



Work Instructions

DIRECTIVE NO. 205-WI-6400.1.2A
EFFECTIVE DATE: June 17, 1999
EXPIRATION DATE: N/A

APPROVED BY Signature: Original Signed By
NAME: Mike A. McNeill
TITLE: Head, Safety and Environmental Branch

Responsible Office: 205/Safety, Environmental and Security Office

Title: Packaging and Shipping of Radioactive Materials

P1. PURPOSE

This procedure describes the process for performing the packaging and shipping of government controlled items containing radioactive materials.

P2. SCOPE

This procedure applies to Project and Government controlled scientific and ground support material and equipment for space flight projects and ground support systems that are covered under the scope of GSFC's Quality Management System (QMS) Policy. Packaging and shipping of these products is managed by Code 232 Materials Management Branch and supported by the Code 205 Radiation Protection Program contractor. A Wallops employee whose training has been approved by the GSFC Radiation Protection Officer handles radioactive materials packaging and shipping at Wallops Flight Facility.

P3. DEFINITIONS

- 3.1 RSC: Goddard Space Flight Center Radiation Safety Committee
- 3.2 RPO: Goddard Space Flight Center Radiation Protection Officer
- 3.3 NRC License: US Nuclear Regulatory Commission Byproduct (Radioactive) Material License

P4. RECORDS, REPORTS AND FORMS

- 4.1 GSFC Form 20-4, Invoice/Shipping Document
- 4.2 Shippers Declaration for Dangerous Goods (For Type A & Type B packages)
- 4.3 Limited Quantity of Material Statement (UN2910)
- 4.4 GSFC Form 23-27, Health Physics Activity Report
- 4.5 GSFC Form 23-26, Radioactive Material Shipping and Receiving Record
- 4.6 GPG 6400.1, Handling, Storage, Packaging, Marking, Preservation & Transportation

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT

<http://gdms.gsfc.nasa.gov/gdms> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

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4.7 Quality Records Retention and Disposition

Quality Record Title	Record Custodian	Retention/Schedule
Shipment of Radioactive Materials Files (<i>GSFC Forms 23-26</i>)	Safety and Environmental Branch	NPG 1441.1C, NRRS 1-124: Transfer to Federal Records Center (FRC) 3 years after break. Destroy 10 years after transfer.
Radioactive Materials Inspection and Test Files (<i>GSFC Form 23-27</i>)		NPG 1441.1C, NRRS 8-38: Retire to FRC when 6 years old. Destroy when 75 years old.

P5. SAFETY PRECAUTIONS AND WARNING NOTES

- 5.1 Radioactive material is also designated a “Hazardous Material.” Only qualified and trained Health Physics staff will prepare and handle packages containing radioactive materials. Non-Conformities: Deviations from material specifications or normal operating procedure. Reportable to management via the NonConformance Report and Corrective Action (NCR/CA) System.

P6. REFERENCES

- 6.1 US Code of Federal Regulations – 49CFR172-174
6.2 US Code of Federal Regulations - 10CFR20
6.3 International Air Transport Association (IATA) Regulations
6.4 Goddard Handbook 1860.1B, Radiation Protection

P7. TOOLS, EQUIPMENT, AND MATERIALS

- 7.1 Geiger Counter equipped with GM Tube.
7.2 Wipe Papers.
7.3 Low Background Gas Proportional Counter or suitable alpha/beta counting instrument
7.4 Thermoluminescent Dosimeter (TLD) Badge (if required)
7.5 Packaging materials sufficient to prepare a US DoT 7A, Type A package for shipment.

P8. INSTRUCTIONS

- 8.1 Radiation Protection Officer is notified that radioactive materials require packaging and shipping (GSFC Form 20-4 received from requestor) and that the RSC has given authorization for the shipment.
8.2 Radioactive material is obtained and transported to the Radioactive Materials Laboratory for leak testing and radiation measurement.
8.3 Packaging materials will be obtained from the Packing and Crating Section, Code 239 as required.
Radioactive materials will be packaged in accordance with the mode of transportation to be used. (IATA for air shipments, US DoT for ground transport).

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- 8.4 Monitor exterior of package with Geiger counter and perform a contamination wipe test on the package exterior. (Affix package seal if required).
- 8.5 Prepare a Shippers Declaration for Dangerous Goods or US DoT statement for limited quantity of material and forward it with the package.
- 8.6 Arrange for transport of package to shipping department.
- 8.7 Transport package to shipping department.
- 8.8 Obtain receipt for package from Logistics personnel.
- 8.9 Update radioactive material inventory records (Wallops notifies RPO for inventory update)
- 8.11 Report all non-conformances through the NCR/CA Database at <http://scylla.gsfc.nasa.gov/cars/cgi-bin/index.cgi>

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**FLOW DIAGRAM :
PACKAGING AND SHIPMENT OF RADIOACTIVE MATERIALS**



