
**Oak Ridge National Laboratory
Transportation and Packaging Management
Procedure**

**Radioactive Materials and Mixed Waste Shipments
TPM-R-1, Revision 3**

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September 17, 2004**

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Date Printed:

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I. PURPOSE

To provide general instructions for the packaging and shipment of radioactive materials and mixed wastes to off-site locations.

II. APPLIES TO

This procedure applies to personnel in Transportation and Packaging Management (TPM) who ship radioactive materials and mixed wastes to off-site locations.

III. OTHER DOCUMENTS NEEDED

-) Air Waybill
-) Bill of Lading
-) Canada Customs Invoice for Shipments to Canada
-) Defense Program Packing List
-) Exclusive Use Instructions
-) Facsimile Invoice
-) Form 741, Department of Energy (DOE)/Nuclear Regulatory Commission (NRC)
-) Uniform Hazardous Waste Manifest
-) ORNL-28, Request for Shipment of Radioactive Materials
-) Shipper's Declaration of Dangerous Goods
-) Shipper's Export Declaration
-) State Notification of Transportation of Radioactive Material
-) TPM-R-001, Radioactive Materials Shipper Order
-) TPM-R-002, Radioactive Shipments Radiation Protection Inspection
-) TPM-R-003, Radioactive Materials Packaging Certification
-) TPM-R-004, Transport Vehicle and Cask HP Monitoring Checklist
-) TPM-S-001, Shipping Paper/Transportation Checklist
-) UCN-28-IDO, Request for Shipment of Radioactive Materials (See Exhibit A)

For Isotope Business Office (IBO) shipments, UCN-28-IDO may be used instead of ORNL-28.

Unless otherwise indicated, the current revisions to the above forms and documents can be obtained from TPM.

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IV. RESPONSIBILITIES

A. Packaging Radioactive Materials and Mixed Hazards/Waste Shipments

1. Packaging Operations

- a. Receives ORNL-28, Request for Shipment of Radioactive Materials, and other applicable documents (i.e., Material Safety Data Sheet, BJC-2109) from shipment or campaign originator.

For Y-12 Plant Defense Program (DP) shipments, the DP Packing List may be used instead of ORNL-28.

- b. **For ORNL shipments only**, forwards copy of ORNL 28, Request for Shipment of Radioactive Materials, to Isotopes Business Office (IBO) for license verification of the receiving facility. (IBO performs this verification for IDO shipments before sending UCN-28-IDO to TPM Packaging Operations).
- c. Obtains the following information for each shipment as applicable:
- (1) analytical data,
 - (2) Certificate of Competent Authority (CoCA),
 - (3) Certificate of Compliance (CoC),
 - (4) customer requested information (e.g., assay information, special handling instructions, etc.),
 - (5) data on non-rad constituents,
 - (6) Form 741 DOE/NRC for Nuclear Materials,
 - (7) packaging procedure or checklist,
 - (8) packaging schematic,
 - (9) Safety Analysis Report for Packaging (SARP),
 - (10) Special Form documentation,
 - (11) Type A test documentation.
- d. Determines if material is DOT radioactive. If not, forwards copy of ORNL-28 and calculation sheet to Transportation Operations and either sends package from RAMSPAC with non-DOT Rad "Insert" (See Exhibit B & C) placed inside or instructs requestor to transfer material to 7001. R(3)
- e. Classifies material for shipment and determines proper shipping name, markings, labels, and placards.
- f. Verifies that **IBO** has completed license verification and relevant information has been added to ORNL-28 by IBO.

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- g. Selects appropriate packagings and loading instructions for material, or approves customer-selected packaging and loading instructions for materials.
- h. Completes TPM-R-001, Radioactive Materials Shipping Order, and TPM-R-003, Radioactive Materials Packaging Certification.

For Y-12 IDO shipments, the DP Packing List, may be used instead of TPM-R-001, Radioactive Materials Shipper Order.
- i. **If** materials is spent nuclear fuel (SNF) or other highly visible shipment, **then** issues Tennessee Oversight Agreement (TOA) notification at least ten (10) calendar days prior to shipment.

Transportation Specialist issues state notification at least seven (7) calendar days prior to shipment.
- j. **For ORNL shipments only, if** Form 741, DOE/NRC for nuclear materials is required, **then** contacts ORNL Nuclear Material Control & Accountability (NMC&A) for completion of Form 741, and ensures that a copy of Form 741 is received or ensures customer has completed required notifications.
- k. Arranges Health Physics (HP) contamination survey of package, and obtains copy of TPM-R-002, Radioactive Shipments Health Physics Inspection or TPM-R-004, Transport Vehicle and Cask HP Monitoring Checklist and/or other site-specific HP forms, as applicable.
- l. Retains file copy of the document package for minimum of three (3) years.
- m. Coordinates delivery of packages to Building 7001, notifies Transportation Operations that package(s) is ready for shipment, and provides paperwork documentation to Transportation Operations.

B. Shipping Radioactive Materials and Mixed Waste

1. Transportation Operations

- a. Receives shipping documentation from Packaging Operations or Laboratory Wastes Services
- b. For SNF shipments, issues state notification at least seven (7) calendar days prior to shipment.
- c. Selects carrier through ATMS for all LTL shipments and selects truckload and dedicated shipments through carrier negotiations.

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- d. Prepares or obtains the following shipping forms as applicable:
 - (1) Air Waybill
 - (2) Bill of Lading
 - (3) Canada Customs Invoice for Shipments to Canada
 - (4) Exclusive Use Instructions
 - (5) Facsimile Invoice
 - (6) Hazardous Waste Manifest
 - (7) Shipper's Declaration of Dangerous Goods
 - (8) Shipper's Export Declaration

LWS prepares own Hazardous Waste Manifest and submits to TPM for review and approval.

For non-ORNL shipments, receives Form 741 DOE/NRC from NMC&A as applicable.

- e. Completes TPM-S-001, Shipping Paper/Transportation Checklist.
- f. Obtains peer review of shipping papers and package.
- g. Forwards copy of shipping papers to designated Compliance Reviewer.

3. Designated Compliance Reviewer

- a. Performs regulatory compliance reviews, resolves discrepancies, stamps and/or signs shipping documents indicating approval, and notifies Transportation Specialist of approval.

4. Transportation Operations

- a. Inspects shipment for DOT/RCRA/TSCA markings, labeling, and placarding requirements.
- b. Ensures that inspections required for truckload carrier and Highway Route Control Quantity (HRCQ) shipments are performed.
- c. Ensures Federal Motor Carrier Safety Regulations are met by carrier prior to departure.
- d. Verifies shipping papers have been signed with designated technical contact noted and ensures that carrier is informed of security responsibilities and consigns shipment to carrier.
- e. Faxes Emergency Response Guide information with copy of shipper papers to the Laboratory Shift Superintendent Office.

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- f. For fissile, Type B, and HRCQ shipments, notifies consignee via fax notification of receipt of shipment/material and requests confirmation per 173.22(c). R(3)
- g. Sends a copy of Bill of Lading or Air Waybill and Shipper's Declaration of Dangerous Goods to IBO.
- h. Notifies NMC&A via phone when nuclear material is shipped.
- i. Distributes copies of shipping documents to Accounts Payable, Property Management, LWS, and Procurement as required.
- j. Sends copy of Hazardous Waste Manifest to Science Application for entry into the Enterprise Transportation Analysis System.
- k. Enters hazardous materials information other than Hazardous Waste Manifest information into ATMS.
- l. Retains copy of shipping papers/documentation for file.

V. RECORDS

Records are generated and maintained in accordance with established company records management practices and approved records inventory and disposition schedules.

Packaging Operations retains file copy of the document package for minimum of three (3) years.

Transportation Operations retains shipping papers documentation for three (3) years.

VI. REFERENCES

- 1. Title 10, Code of Federal Regulations, Parts 71, "Packaging and Transportation of Radioactive Materials"
- 2. Title 40, Code of Federal Regulations, Parts 260-268, 302, "Protection of Environment"
- 3. Title 49, Code of Federal Regulations, Parts 106 – 180, "Hazardous Materials"
- 4. Dangerous Goods Regulations International Air Transportation Association
- 5. International Civil Aviation Organization
- 6. North American Emergency Response Guide Book (Latest Edition)

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7. ORNL-PT-001, "ORNL Packaging and Off-Site Transportation of Hazardous/Nonhazardous Materials and Waste Shipments"
8. ORNL-TS-001, "ORNL Motor Carrier Safety Compliance"
9. TPM-TRF-1, "Shipping"

Prepared by: TPM Organization

Points of Contact: J. H. Shelton, 576-6401

Approved by: _____ [Signature on File] _____ Date: [9/17/04] _____
J. H. Shelton, Manager
Transportation and Packaging Management

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**Exhibit A
UCN-28-IDO, Request for Shipment of Radioactive Material**

**INTERNAL USE ONLY
REQUEST FOR SHIPMENT OF RADIOACTIVE MATERIAL**

REQUESTER'S NAME ISOTOPE DISTRIBUTION		PHONE 865-574-6984	BUILDING/MAILSTOP 9204-3/8044	DIVISION 03	
SHIP TO		REQUESTED SHIP DATE 20-November-2000	CHARGE NUMBER 3641-1103		
		SHIP BY <input type="checkbox"/> MOTOR <input type="checkbox"/> FASTEST WAY <input type="checkbox"/> OTHER <input type="checkbox"/> AIR <input type="checkbox"/> NO PREFERENCE			
ATTENTION		PREFERRED CARRIER			
PHONE		FAX		SHIPPING CHARGES <input type="checkbox"/> PREPAID <input type="checkbox"/> COLLECT	
GROSS WEIGHT OF PACKAGE(S)					
LIST EACH ISOTOPE WITH ACTIVITY AND GRAMS. (Attach calculation sheet(s) with classification)					
ISOTOPE	ACTIVITY (Ci)	ISOTOPE WEIGHT (g)	ISOTOPE	ACTIVITY (Ci)	ISOTOPE WEIGHT (g)
PHYSICAL FORM <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS		CHEMICAL FORM	MATERIAL WEIGHT OR VOLUME	TOTAL NUMBER OF PACKAGES	
ASSAY DATE	HEAT LOAD (WATTS)	PURPOSE OF SHIPMENT	TEMPERATURE CONTROL REQUIRED? <input type="checkbox"/> YES DEG C <input type="checkbox"/> NO		
ARE THE RADIOACTIVE MATERIALS FOR USE IN, OR INCIDENT TO, RESEARCH, OR MEDICAL DIAGNOSIS OR TREATMENT? <i>Information on use not available from customer</i> <input type="checkbox"/>		<input type="checkbox"/> YES <input type="checkbox"/> NO			
EXTERNAL RADIATION READING(S) OF INTERNAL CONTAINER(S) mR/hr		HP TAG APPLIED (OR FOR EMPTY PKGS. INTERNAL & EXTERNAL SURVEY COMPLETED) <input type="checkbox"/> YES <input type="checkbox"/> NO			
URANIUM ENRICHMENT (% U-235) IF APPLICABLE		AT WHICH SITE AND BUILDING IS THE MATERIAL LOCATED?			
LIST ANY ADDITIONAL HAZARDS (FLAMMABLES, CORROSIVES, EXPLOSIVES, OXIDIZERS, POISONS, COMBUSTIBLES, PEROXIDES, NITRATES, ACIDS USED AS PRESERVATIVES, OILS, RCRA WASTE CODES, ASBESTOS, PCBs, ETC.). STATE QUANTITIES, CONCENTRATION, PH, FLASH POINT, TEST RESULTS, ETC.					
DESCRIBE THE PACKAGING. INCLUDE ALL LEVELS OF CONTAINMENT AND RECORD SERIAL NUMBER, TORQUE VALUES, BOTTLE SIZES, CONTAINER CERTIFICATION, SPECIAL FORM CERTIFICATION, CONTAINER WEIGHT, ETC., AS APPROPRIATE (OR ATTACH LOADING CHECKSHEET).					
ISOTOPE ORDER NUMBER	WORK AUTHORIZATION	INVOICE NUMBER			
CUSTOMER ORDER	SPECIAL INSTRUCTIONS				
ORDER RELEASED TO SHIPPING:		DATE RELEASED 20-November-2000			
NAME (PRINTED)	BADGE	DIVISION Chemical Technology			
K-25 and Y-12 REQUESTERS - COMPLETE BELOW. ORNL REQUESTERS - SUBMIT LICENSE WITH THIS FORM. DO NOT WRITE BELOW.					
NRC LICENSE NUMBER OF CONSIGNEE	EXPIRATION DATE OF LICENSE	LICENSE VERIFIED BY	DATE 20-November-2000		

Exhibit B

CAUTION

RADIOACTIVE MATERIAL

The contents in this package do not meet the U.S. Department of Transportation's definition for *radioactive material* for the purpose of shipping; however, the contents do meet the U. S. Department of Energy's definition for *radioactive material*.

All handlers of this package should be aware that the inner contents are radioactive, and appropriate precautions should be taken prior to opening this package.

CAUTION

RADIOACTIVE MATERIAL

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Exhibit C

CAUTION

SUSPECT RADIOACTIVE MATERIAL

The contents in this package do not meet the U.S. Department of Transportation's definition for *radioactive material* for the purpose of shipping; however, the contents may meet the U.S. Department of Energy's definition for *radioactive material*.

All handlers of this package should be aware that the inner contents may be radioactive, and appropriate precautions should be taken prior to opening this package.

CAUTION

SUSPECT RADIOACTIVE MATERIAL

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