OCRS Radiation Safety

Application for Radioactive Material Principal Investigator Permit

Instructions for New Applicants:

1) Review the VU or VUMC Radiation Safety Manual for the current policies and procedures, available on our website: **https://www.vumc.org/safety/rad/radiation-safety-manuals**
2) Using **Adobe Reader**, provide all applicable information in sections I through VII on this form.
3) Save and submit this form using the button below or manually save and send to radsafety@vumc.org along with a copy of your CV and any attachments requested for review.

Instructions for Permit Amendments:

1) Review and revise all sections on the most recent copy of your permit - contact Radiation Safety for a copy, if needed.
2) Save and submit this form using the button below or manually save and send to radsafety@vumc.org and provide a summary of the information revised.
3) For new isotopes or increased possession limits requested, a brief statement explaining why you are requesting the amendment should be included with your revised permit application.

Save & Submit *This button will prompt you to save this file & submit to **radsafety@vumc.org***

I. Principal Investigator Information

Name: _____ VUNetID: _____

Department: _____ Affiliation: ○ VU ○ VUMC

Title/Faculty Appointment: _____

A. Training & Experience

Per the VU & VUMC Radiation Safety Manual, a PI must have training and experience to qualify for a permit to use radioactive material. (new PI applicants ONLY; for previously-approved PIs, simply indicate "N/A - Previously Approved")

Training Course Required - Basic Principles of Ionizing Radiation

Topics covered must include characteristics of ionizing radiation, units of radiation dose and activity, radiation detection instrumentation, biological hazards and the safe handling of radioactive materials.

Enter the location(s) where you have completed a course covering these topics and the year(s) completed:

Note that the initial radiation safety training provided by OCRS at VU/VUMC will satisfy the training requirements in this section

Enter the location(s) where you have had on the job training in the safe handling of radioactive material:

Experience with radiation

Briefly describe your previous work experience with radioactive material to indicate ability to administer your proposed radionuclide program. Include radionuclides and maximum activity amounts used.

☐ A copy of my CV has been attached (new applicants only)

II. Radionuclide Table

Directions: Select the radionuclides you are applying for and provide *ALL* information requested for each; additional descriptions are included at the bottom of this page.

Radionuclide	Sealed Source only	Possession Limit Requested (mCi)	Select All that Apply					General Chemical Form	Number of ALIs	Maximum Activity per Procedure (mCi)	Monthly Frequency (max. no. procedures per Month)
			Volatile or Gas	Animal Use	Solid	Liquid	Other				
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		
[select]	☐		☐	☐	☐	☐	☐		0.00		

Total Number of ALIs: 0.00

RAM Lab Hazard Class: Slight

Additional Descriptions:

Sealed Source Only: Select this option if you *only need the radionuclide as a sealed source.*

Possession Limit: Enter the maximum activity of each radionuclide you are applying for approval to have possession of at any given time; you will not be allowed to purchase more activity if your current inventory would exceed the limit requested.

Volatile: Select this option if ***ANY*** procedure may generate a volatile form of this radionuclide.

Animal Use: Select this option for each radionuclide that will be administered to animals; additional information is requested in Section VI.

Other: Describe in Section III, Experimental Procedure.

Chemical Form: Indicate the *general* chemical form of this radionuclide, i.e. nucleotides, radiolabeled drug compounds, etc.

Number of ALIs: This is automatically calculated for the possession limit & is used to determine the Lab Hazard Class (Slight, Low, Medium, High); *ALI is the annual limit on intake; referring to a value representing 5 rem/year. Ingestion ALI activity limits are used in these calculations.*

Max Activity per Procedure & Monthly Frequency: Provide the approximate maximum activity anticipated per experiment for each radionuclide as well as the number of procedures on a monthly basis.

Specific details about the information in this table should be included in Section III, Experimental Procedure.

III. Experimental Procedures

Briefly describe radiological aspects of each procedure in this section for *each radionuclide*. Focus on information needed to assess radiation safety aspects of the procedure.

III. Experimental Procedures, Continued...

IV. Radiation Enabled Laboratories and Safety Procedures

A. List of Locations Enabled for RAM

List each location you would like to enable for radiation use; these are the only spaces that RAM will be permitted to be stored or handled.

Building	Room Number	Lockable (Y/N)?	Shared (Y/N)?	Additional Details
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	
[select]		☐ Yes ☐ No	☐ Yes ☐ No	

B. Room Diagrams

Include a room diagram for each radiation enabled space on your permit; use the acronyms listed below to identify each of the following radioactive elements in your diagrams. Crosshatch areas where RAM is not permitted in each diagram.

- RAM Benches (RB)
- RAM Biosafety Cabinets (RBSC)
- RAM Centrifuges (RC)
- RAM Freezers (RF)
- RAM Hoods (RH)
- RAM Incubators (RI)
- RAM RAM Refrigerators (RR)
- RAM Sink (RS)
- RAM Waste (RW)
- RAM Inventory Storage (RIS)

Other:
- ______________________
- ______________________

*Room diagrams can be done in paint, word, ppt, or hand drawn; click **here** for examples.*

☐ *A room diagram has been provided for each of the spaces listed above.*

C. Security Procedures

All RAM, (i.e stock inventory, waste, experimental samples, etc), must be secured against unauthorized access or removal.

- RAM inventory should be stored in a lockable rad enabled refrigerator/freezer, lockbox, or storage container, and
- RAM waste containers holding dry or liquid rad waste should be lockable; hasp locks can be utilized to avoid purchasing new containers, or
- RAM is constantly attended or secured in a locked room when unattended.

*Describe below your lab's security methods for **RAM Inventory & RAM aliquoted samples:***

*Describe below your lab's Security methods for **RAM Waste:***

IV. Radiation Enabled Laboratories and Safety Procedures, Continued...

D. Radiation Shielding, Detection Equipment & Contamination Surveys

1) Shielding Radionuclides with External Radiation Hazards

You must have appropriate shielding for work with gamma (high-Z material) and high energy beta (low - Z material) emitting radioisotopes.

Describe below your lab's shielding plan; enter "N/A" if your lab is only authorized to work with low energy beta emitters.

Dosimetry monitoring determination for these radionuclides (completed by radiation safety).

2) Radiation Detection

You must have an appropriate and operable survey meter available when handling RAM (C-14, P-32, I-125, etc.); low energy beta-emitters (i.e. H-3, C-14) require access to a Liquid Scintillation Counter (LSC) or beta counter to detect removable contamination.

Describe below your lab's radiation detection capabilities for all radioisotopes*:

**Include Building/Room numbers for locations where LSC's are being used.*

3) Contamination Surveys

You are responsible for maintaining contamination levels below the limits listed in the VU & VUMC Radiation Safety Manuals. It is recommended to complete and document radiation contamination surveys following each experiment; weekly documentation of surveys are required for Medium hazard labs (see RAM hazard class on page 2).

Describe your lab's policy for completing contamination surveys*:

** Include information regarding frequency, method (wipe test vs. survey meter) & contamination limits.*

☐ A SOP for performing contamination surveys in the lab has been attached in lieu of filling out this field.

Survey documentation requirements for the lab (completed by radiation safety)

IV. Radiation Enabled Laboratories and Safety Procedures, Continued...

E. Other Information

Describe any additional safety hazards (e.g. biohazardous, chemical, etc.) that radiation safety staff may come into contact with when entering one of your rad enabled rooms:

Contact the appropriate section for additional information in OCRS ***https://www.vumc.org/safety/staff***

Miscellaneous

Any information that may be relevant for accessing radiation enabled rooms can be entered here (e.g. location of keys for rad waste or RAM storage, code to enter room, etc.).

V. Radioactive Waste

A. Radioactive Waste Stream: indicate all waste types expected from these procedures

- ☐ Solid (paper, plastic, disposable gloves, etc.)
  Note: keep waste lead (Pb) pigs and shielding separate from other solid waste
- ☐ Liquid (e.g. aqueous waste) contained for pickup
- ☐ Liquid waste disposed to the sanitary sewer (must have a properly labeled radioactive use sink and disposal log)
- ☐ Liquid Scintillation Counting (LSC) vials
- ☐ Biohazardous (carcasses, blood/body fluids, etc.)
- ☐ Decay in Storage for isotopes having half-lives less than or equal to 10 days
  - ☐ *A copy of the log that will be documented and maintained by the laboratory for a minimum of 3 years has been attached and includes the following information; date of disposal, background CPM, surface CPM, meter make/model/calibration date & name of surveyor. This log will be maintained in the following locations:*
- ☐ Mixed waste, including chemical hazards or RCRA-regulated. **Describe below.**
  See our website for more information regarding the types of RCRA waste:
  https://www.vumc.org/safety/waste/chemical-waste-identification or for more information, email **hazardouswaste@vumc.org**
- ☐ Additional information, or waste not described in any of the selections above. **Describe Below.**

Rad waste policies can be found in the appendix of the VU & VUMC Radiation Safety Manual:
https://www.vumc.org/safety/rad/radiation-safety-manuals, *or email* ***radwaste@vumc.org*** *for more information.*

VI. Animal Use [complete only if animal use has been selected in the Radionuclide Table]

- Do NOT list imaging procedures performed entirely by the VUIIS Imaging staff.
- ***IACUC research protocols must be submitted and approved in conjunction with this application.***

A. Animal Use Table

Radionuclide	Enter the max number of animals anticipated at any time, per radionuclide								Max total activity admin. to any one animal (uCi) *[include aggregate due to mult. admin]*	Housing ≥12h Yes or No
	Dogs	Gerbils	Mice	Rats	Other Species					
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
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[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No
[select]										☐ Yes ☐ No

B. Routes of Intake

Select all routes of intake you are anticipating administering RAM to animals

- ☐ Intravenous, Intraperitoneal (stomach) & Intramuscular injections
- ☐ Gavage (forced mouth admin of liquid or pill)
- ☐ Intratracheal (delivered to lungs via intubation, inhalation or injection)
- ☐ Subcutaneous (under skin, into tissue layer between skin & muscle)
- ☐ Other **(describe below)**

VI. Animal Use, Continued...[complete only if animal use has been selected in the Radionuclide Table]

C. Rooms and Personnel for Animal Uses

The radiation safety reviewer of your animal study will cross reference rooms and personnel for each section that a radioactive substance has been added.

1) Rooms

Page 5, Section IV, of this permit application must include each rad lab & rad DAC (Division of Animal Care) housing location that will be used for handling or storage of radioactive animals, tissues or fluids as part of this study.

2) DAC Housing

Enter the locations of DAC housing for each species that you plan to use for your animal study. If you are unsure where to house animals please enter "housing location needed". DAC may ask you to attend a Hazardous Housing meeting prior to your animal study being approved.

Note that DAC housing is required for housing animals greater than 12 hours

3) Personnel

Only radiation workers listed on page 10, Section VII, of this permit application will be approved in your animal protocols for handling radioactive materials.

D. Animal Use Procedures

☐ I have included a brief description of all animal use procedures in Section III, Experimental Procedure; including total activity handled.

E. Radioactive Cages & Contamination Surveying

Cages housing radioactive animals must be labeled as 'Caution, Radioactive Material' until the animal has been removed and the cage decontaminated; the cage must be surveyed to ensure contamination is below the limits prior to returning to Animal Care.

Describe any contamination survey procedures relating specifically to work with animals (i.e. decontaminating cages, DAC housing, etc.)

F. Additional notes for RAM use in animals:

- Radioactive animals must be isolated from other animals.
- The PI is responsible for changing and collecting radioactive litter and for providing all necessary monitoring; radioactive excreta or litter should be disposed of in the same manner as biological radioactive waste and all locations where radioactive animals where administered RAM, housed or sacrificed must be monitored for contamination.
- PPE (e.g. gloves, gowns, etc.) must be worn when changing litter or cleaning cages.
- Animals administered RAM may not be used for human or animal consumption.

See the VU/VUMC Radiation Safety Manual for more information on the use of RAM in animals:
https://www.vumc.org/safety/rad/radiation-safety-manuals

VII. Personnel Authorized to Perform these Radioactive Material Procedures

A. Radiation Workers

List all personnel authorized by the Principal Investigator (PI) to handle radioactive materials & Indicate most recent training date.

Enter in the following format: Name, vunet ID, training date (must be within 12 months);

B. Radiation Lab Managers

Authorizing personnel as a radiation lab manager allows them to make changes to your permit without you being notified.

C. Authorized Buyers

Authorizing personnel, in addition to the PI, as an authorized buyer permits them to submit RAM orders through iLab.

VIII. OCRS Use Only - Previously Approved Procedures

This section is intended to be a placeholder to maintain information of radionuclides, possession limits, experimental procedures, etc. that have previously been reviewed and approved by the VU or VUMC Radiation Safety Committee.

Radionuclides	Possession Limit (mCi)	Physical Form	Animal Use	Sealed Source Only	Date Removed
[select]		Select			
[select]		Select			
[select]		Select			
[select]		Select			
[select]		Select			
[select]		Select			

Experimental Procedures Removed:

Re-Adding Previously Approved Items

All items previously approved for by the VU or VUMC Radiation Safety Committee will not require another vote, however, your permit will be subject to administrative approval by the Radiation Safety Office. To request this, you must:

1. Amend your permit to include the previously approved for items & include all supporting information in each section.
2. Ensure all radiation workers in your lab are listed on the permit and are current in the annual radiation safety training requirement.
3. Submit an amended permit to **radsafety@vumc.org** for review.

Note: some changes (i.e. possession limit increases) to previously approved items may be subject to committee review and approval, please see the VU or VUMC Radiation Safety Manual for additional information: **https://www.vumc.org/safety/rad/radiation-safety-manuals**