

ROCKY FLATS PLANT
EMD OPERATING
PROCEDURES MANUAL

Manual No.: 5-21000-OPS-FO
New Manual No.: 4-11000-ER-OPS-FO
Procedure No.: Table of Contents, Rev 57
Page: 1 of 4
Effective Date: 11/17/93
Organization: Environmental Management

THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES:

VOLUME I: FIELD OPERATIONS (FO)
VOLUME II: GROUNDWATER (GW)
VOLUME III: GEOTECHNICAL (GT)
VOLUME IV: SURFACE WATER (SW)
VOLUME V: ECOLOGY (EE)
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**EG&G
SUPERSEDED
DOCUMENT**

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DOCUMENT CLASSIFICATION REVIEW WAIVER
PER R.B. HODGSON, CHIEF CLASSIFICATION OFFICE
JUNE 11, 1991

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**ROCKY FLATS PLANT
4-B11-ER-OPS-FO.25**

REVISION 0

**SHIPMENT OF RADIOACTIVE
MATERIALS SAMPLES**

APPROVED BY: *N. Wittchen* , *N. Wittchen* , *10/25/93*
Associate General Manager Print Name Date
EG&G Environmental Restoration Management

K. Bentzen , *KAYE BENTZEN* *10/20/93*
Quality Assurance Program Manager Print Name Date
EG&G Environmental Restoration Management

CONCURRENCE BY: *R. Schassburger* , *R. SCHASSBURGER* *11/2/93*
Director Print Name Date
Environmental Restoration Division
DOE, Rocky Flats Office

Environmental Protection Agency Approval Required: Yes No

Responsible Organization: Environmental Restoration Effective Date: 12-01-93

CONCURRENCE BY THE FOLLOWING DISCIPLINES WILL BE DOCUMENTED IN THE PROCEDURE HISTORY FILE:

- Traffic
- Industrial Hygiene
- Radiological Engineering
- Rocky Flats Plant Traffic
- Environmental Quality Support
- Remediation Project Management
- Environmental Science & Engineering
- Facility Operations
- Records Management & Documentation
- Solar Pond Project
- Sample Management

DOCUMENT CLASSIFICATION REVIEW WAIVER
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Use CATEGORY 3

ORC review not required
Periodic review frequency: 3 years from effective date

SHIPPING LIMITED QUANTITIES
OF RADIOACTIVE MATERIALS
IN SAMPLES

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1. PURPOSE

This procedure is to provide guidance for EG&G Environmental Restoration Management (ERM), other RFP environmental activities, and its subcontractors to help ensure compliance with Department of Transportation (DOT) requirements in 49 CFR when shipping samples that meet the definition of radioactive material in 49 CFR 173.403 (y).

However, this procedure does not nullify the shipping requirements set forth in 49 CFR. If EG&G does not prepare the shipping papers, the subcontractor preparing the shipping papers for the shipment assumes the responsibilities for meeting the requirements in 49 CFR.

2. SCOPE

This procedure is applicable to samples collected by ERM or ERM subcontractors being shipped to laboratories for testing or for treatability studies [see 40 CFR 261.4 (d) and (e)] that meet the definition of radioactive material in 49 CFR 173.403 (y) and to shipment of source or articles (in other words manufactured items or equipment).

3. LIMITATIONS AND PRECAUTIONS

- Although samples for testing (e.g., laboratory analysis) or treatability studies are exempt from the hazardous waste manifesting requirements [see 40 CFR 261.4 (d) and (e)], the DOT requirements in Title 49 of the Code of Federal Regulations (49 CFR) relating to the shipment of hazardous material shall be implemented. For example, if the sample meets DOT's criteria for radioactive material (i.e., radioactivity exceeding $0.002 \mu\text{Ci/g}$), then all samples of the material shall be shipped as radioactive material. Failure to meet the DOT requirements may result in legal action against you, your employer, EG&G, and/or DOE.

3. **LIMITATIONS AND PRECAUTIONS (continued)**

- Radiation (RAD) screening of samples for offsite shipments are required to meet the DOT criteria specified above unless specifically exempted under HSP 18.10. Failure to implement this requirement may result in a violation of the DOT criteria (in other words a violation of federal regulations).

4. **PREREQUISITE ACTIONS**

NOTE *The preparer identified throughout this procedure applies to the individual or individuals who prepare the package and paperwork, and deliver the package to the offsite transporter. This preparer is typically an individual or individuals (e.g., subcontractor sample manager) in a subcontractor organization.*

4.1 **Planning and Coordination**

NOTE *The Preparer referred to throughout his procedure is the individual who prepares and signs the shipping papers.*

CAUTION

EG&G ERM Personnel do not sign shipping papers. EG&G ERM Personnel are responsible for preparation of the paperwork shown in Appendixes 2 and 3.

4.1 Planning and Coordination (continued)

Project Manager

- [1] Ensure that all personnel performing these procedures have the appropriate health and safety training as specified in the site-specific Health and Safety Plan.
- [2] Ensure that personnel performing this procedure and the personnel who package, handle the packages, or ship the material have documented training that meet the requirement of 49 CFR 172.704.
- [3] **IF** the shipping papers are not prepared by EG&G Traffic,
THEN provide the EG&G Project Manager with certification of the training mandated in Step 4.1[2].

NOTE *Traffic is the EG&G organization responsible for shipping hazardous substances offsite for EG&G Rocky Flats Plant shipments. Traffic is located in Building 111 and can be reached by calling 4430.*

NOTE *EG&G Project Managers do not accept responsibility for the adequacy, completion or certification of subcontractor training. Subcontractor training certification provides EG&G with some reasonable assurance that the subcontractor will be able to meet legal and contractual obligations (minimizing any potential negative impact on EG&G and DOE). EG&G will track the subcontractor training and maintain copies of the applicable certification to address EG&G responsibility for providing reasonable assurance that this training did occur.*

4.1 Planning and Coordination (continued)

Project Manager (Continued)

- [4] Ensure that a copy of the carrier's satisfactory DOT safety rating and evidence of insurance are sent to Traffic (or subcontractor administrator for shipments made independently by subcontractors).

NOTE *49 CFR 171.8 defines a carrier as person engaged in the transportation of passengers or property by:*
(1) Land or water, as a common, contract, or private carrier, or
(2) Civil aircraft.
The appropriate registration or authority will be determined by RFP Traffic and may include registration as a carrier for interstate commerce.

- [5] Ensure that a copy of the laboratory's Nuclear Regulatory Commission (NRC) (or Agreement State) license is on file with the subcontractor administrator and Traffic before the first shipment.
- [6] Ensure that Traffic was sent a copy of the name and training records of the identified individuals for the shipper, carrier, and laboratory who have been identified as the transportation specialists in hazardous materials.

Preparer

- [7] Obtain from EG&G or its designee the appropriate documentation for RAD material screening and monitoring of all field samples for shipment offsite (typically the laboratory analysis or field analysis report/datasheet), unless specifically exempted by Radiological Engineering in accordance with HSP 18.10.

4.1 Planning and Coordination (continued)

Preparer (Continued)

- [8] Implement procedure 5-21000-OPS-FO.13, Containerization, Preserving, Handling and Shipping of Soil and Water Samples, in association with the implementation of this procedure.

4.2 Performance Documents

NOTE *The procedure numbers referenced below reflect the re-issuance of the procedures based on the separation of Environmental Restoration Management and Environmental Protection. Once these procedures have been re-issued, the alpha/numeric prefix would be "4-###-ER-OPS-". "###" is a number assigned to this specific procedure.*

Preparer

- [1] Obtain and review 5-21000-OPS-FO.13, Containerization, Preserving, Handling and Shipping of Soil and Water Samples, as necessary.
- [2] Obtain and review 5-21000-OPS-FO.18, Environmental Sample Radioactivity Content Screening, as necessary.

4.3 Field Preparation

Project Manager

- [1] Verify that the carrier is permitted/authorized to transport the materials.

NOTE *Contact Traffic to determine that the carrier is approved to transport Department of Energy (DOE) materials. A copy of the laboratory's NRC (or Agreement State) license must be on file with the subcontractor administrator and Traffic before the first shipment. Traffic shall receive a copy of the name and training records of the identified individuals for the shipper, carrier, and laboratory who have been identified as the transportation specialist in hazardous materials.*

4.4 Project Manager

Project Manager

- [1] Verify that the laboratory is permitted/licensed to receive the materials.

5. INSTRUCTIONS—SAMPLE CONTAINERS AND PRESERVATIVES

Procedures for the containerizing, preserving, handling and shipping of soil and water samples are detailed in Procedure 5-21000-OPS-FO.13, Containerization, Preserving, Handling and Shipping of Soil and Water Samples. This procedure provides supplementary directions (see Appendices 1, 2, and 3) to be followed when the sample being shipped meets the DOT definition for radioactive (RAD) material provided in 49 CFR 173.403 (y) (in other words, if the specific activity exceeds $0.002 \mu\text{Ci/g}$).

NOTE *49 CFR 173.403 (aa) states specific activity of a radionuclide, means the activity of the radionuclide per unit mass of the nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the activity per unit mass of the material.*

NOTE *This procedure specifically addresses the shipment of limited quantities of radioactive material. Limited quantities are defined in 49 CFR 173.421. This section of 49 CFR is included in Appendix 4. For radioactive material shipments with contents exceeding that allowed under limited quantity, this procedure directs the users to contact EG&G Traffic for specific direction.*

NOTE *The radioactivity screening data reports (which provide data needed to determine the specific activity of the sample) from the laboratory will be used to make radioactivity content determinations for sample shipment. For the screening samples that are shipped offsite for analysis, the radioactivity content may be estimated using field measurement techniques to make a conservative estimate of radioactivity content. Radiological Engineering can provide assistance in determining sample radioactivity content from field measure data.*

5.1 Identification of Shipment Requirements

Preparer

- [1] **WHEN** implementing this procedure,
THEN complete the Radioactive Material Shipping Checklist (see Appendix 1)
as each item is completed.

- [2] **WHEN** the activity is terminated (termination is specifically directed at
various points in this procedure for some conditions),
THEN:
 - [A] Mark "NA" for any uncompleted steps, sign and date the checklist.

 - [B] Submit Form FO.25A to your supervisor for authentication.

- [3] Determine the contents of any planned shipment prior to initiating the shipment
(see 5-21000-OPS-FO.18, Environmental Sample Radioactivity Content
Screening, applicable work plan, statement of work, or health and safety plan),
unless specifically exempted by Radiological Engineering in accordance with
HSP 18.10.

5.1 Identification of Shipment Requirements (continued)

[4] IF the contents fall into any of the Hazard Classes (see 49 CFR 173.2) listed below,

THEN contact the Rocky Flats Plant (RFP) Traffic Manager for assistance in making the shipment in accordance with the RFP Transportation Safety Manuals and discontinue this procedure.

- Explosives -- Class 1
- Flammable Gas -- Class and Division Number 2.1
- Non-flammable Gas Compressed -- Class and Division Number 2.2
- Poisonous Gas -- Class and Division Number 2.3
- Flammable and Combustible Liquid -- Class 3
- Flammable Solid -- Class and Division Number 4.1
- Spontaneously Combustible Material -- Class and Division Number 4.2
- Dangerous When Wet Material -- Class and Division Number 4.3
- Oxidizer -- Class and Division Number 5.1
- Organic Peroxide -- Class and Division Number 5.2
- Poisonous Materials -- Class and Division Number 6.1
- Infectious Substances -- Class and Division Number 6.2
- Corrosive Material -- Class 8
- Miscellaneous Hazardous Material -- Class 9
- Other Regulated Material: ORM-D -- Class none

5.1 Identification of Shipment Requirements (continued)

WARNING

If at any time there is difficulty in completing the process described in this procedure, contact EG&G Sample Management or RFP Traffic for assistance. **DO NOT** make a shipment unless **EVERYTHING IS CORRECT**. You, your company, and EG&G may be subject to civil or criminal penalties for failure to follow the applicable regulations.

- [5] **IF** at any time sufficient data are not available to make the required determination,
THEN initiate actions necessary (with the assistance of your supervisor) to obtain these data.

NOTE *If the sample specific activity is less than or equal to 0.002 $\mu\text{Ci/g}$ as indicated in 49 CFR 173.403 (y), the shipment is not considered a radioactive material shipment (RAD material) for purposes of compliance with DOT regulations; the sample is a hazardous material shipment only if some other characteristic makes it a hazardous material per DOT regulations.*

- [6] **IF** it is determined that the sample is not RAD material as defined in 49 CFR 173.403 (y), in other words has a specific activity less than 2000 pCi/g (0.002 $\mu\text{Ci/g}$),
THEN terminate the procedure and ship the sample in accordance with 5-21000-OPS-FO.13.

WARNING

The above note does not in any way exempt you from the onsite radioactive material definition, handling, and transport requirements for the Rocky Flats Plant, contact Radiological Engineering.

5.1 Identification of Shipment Requirements (continued)

NOTE *There can be more than one package in a shipment. The package limit applies to each package and not to a shipment. A sample package (an appropriately sealed cooler), addressed by the procedure, must be a strong, tight container. Further there must be sufficient absorbent material in a package to absorb twice the volume of liquid it contains. If you shipped several packages, the package limit would apply to each. It is possible to use interior sample containers (e.g., sealed paint cans) and have several inner sample containers in a package (an appropriately sealed cooler); in such a case, the limit applies to the package and not to the inner container within the package.*

NOTE *The balance of this section evaluates whether the shipment qualifies as a limited quantity shipment of radioactive material. If the shipment qualifies, this procedure sends you to the next section to continue preparation of the shipping process. If the shipment exceeds the criteria for limited quantity shipment, notify EG&G Traffic for further packaging requirements. Obtain assistance from EG&G Traffic if you pass through the steps that follow and reach the end of this section (see Step 5.1[8]).*

5.1 Identification of Shipment Requirements (continued)

NOTE *ERM Sample Management identifies appropriate labs and other organizations for shipment based on their licenses and authorizations and allowed capacity.*

- [7] **IF** the sample-specific activity is greater than $0.002 \mu\text{Ci/g}$ and the total activity in the package (i.e., specific activity of the sample times the mass of the sample) is less than $2 \times 10^6 \text{ pCi}$ ($2 \mu\text{Ci}$) for solid or $2 \times 10^5 \text{ pCi}$ ($0.2 \mu\text{Ci}$) for liquid samples based on the limit case conditions in 49 CFR 173.433, **THEN** prepare the shipping paper in accordance with Section 5.2.
- [8] Contact the RFP Traffic Manager who will assist you in selecting the packaging and packaging procedure, preparing the shipping papers, and shipping the package in accordance with RFP Transportation Safety Manuals.
- [9] When packaging of the shipment is complete in accordance with the applicable procedure (see step 5.1[8]), **THEN** go to 5.2[21].

5.2 Shipping Limited Quantity Radioactive Material By EG&G Personnel

WARNING

If at any time there is difficulty in completing the process described in this procedure, contact EG&G Sample Management or RFP Traffic for assistance. **DO NOT** make a shipment unless **EVERYTHING IS CORRECT**. You, your company, and EG&G may be subject to civil or criminal penalties for failure to follow the applicable regulations.

Preparer

- [1] Obtain a Shipping Memo (RF-24320) (Appendix 2) and Radioactive Shipment Preparation Certification (RF-46404) (see Appendix 3).
- [2] Initiate the packaging of the shipment in accordance with 5-21000-OPS-FO.13, Containerization, Preserving, Handling and Shipping of Soil and Water Samples.
- [3] Prepare the Shipping Memo as described in the Rocky Flats Correspondence Guide section CG-7, Forms (specifically the subsection addressing *Shipping Memo, Rf 24320*) or Off-site Transportation Manual 1-94700-Traffic-120, when implementing the balance of this section.
- [4] **IF** essentially identical items are being shipped, **THEN** indicate the number of items in the appropriate column of the Shipping Memo.

**5.2 Shipping Radioactive Material for Limited Quantity By EG&G Personnel
(continued)**

Preparer (continued)

- [5] IF the items are not the same,
THEN add them as separate items on the Shipping Memo and repeat Steps
5.2[4] to 5.2[12] for each item.
- [6] IF more than one hazardous material is being shipped,
THEN list the hazardous material in the order of highest degree of hazard (see
49 CFR 173.2) based on input provided by Traffic.

NOTE *Non-hazardous material may be shipped in the same container and
identified on the sample shipping paper; however, they are required to
follow after any hazardous material items on the shipping paper.*

- [7] Ensure that the hazardous material precedes the non-hazardous material in the
listing on the Shipping Memo.
- [8] IF the shipment is a surface shipment,
THEN record, in the description column, the following in the order indicated:
- [A] *Radioactive material, excepted package-limited quantity of material, 7,
UN2910.*

*This package conforms to the conditions and limitations specified in
49 CFR 173.421 for Radioactive material, excepted package--
limited quantity of material, UN2910.*

**5.2 Shipping Radioactive Material for Limited Quantity By EG&G Personnel
(continued)**

Preparer (continued)

[9] IF the shipment will be by air,
THEN record, in the description column, the following in the order indicated:

[A] *Radioactive material, excepted package-limited quantity of material, 7,
UN2910.*

*This package conforms to the conditions and limitations specified in IATA
6.2.1 for Radioactive material, excepted package--limited quantity of
material, UN2910.*

[10] Contact Radiological Engineering and obtain:

- The required radiation monitoring.
- A completed onsite Material Transfer Tag (RF-47555) or completion of the radiation monitoring section of the Shipping Memo.
- Attach copy of completed Material Transfer Tag, if used, to the Shipping Memo.

[11] If a Property/Waste Release Evaluation (RF-1003) was provided by Radiological Engineering, attach it to the Shipping Memo.

[12] Record the weight of the package.

[13] Complete the balance of the Shipping Memo, as necessary.

**5.2 Shipping Radioactive Material for Limited Quantity By EG&G Personnel
(continued)**

Preparer (continued)

- [14] Record the "Page number of number" on each page of the Shipping Memo including any attachments.

- [15] Label (or verify labeling) of the inner container(s) with "Caution Radioactive Material" (see the On-Site Transportation Manual) and note this verification on the Shipping Memo.

- [16] Complete the packaging of the shipment in accordance with 5-21000-OPS-FO.13, Containerization, Preserving, Handling and Shipping of Soil and Water Samples.

- [17] Obtain your supervisor's concurrence on the Radioactive Material Shipping Checklist.

- The process described in this procedure is summarized in Appendix 5.

- [18] Place copy number 10 of the Shipping Memo (Appendix 2) in the package so that it is immediately visible when the package is opened.

- [19] Ensure that a "Caution Radioactive Material" label is immediately visible upon opening the package.

- [20] Send copy 9 of the Shipping Memo to the Project Manager.

**5.2 Shipping Radioactive Material for Limited Quantity By EG&G Personnel
(continued)**

Preparer (continued)

[21] Complete the Radioactive Shipment Preparation Certification (Appendix 3).

[A] Complete the RF-46404 in accordance with T-200-1 (1-T03-Traffic-200-1), Procedure for the Use of the Radioactive Shipment Preparation Certification.

[22] Send a copy of the Shipping Memo and Radioactive Shipment Preparation Certification to Traffic who will prepare the appropriate shipping paper.

EG&G Project Manager

[23] Verify the shipping papers have been prepared by Traffic and for the package to be transferred to Building 130 the day the package is to be picked up.

[24] Arrange for copies of the shipping papers to be sent to the ERM records center.

[25] Ensure a copy of the shipping papers are provided to the transporter.

[26] Sign and date completed checklist (see Appendix 1) and submit it to the ERM records center.

[27] Notify consignee of the shipment.

5.3 Shipping Limited Quantity Radioactive Material By EG&G Subcontractors

WARNING

If at any time there is difficulty in completing the process described in this procedure, contact EG&G Sample Management or RFP Traffic for assistance. **DO NOT** make a shipment unless **EVERYTHING IS CORRECT**. You, your company, and EG&G may be subject to civil or criminal penalties for failure to follow the applicable regulations.

NOTE *Non-hazardous material may be shipped in the same container and identified on the sample shipping paper; however, they are required to follow after any hazardous material items on the shipping paper.*

NOTE *If the EG&G Project Manager is not the Contract Technical Representative, then where this section refers to EG&G Project Manager, it should be considered to read EG&G Project Manager and Contract Technical Representative. This includes designation of responsibility to complete action steps, which should be completed jointly.*

**5.3 Shipping Limited Quantity Radioactive Material By EG&G Subcontractors
(continued)**

Subcontractor Project Manager

[1] Arrange for preparation of shipping papers for the shipment in conjunction with completion of 5-21000-OPS-FO.13, Containerization, Preserving, Handling and Shipping of Soil and Water Samples in accordance with 49 CFR and applicable onsite requirements.

[A] Establish procedures or equivalent documentation for preparation of shipping paper in accordance with 49 CFR.

[B] Submit the approved procedure for preparation of shipping papers to EG&G Project Manager for task authorization.

NOTE *EG&G Project Managers do not accept responsibility for the adequacy, completion or certification of subcontractor procedures. Subcontractor procedures provide EG&G with some reasonable assurance that the subcontractor will be able to meet legal and contractual obligations (minimizing any potential negative impact on EG&G and DOE).*

[C] Arrange for shipments only after the responsible EG&G Project Manager has authorized them to implement this task.

[D] Use only trained personnel (see Section 4.1) to package, handle, and ship (including preparation of the shipping papers) hazardous material shipments.

[E] Ensure that the subcontractor and not EG&G is indicated as the shipper on the shipping papers.

**5.3 Shipping Limited Quantity Radioactive Material By EG&G Subcontractors
(continued)**

Subcontractor Project Manager (continued)

- [2] Complete the packaging of the shipment in accordance with 5-21000-OPS-FO.13.
- [3] Sign the radioactive shipping papers.
- [4] Enclose copies of the shipping papers with the package.
- [5] Arrange for copies of the shipping papers to be sent to the ERM records center and Project Manager.
- [6] Ensure a copy of the shipping paper is provided to the transporter.
- [7] Notify consignee of the shipment.

6. POST-PERFORMANCE ACTIVITY

Preparer

- [1] IF the shipment is not received by the consignee in a timely manner,
THEN:
 - [A] Ascertain the disposition of the shipment.
 - [B] Notify ERM of the situation and obtain their assistance in reporting the situation consistent with DOE Orders and DOT requirements.

6.0 POST-PERFORMANCE ACTIVITY (Continued)

Preparer (continued)

- [C] Notify Traffic of the situation and obtain their assistance in reporting the situation consistent with DOE Orders and DOT requirements.

- [D] Document the incident consistent with the requirements of 2-11000-ER-ADM-15.01, Control of Non-Conforming Items and Activities.

- [2] Document completion of the activity.
 - [A] Keep copies of the shipping papers for the samples shipped until delivery is confirmed.

 - [B] Submit copies of all notification issued to the ERM records center in accordance with 2-11000-ER-ADM-17.01, Quality Assurance Records Management.

 - [C] Submit the shipping paper and the shipping checklist to the ERM records center in accordance with 4-11000-OPS-FO.02, Transmittal of Field QA Records, and/or 2-11000-ER-ADM-17.01.

7. REFERENCES

International Air Transportation Association: "Transport of Dangerous Goods (current edition)."

40 CFR, Title 40, Code of Federal Regulations, Protection of the Environment

7. REFERENCES (continued)

49 CFR, Title 49, Code of Federal Regulations, Transportation

Rocky Flats Plant Correspondance Guide

Rocky Flats Plant Transportation Safety Manuals

T-200-1 (1-T03-Traffic-200-1), Procedure for the Use of the Radioactive Shipment Preparation Certification.

1-16100-HSP-18.10, Release of Property/Waste For Conditional and Unrestricted Use

1-94700-Traffic-120, Off-site Transportation Manual

2-11000-ER-ADM-15.01, Control of Non-Conforming Items and Activities (Current procedure number is 3-21000-ADM-15.01 but will be released with the indicated number.)

NOTE *The procedure numbers referenced below reflect the re-issuance of the procedures based on the separation of Environmental Restoration Management and Environmental Protection. Once these procedures have been re-issued, the alpha/numeric prefix would be "4-###-ER-OPS-". "###" is a number assigned to this specific procedure.*

5-21000-OPS-FO.13, Containerization, Preserving, Handling and Shipping of Soil and Water Samples

5-21000-OPS-FO.18, Environmental Sample Radioactivity Content Screening.

APPENDIX 1

Page 1 of 3

RADIOACTIVE MATERIAL SHIPPING CHECKLIST

SECTION 1: PRELIMINARY INFORMATION (Complete this section when initiating Procedure 2-11000-OPS-FO.25, Shipping Limit Quantities of Radioactive Material.)			
Shipper:		Date:	
Identification of Material To Be Shipped (Sample Numbers)			
Sample Type: Soil <input type="checkbox"/> Water <input type="checkbox"/>			
Verify that the Prerequisites (see Section 4) have been meet, then initial: _____			
If not completed explain:			
SECTION 2: SHIPMENT CONTENTS IDENTIFICATION CHECKLIST			
Step ¹	Task	Completed	
		By	Date
5.1[3]	Determine content of the shipment in accordance with 2-11000-OPS-FO.18.		
5.1[4]	Determine if shipment meets the DOT definitions of a hazardous material (compressed gases, flammable, corrosive, oxidizer, poisonous, and/or infectious substance). Yes <input type="checkbox"/> No <input type="checkbox"/> (If yes, consult Traffic)		
5.1[6]	Sample(s) specific activity is less than 2000 pCi/g (0.002 μ Ci/g). Yes <input type="checkbox"/> No <input type="checkbox"/> (If yes, terminate procedure)		
5.1[7]	Does the package potentially contain (total activity in the package): $>2 \times 10^6$ pCi (2 μ Ci) for soil samples or $>2 \times 10^5$ pCi (0.2 μ Ci) for water samples? Yes <input type="checkbox"/> No <input type="checkbox"/> (If yes, consult Traffic)		

APPENDIX 1 (continued)

SECTION 3: SHIPPING MEMO PREPARATION CHECKLIST			
Step ¹	Task	Completed	
		By	Date
<i>Initial off items for Step 5.2[4] to 5.2[12] after this action has been completed for each package containing radioactive material. Complete these steps for the radioactive packages only.</i>			
5.2[4]	Record number of identical packages being shipped.		
5.2[8]	<p>Is the shipment by surface transport? Yes <input type="checkbox"/> No <input type="checkbox"/> (If No go to option 5.2[9]).</p> <p>In the description column record: Radioactive Material, excepted package-limited quantity of material, 7, UN2910.</p> <p>This package conforms to the conditions and limitations specified in 49 CFR 173.421 for Radioactive material, excepted package-limited quantity of material, UN2910.</p>		
5.2[9]	<p>Is the shipment by air transport? Yes <input type="checkbox"/> No <input type="checkbox"/> (If No go then option 5.2[8], it is correct).</p> <p>In the description column record: Radioactive Material, excepted package-limited quantity of material, 7, UN2910.</p> <p>This package conforms to the conditions and limitations specified in IATA for Radioactive material, excepted package-limited quantity of material, UN2910.</p>		
5.2[12]	Record the weight of each package.		
5.2[6], 5.3	List any associated hazardous materials (in order of hazard) being shipped on the same shipping papers after the Radioactive items, then list any non-hazardous materials.		
5.2[14]	Record "Page ## of ##" on each page including attachments.		

APPENDIX 1 (continued)

SECTION 4: SHIPPING CHECKLIST CHECKLIST			
Step ¹	Task	Completed	
		By	Date
5.2[15]	Verify that the "Caution Radioactive Material" label has been applied to the inner container.		
5.2[18]	Enclose copies of the shipping memo in the container.		
5.2[19]	Verify that the "Caution Radioactive Material" label is immediately visible when the shipping container is opened.		
5.2[17]	Obtain supervisor concurrence on this checklist.		
5.2[21]	Complete applicable sections of Radioactive Shipment Preparation Certification.		
5.2[22]	Send Shipping Memo and Radioactive Shipment Preparation Certification to Traffic.		
5.2[22]	Send Shipping Memo and Radioactive Shipment Preparation Certification to ERM records center.		
SECTION 4: AUTHENTICATION AND CONCURRENCE			
Name (<i>Print</i>)		Signature	Date
Supervisor Concurrence:			
Completed By:			
NOTES			
¹ These numbers refer to the step number in Procedure 4-B11-ER-FO.25. ² Shaded words should be recorded as written on the shipping papers and associated documentation.			

APPENDIX 2

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SHIPPING MEMO



EG&G ROCKY FLATS

FROM: EG&G ROCKY FLATS, INC.
U.S. DEPARTMENT OF ENERGY
ROCKY FLATS PLANT
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

FOR:

TO: (1)

ATTN:

ORDER NO:

SHIPPING MEMO

RF No.
00000

Material Classification (2)

Ship Via (3)

BY

Date Shipped _____ Parcel _____ Final _____

Freight Code _____ Prepaid (4) Collect (4)

Order No. (5)

DJO No. (6)

Cash _____ Non Cash _____ No Charge _____

CONTAINER DATA				CONTENTS	
Number	Type	Size	Gross Wt.	Quantity	Description
(7)	(8)	(9)	(10)	(11)	(12)
(15)			(16) Total Containers (13) Total Weight (14)		

D.C.T. Permit No. _____ Radiation Group _____ Surface Contamination _____ Radiation Surface _____ Radiation Meter _____	OC No. _____ Curies _____ C/M _____ M/R/M _____ M/R/M _____	Released By _____ Packaged By _____ Authorized By _____ Released By _____	Date _____ Date _____ Date _____ Date _____
---	---	--	--

CONSIGNEE 1

SHIPPING LIMITED QUANTITIES
OF RADIOACTIVE MATERIALS
IN SAMPLES

4-B11-ER-OPS-FO.25
REVISION 0
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APPENDIX 3
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RADIOACTIVE SHIPMENT PREPARATION CERTIFICATION

This form must be completed for each container in a shipment, except for multiple identical containers. For these, one form must be completed for each group. For commercial shipments, forward original to Traffic with Shipping Memo. For shipments via Ross Aviation or courier, departing from Bldg. 991, send the original to Bldg. 991 with the shipment and send one carbon copy to Traffic. Bldg. 991 will forward original to Traffic when shipment departs.

PLEASE KEEP THIS FORM UNCLASSIFIED

If the material form is other than routine (see instructions), this information must be included under Remarks, unless classified; in such cases, use the Courier Request Form, RFC-46344, and reference the Courier Request number. If the material quantity is classified, please reference the Courier Request number instead of grams and curies.

MATERIAL HANDLING & PACKAGING/OR PRODUCT WAREHOUSE COMPLETES THIS SECTION

Radioisotope	Material Quantity		Transport Index	Shipping Memo No. RF _____	
	Grams _____			Material Classification _____	
	Curies _____				
Material Form	Quantity Type	Fissile Class	Mode	Container:	
Metal <input type="checkbox"/>	Limited <input type="checkbox"/>	I <input type="checkbox"/>	Courier <input type="checkbox"/>	Description _____ Type: A <input type="checkbox"/> B <input type="checkbox"/>	
Liquid <input type="checkbox"/>	Type A <input type="checkbox"/>	II <input type="checkbox"/>	Ross <input type="checkbox"/>	Size _____ Weight _____	
Gas <input type="checkbox"/>	Type B <input type="checkbox"/>	III <input type="checkbox"/>	Commercial <input type="checkbox"/>	DOE AI 5810.1 Exemption No. _____	
Solid Other Than Metal <input type="checkbox"/>	LSA <input type="checkbox"/>		Surface <input type="checkbox"/>	DOT Spec. No. _____	
			Air <input type="checkbox"/>	Certificate of Compliance No. _____	
Remarks or Special Considerations			Marking on Container	Labels Applied	
Packaging Procedure No. _____		Type			
Operational/Job Safety Analysis No. _____		Seals Applied			

Container Number(s) (Multiple Listing for Identical Containers)

Employee performing packaging:

Signature _____ Employee No. _____ Date _____

Supervisor hereby certifies the correct procedure was properly followed and container correctly marked, labeled and sealed.

Signature _____ Employee No. _____ Date _____

PRODUCT WAREHOUSE VERIFIES SHIPMENT AND COMPLETES THIS SECTION
(For shipments from buildings other than 991 to be made via Ross Aviation or courier)

Product Warehouse Manager _____ Employee No. _____ Date _____

RADIATION MONITORING COMPLETES THIS SECTION

For shipments with Bldg. 991 as off-site departure point, gamma and neutron readings will be performed in originating building; surface contamination levels will be taken in Bldg. 991. Other shipments are to be signed off from their respective buildings.

Surface of Shipping Container		1 Meter From Shipping Container		Surface Contamination of Shipping Container	
MR/HR	Gamma	Neutron	MR/HR	Gamma	Neutron
				d/m/100 cm ² _____	

Packaging building monitoring performed by:
Signature _____ Employee No. _____ Date _____

991 monitoring performed by:
Signature _____ Employee No. _____ Date _____

See page 2 for monitoring results of multiple containers.

APPENDIX 4

Page 1 of 2

LIMITED QUANTITY

APPENDIX
FOR
DEFINITION OF THE QUALITY OF RADIOACTIVE MATERIALS

§ 173.421 Limited quantities of radioactive materials.

Radioactive materials whose activity per package does not exceed the limits specified in § 173.423 are excepted from the specification packaging, shipping paper and certification, marking and labeling requirements of this subchapter and requirements of this sup part if:

- (a) The materials are packaged in strong, tight packages that will not leak any of the radioactive materials during conditions normally incident to transportation;
- (b) The radiation level at any point on the external surface of the package does not exceed 0.5 millirem per hour;
- (c) The nonfixed (removable) radio active surface contamination on the external surface of the package does not exceed the limits specified in § 173.443(a);
- (d) The outside of the inner packaging or if there is no inner packaging, the outside of the packaging itself bears the marking "Radioactive;"
- (e) Except as provided in § 173.424 the package does not contain more than 15 grams of uranium -235; and
- (f) The material is otherwise prepared for shipment as specified in § 173.421-1.

APPENDIX 4
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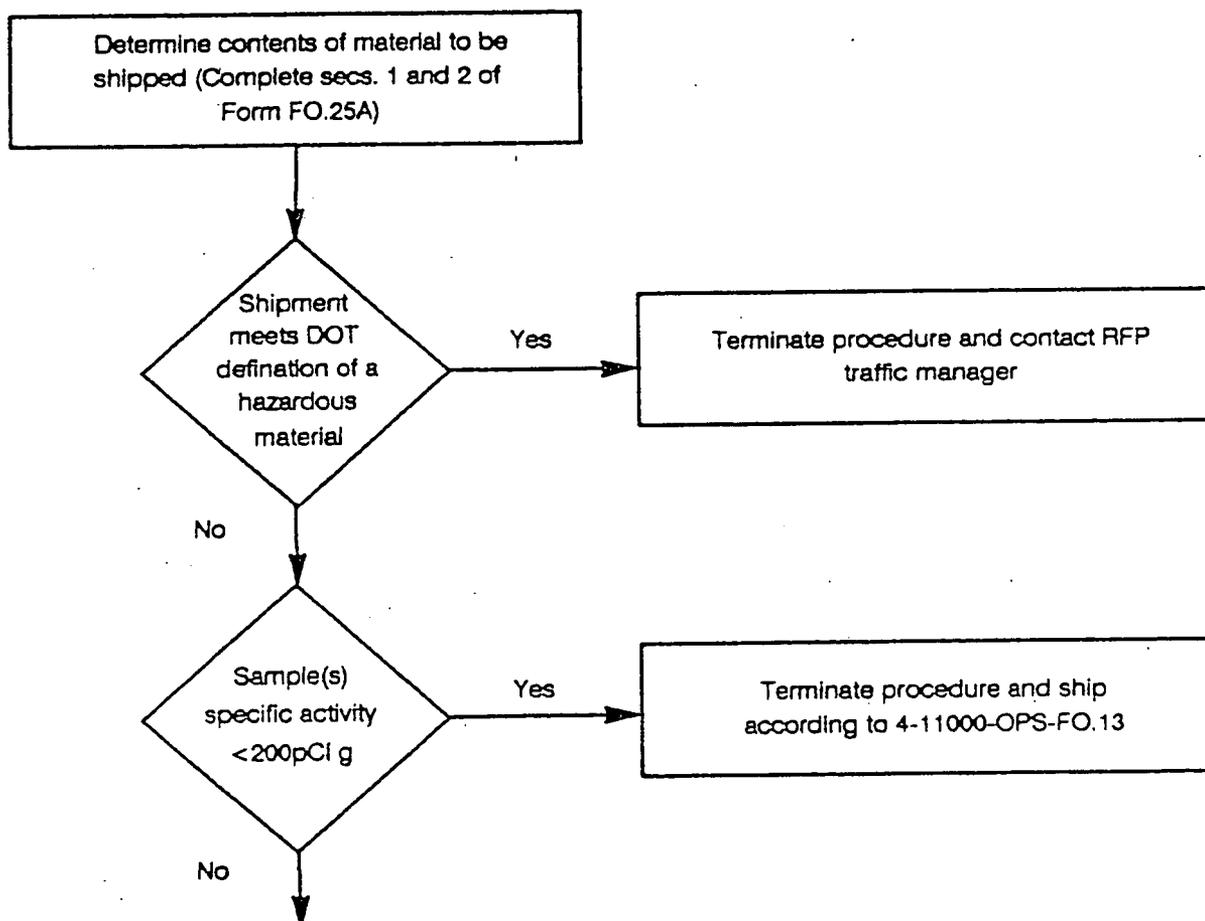
TABLE 7 -- ACTIVITY LIMITS
 FOR
 LIMITED QUANTITIES, INSTRUMENTS, AND ARTICLES

Nature of Contents	Instruments and Articles		Materials Packaging Limits
	Instrument and Article Limits	Package Limits	
Solids:			
Special Form	10^{-4} A ₁	A ₁	10^{-3} A ₁
Other Forms	10^{-4} A ₂	A ₂	10^{-3} A ₂
Liquids			
Tritiated water:			
<0.1 C/liter	1000 Curies
0.1 C to 1.0 C l	100 Curies
>1.0 C/liter	1 Curies
Other liquids	10^{-3} A ₂	10^{-3} A ₂	10^{-3} A ₂
Gases:			
Tritius	20 Curies	200 Curies	20 Curies
Special Form	10^{-3} A ₁	10^{-4} A ₁	10^{-4} A ₁
Other Forms	10^{-3} A ₂	10^{-3} A ₂	10^{-3} A ₂

APPENDIX 5

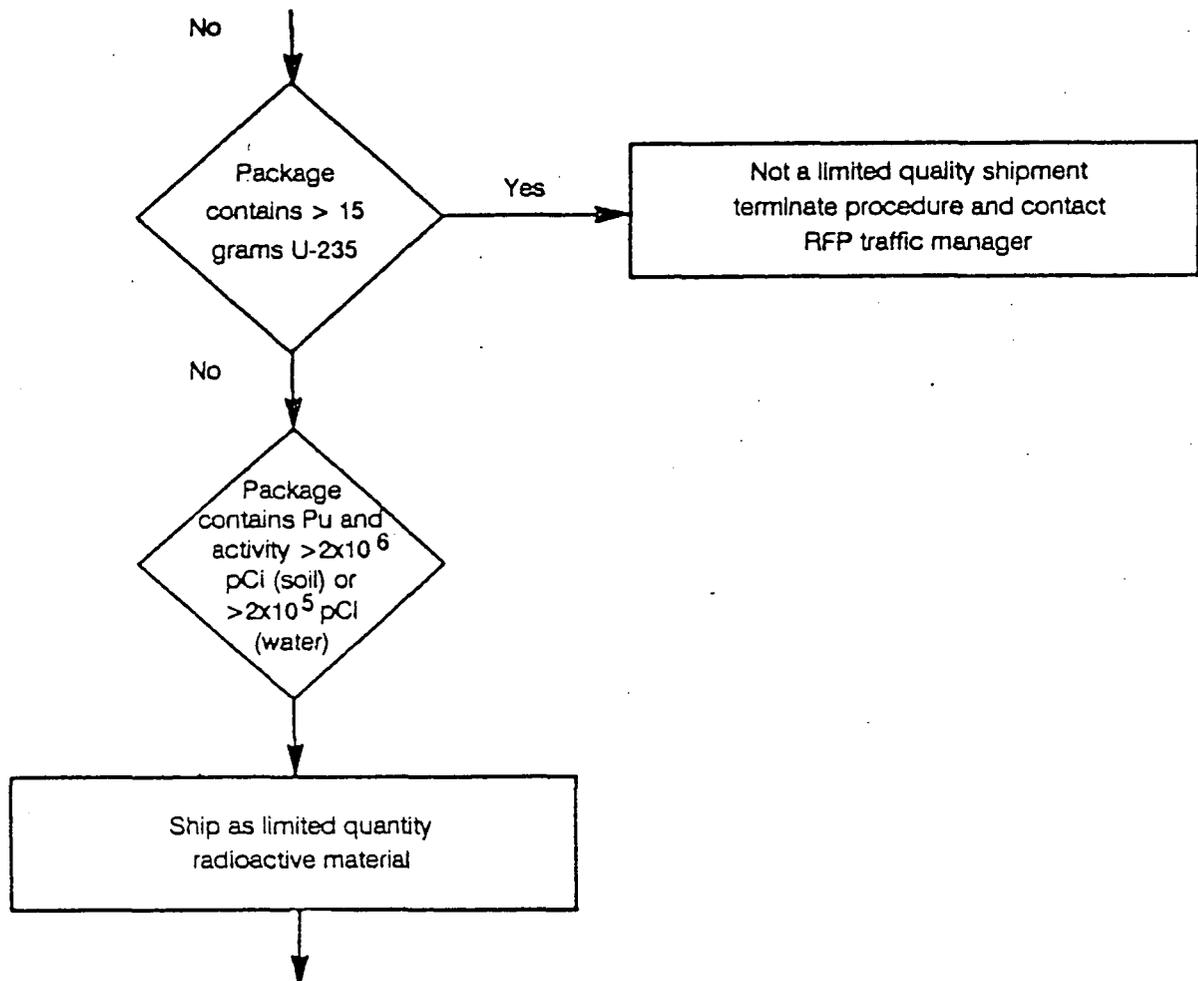
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RADIOACTIVE MATERIAL SHIPPING FLOWCHART

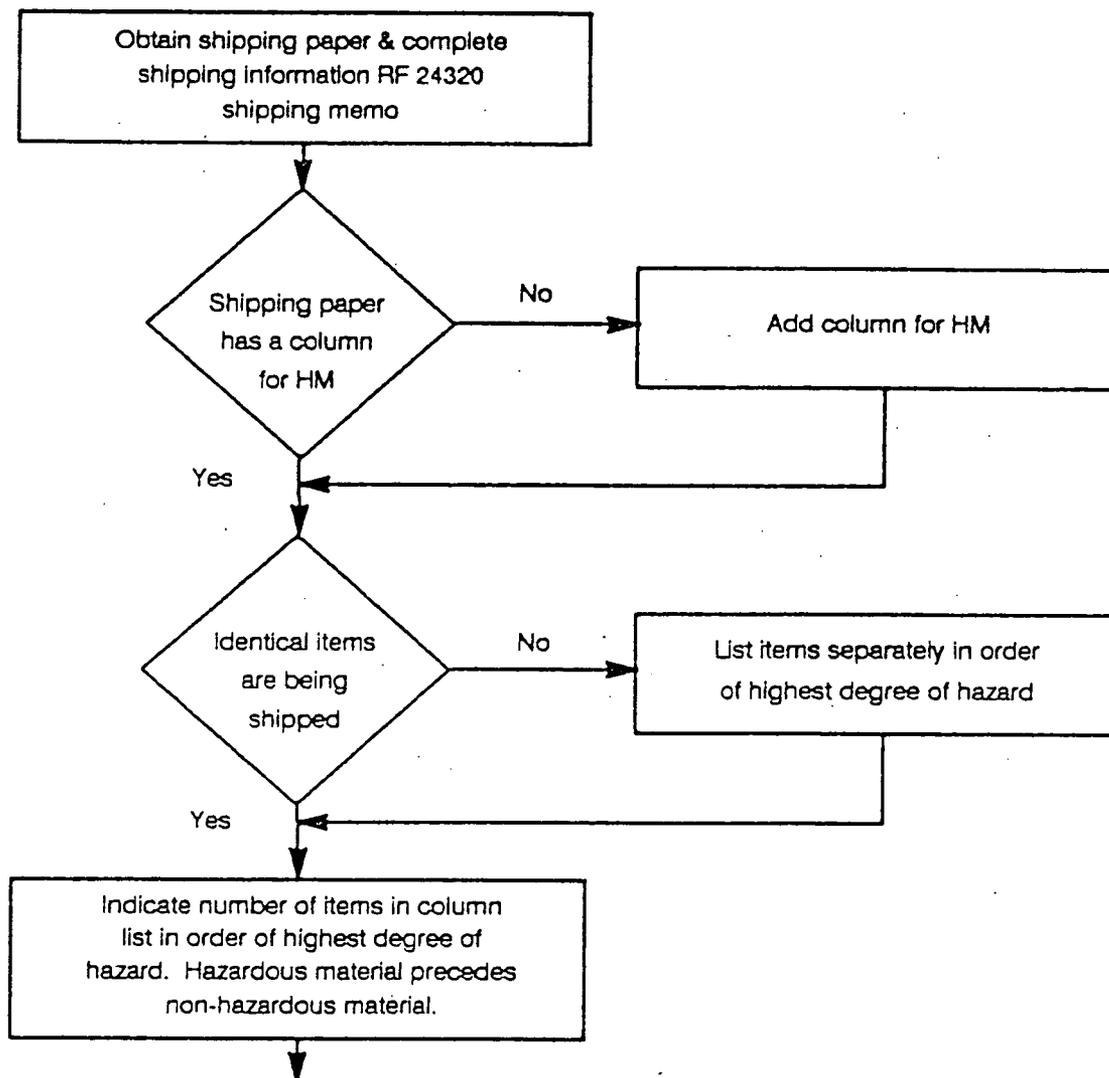


APPENDIX 5 (continued)

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APPENDIX 5 (continued)
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APPENDIX 5 (continued)
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