

**LLE NOTICE 6680C**

**SUBJECT: Radiological Materials Shipment**

**REFERENCE:** (a) LLE INSTRUCTION 6680C

**ENCLOSURE:** (1) Radiological Materials Shipment Procedure

- 1. Purpose:** To formalize procedures for preparing tritium waste materials for shipment to external vendors, identifying the proper shipping category, communicating with University of Rochester Radiation Safety (RSU) personnel, and documenting the shipping transaction.
- 2. Background:** This instruction is based upon the RSU procedure "Shipping Radioactive Materials" SOP 2.12 and the U.S. D.O.T. CFR 49 Hazardous Materials Regulations.
- 3. Definition:** The radiological materials covered in this instruction include any equipment or materials that contain measurable amounts of tritium either on the surface of or internal to the equipment/material that need to be transported outside the confines of LLE. This includes adsorption beds, getter beds, radioactive water, and contaminated equipment/materials. The scope of this document does not include shipping targets that contain tritium or low-level tritium waste such as gloves, wipes, etc.
- 4. Discussion:** The University and federal government mandate that the shipment of radiological materials closely adhere to agreed-upon shipping standards that protect the safety and security of the public. It is essential that any package containing radiological materials sent or received by the University comply with these standards. The consequences of shipping radiological materials improperly can result in exposure to the public and severe fines and legal action by governmental agencies. Several types of materials/equipment that contain tritium and are used in the Cryogenic and Tritium Facility (C&TF) and the OMEGA Target Chamber Tritium Removal System (TC-TRS) must be periodically shipped to vendors. These materials include adsorption beds, radioactive water, and contaminated equipment/materials. Several important characteristics of the materials to be shipped determine the manner in which they are prepared for shipment: the physical state (solid/liquid); the total tritium activity and concentration; and the inherent hazards of the materials. Some of the radiological materials routinely shipped by C&TF personnel contain other hazards that are addressed by this instruction. For example, nickel and zirconium-iron adsorption beds contain flammable solids that must be shipped as a Class 4 (flammable) material unless tritium activity is high enough to ship it as a Class 7 material.
- 5. Action:** This procedure shall be employed in the shipment of all radiological materials (except targets and low-level waste) that are required for the operation of the C&TF and in the OMEGA TC-TRS. The LLE Radiation Safety Officer must approve any deviations from this procedure.

**6. Responsibilities:**

a. C&TF Personnel

1. Ascertain the activity of the material to be shipped and determine the appropriate shipment category.
2. Prepare the items(s) for shipment.
3. Perform measurements of surface radiological contamination.
4. Prepare all shipping paperwork.
5. Contact RSU personnel to inspect the package, review the paperwork, and approve the shipment.
6. Maintain shipment records in the Tritium Facility and insert into the Radiological Shipment binder.
7. Provide copies of shipping documents to the RSU.

b. C&TF Manager

1. Review and approve all shipments.
2. Review the paperwork and package preparations to ensure that they comply with the enclosed procedures.
3. Ensure that all documentation is inserted into the CTHS Radiological Shipment binder.

c. LLE Radiation Safety Officer

1. Ensure compliance with these procedures.
2. Approve shipments in the absence of the Tritium Facility Manager.



Walter T. Shmayda  
LLE Radiation Safety Officer

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