

**University at Buffalo**  
**Environment, Health & Safety Services**  
**APPLICATION TO USE RADIOACTIVE MATERIAL**  
PRINCIPAL INVESTIGATOR AUTHORIZATION INSTRUCTIONS

Environment, Health & Safety (EH&S) Services administers a radiation protection program required under New York State Department of Health (DOH) broad scope Radioactive Materials License 1049. To request authorization to use radioactive material as a Principal Investigator (PI) at the University at Buffalo (UB) under this license, complete the "Application to Use Radioactive Material Principal Investigator Authorization" (form RMA-1). The Radiation Safety Officer (RSO) and the EH&S Radiation Safety Division staff will check the application for completeness and forward it to the Radiation Safety Committee (RSC) for review. Upon approval by the RSC, EH&S will set up an appointment to implement the new radioactive materials permit. The qualifications for an authorized radioactive materials PI are as follows:

- Must be recognized as a member of the UB faculty or staff and have a definite and demonstrable application for the radioactive materials requested.
- Must be the senior researcher of the project and **directly responsible for radioactive material use in the laboratory.**
- Must provide lab facilities suitable for the work proposed.
- Must have a minimum of one year's experience working with radioactive materials.
- Must provide documentation of successful completion of academic courses pertaining to, or demonstrate to the satisfaction of the Radiation Safety Officer (RSO), competence in and knowledge of: 1) Principles and practices of radiation protection; 2) Radioactive measurement standardization and monitoring techniques and instruments; 3) Mathematics and calculations basic to the use and measurement of radioactivity; 4) Biological effects of radiation; and 5) Regulations contained in the Campus "Radioactive Materials Safety Manual."

In the event that the documentation of the knowledge or experience of the applicant appears insufficient, an examination, either written or oral, may be required for final approval. All work involving the use of radioactive material must be performed in a safe manner and all exposures to radiation shall be maintained as low as reasonably achievable (ALARA).

## **GENERATION OF HAZARDOUS WASTE**

Use of radioactive materials and other lab work often involves the generation of hazardous waste. University Facilities disposes of hazardous chemical and radiological waste at no direct cost to the generator. EH&S provides containers for the collection and disposal of **all radioactive waste**. Refer to the EH&S "Guide to Radioactive Waste Management" for handling and disposal information. Due to the high disposal costs, efforts should be made to prevent or minimize the mixture of radioactive material with hazardous chemicals. Contact EH&S (829-3301) for specific instruction on biohazards, human blood, toxic, carcinogenic or other such hazardous material.

## **RADIATION DETECTION INSTRUMENT REQUIREMENTS**

### **Counting Instruments:**

Wipe surveys are required after each use of radioactive materials. Indicate the location of the liquid scintillation counter or gamma counter to be used to count samples and to analyze wipes taken as part of surveying for removable contamination. If the equipment is shared with someone else, attach a statement authorizing use of the instrument.

### **Portable Instruments:**

Portable radiation survey instruments are required for all beta emitting isotopes with energies above 70 keV and/or gamma emitting isotopes. All isotope PIs (other than those only using H-3) *must* have their own portable survey instrument before the authorization is implemented. While in some cases arrangements can be made to "borrow" an instrument from a colleague, this is not recommended since there may be times when the instrument is unavailable. For campus laboratories, EH&S recommends the Ludlum Model 3 survey instrument with a pancake probe for detecting beta radiation, a low energy gamma (LEG) sodium iodide (NaI) probe for detecting I-125, or a high energy gamma (HEG)

sodium iodide probe for detecting Cr-51 or Co-57. See the enclosed form "Choosing a Portable Survey Instrument" for more details.

## **ADDITIONAL INFORMATION**

### **Experimental Protocols:**

The most important part of the application is well-written experimental protocols. Include the experimental procedures for each radioisotope requested. This description should include the types of manipulations to be performed. For guidance, use a "Radioactive Materials Experimental Procedures Application" (form RMA-42) for each protocol. If any powders, biohazards, human blood, etc. will be handled, state the precautions to be taken. If animals are to be used, please obtain form RMA-29, "Request to Use Radioactive Materials in Animals".

The descriptions in your protocols should be complete enough so that the RSC can adequately understand the proposed work. If the description is too short or lacking specific safety related details, it will hold up the review process. Do not supply just a recipe or technical protocol. Provide a thorough description of each step and include the safety requirements needed. This process will also provide a training guide for workers who may not readily know the safety precautions required to maintain ALARA conditions. Example protocols are available under the Radiation Safety course on the *UBlearns* website.

### **Lab Facilities:**

Make a sketch of each laboratory showing the location of fume hoods, radioactive materials storage locations, equipment, radioactive work areas, waste storage locations, counting instruments, etc. Describe any shielding to be used and any other facilities. A fume hood approved by EH&S must be used to handle volatile compounds such as H-3 and I-125.

### **Associate Investigators:**

Associate Investigators (AIs) are those individuals (technicians, faculty or staff) working under the supervision of and directly responsible to a PI. Have each associate who will be working with radioactive material in your lab fill out form RMA-2, "Application for Associate Investigator Authorization". As the PI, you are responsible to give instruction on approved, safe methodology to personnel under your direction *prior* to the personnel assuming duties with, or near, radioactive materials. This initial training is documented on the form RMA-2 and includes: 1) Areas where radioactive materials are used or stored; 2) Potential hazards associated with radioactive material in each area where the employee will work; 3) Appropriate radiation safety procedures, regulations; 4) In-house work rules; 5) Appropriate response to emergencies or unsafe conditions.

Each AI candidate must attend a "New User Orientation" prior to using radioactive materials to become familiar with the rules and regulations contained in the campus "Radioactive Materials Safety Manual." Upon completion of the orientation and passing a written examination (given at the end of the Orientation), the user will be granted approval to work under your supervision.

### **Use of Radioactive Material During a Course:**

Students participating in a course using radioactive material shall be adequately instructed in the applicable provisions of the "Radioactive Materials Safety Manual" (i.e., basic radiation protection procedures, contamination surveys and limits, radioactive waste disposal, etc.). Contact EH&S prior to conducting a class involving radioactive material.

Send the completed application with supporting documents to:

**EH&S Radiation Safety Division  
14 Parker Hall  
South Campus**