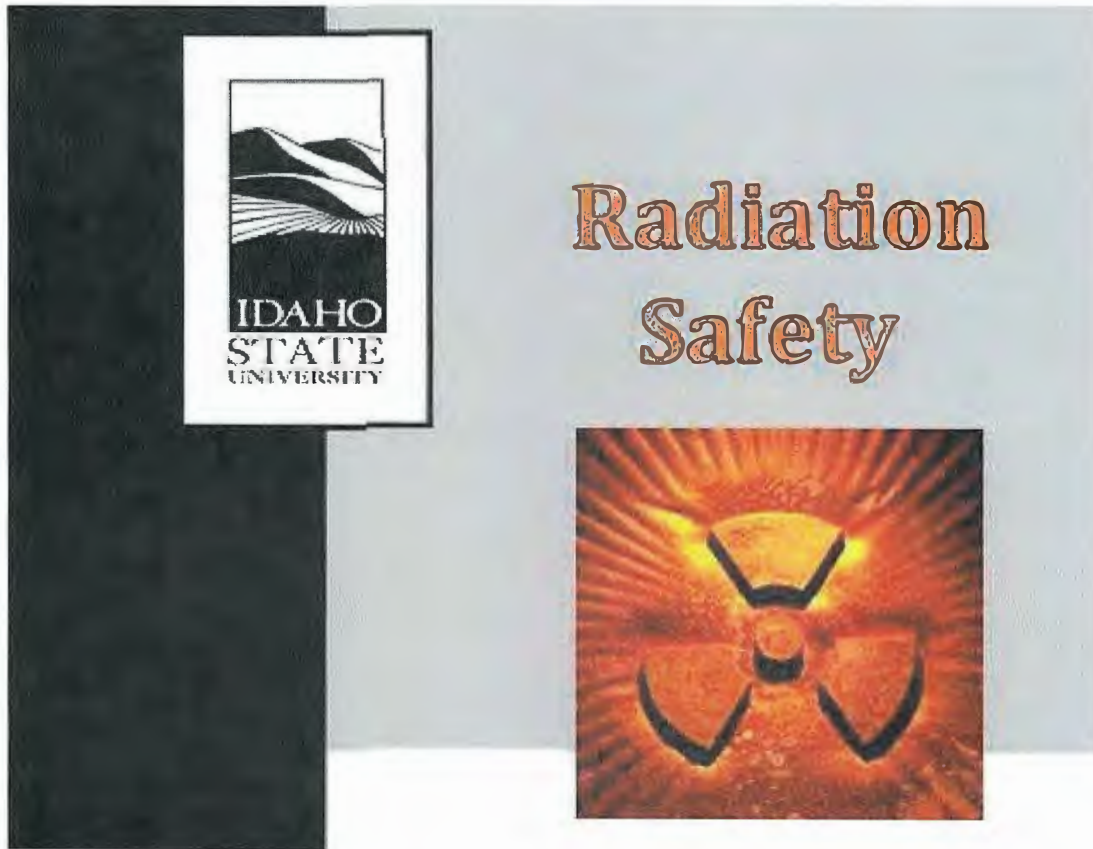




Procedure #: RS-07 REV 0
Procedure Title: Receipt of RAM Package
Approval Date: 20-SEP-2019
Effective Date: 23-SEP-2019



RADIATION PROCEDURES MANUAL
Procedure Cover Sheet

Procedure Title: Receipt and Opening of Radioactive Material Package

Procedure Number: RS-07 REV 0

Effective Date: 23-SEP-2019

Reviewed By: Wanda Janni
Assistant Radiation Safety Officer

Date: 20-SEP-2019

Approved By: John Humphrey
Radiation Safety Officer

Date: 20-SEP-2019



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1. INTRODUCTION

All radioactive material (RAM) packages received under the scope of Idaho State University's (ISU) Nuclear Regulatory Committee (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 provide instructions for inspection and survey of RAM packages received at ISU facilities and for initial opening of the packages.

3. SCOPE

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 the shipping and receiving department must contact the Radiation Safety Department when a radioactive material package has been received. They must not open the package and must store it in a secure locked location until Radiation Safety personnel arrive.

The Radiation Safety Department must inspect the package and, if necessary, perform a receipt survey on the package. RS personnel are required to inspect and survey all regulated RAM packages within three hours of package arrival. If package arrival occurs at the end of the work day, the three hour time frame starts at the beginning of the next work day. 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 Assistant Radiation Safety Officer will review and approve package receipt surveys prior to delivering the materials to the Authorized User.



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5. REQUIRED MATERIAL(S)

- Appropriate portable survey meter (s) GM frisker, gamma dose rate, neutron dose rate.
- Swipes
- Gloves
- Plastic bag to contain swipes
- Pen
- Whole body dosimeter
- RPR 13A form
- Government vehicle for transport of RAM on public roads (if needed)
- Alpha/Beta counter or Liquid Scintillation Counter (LSC) for swipe analysis

6. PROCEDURE

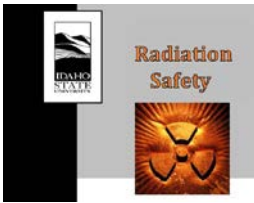
The following steps are performed by the RS employee once notification of package arrival has been received.

6.1 Preparation

- 6.1.1 Wear whole body dosimeter.
- 6.1.2 Perform operation and response checks on survey meters. (GM frisker and dose rate meters).
- 6.1.3 Prepare RPR 13A form and accompanying swipe material.
- 6.1.4 Obtain authorized vehicle if transporting RAM on public roads. Never use a personal vehicle to transport RAM. See restrictions in 6.3.1 below
- 6.1.5 Contact the authorized user and ensure that preparations are made to receive custody of the package.

6.2 Package Inspection

- 6.2.1 Inspect the integrity of package and notify RSO if package integrity is degraded such as crushed, wet or damaged. Note the condition on the RPR 13A form.
- 6.2.2 Be sure to wear gloves and personal dosimetry whenever handling the RAM packages.
- 6.2.3 Record the UN number, label category, nuclides, activity, and TI on the RPR 13A form.
- 6.2.4 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.
 - 6.2.4.1 Bag package to contain any loose surface contamination still present.
 - 6.2.4.2 Perform whole body frisk as a precautionary measure.
- 6.2.5 If contamination levels exceed the limits of 49 CFR 173.433, the RSO will perform



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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)).

6.2.6 If the integrity of the package passes inspection then continue with the receipt survey

7 Receipt Survey of Package

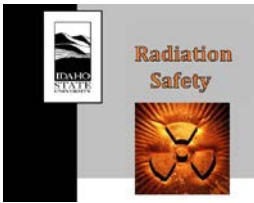
If the package contains DOT regulated radioactive material, perform a package receipt survey following the instructions in this section. Otherwise, skip to the package opening instructions in Section 8.

- 7.1 Contact a radiation safety staff member to discuss necessary survey requirements and types of instrumentation to use in the steps below.
- 7.2 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.
- 7.3 Record the dose rates on the RPR 13A form.
- 7.4 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).
- 7.5 Collect 300 cm² swipes on the external surface of the package.
- 7.6 Frisk the swipes with the GM counter to ensure significant contamination is not present. Note: The package may be moved to EHS based on these frisk results.
- 7.7 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.

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

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

- 7.7.1 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)).
- 7.7.2 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.



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8 Package Opening Instructions

- 8.1.1 After the package receipt inspection and survey is complete, the package may be moved to the EHS laboratory. For excepted packages (UN2908, UN2909, UN2910, and UN2911) radiation safety personnel may move the package to the EHS lab in a government vehicle. For other packages, radiation safety personnel may move the package by hand (hand truck) or must perform a shipment in accordance with Procedure RS-19-08.
- 8.1.2 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.
- 8.1.3 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.
- 8.1.4 If all packaging is free of contamination, remove or cover radioactive markings and store or dispose as appropriate.
- 8.1.5 Verify that the material description, nuclide, and activity listed on the certification form from the manufacturer are correct.
- 8.1.6 After all survey samples are analyzed send the RPR 13A form to the RSO or ARSO for review.
- 8.1.7 As necessary, enter the item in HPAssist and label with the HPAssist number. See procedure RS 19-02. Enter the HPAssist number (s) on the RPR 13A form.
- 8.1.8 After the survey is approved by the RSO or ARSO, move the package to the authorized user. See step 8.1.1 above for moving the package.
- 8.1.9 Attach a copy of the receipt documentation to the RPR 13A form and scan the form to the appropriate Box records folder.

7. REFERENCES

- 10 CFR 20.1906.
- 10 CRF 71.4.
- 10 CFR 71.47.
- 10 CFR 71.87(i).