Radiation Safety Refresher Training 2022

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Outline

• Results of 2021 RSC Summer Audits
• Training
• Radioisotope Inventory, Tracking, & Accountability (RITA)
• Waste
• Contamination Surveys
• SHIELD by BioRAFT: Lab Management Tool
2021 RSC Summer Audit

2 labs inspected
2 total findings
1 relating to training
1 relating to inventory
All members of this lab must complete radiation safety training.

★ Radiation Safety **Awareness**
- Training for all who do **not** use RAM

★ Radiation Basics (5 Modules), Radioactive Materials Safety Class & Protocol Specific Training
- Training for PI, lab managers, and researchers who use RAM
Training: More on the Who

We rely on SHIELD to identify who needs what.

★ Based on Job Responsibilities

★ SHIELD must be managed by at least 1 individual in the lab
The lab’s request to use RAM is reviewed and approved by the Radiation Safety Committee. The authorization is specific to:

- Isotope
- Chemical Form
- Procedure
- Conditions

12. Conditions of Use:
   Radiolabeled use must be conducted in accordance with the requirements of the Princeton University radiation safety program as set forth in the Princeton University Radiation Safety Guide and the Radiation Safety Manual, and in accordance with the procedures described in Prof. Rubenowitz’s authorization application:
   a. The lab continues to follow the conditions placed on the original authorization approval (attached).
   b. Opening the sealed tissue culture flasks must be performed within the chemical fume hood to minimize the potential of releasing 14C within the lab space. Once there is sufficient data that quantifies the amount of labelled CO2 released in this process, EHS will re-evaluate.
   c. The lab must notify the RSO of any desire to modify the experiments to increase the activity in any single experiment/labelling operation prior to making the modification to experimental protocol.
Radioisotope Inventory, Tracking, & Accountability (RITA)

- Inventory: Promptly dispose of stock vial once removed from RITA
  - RITA | Review User Inventory

### Vial Use Log

<table>
<thead>
<tr>
<th>Authorization #</th>
<th>Authorized User</th>
<th>Vial Activity</th>
<th>Vial ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-0930</td>
<td>Shenk, Thomas</td>
<td>15.0000 mCi</td>
<td>02-0345</td>
</tr>
</tbody>
</table>

When this vial has been discarded as waste, return the vial use log to EHS, 262 Alexander Street
Receiving a Package at the Lab

When you accept a package:
Immediately secure it, such as storing in the locked rad freezer. Never leave it unsecured while you finish other tasks.

Before you dispose of the packaging, be sure to deface or remove or cover all Radioactive labels and markings.

Be sure to survey the packing list and packaging before you discard it.
Waste: Dry RAM

Do NOT overfill!

- Contact EHS - ehs@princeton.edu

- ANY HOUR OF ANY DAY 609.258.5294
  - Press “2” to be connected to the EHS on-call phone with an urgent health and safety matter

EHS may reject non-conforming waste.

You must close and seal the bag.

Sealed with zip tie.
Waste: Sewer Release Protocol

- Non-Hazardous
- Soluble in water or readily dispersible biological material
- pH between 5.5 and 9.5
- Flush with lots of water so it doesn’t get caught in the trap
- Updated list of compounds posted (2019)
Radioactive Compounds Approved For Drain Disposal

The following radioactive compounds are approved for disposal in Radioactive Disposal Sinks. For compounds not listed here, contact EHS for written approval prior to disposal.

Acetic Acid
Acetyl CoA (coenzyme A)
Adenosine Diphosphate (ADP)
Adenosine Triphosphate (ATP)
Albumin
Bicaine
Buffer Solutions
Calcium Chloride
CAPS
Coomasie Brilliant Blue
Cyclic Adenosine-3, 5-monophosphate (CAMP)
Cysteine
Cytidine
Cytidine Diphosphate (CDP)
Cytidine Triphosphate (CTP)
Dextrose
EDTA
Ferritin

Glucagon
Glucose
Glycerol
Glycine
HEPES (buffer)
Histidine
Inositol
Leucine
Lipopolysaccharides
Magnesium Chloride
Maltodextrins
Mannitol
MES (buffer)
Methionine
Monopotassium Phosphate
Monosodium Phosphate
MOPS (buffer)
Nicotinamide Adenine Dinucleotide (NAD)

Orthophosphate
PIPES (buffer)
Ribonucleic Acid (RNA)
Saline Solution
Saline sodium citrate (SSC)
SDS - Sodium Doecyl Sulfate
Sodium Chloride
Sodium Phosphate
TES
Tricine
TRIS
Urea
Uridine Diphosphate (UDP)
Uridine Triphosphate (UTP)
Vitamin B1 (Thiamine)
Vitamin B12 (Cobalamin)
Vitamin B7 (Biotin)

Contact EHS with questions: 609-258-5294 ehs@princeton.edu
Contamination Surveys

- Performed after every use.
  - Work Area
  - Self
  - DOCUMENT EVERYTIME

- EHS performs monthly provided the lab has used.

### RADIOISOTOPE LABORATORY SURVEY LOG

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>SURVEYOR'S NAME</th>
<th>ISOPOE USED</th>
<th>SURVEY TYPE</th>
<th>SURVEY RESULTS IN CPM &amp; COMMENTS</th>
<th>SURVEY METER USED: MFG., MOD &amp; S/N AND PROBE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12/00</td>
<td>2:30 pm</td>
<td>S. Dupre</td>
<td>P-32</td>
<td>✓ ✓</td>
<td>≤ 50 cpm except 1000 cpm on hood sash.</td>
<td>EHS #1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>cleaned sash to ≤ 50 cpm.</td>
<td></td>
</tr>
</tbody>
</table>
SHIELD by BioRAFT: Lab Management Tool

We use SHIELD to manage the labs:

- Personnel
- Job Responsibilities
- Training
- Hazards
- Equipment
Contact EHS - ehs@princeton.edu

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