



I. PURPOSE

To ensure that Authorized Users and the campus as a whole does not violate established possession limits. To ensure that the Safety Office maintains an accurate overall inventory of radioactive material in possession under the University of North Dakota's Type A, Broad Scope Radioactive Material License. To ensure compliance with the US Department of Transportation (DOT) Regulations regarding the receipt of radioactive material.

II. POLICY

Radioactive material may only be obtained under the authority of an Authorized User. Purchases or other procurement of radioactive material must be approved by the Radiation Safety Office prior to placing an order or obtaining the material. Package receipt must be performed in compliance with the DOT regulations. All individuals involved in the receipt of radioactive material must be properly trained at least every three years.

III. SCOPE

This standard practice all departments and individuals procuring radioactive material under the authority of the University of North Dakota's Radioactive Material License.

IV. REFERENCES

1. US Department of Transportation's Regulations, 49 CFR Parts 172 and 173
2. North Dakota Radiological Health Rules
 - a. Chapter 33-10-13, "Transportation of Radioactive Material"
 - b. subsection 6 of section 33-10-04.1-11, "Procedures for receiving and opening packages."

V. DEFINITIONS

1. Transport Index (TI): A dimensionless number used to indicate the dose rate surrounding a package of radioactive material. The TI is the maximum dose rate in millirem per hour 1 meter from the surface of the package.
2. Hazard Identification Label: A diamond shaped label attached to at least two sides of a radioactive material shipment. Packages received at UND may have either a white and black label that reads Radioactive I (White I) or a yellow, black, and white label that reads Radioactive

II (Yellow II).

3. Labeled package: Any package that has “Radioactive” Hazard Identification Labels attached to it. Includes packages with either the White I or Yellow II labels.

VI. RESPONSIBILITIES

A. Radiation Safety Officer (RSO) is responsible for:

1. Reviewing and approving all radioactive material requisitions based on approved possession limits of the individual ordering the material.
2. Maintaining a record of all radioactive material ordered under the authority of the University’s Radioactive Material License.
3. Reviewing the UND-RSP-4 receipt records for discrepancies
4. Emergency response for damaged in incorrect shipments.

B. Authorized User/Radiation Producing Machine User is responsible for:

1. Ensuring that requests for material don’t exceed their authorized limit.
2. Ensuring that packages are properly surveyed and opened upon receipt

C. Each affected employee/student is responsible for:

1. Properly performing package receipt procedures and submitting completed UND-RSP-4 forms to the Safety Office in a timely manner
2. Keeping their radiation dose As Low As Reasonably Achievable (ALARA).

VII. PROCUREMENT

Radioactive material can only be ordered under the authority of an Authorized User. Each Authorized User has specific limits on the type and quantity of an isotope that can be possessed at one time. Limits are established during the authorization process and are based on the procedures that the user is authorized to perform. To ensure that an Authorized User doesn’t exceed their possession limit, each Authorized User must maintain an up to date inventory of radioactive material in their possession. Authorized Users must obtain approval from the Safety Office prior to ordering, purchasing, or otherwise procuring radioactive material. The following procedures must be used to procure radioactive material:

A. Complete form UND-RSP-3, “Radioactive Material Requisition Form” and, for purchases, a University of North Dakota Purchase Requisition form. A round yellow sticker reading “LABEL MUST BE ATTACHED TO ALL RADIOACTIVE MATERIAL REQUISITIONS” should be attached to the Purchase Requisition form.

1. Determine the minimum amount of material that can be ordered to meet your requirements. For

more rare isotopes or compounds, consult production schedules for availability.

2. Review current inventory to ensure that the order will not exceed the authorized isotopic activity limit.
- B. If you are obtaining the material without need of a Purchase Requisition or Purchase Order, submit the completed form UND-RSP-3 to the Safety Office for review and inventory update.
- C. For purchases, the Purchase Requisition and form UND-RSP-3 must be reviewed and approved by the Radiation Safety Officer or designee prior to approval by UND's Purchasing Department. The following procedure developed between the Safety Office and the Purchasing Department may be used:
1. Due to the information typed on a requisition getting smaller and less clear by each electronic transfer, the requesting department must fax the completed requisition twice.
 - a. Fax the Purchase Requisition to the Purchasing Department at 777-2125
 - b. Fax the Purchase Requisition and form UND-RSP-3 to the Safety Office at 777-4132
 2. The Radiation Safety Officers' approval is completed on the faxed Purchase Requisition which is faxed to Purchasing.
 3. Purchasing matches the two faxed Purchase Requisitions and reviews for required approvals.
 4. The requisition then moves to Budget and Grants (if required), a buyer, and then to data input to create the Purchase Order. If requested by the ordering department, the purchase order number is phoned to the requestor.
- D. Once all approvals have been obtained the material can be ordered.

VIII. PACKAGE RECEIPT

- A. The authorized user and the supplier must agree on a shipment time for the radioactive material that will result in its arrival during normal working hours. The shipment must be made to the user's Department Office or laboratory.
- B. The authorized user or a radiation worker instructed in receiving shipments of radioactive materials must monitor the package as soon as possible after delivery. Section 33-10-04.1-13 subsection 6 of the North Dakota Department of Health's Rules requires that labeled shipments must be monitored within 3 hours of delivery. Users should make laboratory personnel aware of any such expected isotope shipments so that monitoring can be expeditiously handled. Each user should fill out form UND-RSP-4 and follow these steps when receiving and opening packages containing radioactive material:
1. If a package is damaged, smear test for radioactivity and measure the radiation levels in mrem/hr (EVEN IF THE PACKAGE IS ONLY SUPPOSED TO CONTAIN TRITIUM). The shipment box and packaging material must be disposed of as radioactive waste if contamina-

tion is detected in or on the package.

2. Perform a wipe test of the external surfaces of the package. Under no conditions may the material be used until the results of the wipe tests have shown that the shipment is not leaking. Record the results on form UND-RSP-4 and attach the wipe test printout.
 3. Examine the integrity of the package.
 4. For hard beta and gamma emitters (greater than 10 microcurie samples) measure the radiation levels in mrem/hr at 3 ft from the surface of the package (transport index) and compare with the transport index stated on the package. Measure the radiation level at the surface of the package, it must be less than 50 mrem/hour. Record the results on form UND-RSP-4
 5. For liquid or powder shipments place the package in a vented hood. Protective gloves must be worn when processing the package.
 6. Open the package and check for possible breakage of seals or containers, loss of liquid, or change in color of absorbing material. Perform a wipe test of the package contents.
 7. Verify that the contents of the inner package agree in name and quantity with the packing slip. Be sure to check the appropriate box on form UND-RSP-4
 8. For hard beta and gamma emitters (greater than 10 microcuries per sample) measure the radiation level of the unshielded container in mrem/hr. If necessary, place the container behind shielding to reduce the radiation level and proceed with remote handling devices.
 9. Move the isotope to its permanent storage location.
 10. Record the date, isotope shipment, quantity, chemical form, and location in the laboratory's inventory. All users will keep an inventory and a record of isotope purchases. These records will give the quantity of isotope, chemical name, supplier and date of receipt.
 11. Forward a completed copy of the Radioisotope Receiving Form (UND-RSP-4) to the RSO as soon as possible after completing the above steps.
- C. The RSO must be notified during the opening procedure if any one of the following occurs:
1. The package was not intact.
 2. Removable contamination was found on the exterior of the outer package.
 3. The contents of the inner package disagree with the packing slip.
 4. If the radiation levels are above 1 mrem/hr at 3 ft or above 50 mrem/hr at the package surface.

IX. TRANSFER OF MATERIALS WITHIN THE UNIVERSITY

Before radioactive materials are transferred from one authorized user to another within the University, the RSO must be notified so appropriate health physics coverage can be provided and revision of inventory records can be accomplished. Form UND-RSP-3 must be completed and submitted to the Safety Office by the Authorized User receiving the material. Clearly state on the form that the material is being transferred from another UND Authorized User. Completion of form UND-RSP-4 is not required upon receipt of the material.