RPR 2B. RADIOACTIVE MATERIAL USE APPLICATION

Surname: _____ Initial:_____ UNID:_____

USE CATEGORIES: Check each proposed Use Category; circle and/or add nuclide information where requested.

☐	Cat.	Uses Categories and Forms	Nuclide(s) (Circle or write-in)	Review Level[1]	Monitoring Codes[2]
		GENERALLY LICENSED CATEGORIES			
	G-1	U or Th compounds, e.g. for electron microscopy	Natural U, Th	None	None
	G-2	Ionization sources, spark gap irradiators, ionization detector cells, e.g. gas chromatograph, ECDs	^{3}H ^{63}Ni ^{210}Po ^{147}Pm	None	None
	G-3	Self-luminous products & luminous dials	^{3}H ^{85}Kr ^{147}Pm	None	None
	G-4	Calibration and check sources, including LSC built-in standardization sources (<10 μCi α; <100 μCi β-γ)	Nuclide:	None	None
		NON-DISPERSIBLE CATEGORIES			
	N-1	Sealed sources (≥10 μCi α; ≥100 μCi β-γ)	^{57}Co ^{60}Co ^{125}I ^{137}Cs Other:	10 mCi	B*
	N-2	Microspheres for cardiovascular or respiratory studies in animals	^{85}Sr ^{95}Nb ^{103}Ru ^{109}Cd ^{141}Ce ^{86}Rb ^{113}Sn ^{46}Sc ^{153}Gd ^{114M}In ^{57}Co ^{111}In	10 mCi	R*
		DISPERSIBLE CATEGORIES			
	D-1	Pre-packaged Assay kits	^{3}H ^{125}I ^{59}Fe ^{75}Se	None	None
	D-2	Nuclides for labeling, or as labeled biological compounds to be used directly as molecular or cellular tracers, for DNA sequencing, for metabolic studies in animals, etc.	^{3}H ^{51}Cr ^{14}C ^{33}P ^{35}S ^{36}Cl ^{55}Fe	25 mCi 10 mCi	U* U*
	D-3		^{32}P	10 mCi	U*, R*
	D-4		^{22}Na ^{24}Na ^{59}Fe	10 mCi	U*, R*
	D-5		^{125}I	10 mCi	T*
	D-6	Orthophosphoric acid or other **high-activity** solutions for use in synthesizing labeled compounds	^{32}P Other:	10 mCi	U, R
	D-7	Sodium iodide for iodination	^{125}I ^{131}I	25 mCi	R, B*, T
	D-8	Preparation or administration of radiopharmaceutical	^{99m}Tc ^{131}I and any radiopharmaceutical	N/A	U, R, B, T
	D-9	Nuclides as the element or an inorganic compound used for chemical/physical tracer studies	Nuclide: Activity:	N/A	U*, R*, B*, T*
	D-10	Production and handling of activated samples or compounds in an accelerator or nuclear reactor	Any activation or fission products	N/A	U*, R, B

1 Individual purchase orders exceeding the review level are reviewed by the Radiation Safety Officer.
2 Monitoring codes: B = body badge; R = finger ring badge; T = thyroid counting; U = urinalysis.
* Monitoring requirements depend on actual quantities acquired and used.

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PERSONNEL:

List all individuals who will work with the above materials in the same location (faculty, staff, students). Unless a current record is on file with the Radiological Health Department, attach "RADIATION USER TRAINING & PERSONAL DATA" form (RPR 1A) for each listed individual.

Name of Individual		University ID # (UNID)

FACILITIES:

Location - Building: _____ Room Numbers: _____

Fume hood available in room: _____ Waste will be stored in room: _____

INSTRUMENTS:

Contamination survey meter; Make & Model: _____

Liquid scintillation counter, if needed, in room: _____

ANIMALS:

☐ None

☐ Animals will be used; attach description giving type, number, individual doses, holding facilities and handling methods. Refer to "HOUSING AND HANDLING OF RADIOACTIVE ANIMALS" (RPR 15).

CHEMICALS:

List brand names of liquid scintillation fluor(s), tissue solubilizers, if any that will be used with radioactive materials:

_____

Written justification must be provided for any fluors other than "NHNT". See "LIQUID SCINTILLATION MEDIA" on page 10.

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WASTES:

List any chemicals listed by the EPA as hazardous (e.g. flammable solvents, toxic or poisonous chemicals, etc.) that will contain radioactive materials. For each, give the chemical name and the EPA hazardous material identification number (see the Material Safety Data Sheet for that chemical, or EPA/State hazardous waste regulations). Written justification must also be provided for generation of any "mixed wastes", i.e. radioactivity mixed with materials classified as hazardous by the EPA.

Indicate the types and quantities of radioactive and mixed wastes you expect to generate.

Dry, compactable waste:	_____ kg/month
Sharps in puncture-proof containers:	_____ kg/month
Animal carcasses, excreta, bedding:	_____ kg/month
Non-hazardous, non-toxic aqueous liquids:	_____ L/month
Flammable or combustible liquids:*	_____ L/month
Toxic, nonflammable, hazardous liquids:*	_____ L/month
Other (describe):	_____

* Written justification must be provided for any mixed wastes you expect to generate, and you may be required to pay for the disposal costs for such wastes.

I have read the University's Radiation Safety Policy Manual and understand the conditions and regulations contained in it. With respect to the requested radiation sources and proposed uses, I acknowledge and accept the responsibility for:

- radiation protection instruction for all involved personnel;
- acquisition of the equipment, supplies and/or services necessary for radiation protection;
- security to prevent misuse or theft of radioactive materials;
- maintaining accurate records of acquisitions and dispositions;
- regular contamination and/or exposure surveys and records;
- notification of the RSO of any accident or abnormal incident;
- arranging for authorization of another individual to assume the preceding responsibilities, or to suspend or terminate all radiation uses, prior to any extended absence.

Signature of Responsible User: _____ Date: _____

LIQUID SCINTILLATION MEDIA

Fluors containing non-hazardous, non-toxic (NHNT) solvents are required unless a specific exception is obtained from the RSO or the Radiation Safety Committee. Examples of such fluors are:

Fluor (Mfgr.)	^{3}H Efficiency* Mean ± SD (N)	Flow* (sec)	Fluor (Mfgr.)	^{3}H Efficiency* Mean ± SD (N)	Flow* (sec)
BCS (AMER)			**Betamax-ES** (MPBio)	45.1 ± 7.9 (6)	2.6
Bio-Safe II (RPI)	38.1 ± 5.2 (24)	4.1	**Bio-safe NA** (RPI)	43.9 ± 9.8 (6)	2.5
Cytoscint-ES (MPBio)	43.7 ± 4.0 (24)	3.7	**Ecolite(+)** (MPBio)	32.1 ± 5.1 (24)	5.3
Ecolume (MPBio)	36.6 ± 6.0 (24)	4.9	**Ecoscint A** (NAT)	40.2 ± 4.5 (24)	3.7
Ecoscint H (NAT)	45.8 ± 5.0 (24)	2.7	**Ecoscint O** (NAT)	45.1 ± 6.7 (6)	2.8
Envirosafe (ANOR)	35.4 ± 4.6 (24)	4.2	**Mono Flow 5** (NAT)	35.6 ± 3.7 (24)	2.7
Opti-Fluor** (PE)	39.7 ± 5.5 (24)	3.2	**Opti-Fluor O** (PE)		
OrganicSolv 3 (ANOR)	42.2 ± 9.7 (6)	2.5	**Poly-Fluor** (PE)		
Ready Safe (BECK)	40.6 ± 4.2 (24)	7.2	**Solvent-Free** (PE)		
Ultima Gold (PE)	43.1 ± 2.1 (24)	5.5	**Universol-ES** (ICN)		

Fluors containing toxic or flammable solvents may not be purchased without prior approval from the RSO. Examples are:

CP, HP, HP/b, EP, MP, NA, Ready Micro, Ready Solv, Ready Protein, Ready Gel, Ready Value, Ready Organic, Ready Flow II, Ready Flow III (BECK)

Universall (ICN)

Betafluor, Hydrofluor, Liquiscint, Monoflow 4, Ultraflow (NAT)

Aquasol, Aquasol-2, Econofluor, Econofluor-2, Formula 963, Liquifluor, Omnifluor, Atomlight, Aquasure, Biofluor, Riafluor, and all "NEF" numbers (NEN)

Insta-Gel XF, Scint-A XF, Pico-Aqua, Pico-Fluor 15, Pico-Fluor 40, Hionic Fluor, Filter-Count, Pico-Fluor LLT, Insta-Fluor, Permafluor V, Monophase S, Flo-Scint I, II, III, IV, and V (PE)

***** Tritium counting efficiencies are based on 0.1 mL sample in 4.0 mL fluor; "Flow" represents the time for a fixed volume to flow from a pipette and is inversely proportional to viscosity; data from Klein, RC and Gershey, EL, 'Biodegradable' liquid scintillation counting cocktails, Health Physics 59:461-470, 1990.

****** Available from U of U, Stores and Receiving, 581-8671

AMER = Amersham Corp., Arlington Heights, IL 800-526-3593

ANOR = Anorak Scientific, South Hackensack, NJ
BECK = Beckman Instruments, Fullerton, CA 800-742-2345
MPBio = MP Biomedicals, Solon, OH 800-854-0530
NEN = DuPont-NEN Products, Boston, MA 800-551-2121
NAT = National Diagnostics, Manville, NJ 800-526-3867
PE =PerkinElmer, Downers Grove, IL 800-323-5891
RPI = Research Products International Corp., Mount Prospect, IL 800-323-9814