



FORM EHS 10-11

RAD LAB RADIATION SAFETY AUDIT REPORT

I. INTRODUCTION

This form documents findings identified during a radiation safety audit of activities authorized under Florida State University (FSU) Permit No. _____ involving use of radioactive material (RAM).

The audit evaluated implementation and compliance with specified requirements, with emphasis on the effectiveness in keeping exposures as low as reasonably achievable (ALARA). Findings, corrective actions/preventive actions (CAPAs), and recommendations are summarized.

II. AUDIT HISTORY

- A. FSU RSO audits:** _____
- B. Findings** noted during past audits Yes ☐ No ☐
Description: _____
- C. Recommendations** made during past audits Yes ☐ No ☐
Description: _____
- D. CAPAs** taken N/A ☐ Yes ☐ No ☐
Description: _____

III. PERMIT PRINCIPAL INVESTIGATOR (PI) & STAFF, SCOPE OF OPERATIONS

- A. Permit #** _____
Location(s) of Use & Storage: _____
Lead PI: _____ **Phone & email:** _____
Staff: _____

B. RAM Inventory

1. All RAM currently possessed (types & quantities) authorized by the permit .201(1), .213(4) Yes ☐ No ☐
2. Current RAM Inventory

#	Radioisotope	Form	Activity/Quantity	Use
1.				
2.				
3.				
4.				
5.				
6.				

**Radiological Lab Radiation Safety Audit Report****III. PERMIT PI & STAFF, SCOPE OF OPERATIONS (contd.)****C. Current Status:**

- | | | | |
|---|------------------------------|------------------------------|-----------------------------|
| 1. Physical location(s) unchanged since last audit | LC 22, 64E-5.201(1), .213(4) | Yes ☐ | No ☐ |
| 2. Permitted RAM activities unchanged since the last audit, so current public dose limits compliance study remains valid | LC 22, 64E-5.201(1), .213(4) | Yes ☐ | No ☐ |
| 3. If no to 1 or 2, study revised & license amended to approve changes & revised study | LC 22, .213(4), .313(2) | Yes ☐ | No ☐ |

IV. FACILITIES & EQUIPMENT**A. Facility Status**

- | | | | |
|---|---------------------|------------------------------|-----------------------------|
| 1. Facility layout accurately described in permit & matches current layout | LC 12 & 22, .213(4) | Yes ☐ | No ☐ |
| 2. Physical environment adequate for safe & compliant RAM activities | .208(2), .303 | Yes ☐ | No ☐ |
| 3. RAM storage capacity adequate for all authorized RAM | .320 | Yes ☐ | No ☐ |

B. Facility Hazards evaluated & addressed to minimize hazard [recommended best practice] Yes ☐ No ☐

- | | | | |
|--|------------------|------------------------------|-----------------------------|
| 1. Fire/explosion hazards described in permit, & properly addressed | LC 12 & 22, .213 | Yes ☐ | No ☐ |
| 2. Chemical hazards described in permit, & properly addressed | LC 12 & 22, .213 | Yes ☐ | No ☐ |
| 3. Biological hazards described in permit, & properly addressed | LC 12 & 22, .213 | Yes ☐ | No ☐ |

C. Lab Postings: Below documents are posted in conspicuous location(s) to permit radiation workers to observe them on the way to/from work .901, .1302 Yes ☐ No ☐

- FSU emergency procedures
- FDOH "Notice to Employees" form (current edition) with an added note on where other RSP-related documents can be viewed: FL regulations, FSU license & policies/procedures
- Any notice of violations, proposed imposition of administrative penalties, & FDOH BRC-issued orders & FSU responses to the cited violations

Note: Enforcement correspondence must be posted within 5 working days of receipt; FSU responses must be posted within 5 days of dispatch; they must stay posted for 5 days or until corrective actions are completed. Copies should be emailed to workers, & RS staff should remind workers of FSU's past enforcement issues.

D. RAM/Radiation Warnings**1. RAM storage areas:**

- | | | | |
|---|--------------|------------------------------|--|
| – Posted with "Caution/Danger – Radioactive Materials" signage | .323(5) | Yes ☐ | No ☐ |
| – Posted with "Caution – Radiation Area" signage when radiation levels are > 5 mR/hr at 30 cm | . 323(1) N/A | ☐ | Yes ☐ No ☐ |

2. RAM containers/contaminated equipment: properly labeled .322(3), .325(1), .1316(7) Yes ☐ No ☐
"Caution/Danger – Radioactive Materials", "Radioactive", etc.

- Exemptions:**
- 1) containers with RAM quantities < listed in FDOH *RAM Requiring Labeling*
 - 2) containers with RAM concentrations < specified in FL regs
 - 3) containers attended by an individual taking necessary safety precautions

3. Additional hazard information: provided on or near required signs/labels to make personnel aware of potential radiation exposures & to minimize exposures Yes ☐ No ☐
Ex: for labs with unsealed RAM, post: "No Eating, Drinking or Application of Cosmetics" .322(3)**4. Lab entry doors:** posted with RAM warning icon & text .322(3), RSM Yes ☐ No ☐

**Radiological Lab Radiation Safety Audit Report****IV. FACILITIES & EQUIPMENT (contd.)****E. Facilities & Equipment Security**

1. RAM sources/devices locked while in storage & not under direct surveillance .320, .321 Yes ☐ No ☐
 2. RAM storage areas & keys controlled by authorized personnel .320 Yes ☐ No ☐
 3. Access to RAM use/storage areas restricted to AUs & individuals escorted & supervised by an AU .320, .321, .1307(1) Yes ☐ No ☐
 4. RAM security measures in place are appropriate to control access .320, .321 Yes ☐ No ☐
- Description of extra security precautions: _____

F. Facilities & Equipment Housekeeping/Maintenance

1. RAM facilities & radiation-related safety equipment are proper for current activities .323(5) Yes ☐ No ☐
2. **RAM transport/storage containers** maintained in acceptable physical condition, labels/markings are present & legible, replacement labels available LC 15, .1502 Yes ☐ No ☐
3. **RAM rad-safety, contamination control & emergency equipment** available as appropriate for current radiation activities, such as personal protective equipment (PPE), leak test kits, decon & LSC supplies, signage, spill kits, RAM storage containers & portable shielding .303, .1302, .1318(1), .1319 Yes ☐ No ☐

G. Radiation Survey Instruments

1. Sufficient calibrated (12-months) survey instruments are available to perform required area & contamination surveys N/A ☐ Yes ☐ No ☐ .314(2), .809(1), .1318(3)
2. Radiation check source available for meter function tests prior to use .303 Yes ☐ No ☐

H. Radiation Monitoring Equipment

1. Personnel monitoring (PM) badges & area badges exchanged & promptly processed (within 14 days of end of period) N/A ☐ Yes ☐ No ☐ .314(4)
 2. Badges are stored in locations isolated from radiation sources & protected from heat, light, moisture & chemicals N/A ☐ Yes ☐ No ☐ .314(4)
 3. Adequate precautions taken to prevent deceptive exposures to badges .314(4) N/A ☐ Yes ☐ No ☐
- Description of circumstances involving lost or damaged PM badge(s): _____
4. All badges accounted for (i.e., no lost or damaged badges) .314(4) Yes ☐ No ☐
 5. If no to 4, RSO immediately notified & a record of worker's estimated dose made, provided to badge vendor & a record kept on file .314(4) Yes ☐ No ☐
 7. RSO provides dose reports annually to monitored workers, & termination dose reports within 30 days of receipt of final dose report .903 Yes ☐ No ☐
 8. Results of review of badge reports (describe any issues & any corrective actions): _____
9. RSO investigates any worker doses considered to be excessive or unnecessary .303(2) Yes ☐ No ☐
- Description of worker dose investigation(s): _____
- _____
- _____
- _____

**Radiological Lab Radiation Safety Audit Report****IV. FACILITIES & EQUIPMENT (contd.)****H. Radiation Monitoring Equipment (contd.)**

10. Lab staff exhibit knowledge of their badge's functions, limits & proper use .303 Yes ☐ No ☐

11. Describe any other dosimetry program issues:

V. PROCEDURES

A. **Current RSP Policies & Procedures** accessible to all RAM AUs .208(2), .209(2), .303(1), Yes ☐ No ☐
.1302, RSM

- RS Policies & Procedures:**
- 1) 4-OP-G-6 *Radiation Safety*
 - 2) Radiation Safety Committee Charter
 - 3) FSU RAM Radiation Safety Manual

B. Radiation Safety Procedures, Audit & Inspection Reports

1. Pls & AUs have access to: RSM, .209(2) Yes ☐ No ☐

- Permit & permit-related documents, including the list of current RAM AUs
- RS Committee meeting minutes
- Annual RSP audit reports
- State inspection reports
- Public dose limits compliance study

C. Operating & Emergency Procedures

1. **O&E procedures** are applied as appropriate to lab activities .1302, RSM Yes ☐ No ☐
 - ALARA measures
 - Locking/securing radiation sources
 - Personnel monitoring & use of PM equipment
 - Emergency procedures
 - General guidelines for safe use
 - Records maintenance
 - RAM shipping/receiving
2. **Contamination control measures** in use when appropriate, including application of decon action levels .1316, .1318(2), .1319 Yes ☐ No ☐
3. **Leak test procedures** for sealed sources in place for semiannual testing; leak tests performed semiannually & records kept for 3 yrs. N/A ☐ Yes ☐ No ☐
.312(1), .1303
4. **RAM storage areas** surveyed & results documented to verify that radiation levels are < 2 mrem/hr .314(1), .1319(1) Yes ☐ No ☐
5. **Area surveys** made to determine contamination in pertinent areas .1319(1) Yes ☐ No ☐
 - At end of days of use or receipt of RAM in RAM use/storage areas
 - Weekly during weeks of use in RAM use/storage areas
 - Frisks of personnel exiting radiologically controlled areas (no records if < actions levels)
6. **Rad. area/high rad areas:** If surveys find rad. levels warrant posting &/or controlled access, areas are properly posted/barricaded to prevent access N/A ☐ Yes ☐ No ☐
.312(1)
7. **Contamination smear surveys** made at end of each day of use in routine-use RAM use & storage areas for RAM not detected by survey instruments (i.e., weak beta-emitters) Yes ☐ No ☐
.1319(1)(e), (3)
8. **Airborne radioactivity surveys** made to test for airborne contamination in pertinent areas N/A ☐ Yes ☐ No ☐
.1318(2)
9. **Survey/wipe records** kept for 3 years .1319(3), (4) Yes ☐ No ☐
10. **RAM discharges** to uncontrolled areas documented, limited .1318(2) N/A ☐ Yes ☐ No ☐

**Radiological Lab Radiation Safety Audit Report****V. PROCEDURES (contd.)****C. O&E Procedures (contd.)**

11. Bioassay program/procedures in place to evaluate internal doses .1320 Yes ☐ No ☐

12. RAM sealed source physical inventories/inspections conducted semiannually, with records kept for 3 years .1304 Yes ☐ No ☐

13. RAM unsealed source inventories tracked by the RSO to ensure compliance with quantity limits, with records kept for 3 years .208(2), .320., 321 Yes ☐ No ☐

14. GL & Exempt RAM source inventories tracked by the RSO (recommended) Yes ☐ No ☐

D. RAM Ordering, Shipping, Receipt & Disposal Procedures

1. RAM orders approved by the RSO who verified all parties are licensed LC 11, .213(4) Yes ☐ No ☐

2. RSO maintains shipping, receipt & disposal records for all RAM possessed under the permit (shipping papers:2 yrs; radwaste manifests: 3 yrs LC 11, .213(4), .511(2) Yes ☐ No ☐

3. Radwaste disposal records kept indefinitely & demonstrate that waste was transferred to licensed recipients .103, .328(1), 49 CFR 172.201(e) Yes ☐ No ☐

E. Records, Reports & Notifications

1. GL RAM: RSO reports any changes to the GL RAM source inventory to FDOH BRC .205., .206 Yes ☐ No ☐

2. Incidents: RSO makes required notifications & submits required reports within specified times if a rad incident occurs 64E-5 Parts III, IX, XIII N/A ☐ Yes ☐ No ☐

3. Survey/Wipe Records: have all required info & retained for 3 years .1319(3), (4) Yes ☐ No ☐

VI. PERSONNEL**1. RAM AU Training Records**

a. Rad. safety training records for RAM authorized users document info. required by .1307; records maintained indefinitely (recommended) .1307(3) Yes ☐ No ☐

– **Function-specific rad. safety training**, with formal & practical training & testing, specific to job functions (minimum 40 hrs recommended):

– Sealed RAM source user .208(1), .209(2), 1307

– Unsealed RAM source user .208(1), .209(2), .1307

b. Rad. safety training records document .902(1) topics & practical training/testing (recommended) Yes ☐ No ☐

c. Training records document annual refresher training on .902(1) topics, review of the last annual RSP report, plus a Q&A session (recommended) Yes ☐ No ☐

2. Lab staff exhibit proper knowledge of: Yes ☐ No ☐

– Current RSP policies & procedures rad. safety procedures, audit & inspection reports

– All .902(1) topics, including radiation safety basics, survey meter functions, limits & proper use, radiation monitoring badge functions, limits & proper use, cc, etc. .901(1)

3. Lab staff are empowered, readily communicate with RSO & mgmt. on rad safety issues & question the status quo (i.e., strong safety culture) (recommended) Yes ☐ No ☐



Radiological Lab Radiation Safety Audit Report

VII. AUDIT FINDINGS

Facilities

—

Equipment

—

Procedures

—

(Auditor Name & Title)

(Signature)

(RSO Name & Title)

(Signature)