



# Radiation Safety



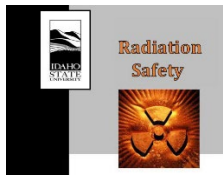
## **RADIATION PROCEDURES MANUAL**

### **Procedure Cover Sheet**

Procedure Title: Procurement and Receipt of Radioactive Material  
Procedure Number: RS-07 Rev.2  
Effective Date: 02/29/2024

Approved By: Radiation Safety Committee

Date: 02/02/2024

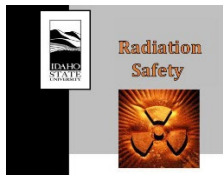


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### Revision History

Revision Number	Author Name	Date	Approved by/date
RS 7.0	John Longley/Mason Jaussi	09/20/19	RSC-09/23/19
RS 7.1	Mason Jaussi	04/07/22	RSC-04/15/22
RS 7.2	Miranda Kriner	10/01/23	02/02/2024

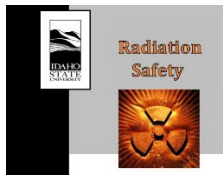


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## 1. INTRODUCTION

Radioactive material purchases and transfers shall be authorized by the Radiation Safety Officer (RSO) to ensure that the acquisition of the proposed material is allowed on the Authorized User permit and the institution license. All radioactive material (RAM) packages received under the scope of Idaho State University's (ISU) Nuclear Regulatory Commission (NRC) licenses are required to be inspected upon receipt, possibly surveyed, and opened following the instructions of this procedure.

## 2. PURPOSE

The purpose of this procedure is to explain the processes and requirements for the procurement of all radioactive material at ISU. This procedure is also meant to provide instructions for the inspection and survey of RAM packages received at ISU facilities and for initial opening of the packages.

## 3. SCOPE

All procurement of radioactive material must be authorized by the RSO (purchases or transfers).

All radioactive material packages received will be inspected for damage. A receipt survey is required on regulated radioactive material packages listed below

- All excepted packages of radioactive material
- All packages with White I, Yellow II, or Yellow III labels
- Packages that have significant degradation of package integrity

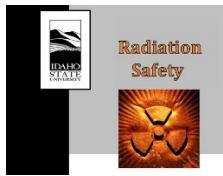
In addition, all radioactive material packages received at ISU facilities must be initially opened following the instructions of this procedure.

## 4. ROLES AND RESPONSIBILITIES

The authorized user (AU) or designee is responsible for submitting the appropriate paperwork for any radioactive material purchases or transfers.

The Radiation Safety Department will verify that the proposed material is allowed in the Authorized User permit and the license and then the RSO will authorize procurement.

The authorized user or the shipping and receiving department must contact the Radiation Safety Department when a radioactive material package has been received. They must not open a regulated radioactive material package and must store it in a secure locked location until Radiation Safety personnel arrive. Exempt quantity radioactive material packages may



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be received, inspected, and opened by the Authorized User or designee so long as the Radiation Safety Department is notified the package has been received, the package is in good condition, and the inspection and opening are performed in accordance with the requirements of this procedure.

The Radiation Safety Department or Authorized designee, must inspect the package and, if necessary, perform a receipt survey on the package. Radiation Safety personnel are required to inspect and survey all regulated RAM packages within three hours of package arrival notification from the ISU shipping and handling department. If package arrival occurs at the end of the workday, the three-hour time frame starts at the beginning of the next workday.

Personnel from the Radiation Safety Department also will perform initial package opening operations. Radiation Safety Department staff members will determine the appropriate instrumentation for swipe analysis and appropriate instrumentation for dose rate surveys.

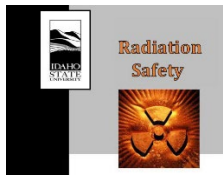
The Radiation Safety Officer or Authorized Designee will review and approve package receipt surveys prior to delivering the materials to the Authorized User.

## 5. ACRONYMS/DEFINITIONS

ARSO: Assistant Radiation Safety Officer  
AU: Authorized User  
EHS: Environmental Health and Safety  
ISU: Idaho State University  
LSC: Liquid Scintillation Counter  
NRC: Nuclear Regulatory Commission  
RAM: Radioactive material  
RS: Radiation Safety  
RSD: Radiation Safety Department  
RSO: Radiation Safety Officer  
TI: Transport Index

## 6. REQUIRED MATERIAL(S)

- RPR 13F Radioactive Material Purchase Authorization form (Prior to Receipt)
- Appropriate portable survey meter (s) GM frisker, gamma dose rate, neutron dose rate.
- Swipes
- Gloves
- Plastic bag to contain swipes
- Pen



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- Whole body dosimeter
- RPR 13A, Radioactive Material Package Receipt Survey form
- Government vehicle for transport of RAM on public roads (if needed)
- Alpha/Beta counter or Liquid Scintillation Counter (LSC) for swipe analysis

## 7. REQUIRED TRAINING(S)

- ISU Radiation Safety Training

## 8. PROCEDURE

The following steps are performed by the Authorized User prior to procuring any radioactive material. Procurement will include any purchases or transfers of new radioactive material that was not already authorized for possession on the AU permit and ISU License's.

### 8.1. Procurement

8.1.1. The AU must complete and submit an RPR 13F. Radioactive Material Procurement Authorization form which contains at least the following information:

- Name of Authorized User
- Permit Number
- Department
- Supplier of RAM
- Signature
- Isotope
- Chemical/Physical Form
- Isotope Possession Limit
- Requested Isotope Amount for procurement
- Date

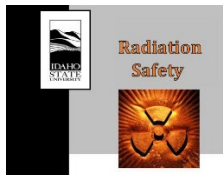
8.1.2. Radioactive material procurement requests must be submitted at least three working days in advance to the RSO via email.

8.1.3. If not already possessed by ISU, all radioactive materials purchase orders and transfers are to be addressed to one of the following:

Authorized User's Name  
c/o Radiation Safety Department  
Idaho State University  
Shipping and Receiving Department  
638 E Dunn Street  
Pocatello, ID 83201

Authorized User's Name  
c/o Radiation Safety Department  
Idaho Accelerator Center  
1500 Alvin Ricken Drive  
Pocatello, ID 83201

Authorized User's Name  
c/o Radiation Safety Department  
Center for Advanced Energy Studies  
995 MK Simpson Boulevard  
Idaho Falls, ID 83401



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8.1.4. See the ISU Radiation Safety Manual for acquisition of material with significant disposal costs.

8.1.5. The Radiation Safety Department will review the RPRF13F using HPAssist to complete the following:

- User Limit
- User Current Inventory
- ISU Limit
- ISU Current Inventory
- Name of Verifier

8.1.6. Following RSO approval, radioactive materials may be ordered. Typically, ISU Purchasing services will complete the purchasing process.

## 8.2. Preparation

The following steps are performed by the RS employee once notification of package arrival has been received.

8.2.1. Wear whole body dosimeter.

8.2.2. Perform operation and response checks on survey meters. (GM frisker and dose rate meters).

8.2.3. Prepare RPR 13A form and accompanying swipe material.

8.2.4. Obtain authorized vehicle if transporting RAM on public roads. Never use a personal vehicle to transport RAM. See restrictions in 8.5.1 below.

8.2.5. Contact the authorized user and ensure that preparations are made to receive custody of the package.

## 8.3. Package Inspection

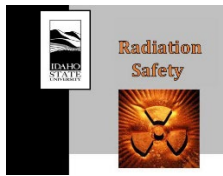
8.3.1. Inspect the integrity of package and notify the RSO if the package integrity is degraded such as crushed, wet or damaged. Note the condition on the RPR 13A form.

8.3.2. Be sure to wear gloves and personal dosimetry whenever handling the RAM packages.

8.3.3. Record the UN number, label category, nuclides, activity, and TI on the RPR 13A form (if applicable).

8.3.4. If significant damage has occurred perform surveys on package and surrounding areas to ensure that there was no spread of contamination. Also perform dose rate surveys on the package at contact and one meter.

8.3.4.1. Bag package to contain any loose surface contamination still present.



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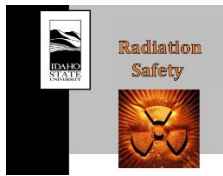
- 8.3.4.2. Perform whole body frisk as a precautionary measure.
- 8.3.4.3. If contamination levels exceed the limits of 49 CFR 173.433, the RSO will perform immediate notifications to the delivery carrier, the NRC (301-816-5100) (10 CFR 20.1906) and the DOT National Response Center (800-424-8802) (49 CFR 171.15(b)(2)).
- 8.3.5. If the integrity of the package passes inspection then continue with the receipt survey.

#### 8.4. Receipt Survey of Package

If the package contains DOT regulated radioactive material, perform a package receipt survey following the instructions in this section. Otherwise, skip to the package opening instructions in Section 8.5.

- 8.4.1. The Authorized User or the Shipping and Receiving department must contact a radiation safety staff member to discuss necessary survey requirements and types of instrumentation to use in the steps below.
- 8.4.2. Radiation Safety Department personnel will perform a dose rate survey on contact with the external surface of the package and at one meter from the point with the highest dose rate. The survey must consider gamma and if necessary neutron radiation.
- 8.4.3. Record the dose rates on the RPR 13A form.
- 8.4.4. If radiation levels exceed 200 mrem/hr on contact or 10 mrem/hr at one meter immediately contact the RSO. An immediate notification to the final delivery carrier and the NRC Operations Center (301-816-5100) may be required by 10 CFR 20.1906(d).
- 8.4.5. Collect 300 cm<sup>2</sup> swipes on the external surface of the package.
- 8.4.6. Frisk the swipes with the GM counter to ensure significant contamination is not present. Note: The package may be moved to the EHS laboratory or authorized user's laboratory based on these frisk results.
- 8.4.7. Bag the swipe(s) for laboratory gross alpha/beta analysis. Complete the analysis on the appropriate instrument to verify that there is no removable contamination above the values listed in 49 CFR 173.443, shown in Table 1 and document the data on the RPR 13A form.





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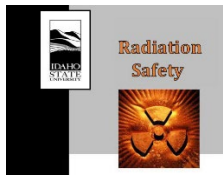
**Table 1.** Non-fixed external radioactive contamination limits for packages 49 CFR 173.443.

Contaminant	Maximum permissible limits
	dpm/300 cm <sup>2</sup>
Beta and gamma emitters and low toxicity alpha emitters	7200
All other alpha emitting radionuclides	720

- 8.4.7.1. If removable contamination levels on the external surface of the package exceed the limits in Table 2, stop and immediately contact the RSO. An immediate notification is required to the final delivery carrier, the NRC Operations Center (301-816-5100) (10 CFR 20.1906(d)), and the DOT National Response Center (800-424-8802) (49 CFR 171.15(b)(2).
- 8.4.7.2. If the results of analysis for a swipe show activity above the action levels specified in the ISU Radiation Safety Manual (RSM) and a re-analysis of the removable contamination swipe does not demonstrate that the activity is below the action level, then decontaminations must be performed until the contamination surveys show activities less than the specified action levels.

## 8.5. Package Opening Instructions

- 8.5.1. For exempt and excepted packages (UN2908, UN2909, UN2910, and UN2911) radiation safety personnel may move the package to the EHS laboratory or Authorized User's laboratory in a government vehicle. For other regulated packages, radiation safety personnel may move the package by hand (hand truck) or must perform a shipment in accordance with Procedure RS-08.
- 8.5.2. Contact the authorized user to determine if dispersible radioactive material is expected. If so, open the package in a radiological fume hood. Otherwise, the package may be opened on a bench top in a restricted area.
- 8.5.3. Wear gloves. Survey the inner container and packaging for removable contamination with swipes and measure the swipes for activity initially with GM and finally with laboratory instrument. Record the results on the RPR 13A Form.
- 8.5.4. If all packaging is free of contamination, remove or cover radioactive markings and store or dispose of it as appropriate.
- 8.5.5. Verify that the material description, nuclide, and activity listed on the certification form from the manufacturer are correct.
- 8.5.6. After all survey samples are analyzed send the RPR 13A form to the RSO or authorized designee for review.
- 8.5.7. As necessary, enter the item in HPAssist and label with the HPAssist number. See procedure RS-16, Radioactive Material Inventory. Enter the HPAssist number (s) on the RPR 13A form.



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- 8.5.8. After the survey is approved by the RSO or authorized designee, move the package to the authorized user. See step 8.5.1 above for moving the package.
- 8.5.9. Attach a copy of the receipt documentation to the RPR 13A form and scan the form to the appropriate Box records folder.

## 9. LIST OF FORMS

RPR 13A – Radioactive Material Package Receipt Survey

RPR 13F - Radioactive Material Purchase Authorization

## 10. REFERENCES

U. S. Nuclear Regulatory Commission, Standards for Protection Against Radiation, Procedures for Receiving and Opening Packages, 10 CFR 20.1906.

U. S. Nuclear Regulatory Commission, Packaging and Transportation of Radioactive Material, Demonstration of Compliance, 10 CFR 71.41

U. S. Nuclear Regulatory Commission, Packaging and Transportation of Radioactive Material, External Radiation Standards for all Packages, 10 CFR 71.47

U. S. Nuclear Regulatory Commission, Packaging and Transportation of Radioactive Material, Routine Determination, 10 CFR 71.87(i).

## 11. CHANGE HISTORY

Revision 1: Included the addition of the Authorized User’s laboratory as an acceptable location to perform a receipt survey. Also, minor grammatical clarifications and updated referenced procedures.

Revision 2: Included an additional section for procurement and transfers of radioactive material.

## 12. APPENDICES

None.