REQUEST FOR AMENDMENT TO APPROVED PERMIT

Section I. Complete Items A through D

Approved Supervisor Information				
A.	Supervisor		Date	
	Kerberos ID (name.#)			
B	E-mail Address			
C.	Telephone Number		Fax	

Section II. Location(s) of use, **Is this a new location?** ☐ **Yes** ☐ **No**

Building & Room:
Street Address:

Section III. Specialized Uses.

A. For Use in Animals: ☐ **Yes** ☐ **No**
If "**Yes**," append completed Form RS-5 and documentation of approval from ILACUC.

B. For Use in Humans: ☐ **Yes** ☐ **No**
If "**Yes**," and the use is clinical, indicate the section and paragraph of OAC 3701:1-58 under which the use is authorized: 3701:1-58

If "**Yes**," and the use is research, append documentation of approval from the Human Subjects Review Committee, and include information on the IND No. or approval by an authorized RDRC.

IND#:

For RS Use Only: Does OAC 3701:1-58-30 apply? ☐ **Yes** ☐ **No**
(Release of individuals containing unsealed radioactive material or implants)
Does OAC 3701:1-58-15 apply? ☐ **Yes** ☐ **No**
(Written Directives)

Section IV. To add radionuclide(s), chemical form(s), or increase limits. Complete Items A through H.

		Radionuclide 1	Radionuclide 2	Radionuclide 3	Radionuclide 4
A.	Radionuclide Requested				
B.	Chemical Form (example: nucleotides)				
C.	Physical Form (gas, liquid, solid)				
D.	Solubility Class*				
E.	Possession Limit (mCi)				
F.	Max. Stock Vial Activity (mCi)				
G.	Monthly Fume Hood Release Estimate (% or mCi)				
H.	Potential for RAM in Breathing-Zone				
I.	Monthly Hot Sink Disposal Limit (To be completed by RS)				
J.	License and Line No. (To be completed by RS)				

Solubility "Key":
RS Readily Soluble
NRS Not Readily Soluble (Cannot be disposed via the Hot Sink)
UKN Unknown Solubility (Cannot be disposed via the Hot Sin

Section V. **Procedural changes:** ☐ **Yes** ☐ **No**

If yes, attach a description of the methods and procedures to be used under this authorization **or** reference the procedure, from accepted publications, in the table below. State the activities of radionuclide(s) used for each experiment and the frequency with which the experiments will be conducted.
Please see the corresponding instructions for this section.

Objective of Research:

Attach additional sheets if necessary.

Procedure	Publication Number (Indicate by numbered publications from instructions) and page or section number	Radio-nuclide	Activity per experiment	Frequency	Activity of Waste Generated for Each Category				
					Solid	Aqueous Liquid Waste	Organic Liquid Waste[1]	Scintillation Cocktail	Animal Carcasses

ote 1: Mixed waste that cannot be held for decay-in-storage or neutralized so it is no longer mixed waste, must be segregated from other radioactive waste. Records regarding the identification and quantity of all hazardous chemicals in the mixed waste, along with the standard radionuclide information, must be maintained.

Section VI. Other Changes: Please attach a narrative of the changes

Section VII.
I certify I will use Radioactive Material in accordance with the Ohio Department of Health rules and regulations, *The Radiation Safety Standards for The Ohio State University*, and all permit conditions and amendments.

_____ _____
Approved Supervisor's Signature Date Signed

For RS Use Only
RS Approved: Yes No

_____ _____
RS Representative Signature Date Approved by RS

Overview

The RS–7 is a two-page form to be completed by the approved supervisor for any changes to the current permit for the use of radioactive materials. This form is used for the addition of chemical groups, for activity increases, to add or delete locations of use, for procedural changes and for radionuclide additions.

RS-7 forms are typically reviewed and approved by Radiation Safety within 48 hours.

Completing the Form

Section I. Approved Supervisor Information: Complete items A-D.

Section II. Locations of Use: If you need to request additional locations of use for radioactive materials, please identify the room (s) and building.

Section III. Specialized Uses: Please indicate if you are amending your permit to add the use of radioactive materials in animals or in humans. Append additional forms and information as requested.

Section IV. Addition of radionuclides, chemical forms, and increasing permit limits: Complete items A through H if applicable. You need only complete the sections that apply to your amendment request. Be sure to consider the following items when making changes to your application.

Item D If you are making chemical group additions, you are required to provide the solubility of material you might dispose via the sanitary sewer system (Hot Sink disposals). (If you are using sealed sources, this requirement does not apply.) The University must comply with the following regulation as stated in 10CFR:

OAC 3701:1-38-19(D) Disposal by release into sanitary sewerage

A. A licensee may discharge licensed material into sanitary sewerage if each of the following conditions is satisfied:

1. The material is readily soluble (or is readily dispersible biological material in water; and... (The rest of the text generally refers to limits on discharge).

The following discussion is from Information Notice 94-07, dated January 28, 1994, from the United States Nuclear Regulatory Commission. The full text is available from RS.

"Determination of Compound Solubility Class

I. **Solubility Class Determination:**
The solubility class of the compound to be released could be determined directly from common literature data (e.g., *Handbook of Chemistry and Physics* - CRC Press, and *Lange's Handbook of Chemistry* - McGraw-Hill Book Company). If a compound is classified as '**v s**' (very soluble) or '**s**' (soluble), this would indicate the compound is '**readily soluble**.' On the other hand, if it is classified as '**i**' (insoluble), '**sl s**' (slightly soluble), or '**v sl s**' (very slightly soluble), this would indicate materials that are '**not readily soluble**.' Certain compounds are designated as class 'd' (decompose). If the decomposed species of these compounds are classified as either '**v s**' or '**s**,' this would indicate that the parent compound is '**readily soluble**.' If these decomposed species are simple ions, such compounds (class 'd') should be considered '**readily soluble**.'

II. **Formal Solubility Determination**

Compound solubilities (g/100 ml or mole fraction per 100 ml) are also listed in the chemical literature. From a review of general scientific literature, '**formal solubilities**' **greater than 0.003 mole/liter** would indicate the compound is **readily soluble**. Formal solubilities **less than 0.003 mole/liter** would indicate compounds that are '**not readily soluble**.'"

The above information should be readily available from your supplier of radioactive material. After determination of the solubility class, enter the correct abbreviation ("**RS**" = Readily Soluble and "**NRS**" = Not Readily Soluble) for EACH chemical form you intend to use. Responses for chemical forms that are "**NRS,**" "**Unknown,**" or left unanswered indicate these materials **CAN NOT** be disposed via the hot sink into the sanitary sewer system. **ONLY** material having a "**RS**" response can be disposed via the hot sink into the sanitary sewer system. Disposal of radioactive material that is "not readily soluble" ("**NRS**") is a violation of Federal and University Regulations.

- **Item E** is your possession limit. This is the activity you are allowed to have on hand at any one time.
- **Item G** is your estimate for the monthly activity of each nuclide to be released through each fume hood identified in item 4.B of your original permit to use radioactive materials (RS–1). Please indicate whether you are stating a percent of monthly use, or an actual mCi amount.
- **Item H** is your qualitative assessment of the potential for radioactive material to become airborne in the breathing-zone of the workers handling the material. This assessment shall be stated in the following terms for each nuclide you wish to use:
  - **None** (sealed or solid sources not subject to abrasion)
  - **Low** (Little potential exists under normal use)
  - **Medium** (Some potential exists under normal use)
  - **High** (Potential exists under normal use)

  You should develop your assessment considering all chemical and physical properties and mechanisms. Use the following criteria as a guide:
  - DO NOT base your decision on possible accident scenarios. These are by definition not likely and not "normal use."
  - In the case of multiple potentials for the same nuclide (e.g. two different chemical forms with differing potentials for volatilization) state the highest potential.
  - When determining the potential be sure to consider all possible places in your procedures which could cause ANY release of radioactive material to the handler's breathing-zone. Examples of some things to consider:
    - Inherent volatilization potential of the chemical forms being used.
    - Reaction products which are more volatile than the constitutes.
    - Opening of stock vials, or any other container containing radionuclides which may be under positive pressure.
    - Vortexing, centrifugation, mixing, heating, cooling, or any other operation which can change the vapor pressure of any container, or actually creates airborne radioactive aerosols.
    - Transfer of discardable experimental material to waste containers or hot sinks.

Section V: Procedural changes. The URSC has adopted all procedures in the following publications:

1. "Current Protocols in Molecular Biology", by Roger Brent, David Moore, Robert E. Kingston, and Frederick Ausubel (editor) - published by Current Protocols, John Wiley & Sons, Inc.
2. "Molecular Cloning, A Laboratory Manual", by J. Sambrook, E.F. Fritsch, and T. Maniatis – published by Cold Spring Harbor Laboratory Press
3. "Current Protocols in Immunology" - published by Current Protocols, John Wiley & Sons, Inc.
4. "Current Protocols in Protein Chemistry" - published by Current Protocols, John Wiley & Sons, Inc.
5. "Current Protocols in Pharmacology" - published by Current Protocols, John Wiley & Sons, Inc.
6. "Handbook of Veterinary Nuclear Medicine" – Clifford Berry and Gregory Daniel
7. "Current Protocols in Cell Biology" – published by Current Protocols, John Wiley & Sons, Inc.

If you will be using any of the procedures in the above publications, you may indicate the name of the procedure and the publication number (i.e. 1-7 above), and page or section number of the procedure in the table provide on page 2 of the RS-7 Form. Also include the radionuclide, activity per experiment and frequency of the experiment in the table. In addition, you must identify the various types of waste generated and the activity associated with each type of waste. For each procedure, the activity per experiment and the total activity of waste generated must be equivalent. Any variations to the standard procedures, or variations within procedures, must also be described.

If the procedure is not on file with RS, in addition to the activity of waste generated for each type of waste category, attach the detailed experimental procedures to be used. Include the proposed use and objectives, state the activities of radionuclide(s) used for each experiment and the frequency with which the experiments will be conducted. In your own words, please outline the flow of the laboratory procedures to be followed and any other relevant methods you will employ in your research.

Section VI. Other Changes: If you are requesting "other" changes, append a description of the request.

Section VII. Sign and date your RS–7, then send the original (keep a copy for your records) to RS offices for review:

Radiation Safety
The Ohio State University
1314 Kinnear Road
Columbus, OH 43212
e-mail: radiation.safety@osu.edu