanently bonded or fixed in a capsule or matrix designed to prevent the release and dispersal of the radioactive material under the most severe conditions, which are likely to be encountered in normal use and handling.
 - Solid waste containing unauthorized free liquids, or solid waste which fails the Paint Filter Liquids Test. Solid waste containing liquid shall contain as little free-standing and non-corrosive liquid as is reasonable achievable, but in no case shall the liquid exceed one percent of the volume. For authorized free liquids, the process by which the liquid will be minimized to less than one percent of the waste volume must be documented in the Radioactive Waste Profile Record. Non-aqueous radioactive liquids require case-by-case approval from the Utah Division of Radiation Control (UDRC).
 - U.S. Department of Transportation (DOT) Forbidden, Class 1.1, Class 1.2, and Class 1.3 explosives; shock sensitive wastes and materials; waste material that is readily capable of detonation, of explosive decomposition, reactive at normal pressure and temperature, or reactive with water.
 - Compressed gas cylinders, unless they meet the definition of empty containers.
 - Waste materials that contain, or are capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of waste.
 - Waste materials that are pyrophoric. Pyrophoric materials contained in waste must be treated, prepared, and packaged to be nonflammable.
 - Waste materials containing untreated biological, pathogenic, or infectious material including contaminated laboratory research animals.
 - Polychlorinated Biphenyl (PCB) large, high or low voltage capacitors, or PCB containers in which the PCB concentration of material contained in the container was greater than or equal to 500 ppm.
 - Chelating agents in excess of 0.1 percent by weight, unless disposed of as mixed waste (22% by weight allowed).
 - U.S. Environmental Protection Agency (EPA) waste codes F020, F021, F023, F026, and F027; and Utah waste codes F999 and P999.

General Packaging Instructions for Waste with Envirocare Endpoint

Rev.0, 1/21/04

Page 2 of 3

Contact: [Greg Larson](#), Laboratory Waste Services, Radioactive Waste Management Team Leader

Email Address: larsongr@ornl.gov

2. If the waste contains special nuclear material (SNM) (plutonium, uranium-233, uranium enriched in the isotope 233, or in the isotope 235), the following requirements apply.
 - The SNM must be homogeneously distributed, or the limiting concentrations as provided in the Envirocare's Radioactive Material License must not be exceeded in any contiguous mass of 600 kg.
 - The waste must not contain "pure forms" of chemicals containing carbon, fluorine, magnesium, or bismuth in bulk quantities, unless allowed by Envirocare's Radioactive Material License.
 - The waste must not contain total quantities of beryllium, hydrogenous material enriched in deuterium, or graphite above one percent of the total weight of the waste, unless allowed by Envirocare's Radioactive Material License.
3. Measured dose rates must be less than 200 mR/hr on the manifested container; less than 500 mR/hr on external, accessible surfaces of waste in the container; and less than 80 mR/hr on contact for containers with resin. Smearable contamination on the external surfaces of debris must be less than 500 dpm α /100 cm² and less than 50,000 dpm β,γ /100 cm².
4. Prior to opening the container for loading with waste items, visually check the physical area. Verify no potential exists for prohibited items to mingle with waste items as they are loaded into the container.
5. Prior to placement of waste in a waste container:
 - Confirm that the container has a sufficient volume of moisture absorbent added to the bottom.
 - Confirm that the container is clean. It must not have any waste material, or other material that could be mistaken for waste material, on the outer surface.
 - Confirm the integrity of the container, and presence of the container barcode.
6. Complete a container log sheet as items are loaded into the container per [web link]. The log sheet will document item description, weight (estimated or measured), volume, and required radiological information based on waste type.
7. Package dry active waste (DAW) type items (personal protective equipment (PPE), paper, plastic, and other low density items) separately from surface contaminated objects (SCO). Consult Laboratory Waste Services (LWS) to obtain guidance on whether an item is DAW or SCO, or if DAW and SCO items must be combined in one container.
8. Block or brace large items as needed.
9. Close and secure container after loading to prevent addition of waste.
10. Forward log sheets to the appropriate individual for calculation of item/container activity.
11. The following requirements apply to bulk packaging (rail cars, trucks, trailers):

General Packaging Instructions for Waste with Envirocare Endpoint

Rev.0, 1/21/04

Page 3 of 3

Contact: [Greg Larson](#), Laboratory Waste Services, Radioactive Waste Management Team Leader

Email Address: larsongr@ornl.gov

- Bulk packaging must be covered. The top must be completely enclosed with no opening along the sides or openings in the top.
 - Bulk packaging must be tightly sealed to prevent waste from leaking out or water from leaking in.
 - Friable asbestos is prohibited in packages that will be unloaded in the rollover facility.
12. The following requirements apply to non-bulk packaging (containers):
- Containers must be properly sealed to prevent load movement from “pumping” dust-laden air out of the container.
 - Do not have unnecessary container closures, such as welding of drum rings or box lids.
 - For containers to be returned by Envirocare, use box liners and banding to secure the lid instead of clips.
 - Overpack containers only when necessary to meet DOT requirements for shipment.
13. For asbestos waste, refer to the Subject Area: Solid Radioactive Waste Management Exhibit entitled “[Asbestos Packaging Additional Requirements](#)”.