



Radiation Safety  
100 Oak Creek Building  
Corvallis, OR 97331-7404

## Instructions - Authorization To Use Radioisotopes or X-Ray Machines

Authorization by the OSU Radiation Safety Committee is required for every possession or use of a radioisotope or a radiation-generating machine at any facility under jurisdiction of Oregon State University. Change of facilities, procedures, radioisotopes or machines, and change of the Program Director or Lab Contact requires amendment of the Radiation Use Authorization. Authorization or amendment is requested by memo from the Program Director to the Radiation Safety Committee via the Radiation Safety Office. The memo must contain sufficient information to enable the office staff and the Radiation Safety Committee to recognize and evaluate all aspects of radiation safety for the activities proposed.

In completing the application, refer to Section VI (for radioisotopes) or Section VII (for radiation machines) of the OSU Radiation Safety Manual (<http://oregonstate.edu/ehs/rso/rsm-index>) for current requirements. Please note that the memo must be received at the Radiation Safety Office early enough to permit processing, signature gathering, then duplication and distribution before radioactive materials are received or radiation machines are used. The memo may be sent to Radiation Safety via campus mail, or to the Radiation Safety Officer, via e-mail at [radiationsafety@oregonstate.edu](mailto:radiationsafety@oregonstate.edu).

### 1. **General Nature of Work:**

- a. Give a short statement of the general nature and objectives of the proposed activities involving radioisotopes or radiation machines (one or two sentences).
- b. Discuss probable start date, and probable end date or probable duration of the activities.

### 2. **Personnel:**

- a. Provide name, department, status at OSU, campus address, email address, and work phone for the proposed Program Director. List training and experience pertinent to the proposed work. For most uses, the Program Director must have prior experience performing the proposed work.
- b. List name, work phone, email address, and pertinent training and experience of the Lab Contact person to whom routine questions should be directed (dosimeter assignment, waste pickups, etc.). If this is the Program Director, please indicate.
- c. List names and short statements of pertinent training and experience for all others working with radioisotopes or radiation machines on this program.

### 3. **Materials and Machines Involved:**

- a. List all radioisotopes to be involved; give all physical and chemical forms for each, list maximum mCi in possession, maximum mCi to be handled at any one time for each isotope and form.
- b. List every radiation-generating machine to be involved; give maximum operating parameters and expected operating parameters for each (voltage, current, filtration, shielding, etc.).

4. **Work Details:**

- a. Describe the proposed activities and manipulation of radioisotopes and radiation machines in sufficient detail to permit determination of types and magnitudes of radiation hazards involved.
- b. Using the attached list, provide isotope(s) and use amounts for any of the common protocols listed. No additional information is needed for the listed protocols.
- c. Complete a Radioisotope Protocol Sheet (attached) for each protocol not listed in the table.

5. **Facilities:**

- a. List every room where radioisotopes will be used, stored, incubated, counted, etc. Comment on work surfaces, floor surfaces, use of facility by others in addition to user, etc.

6. **Safety Measures Proposed:**

Discuss the safety measures for this work:

- a. Personnel protective apparel
- b. Other protective items (bench paper, shields, segregated storage, etc.)
- c. Personnel dosimeters and bioassays, if any
- d. Survey meters
- e. Routine and special surveys - frequencies, techniques, instrument, etc.
- f. Handling techniques - remote handling devices, pipettes, shipping vial opening equipment, etc.
- g. Waste handling - segregation, equipment and techniques
- h. Security – access to radioactive stock materials and sealed sources must be restricted to authorized personnel only; provide method (locking freezer, lockbox, etc.)

7. **Releases:**

Provide information on anticipated releases from activities conducted under the RUA (radioisotope users only). For each approved fume hood (or other local exhaust system) to be used for radioactive materials, provide the following information:

- a. Maximum activity released per year for each radioisotope used in the hood.
- b. Chemical and physical form of compounds released.
- c. Filtration incorporated in hood exhaust system.

8. **Other Safety Problems:**

Discuss any other pertinent safety aspects of the materials or operations, such as carcinogenicity, biohazards, explosives, abnormal fire hazards, etc. which contribute to the hazard of the work.



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## Common Radionuclide Procedures and Experiments

Provide isotope(s) and use amounts for any of the common protocols listed. No additional information is needed for the listed protocols.

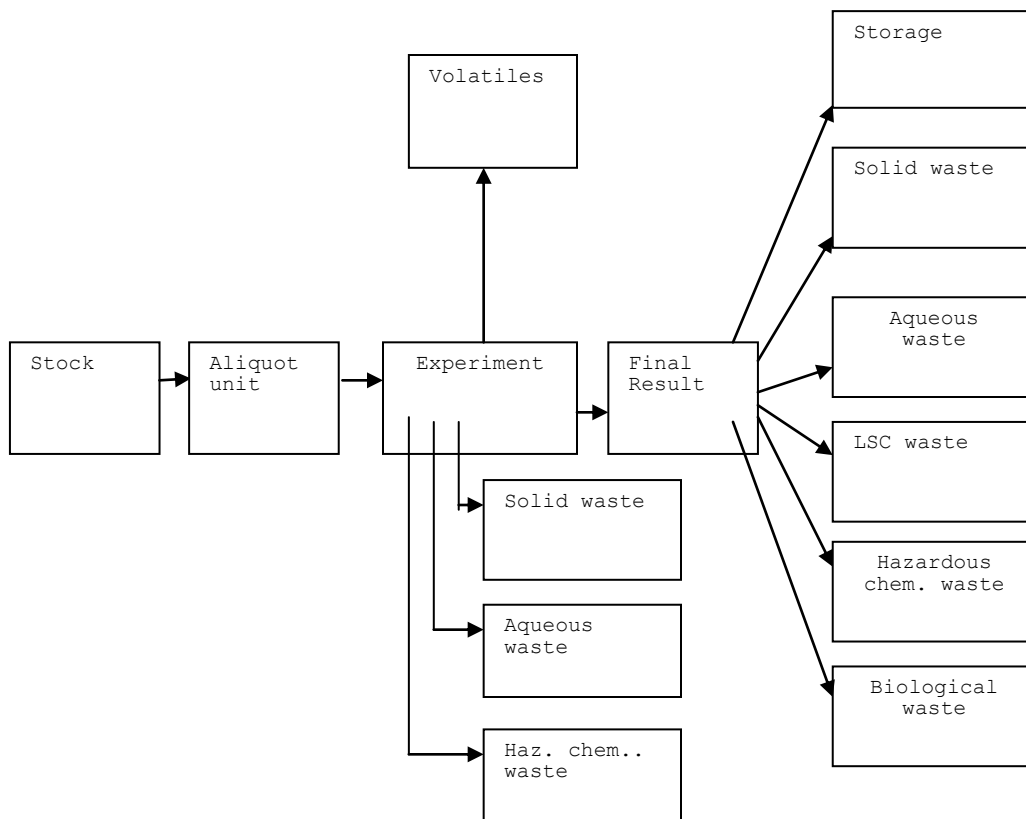
<b>Procedure</b>	<b>Isotope</b>	<b>Amount to be used (in mCi)</b>
Northern Blot		
Southern Blot		
Western Blot		
Nuclear Run-on Assay		
Kinase Assay		
Metabolic Labeling of Protein		
Receptor Ligand Binding Assay		
Iodination		
DNA sequencing		
In Situ Hybridization		

# Radioisotope Protocol Sheet

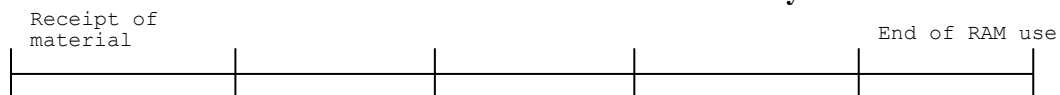
Experiment type: \_\_\_\_\_ Frequency: ~ \_\_\_\_\_ experiments per year  
 Radionuclide(s): \_\_\_\_\_ Chemical form(s): \_\_\_\_\_

## Flow Chart

Enter  $\mu\text{Ci}$  and volume amounts in each cell below:



## Time Line in Days



## Procedures

Check all that apply to this protocol:

- Mixing, vortexing
- Use of powdered material
- Application of suction using \_\_\_\_\_
- Heating, boiling, pressure variation, etc., resulting in release of volatiles
- Application of electrical current
- pH adjustment or other chemical reaction resulting in release of volatiles
- Procedure necessitating work on open benchtop
- Transport between buildings
- Use of syringes or other sharps
- Processes possibly causing explosions, fire or high pressures
- Other (list) \_\_\_\_\_