

# Minnesota State University, Mankato

## Radiation Materials Laboratory Self-Audit Checklist

Building & Room \_\_\_\_\_ Principal Investigator \_\_\_\_\_ Date \_\_\_\_\_

Audit By \_\_\_\_\_ Radioisotopes in use \_\_\_\_\_

	Y	N	NA	Comments
<b>A. Good Work Practices</b>				
1. Absorbent papers, Protective covers or containment trays used.				
2. Work areas monitored and surveys documented.				
3. Survey meter calibrated and appropriate.				
4. Wipe test frequency met, appropriate locations tested.				
5. Contaminated area and items labeled and proper decontamination procedures used.				
6. RAM users are familiar with properties of radioisotopes they use.				
<b>B. Personnel Dosimetry</b>				
1. Radiation monitoring badges issued when required by ORS policy.				
2. Badges stored and used properly and returned promptly.				
3. Lab personnel know location of dose records.				
<b>C. Exposure Control</b>				
1. Protective Clothing/personal protective equipment used.				
2. Appropriate footwear worn (no open toed shoes during rad work).				
3. Shielding of work areas adequate.				
4. No eating, drinking or storing of food in radioisotope lab.				
<b>D. Inventory Control</b>				
1. RAM properly stored and secured.				
2. Isotope possession limits not exceeded.				
3. Radioactive Material Receipt and Use Records properly completed.				
4. Latest semiannual inventory submitted.				
5. Transfer of RAM procedures followed.				

	Y	N	NA	Comments
6. RAM transportation requirements met.				
7. Waste is package correctly.				
8. ORS notified prior to mixed waste generation.				
9. No radioactive waste found in non-radioactive lab trash.				
<b>E. Use Area Identification</b>				
1. Lab entrance properly posted and labeled, including radioisotope use area.				
2. RAM work performed in authorized location only.				
<b>F. Training &amp; Engineering Control</b>				
1. All laboratory personnel that use radioactive material have completed ORS radiation safety orientation.				
2. Users have attended orientation or refresher training within the past three years.				
3. Radiation awareness training provided to all non-RAM users by PI or lab contact and documentation maintained in lab				
4. Work with volatile radionuclides or processes conducted in fume hood.				
<b>G. Administrative Controls and Documentation</b>				
1. Radioactive Material Authorization posted in all authorized location.				
2. Usage, survey, inventory and waste records are current and accurate.				
3. MDH "Notice to Employees" posted in all authorized locations.				
4. Radiation Safety inspection and audits reviewed and deficiencies corrected.				

## A. Good Work Practices

1. All work involving physical or chemical manipulation of open radioactive material sources must be performed directly on the work surfaces suitable for containment of contamination and easy decontamination.
2. Researchers manipulating open sources of radioactive material must conduct operational work area surveys. The criteria for performing surveys can be found in the Radiation protection Manual. These surveys are performed using portable survey meters and/or wipe testing, as appropriate. Records of the survey must be kept.
3. Survey meter must have a current calibration and must be able to detect the isotope used. Contact EH&S for calibration services.
4. Location of wipe tests must correspond to the radiation work areas of the laboratory and wipe test locations must be sufficient to detect contamination.
5. When users find contamination on equipment or in work areas, decontamination must be performed in a timely manner. Skin contamination must be immediately decontaminated to the extent possible and reported to EH&S. To protect other lab personnel, contaminated areas and objects must be labeled.
6. A radioisotope user must be familiar with the properties of any radioisotope used, including half-life, emissions, shielding requirements, special hazards, and how to detect the radioisotope. Information about specific radioisotopes is available from the Office of Radiation Safety.

## B. Personnel Dosimetry

1. The use of radiation monitoring badges is required for work with certain radioisotopes used in specified amounts. The criteria for monitoring are described in the Radiation Protection Manual and Radiation Use Authorization.
2. Badge must be exchanged in a timely manner. Lost badges must be reported to the ORS as soon as possible. Personal dosimeters must be stored away from radiation and heat sources.
3. Users issued dosimeter must have access to their dosimetry records, which are available from the Office of Radiation Safety.

## C. Exposure Control

1. Appropriate protective clothing, including gloves, a full-length laboratory coat, shoes and socks must be worn at all times for work with any open radioactive source. The use of face shields or eye protection should be considered to reduce the risk of face or eye contamination.
2. Wearing sandal or open-toed shoes, while working with radioactive material, is prohibited.
3. In cases where the use of radioactive material presents unique or unusual hazards, special radiation safety equipment, shielding, precautions or procedures may be required.
4. Smoking, eating, drinking and pipetting by mouth in radioisotope laboratories is prohibited. Food for human consumption shall not be placed or stored in any equipment such as a refrigerator, freezer or oven s in which radioisotopes are stored or used or in any other RAM lab area. Storage of food and utensils on open surfaces in the laboratory is discouraged.

## D. Inventory Control

1. Access to "Restricted Areas" must be controlled, and visitors should be supervised by a member of the laboratory staff who is familiar with activities of the laboratory. All radioactive stock material and sealed sources must be stored in a secured container or secured storage area when not in use.
2. Purchase/possession limits must not exceed the Authorized User's authorization limits. ORS maintains records of possession limits assigned to Authorized Users along with their Radiation Use Authorization.
3. ORS provides a Radioactive Material Receipt and Use Record for each stock vial received. An entry in the Record must be made for every withdrawal from the stock vial and each addition to waste.
4. Twice a year, ORS and lab inventory records are reconciled. The semiannual inventory should be promptly returned to ORS to maintain an accurate inventory.
5. ORS must be contacted before a transfer between Authorized Users occurs. Recipients of transferred RAM must be authorized or licensed to use the isotope. Inventory reports submitted to ORS must be updated to show transfers during the inventory period.

#### **D. Inventory Control (continue)**

6. Radioisotopes moved within a building should be moved in such a way that no radioactive material can be readily released from its container under normal conditions and exposure to personnel is minimal. Radioactive liquids must be transported in secondary containment. Radioactive material may not be left unattended during transit. These precautions are especially important when RAM is moved through non-restricted areas. If the transfer involves shipment between buildings on campus or off-campus, or to a non-MSU, M University facility, contact ORS for instructions to comply with DOT regulations.
7. Waste must be segregated and packaged in accordance with current procedures. See the MSU Radiation Protection Manual for additional information.
8. If the generation of mixed waste (waste that is both radioactive and a hazardous chemical) is unavoidable, then the Authorized User must contact both ORS and EH&S prior to generating mixed waste. All Authorized Users are strongly encouraged to use laboratory techniques or to develop new techniques, which do not result in the production of mixed waste.
9. The secondary disposal of radioactive material using sinks in an Authorized User's laboratory is prohibited.

#### **E. Use Area Identification**

1. All work and storage areas for Radioactive Material must be properly labeled "Caution Radioactive Material".
2. All RAM work must be performed in rooms as listed on the Radiation Use Authorization. ORS must be notified when an Authorized User plans to discontinue all RAM work in a room or begin RAM work in a new room.

#### **F. Training and Engineering Controls**

1. All users of radioactive material receive Radioactive Material Safety Training. The schedule for these training sessions is posted on the EH&S Web page.
2. All users must attend Refresher Training every three years which is provided by ORS and EH&S annually.
3. Program Directors or Lab contacts provide radioactive materials laboratory awareness training to all non-RAM users. Training must be documented and maintained in the lab records.
4. Uses of open radioactive sources, which could result in airborne radioactivity, must be carried out in functional fume hoods labeled with "Caution Radioactive Material".

#### **G. Administrative Controls and Documentation**

1. Radioactive Material Authorizations provide radioisotope limits and use conditions and must be posted in all authorized locations. ORS and EH&S can provide copies for posting.
2. Records of all required radiation surveys, and Receipt and Disposal logs, and accurate waste tags are required to be maintained by each laboratory.
3. MDH "Notice to Employees" must be posted in each authorized location. Copies are available from ORS.
4. Radiation Safety conducts annual inspections and biannual audits for each area where radioisotopes are used. Any deficiency found will be indicated in the inspection/audit report. It is advisable to correct deficiencies as soon as possible after they are reported.