WVU IACUC SOP:
Radioactive Materials Used in Animal Studies

1. General requirements must be met before using radioactive material on or in animals.

1.1. All applicants must complete a Non-Human Use Application. This application must be submitted to the Radiation Safety Department for review by the Radiation Safety Officer.

1.2. All applicants wishing to use radioactive material must be approved by the Radiation Safety Officer (RSO) and the Non-Human Use of Radiation & Radionuclides Committee.

**NOTE:** Approval by Non-Human Use of Radiation & Radionuclides Committee is required before the Animal Care and Use Committee can give final approval for animal use protocols.

1.3. The vivarium supervisor must be directly notified of radioactive material use in animals before any use starts.

1.4. Applicants must successfully complete all required training:

   1.4.1. Training required by the Office of Laboratory Animal Research (OLAR).

   1.4.2. Radiation Safety Training for Radiation Users.

   1.4.3. Read and keep a copy of the Radiation Safety Manual.

   1.4.4. Be shown how to use a radiation survey meter, if applicable.

   1.4.5. Be shown appropriate labeling for cage/area/room.

2. General Radiation Controls for Use of Radioactive Material in Animals.

2.1 Monitoring of Personnel:

   2.1.1 Personnel must follow West Virginia University ALARA Policy.

   2.1.2 Personnel dosimeters will be worn during protocol work if appropriate for the type and quantity of radioactive material used in the animal study.

2.2 Exposure Reduction Methods:

   2.2.1 *Time* - Try to minimize the time spent with animals containing this isotope.
2.2.2 *Distance* - Increasing distance between personnel and exposure source greatly minimizes exposure levels. Do not hold animals for extended periods of time.

2.2.3 *Shielding* - When possible, use shielding between personnel and the exposure source. Plexiglas or plastic shall be used for high energy beta isotopes. Lead or aluminum shall be used for gamma isotopes.

2.3 Personal Protective Equipment:

2.3.1 Handlers shall wear double gloves, lab coat, and eye protection.

2.3.2 Any equipment coming into contact with bodily fluids from these animals shall either be disposable or be decontaminated.

2.4 Vivarium User’s Laboratory Set Up:

2.4.1 The outside door shall be labeled, “CAUTION RADIOACTIVE MATERIAL” and Emergency Contact Information sticker must be posted as well.

2.4.2 The area in which the animals will be housed must be labeled “CAUTION RADIOACTIVE AREA”.

2.4.3 Within the laboratory the “Notice to Employees” and the Emergency Response Procedures must be posted.

2.4.4 Absorbent paper shall be placed on lab benches with radioactive caution tape to designate the area where isotopes will be used.

2.4.5 Absorbent paper shall be placed in fume or tissue culture hoods, if radiation work is to be performed in them.

2.4.6 All equipment (refrigerators, freezers, hoods, etc.) used are required to have a “CAUTION RADIOACTIVE MATERIAL” posted on them.

2.4.7 Radiation Safety Department shall provide containers and bags for waste. These containers will be labeled upon delivery.

2.4.8 A sink shall be designated for radiation use within the laboratory. This sink shall be labeled with radioactive caution tape.

2.5 Vivarium User’s Laboratory Security:

2.5.1 The designated radioactive laboratory shall remain locked when unattended.

2.5.2 Only authorized users shall have access to the designated radioactive laboratory.

2.6 Animal Housing Set Up:

2.6.1 The Authorize User must purchase disposal cages. No radioactive cage shall go through the cage washer.
Note: This may require ordering these cages ahead of your project start through the OLAR.

2.6.2 Any animal, except large animals requiring special housing, must be housed in the designated Radioactive Area in a vivarium room.

2.6.3 Each cage must be labeled as follows:

   2.6.3.a “Caution - Radioactive Materials” label.
   2.6.3.b Radionuclide and Amount Administered.
   2.6.3.c Date Administered.
   2.6.3.d Name and Phone Number of Authorized User.

2.6.4 Absorbent paper shall be placed on the floor and secured with radioactive tape under rack or cage itself to prevent the floor from becoming contaminated.

2.7 Animal Handling:

   2.7.1 Be shown how to care for the animal and what they are supposed and not supposed to do. This training is done by the OLAR.

   2.7.2 Report to Radiation Safety Department 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.

2.8 Animal Transport:

   2.8.1 The cart used to transport shall be lined with absorbent paper.

   2.8.2 Double containment shall be used if transporting such specimens to another room or facility for analysis. If necessary, specimens shall be shielded to <2.5 mR/hr at 10 centimeters. Samples to be transported off-campus must be processed by Radiation Safety Department.

   2.8.3 Ensure all cages leaving the hot lab are labeled, "CAUTION RADIOACTIVE MATERIAL," with the radionuclide, activity, date indicated, and name and phone number of authorized user.

   2.8.4 Any radioactive animal must be transported by the freight or serves elevator only. During transport, there cannot be any other passengers or food being transported on the elevator at the same time.

2.9 Surveying:

   2.9.1 After handling contaminated animals, bedding, or cages, personnel shall monitor their hands, arms, clothing, and shoes for contamination using an appropriate technique. Any detectable skin or clothing contamination must be cleaned immediately, and the Radiation Safety Department must be notified at 304-293-3413.

   2.9.2 Contamination surveys are required on the days that radioactive materials are used.

   2.9.3 Monthly contamination surveys are required regardless if experiments take place.
2.10 Storage of Isotopes:

2.10.1 Freezers and refrigerators shall be kept inside the designated radioactive area.

2.10.2 All isotopes shall be stored in the vivarium room.

3.0 Specimens:

3.0.1 Animal waste, urine, feces, blood contaminated dressings shall be treated and handled as contaminated until surveys show otherwise.

3.0.2 Specimens (blood, tissue, etc.) collected from the animal after it has received radioactive material shall be labeled, "CAUTION RADIOACTIVE MATERIAL" until such samples no longer contain detectable levels of radioactive material above background.

3.1 Waste Disposal:

3.1.1 Following the injection/infusion of radioactive materials, the animal's excreta, any soiled absorbent paper, and bedding shall be collected and disposed of as radioactive waste. The length of time the waste will be collected as radioactive depends on the type and quantity of radioactive material involved, and shall be determined by the Authorized User and the Radiation Safety Department.

3.1.2 Waste shall be packaged in a leak proof container labeled, "CAUTION RADIOACTIVE MATERIAL" and bearing a waste tag indicating the radionuclide, activity, date indicated, and name and phone number of authorized user.

3.1.3 Disposable cages shall be placed in a leak proof plastic bag labeled, "CAUTION RADIOACTIVE MATERIAL" and shall bear the waste tag indicating the radionuclide, activity, date indicated, and name and phone number of authorized user.

3.1.4 After all i.v. lines, needles, absorbent paper, etc., have been removed, animal carcasses will be packaged for disposal as radioactive waste separately.

3.1.5 Sharps and needles must be placed in a separate labeled plastic box for disposal.

3.1.6 Carcasses shall be placed in a leak proof plastic bag labeled, "CAUTION RADIOACTIVE MATERIAL" and shall bear a waste tag indicating the radionuclide, activity, and date.

3.1.7 Carcasses shall be stored refrigerator (freezer if storage will be for greater than 24 hours) posted, "CAUTION RADIOACTIVE MATERIAL" until removal by the radioactive waste contractor.

Note: OLAR should be contacted ahead if storage is to be through them.

3.1.8 All animal tissues and bedding wastes must be double bagged and tied closed. Disposal bags provided by Radiation Safety Department shall be used. A completed radioactive waste label must be attached to the waste bag. Special notice shall be made if biohazardous materials or hazardous chemicals are included in the wastes.
3.2 Decommission Laboratory:

3.2.1 When the experiment has been concluded, a closeout survey of the vivarium room shall be performed to ensure that all radioactive materials have been removed and that all areas are:

<200 dpm/100 cm$^2$ for beta- and gamma-emitters

3.2.2 Once the containment surveys demonstrate contamination is below the level stated above, the “Caution Sign” shall be removed if radioactive materials are not going to be used again within 30 days. If radioactive materials are to be used again within 30 days, the room shall remain posted.