



Radionuclide Use in Laboratory Animals

General Information:

Use of radioactive materials in animals must be conducted by or under the direct supervision of an Authorized User who has: (1) submitted an "[Animal Use of Radionuclides](#)" form (RS Form 120) to the UWM Radiation Safety Program; and (2) received approval from the UWM Animal Care and Use Committee to follow this protocol. The Authorized User must receive written approval of this request before work can begin.

The Authorized User is responsible for assuring that:

- Animal rooms and cages are properly labeled to indicate that radioactive materials are being used.
- Animal care personnel are properly trained in the use of radioactive materials.
- Proper safety procedures are followed for the hazard(s) involved.
- Radioactive animals are not moved to unauthorized facilities.

Before work with radioactive material begins, the potential hazard to animal caretakers and other persons entering the animal care area must be evaluated. This evaluation should be based on:

- Radiation dose in the workplace
- Excretion of radioactive material
- Special hazards associated with a radionuclide or its chemical form (i.e. volatile iodine, etc.)

Animal caretakers must be notified in advance of the need to house radioactive animals. Written procedures for routine animal care and for emergency situations must also be provided to the animal care personnel. Storage space for radioactive animal carcasses is very limited (<20 cubic feet).

Safety Guidelines for Work Involving Radioactive Sealed Sources in Animals:

For each protocol involving the use of sealed sources in animals, the authorized user shall:

1. Maintain an adequate source inventory system to account for all sources. Sources must be inventoried at least each time the animal(s) are moved from one room/area/cage to another room/area/cage while the sources are still in the animal.
2. Perform a meter survey in rooms where the animal is housed to determine the exposure levels for appropriate labeling of the room (e.g., "Radiation Area").
3. Perform meter surveys to assure that radiation exposure in all adjacent areas are within legal limits, less than 100 mrem per year and 2 mrem per hour.
4. Each cage must be labeled as follows:
 - o "Caution - Radioactive Materials" Label
 - o Radionuclide and amount implanted.
 - o Date Implanted.
 - o Name and phone number of authorized user.
5. Survey animal waste before disposal, or hold the waste until the end of the experiment when all sources are accounted for. Survey all other materials before they are removed from the animal housing area.

6. Do meter survey of animals after the sources have been removed.
7. Ensure that personnel caring for animals have received required training.
8. If animal is moved to a different authorized room/area/cage, survey the vacant room/area/cage to confirm that no sources were left behind.
9. The animals must be marked until the sources are tested for leakage. If the sources are found leaking the animal must remain marked and must be disposed of through Radiation Safety upon death or sacrifice.

Safety Guidelines for Work Involving Radioactive Materials in Animals Other Than Sealed Sources:

1. When administering high energy beta or gamma emitters, perform meter survey in rooms where the animal is housed to determine the exposure levels for appropriate labeling of the room (e.g. "Radiation Area"), if appropriate.
2. When administering high energy beta or gamma emitters, perform meter surveys to assure that radiation exposure in all adjacent areas are within legal limits, less than 100 mrems per year and 2 mrems per hour, if appropriate.
3. Each cage must be labeled as follows:
 - o "Caution - Radioactive Materials" label.
 - o Radionuclide and amount administered.
 - o Date Administered.
 - o Name and phone number of authorized user.
4. Animal waste, urine, feces, blood contaminated dressings should be treated and handled as contaminated until surveys show otherwise.
5. Ensure that personnel caring for animals have received required training.
6. If animal is moved to a different authorized room/area/cage, survey the vacant room/area/cage to look for contamination.
7. The animal must be marked and must be disposed of through Radiation Safety upon death or sacrifice.

Waste Disposal:

All animals which have been injected with or administered radioactive materials **MUST** be disposed of through UWM's Radiation Safety Program at the end of the project or when sacrificed. The Authorized User must make arrangements with the Radiation Safety Officer for waste storage well in advance of any large scale animal work. When disposing of animal carcasses, tissues, or animal wastes which contain radioactivity, these guidelines should be followed:

1. All tissue and carcass wastes should be frozen prior to pick up.
2. Place no more than 5.0 mCi of combined total activity of C-14 and H-3 into one container (plastic bag).
3. Place no more than 1.0 mCi of any other radionuclide in one container.
4. All animal tissues and bedding wastes must be double bagged and tied closed. Disposal bags provided by Radiation Safety should be used. A completed radioactive waste label must be attached to the waste bag. Special notice should be made if biohazardous materials are included in the wastes. See [Section 26.1.3](#) of the UWM Radiation Safety Manual.
5. Blood and urine wastes may be disposed of in the municipal sewer system. These disposals must be reported at least monthly to the Radiation Safety Program (nuclide, activity, and date) on a radioactive waste disposal form.
6. Complete a radioactive waste disposal form and contact the Radiation Safety Program to schedule a pick up.

Training Requirements:

Personnel caring for animals in which sealed sources of radioactivity are used shall:

1. Read the handbook "Radiation Safety for Radiation Workers" and pass the associated exam.
2. Read the manual "Guide to the Responsible Care and Use of Animals in Teaching and Research at UWM" and pass the associated exam.
3. Be shown a "dummy source".
4. Be told to report to Radiation Safety and the authorized user immediately if sources seem/become loose, or the animal is bleeding, etc.
5. Be shown how to care for the animal and what they are supposed and not supposed to do.
6. Be shown how to use a radiation survey meter.
7. Be shown appropriate labeling for cage/area/room.

Personnel caring for animals in which unsealed source of radioactivity are used shall:

1. Read the handbook "Radiation Safety for Radiation Workers" and pass the associated exam.
 2. Read the manual "Guide to the Responsible Care and Use of Animals in Teaching and Research at UWM" and pass the associated exam.
 3. Be told to report to Radiation Safety and the authorized user immediately if the animal is bleeding, is loose from its cage, or if the urine or feces of the animal are outside of the cage/pan, etc.
 4. Be shown how to care for the animal and what they are supposed and not supposed to do.
 5. Be shown how to use a radiation survey meter, if applicable.
 6. Be shown appropriate labeling for cage/area/room.
-