CHAPMAN UNIVERSITY | Environmental Health and Safety

RUA Number {For EH&S Use Only}: _____

APPLICATION FOR RADIATION USE AUTHORIZATION (RUA)

Please provide all requested information in adequate detail. Use full legal names. Attach any additional information as appropriate. Be sure to sign and date the form at the end.

1. Principal Investigator: _____ Date: _____ Email Address: _____
University Position/Title: _____ Office Phone: _____ Lab Phone: _____
School/Department: _____

2. Locations:

Building	Rooms

3. Names of Other Personnel Working under RUA. Individuals will need to complete appropriate radiation safety training if they have not previously done so. ***User Type: Authorized User (AU) or Supervised User (SU)***

Last Name, First Name	Email Address	Chapman ID	User Type	Training Date

4. Radioactive Materials to be Used:

Isotope	Chemical Form	Physical Form (liquid, etc.)	mCi per Experiment		mCi per Fiscal Year	
			Used for Assays	Removed from Stock	Per Single Purchase	Per Fiscal Year

5. **Description of Proposed Uses of Radioactive Materials.** Briefly summarize protocols for each radionuclide and procedures to be utilized.

6. **Radiation Monitoring Instruments to be Used:**

Portable Survey Meters for Directing Monitoring	Laboratory Counting Equipment for Wipe Tests

7. **Radiation Protection Precautions to be Followed.** Give sufficient information about the methods and/or control devices used to prevent accidental or unnecessary exposure of project personnel and members of the public. Include engineering controls (remote handling tools, shielding, interlocked safety devices, etc.), PPE and Personal Protection Monitors:

8. **Storage Procedures and Requirements.** Describe in general what special handling procedures you will use to work safely and keep your dose as low as reasonably achievable (ALARA). Greater detail and the precautions taken at a particularly hazardous step of the process should be included. Describe any special storage requirements for your stock radioactive materials, materials in process, and waste.

9. **Security.** Also indicate in this section any additional security precautions your lab will take to secure your radioactive materials.

Rooms containing radioactive material will be locked or under the control of RUA personnel to prevent the unauthorized use or removal of the material. If people not on the RUA are present in the room where the radioactive materials are stored, then the radioactive material will be either under constant surveillance by RUA personnel or locked such that it cannot be used or removed by an unauthorized individual. *Any loss or potential loss of radioactive material will be reported to Environmental Health and Safety as soon as possible after the loss is suspected.*

10. **Description of Radioactive Waste Methods and Estimation of Annual Volumes.** List predicted amounts of solids and liquids wastes, and liquid scintillation vials/fluids. Please address issues such as toxicity and volatility of compounds, pathogenicity of agents, and/or carcinogenicity:

Characteristics:
Dry Waste: Dry waste will be collected in 3 mm thick plastic bags that won't rip. Shielding is not required. The waste container will be labeled with a caution radioactive materials label and will indicate the radionuclide in that container (e.g. tritium). Types of dry waste include: tips, Kim wipes, paper towels, gloves, diaper paper. For each assay approximate waste: 1 of each: pair of gloves, diaper paper, Kim wipe and approximately 30 pipette tips of various sizes. Two assays per week or eight assays per month: 8 pairs of gloves, 8 diaper papers, 8 Kim wipes, and about 240 pipette tips. For general cleaning (at least once a week): 4 pieces of paper towel.

Liquid Waste: No sewer disposal of liquid radioactive waste will be permitted. All liquid radioactive waste will be collected in polypropylene carboys provided by EH&S. When not actively adding waste to carboys they will be kept tightly capped. Approximately 10% of space will be left at the top of carboys and they will not be overfilled. A funnel will be used for filling and, if necessary a large volume transfer pipette. Secondary containment (e.g., buckets or Nalgene wash tubs, etc.) that are large enough to contain all of the waste will be used. Maintain the pH between 5 and 7 for your radioactive liquid wastes. Per assay: 300 µl; 8 x 300 µl = 2.4 ml per month from the reactions. For running SDS-PAGE gels, 500 ml per run x 8 = 4 Liters per month.

Other types of waste (e.g., biohazardous, sharps, mixed, lead, etc.) will be safely handled, stored, and packaged as follows:
1. Collection: Make sure bottles are capped or funnel lid is closed when not in use. Secondary containment will be used that holds the maximum capacity of the primary waste container. The outside of waste containers will be clean.
1. Broken glassware and used plastic tips will be disposed of in appropriate waste boxes. One inch of headspace will be left in all waste containers.
2. Labeling: examples of waste labels will be provided so that all waste labeled correctly and writing on labels is legible. Labels will be replaced if ruined by chemical spills. Printed labels will be available in the lab and can be found electronically via the Chapman EH&S website. The labels will include:all contact info, date, with appropriate hazards marked. Full chemical and element names must be used (no element symbols or chemical formulas)
3. Segregation: any waste generated will be segregated into the basic categories of flammable, corrosive, and toxic. In addition, acids of pH 2 or less, bases of pH 12 or more, water reactive chemicals, peroxide forming chemicals, strong oxidizers, cyanides, and known carcinogens will be separated. Liiquid and solid waste will be separated from one another when possible.
4. Biohazard Waste Disposal: Solid biohazard waste does not need to be decontaminated before pickup. It should be carefully packed in red biohazard bags and sealed tightly with tape. Bags should be placed in the large biohazard barrels in either Hashinger 223, or at Rinker in the Autoclave room 249. Do not leave in the hall under any conditions. Liquid waste is decontaminated (generally with 10-20% bleach for 30 min) and then poured down the sink. Material that has been treated with phenol (including Trizol and Tri-Reagent) is considered no longer biohazardous but instead should be handled as organic chemical waste.
5. Disposal and Pick-Up Do not leave waste containers in the hall or outside staff/faculty offices under any circumstances!! Do not pour hazardous waste down the sink (including acetone) or place it in the trash. Waste cannot be collected in a container for more than six months from the waste collection start date for that container. Once waste has been accumulating for five months in a particular waste container, fill out the online form listed below and it will be picked up promptly. Email requests or phone requests without the accompanying online form will not be fulfilled. https://webfarm.chapman.edu/HazardousWasteDisposal

11. **Description of Potential Accidents, Spills, or Releases to the Environment.** {i.e., evolution of gases or aerosols, or the volatilization of any compounds}

12. **Spill Control**

In the event of a minor spill (<20,000 dpm/100 cm^2) the spill will be cleaned up with appropriate PPE as per the Chapman Radiation Safety Program.

For larger spill the spill will be contained if this can be done without further contamination or significant increase in radiation exposure. The area will be isolated with rad tape or signs and the RSO will be contacted for further guidance. In both cases an incident and accident report will be filled out.

13. **Emergencies**

EH&S must be notified immediately of any of the following situations:

- Skin contamination
- Ingestion of radioactive material
- Unexpected personnel exposure
- Airborne radioactivity
- Loss or theft of radioactive materials

In the event of skin contamination:

- Remove contaminated clothing and wash the contaminated skin area gently with mild soap and lukewarm water (never hot water!) Do not abrade the skin with rough scrubbing or excessive washing, and do not use solvents. Restrict movements, call EH&S, and stay in the area until EH&S arrives.

EH&S Contact Information
Business hours: 8:00am to 5:00pm Monday to Friday
Phone: **(714)532-6023**

Outside of business hours, call Public Safety at **(714) 997- 6763** (or **911** from any campus phone).

14. Description of Decontamination.

All radioactively contaminated equipment, glassware, containers, etc. will be clearly labeled until decontamination has been verified to be below the limits for removable surface radioactivity according to the Chapman Radiation Safety Program.

Surface contamination will be cleaned with paper towels and a decontamination solution. A paper towel will be wetted with a decontamination solution and then working from the outer edge of the contaminated area, the surface will be inward and not a circular fashion toward the center of the contaminated area. The towel will be discarded into a radioactive waste container after each pass and will not be reused. This process will be repeated until the paper towels are no longer picking up contamination.

15. Lab-specific Training Documentation

I have read and understood the content of this RUA			
Name (printed)	**Chapman ID**	**Signature**	**Date**

I CERTIFY THAT ALL WORK AS DESCRIBED ABOVE WILL BE PERFORMED IN ACCORDANCE WITH ALL FEDERAL AND STATE REGULATORY REQUIREMENTS AND ALL CAMPUS RADIATION SAFETY PROCEDURES.

_____ _____

Signature of Responsible Principal Investigator **Date**