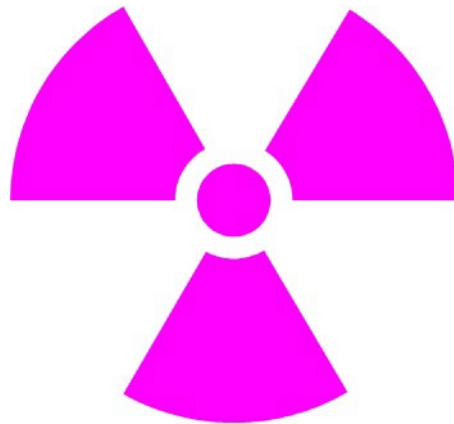


Radiation Safety Policy Manual



Office of Radiological Safety



Effective April 23, 2026



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1. RADIATION SAFETY PROGRAM

1.1 Scope

- 1.1.1 The Georgia Institute of Technology (Georgia Tech) Radiation Safety Program encompasses the use of all ionizing radiation in the form of licensed and exempt radioactive material (RAM) and radiation machines at Georgia Tech campus facilities and any field sites in Georgia.
- 1.1.2 The Radiation Safety Program is defined by the Radioactive Material License, this Radiation Safety Policy Manual (RSPM), procedures, and other related documents approved by the Radiation Safety Committee (RSC) and/or the Radiation Safety Officer (RSO). This RSPM and all related procedures are available from the Office of Radiological Safety (ORS).

1.2 ALARA

- 1.2.1 In keeping with currently accepted practices in radiation protection, and as mandated in OCGA 391-3-17.03(4)(b), exposure of all personnel and members of the public to radiation shall be maintained at the lowest level which can be practically, economically, and reasonably achieved.
- 1.2.2 This policy and practice is called ALARA (As Low As Reasonably Achievable) and shall be rigorously applied to all operations utilizing radiation at Georgia Tech.
- 1.2.3 The Administration of Georgia Tech is committed to the ALARA philosophy and to ensuring that work involving radiation is accomplished in a safe and controlled fashion.
- 1.2.4 ORS shall determine if radiation exposures are being maintained ALARA at Georgia Tech by conducting the routine inspections, radiation dose investigations, training, and annual program reviews described in this RSPM.

1.3 Definitions

1.3.1 Radiation

Radiation refers to ionizing radiation throughout this RSPM.

1.3.2 Radiation Machines



A radiation machine is any device that is designed for the controlled production of ionizing radiation or nuclear particles. This includes equipment designed to emit x-rays, equipment that may emit x-rays as a byproduct of electron acceleration (equipment that accelerates electrons to an energy in excess of 5 keV), particle accelerators (including neutron generators), etc.

1.3.3 Radioactive Material

Radioactive material (RAM) is any solid, liquid, or gas that emits ionizing radiation spontaneously. RAM commonly emits radiation in the form of alpha particles, beta particles, neutrons, and gamma rays.

1.3.4 Licensed RAM

Licensed RAM is RAM that exceeds the values stated in OCGA 391-3-17.02(21)(a) or (b). Throughout this RSPM and ORS procedures, unless otherwise specified, RAM refers to licensed RAM.

1.3.5 Exempt RAM

Exempt RAM is RAM that meets one of the following criteria, and will be referred to as exempt RAM throughout this RSPM and ORS procedures:

1.3.5.1 Does not exceed the values stated in OCGA 391-3-17.02(21)(a) or (b)

1.3.5.2 Sources listed in OCGA 391-3-17.02(2) or (3)(c)

1.3.6 The RSO has the authority to specify whether or not a specific source or category of source meeting the definition from RSPM Section 1.3.5 falls within the Georgia Tech Radiation Safety Program.

1.3.7 The RSO has the authority to require exempt RAM and/or its use to meet the requirements of licensed RAM.



2. RADIATION SAFETY COMMITTEE

A Radiation Safety Committee (RSC) is required for Georgia Tech's Radioactive Materials License.

2.1 Membership

- 2.1.1 The RSC shall be composed of senior technical personnel who provide experience in radiological safety and radiation protection, including a representative of Georgia Tech Administration and representatives from various colleges, departments, groups, or activities that use ionizing radiation. The RSO is an ex-officio member of the RSC.
- 2.1.2 The Executive Vice President of Research (EVPR) at Georgia Tech shall appoint members to the RSC for periods of up to three years on staggered terms. Membership is limited to two consecutive terms. After two terms, a three-year absence from RSC membership is required.
- 2.1.3 A quorum will consist of a simple majority of RSC members that must include the Chair and the RSO or their designee.
- 2.1.4 The Chair of the RSC and the RSO may not be the same person.
- 2.1.5 The number of RSC members is unlimited.

2.2 Responsibilities

- 2.2.1 The RSC is responsible for maintaining the health and safety standards associated with the use of RAM and radiation machines at Georgia Tech and conforming to applicable regulations.
- 2.2.2 The RSC shall review and approve or disapprove the following:
 - 2.2.2.1 Individual faculty or staff to be designated as Authorized Users of RAM or radiation machines;
 - 2.2.2.2 All applications for the possession and/or use of RAM or radiation machines (Form A) taking into consideration the radiological hazards, the facilities and equipment used, the experience of the applicant, and the operating or handling procedures;
 - 2.2.2.3 All proposed modifications to procedures approved in the radiation machine or RAM Form As listed above.

NOTE: Minor modifications may be approved by the RSO according to RSPM Section 3.4.3 without RSC review;



- 2.2.2.4 Any proposed changes to the ionizing radiation facilities (e.g. shielding, ventilation) that were used to limit the radiation dose to a worker or member of the general public
- 2.2.2.5 All additions or revisions to this RSPM
- 2.2.2.6 All additions or revisions to ORS procedures except those detailing calibration of radiation detection or measuring instruments.

NOTE: Minor modifications may be approved by the RSO according to RSPM Section 3.4.3 without RSC review;

- 2.2.2.7 Any other matter brought to its attention by the RSO.
- 2.2.3 The RSC shall review reportable occurrences and take appropriate action.
- 2.2.4 The RSC shall audit, on an annual basis, ORS for the adequacy of operational records for compliance with internal rules, radiation safety equipment performance, procedures, regulations, and license conditions. The audit results will be sent to the EVPR at Georgia Tech.

2.3 Meetings

- 2.3.1 The RSC shall meet quarterly and more often when situations arise that need attention.
- 2.3.2 Approvals by the RSC are signified by the receipt of a simple majority vote of approval by the members of the RSC.
- 2.3.3 Minutes of the RSC meetings, including any recommendations or occurrences, shall be recorded and distributed to all RSC members and the EVPR. RSC minutes will also be filed in the ORS office.
- 2.3.4 The RSC delegates authority to the Chair to act on its behalf between normal meeting dates in certain matters. In such a case, at the next meeting of the RSC, a quorum will review the action (e.g., authorization for a new AU to use RAM) and provide any additional guidance as necessary.

2.4 Authority

- 2.4.1 The RSC has the authority to impose additional radiation safety measures on any use of licensed or exempt RAM or radiation machines or to suspend or terminate an approved Form A.



3. RADIATION SAFETY OFFICER

3.1 Appointment

The Radiation Safety Officer (RSO) is appointed by the Associate Vice President of Environmental Health and Safety. The RSO is qualified to advise others on safety matters pertaining to radiation due to their level of education, training, and experience. The RSO is supported by Health Physicists in ORS who assist in the implementation of the Georgia Tech Radiation Safety Program.

3.2 Responsibilities

- 3.2.1 The RSO shall implement a radiation survey program for the Georgia Tech campus as deemed appropriate in the interest of radiation safety and in compliance with regulatory requirements and license conditions.
- 3.2.2 The RSO shall act in a supervisory/administrative capacity in all aspects of Georgia Tech's radiation measurement and radiation protection activities including personnel monitoring, maintenance of exposure records, survey methods, waste disposal, decontamination, and radiological safety practices.
- 3.2.3 The RSO shall review and make recommendations for all activities and procedures which involve actual or potential exposure of personnel to radiation or the release of radioactive materials to the environment.
- 3.2.4 The RSO shall support academics and research at Georgia Tech by being available to consult with all users of radiation in radiation safety matters.
- 3.2.5 The RSO shall communicate regularly with the Georgia Tech Administration regarding program implementation and compliance status.

3.3 Duties

- 3.3.1 The RSO shall maintain the RAM license and amend or renew it when necessary.
- 3.3.2 The RSO shall ensure that all RAM receipts, deliveries, and shipments are performed properly.
- 3.3.3 The RSO shall manage the radioactive waste disposal program, including effluent monitoring and recordkeeping.



- 3.3.4 The RSO shall maintain an inventory of all RAM and radiation machines on the Georgia Tech campus and ensure that RAM is limited to the kinds and quantities listed on the RAM license.
- 3.3.5 The RSO shall maintain records of radiation surveys and exposures of personnel to radiation as may be required to demonstrate compliance with state and federal regulations and other industry good practices.
- 3.3.6 The RSO shall obtain, issue, collect, review, and record the results of all personnel monitoring devices deemed necessary to determine the level of personnel exposure to radiation and ensure that these devices are used correctly. (RSPM Section 8)
- 3.3.7 The RSO shall investigate and report radiation exposures at or above ALARA levels to the individual and to the RSC in accordance with RSPM Section 8.3.
- 3.3.8 The RSO shall assist Authorized Users in the training of users of RAM and radiation machines. ORS shall provide initial and periodic general radiation safety training, while the Authorized User or designee shall provide specific on-the-job training for each person working under their direction. (RSPM Section 7)
- 3.3.9 The RSO shall review work to be performed under a Radiation Work Permit described by [Procedure 9306](#).
- 3.3.10 The RSO shall report to the RSC any radiation hazards, serious infractions of rules, or other radiological incidents. The RSO shall provide and initiate corrective actions, and verify implementation of corrective actions.
- 3.3.11 The RSO shall require that RAM is secured against unauthorized removal or use.
- 3.3.12 The RSO shall evaluate the shielding requirements for any areas proposed for RAM or radiation machine use.
- 3.3.13 The RSO shall ensure that an initial inspection of all proposed radiation machine or RAM use areas is performed, and that these areas are inspected periodically, as stated in RSPM Section 6.
- 3.3.14 ORS shall notify the Georgia Department of Natural Resources or the Department of Community Health of the occurrence of any instance listed in Procedure 6100.



- 3.3.15 The RSO shall review the content and implementation of the Radiation Safety Program in order to determine their effectiveness and adherence to the ALARA concept at least annually. This review shall be documented.

3.4 Authority

- 3.4.1 The RSO has the authority and responsibility to interrupt or suspend any activity that involves the use of radiation if the methods and/or procedures used in such experiments in their professional opinion are deemed to be unsafe and/or contrary to regulations. Such interruption/suspension shall remain in effect until resolved by the RSC.
- 3.4.2 The RSO has the authority and responsibility to review proposed experiments and tests utilizing exempt quantities and exempt concentrations of radioactive material as defined in OCGA 391-3-17.02(21)(a) and (b).
- 3.4.3 The RSO has the authority to review and approve minor changes in ORS procedures and Authorized User Form A approvals (e.g., room changes, minor changes in procedure, addition of isotopes, minor possession limit increases, etc.) provided the change does not diminish radiation safety.
- 3.4.4 The RSO has the authority to designate and delegate duties to an Associate Radiation Safety Officer (ARSO). An ARSO must be a Health Physicist.



4. RADIATION WORKER

4.1 Definition

A Radiation Worker (RW) is a Georgia Tech faculty member, staff member, student, affiliate, or an external visitor that has completed radiation training provided by ORS and has been designated by an AU to work with licensed or exempt RAM or radiation machines.

4.2 Acquisition of Radiation Worker Status

4.2.1 RW status must be obtained to work under the supervision of an Authorized User (AU)

4.2.1.1 [Procedure 9501](#) specifies the requirements to obtain Radiation Worker status for the use of licensed or exempt RAM.

4.2.1.2 [Procedure 9502](#) specifies the requirements to obtain Radiation Worker status for the use of radiation machines.

4.2.1.3 [Procedure 9503](#) specifies the requirements to obtain Radiation Worker status for the use of particle accelerators.

4.3 Radiation Worker Responsibilities

4.3.1 Adhere to the policies set forth in this RSPM, ORS procedures, the procedures approved in the AU's Form A, and any applicable RWP.

4.3.2 Be familiar with and use established emergency procedures when necessary.

4.3.3 Independently use radiation sources after completing source specific operational training.

4.3.4 Properly wear any issued dosimetry according to [Procedure 9316](#).

4.3.5 Promptly report any event listed in RSPM Section 13.2.



5. AUTHORIZED USER

5.1 Definition

An Authorized User (AU) is a Georgia Tech faculty or staff member who obtains written authorization from the RSO and the RSC to use RAM or radiation machines at Georgia Tech, or from the RSO to use exempt RAM.

5.2 Acquisition of AU Status

5.2.1 AUs must obtain Radiation Worker status.

5.2.2 AU status must be obtained prior to procuring any licensed or exempt RAM or a radiation machine.

5.2.2.1 [Procedure 9501](#) specifies the requirements to obtain AU status for the use of licensed or exempt RAM.

5.2.2.2 [Procedure 9502](#) specifies the requirements to obtain AU status for the use of radiation machines.

5.2.2.3 [Procedure 9503](#) specifies the requirements to obtain AU status for the use of particle accelerators.

5.3 AU Responsibilities

5.3.1 Following the procedures listed in this RSPM and only using radiation according to the procedures approved in their Form A.

5.3.2 Purchasing an appropriate radiation survey meter if deemed necessary by ORS.

5.3.3 Ensuring that anyone using radiation under their supervision adheres to the requirements of this RSPM and is familiar with the terms of their approved Form A.

5.3.4 Ensuring that anyone using radiation under their supervision completes the requirements of RSPM Section 7 prior to permitting them to use licensed or exempt RAM or radiation machines.

5.3.5 Keeping ORS informed of the licensed or exempt RAM or radiation machine inventory for which they are responsible.

5.3.6 Maintaining records of any required periodic survey results of the work areas or radiation machines.



- 5.3.7 Posting emergency contact information for responsible parties at the entrance to the laboratory should an abnormal situation arise. This should be a Georgia Tech Environmental Health and Safety pink card.
- 5.3.8 Notifying ORS prior to leaving Georgia Tech, or before relocating or vacating a laboratory approved for licensed or exempt RAM or radiation machines.
- 5.3.9 RAM AU Responsibilities
 - 5.3.9.1 Documenting use of licensed or exempt RAM, including disposal into radioactive waste containers, according to [Procedures 9501](#) and [9290](#).
 - 5.3.9.2 Posting appropriate radiation signs and labeling containers of licensed or exempt RAM with the standard radiation warning symbol in their laboratory area where the licensed or exempt RAM is used, according to [Procedure 9310](#).



6. ROUTINE RADIATION SAFETY INSPECTIONS

Routine radiation safety inspections shall be performed by ORS in order to validate radiation safety practices and confirm compliance with established policies and procedures.

6.1 Inspections of RAM Use Areas

- 6.1.1 ORS shall inspect all areas where unsealed sources of RAM are used or stored at least quarterly.
 - 6.1.1.1 Items to be inspected include, but are not limited to, postings, completion of weekly surveys, security and consistency with the AU's approved Form A for use of RAM.
 - 6.1.1.2 ORS shall also survey areas for radiation levels and/or removable contamination during inspections, as appropriate.
- 6.1.2 ORS shall inspect biennially all areas where sealed sources capable of producing a radiation area under normal use are stored.
 - 6.1.2.1 Items to be inspected include proper storage, labels, postings, security, and an assessment of radiation dose rates.
- 6.1.3 ORS shall inspect all other areas where RAM is stored every three years.
- 6.1.4 The RSO may perform inspections in any RAM use or storage area more frequently.

6.2 Inspections of Radiation Machine Use Areas

- 6.2.1 ORS shall inspect all areas at least annually where radiation machines are used or stored. Areas where byproduct x-ray machines are used or stored may be inspected at a lesser frequency.
- 6.2.2 Items to be inspected include, but are not limited to, postings, completion of surveys, security, and consistency with the AU's approved Form A for use of a radiation machine.
- 6.2.3 ORS shall also perform leakage and/or radiation level measurements during inspections, as appropriate.

6.3 Inspection Results and Corrective Actions

- 6.3.1 All ORS inspection results are documented and reported to the RSO and the AU.



- 6.3.2 The AU shall respond to any items of concern found during the inspection within 10 business days. The response shall include corrective actions to prevent a recurrence of the item. The RSO shall review the corrective action and may recommend further corrective actions.
- 6.3.3 The RSO may require the AU to report directly to the RSC. Such occasions include any finding that could have led to an exposure in excess of an ALARA level; any violation reportable to the State of Georgia; or any item of concern that has been repeated and the corrective actions have not been followed.
- 6.3.4 The RSC is authorized to terminate the AU's approved Form A for use of RAM or radiation machines. A new Form A would need to be prepared and approved by the RSC before activities may be resumed. The RSC may impose a permanent restriction to RAM or radiation machine use in the case of a willful violation.
- 6.3.5 Records of ORS surveys shall be maintained and shall be made available for review by the AU upon request. Official records may not leave ORS at any time.

6.4 Calibration of Radiation Survey Instruments

- 6.4.1 The calibration frequency for all survey instruments shall be annual. Annual means once every 12 months or no later than the last day of the same calendar month of the following year.
- 6.4.2 Calibration services are provided for many radiation survey instruments by ORS. ORS provides assistance with sending instruments to outside vendors for calibration, as needed.



7. TRAINING

7.1 Responsibilities

- 7.1.1 ORS shall be responsible for providing general training on a periodic basis in the basic principles of radiation and radiation safety.
- 7.1.2 The AU is responsible for providing laboratory specific training for individuals who work under their authority or students in teaching laboratories.
 - 7.1.2.1 For AUs of radiation machines, this includes device specific training covering written operating procedures to ensure that the health and safety of others in the lab will be safeguarded.
 - 7.1.2.2 Laboratory or machine specific training should be documented by the AU or their designee.
- 7.1.3 Non-compliance with training requirements by an AU may result in suspension of all Form As under the AU by the RSC.
 - 7.1.3.1 RAM under the affected Form As will be retrieved (or otherwise secured from use) by ORS until the Form As are reinstated by the RSC.
 - 7.1.3.2 Radiation machines under the affected Form As will have their keys retrieved by ORS (or otherwise remove the ability for the radiation machine to operate) until the Form As are reinstated by the RSC.

7.2 Frequency of Training

- 7.2.1 Radiation safety training is required for all RWs prior to the use of RAM or radiation machines, and may be required prior to the use of exempt RAM.
- 7.2.2 Refresher training is required at intervals specified in [Procedures 9501](#), [9502](#), and [9503](#).
- 7.2.3 Retraining is also required whenever there is a significant change in regulations, policy, or procedures that would affect an AU's use of licensed or exempt RAM or radiation machines.
- 7.2.4 Non-compliance with initial or refresher training requirements will result in RW suspension by ORS, and the AU will be notified.



7.3 General Training Topics

7.3.1.1 At a minimum, training for RWs shall include:

- 7.3.1.1.1 Storage, inventory, and security of RAM and/or radiation machines
- 7.3.1.1.2 Federal and/or State regulations applicable to work being performed
- 7.3.1.1.3 Georgia Tech Radiation Safety Policy Manual, license conditions (for RAM users), ALARA policy, and relevant procedures
- 7.3.1.1.4 Reporting violations or unsafe work conditions
- 7.3.1.1.5 Basic radiation characteristics, terminology, and units
- 7.3.1.1.6 Biological effects of ionizing radiation
- 7.3.1.1.7 Radiation detection equipment
- 7.3.1.1.8 Protective measures
- 7.3.1.1.9 Accident, incident, and emergency guidelines
- 7.3.1.1.10 Personnel dose monitoring program
- 7.3.1.1.11 Case histories of accidents involving radiation machines (radiation machine training only).

7.4 Conditional Training Topics

- 7.4.1 Additional training requirements are specified in [Procedures 9501](#), [9502](#), and [9503](#), depending on the work with RAM or radiation machines.
- 7.4.2 For unescorted access to the NRE/MP Radiological Science and Engineering Laboratory (RSEL), RWs must receive additional training according to Procedure 0155.
- 7.4.3 Certain uses of RAM that pose an increased risk of internal exposure may require additional training and/or requirements related to the use of protective equipment or procedures (e.g., respirators, bioassays, etc.). These requirements may come from Procedure 9038, Georgia Tech Environmental Health and Safety, or the RSO.

7.5 Other Training Requirements

- 7.5.1 ORS staff responsible for shipping radioactive material shall be trained in applicable shipping regulations.
- 7.5.2 The Georgia Tech Police Department shall receive initial radiation emergency preparedness training and an annual refresher training.



- 7.5.3 Non-radiation workers in laboratories where radiation hazards are low may be required to complete Radiation Awareness Training and must be made aware of lab-specific work and hazards.



8. PERMISSIBLE DOSE LIMITS

In accordance with the ALARA policy, all unnecessary radiation exposure of personnel shall be considered undesirable and shall be maintained at the lowest reasonably achievable level. In no case shall an occupationally exposed person be purposefully allowed to exceed the permissible dose limits.

8.1 Radiation Dose Limits

8.1.1 RAM workers shall not exceed the following limits during a calendar year:

- 8.1.1.1 5 rem for the Total Effective Dose Equivalent (TEDE)
- 8.1.1.2 50 rem for the sum of the Deep Dose Equivalent (DDE) and the Committed Dose Equivalent (CDE) to any individual organ or tissue (other than the eye)
- 8.1.1.3 15 rem to the lens of the eye (lens dose equivalent, LDE)
- 8.1.1.4 50 rem to the skin and extremities (shallow dose equivalent, SDE)

8.1.2 Workers using radiation machines shall not exceed the following limits during a calendar quarter:

- 8.1.2.1 1.25 rem to the whole body, head and trunk, lens of the eyes, active blood forming organs, or gonads
- 8.1.2.2 18.75 rem to the hands, forearms, feet, or ankles
- 8.1.2.3 7.5 rem to the skin of the whole body

8.2 ALARA Levels

8.2.1 It is the goal of Georgia Tech to limit any RW's occupational radiation exposure to 20% of the Annual Dose Limits listed in RSPM Section 8.1.

8.3 Investigational Levels

8.3.1 Investigation Levels of radiation exposures have been set at 100 mrem per quarter or 40 mrem per month. Any exposure in excess of these will initiate an investigation by ORS.

8.3.2 The investigation shall attempt to determine the cause and accuracy of the exposure as well as assessment of measures, if any, that can be employed to limit or prevent a future recurrence of the exposure.



- 8.3.3 All radiation exposures equal to or in excess of Investigation Levels and the results of the respective investigations shall be reported to the RSC.

8.4 Embryo/Fetus Dose Limits

- 8.4.1 RWs who become pregnant and declare the pregnancy in writing to the RSO shall be limited to an embryo/fetus dose of 500 mrem for the duration of the pregnancy and 50 mrem in any one month.
- 8.4.2 The Georgia Tech ALARA level is 100 mrem for the duration of the pregnancy.
- 8.4.3 A RW who chooses to declare their pregnancy shall inform their AU and the RSO. Appropriate steps to limit exposures and to ensure that the dose to the embryo/fetus shall not exceed 500 mrem during the pregnancy will be determined cooperatively by the AU and the RSO. Based upon the work activity of the declared pregnant worker, the RSO has the authority and responsibility to restrict work activities of the declared pregnant worker to ensure that no dose limits are exceeded.

8.5 Radiation Dose Limits of Minors

- 8.5.1 A minor shall not be in any setting involving exposure to ionizing radiation. Minors are not permitted to operate any x-ray producing equipment. Operation of machines producing by-product x-rays, such as electron microscopes, may be conditionally allowed.
- 8.5.2 A minor may operate a byproduct x-ray machine only if all requirements of the Georgia Tech Policy "Minors in Laboratories, Hazardous Areas and Animal Facilities" are followed.
- 8.5.3 Radiation doses to minors shall not exceed 10% of the annual limits listed in RSPM Section 8.1.

8.6 Radiation Dose to Members of the Public

- 8.6.1 The total effective dose equivalent to any individual member of the public shall not exceed 100 mrem in a year, exclusive of the dose contributions from background radiation, from any medical administration the individual has received, from exposure to individuals medically administered radioactive material, from voluntary participation in medical research, and from the licensee's disposal of radioactive material into sanitary sewerage.
- 8.6.2 The dose to any individual member of the public must also not exceed 2 mrem in any one hour.



8.7 Assessing Radiation Dose

- 8.7.1 ORS shall issue personnel dosimeters and/or require bioassays in order to demonstrate compliance with the limits in this section according to RSPM Section 9.
- 8.7.2 Results of surveys of areas where licensed or exempt RAM or radiation machines are used or use of area dosimeters may be used to demonstrate compliance with the limits in RSPM Section 8.

8.8 Reporting Radiation Dose in Excess of Limits

- 8.8.1 If it is determined that a dose in excess of the limits in RSPM Section 8 was received, the State of Georgia will be notified as required in Procedure 6100.



9. PERSONNEL MONITORING

To help ensure that the permissible occupational dose limits in RSPM Section 8 are not exceeded, Georgia Tech monitors RWs with dosimetry and bioassays according to the requirements of OCGA 391-3-17.03. Georgia Tech also uses dosimetry and bioassay as an ALARA tool as needed.

9.1 Dosimetry

- 9.1.1 Permanent dosimetry shall be issued to a RW that meets at least one of the following criteria:
 - 9.1.1.1 As evaluated by the RSO, is likely to receive a dose in excess of 10% of the limits specified in RSPM Section 8.1
 - 9.1.1.2 Enters a High Radiation Area or Very High Radiation Area
- 9.1.2 Permanent dosimetry may be issued according to [Procedure 9316](#).
- 9.1.3 RWs who have been issued dosimetry shall follow the rules for care and use in [Procedure 9316](#).
- 9.1.4 The RSO may use area dosimetry to evaluate radiation exposure levels to an area over a period of time.
- 9.1.5 ORS will exchange dosimeters when required. The default exchange frequency for permanent dosimetry is quarterly.
 - 9.1.5.1 If permanent dosimetry is issued to minors or declared pregnant workers, it is exchanged monthly.
 - 9.1.5.2 Dosimeters in use during an incident may be returned for processing immediately.
- 9.1.6 Dosimeters issued by ORS are only to be used for measuring a RW's radiation exposure from their work at Georgia Tech. They are not to be used for measuring personal non-occupational exposures (e.g., during medical procedures or air travel) or occupational radiation exposure at another institution.
- 9.1.7 ORS shall use dosimetry according to [Procedure 9316](#).



9.2 Supplemental Dosimetry

- 9.2.1 When both a permanent dosimeter and a supplemental dosimeter are worn, the reading from the permanent dosimeter will be the dose of record for the RW.

9.3 Bioassay

- 9.3.1 RWs who may be exposed to loose or volatile RAM such that the potential exists for significant intake (e.g., 10% of the Annual Limit on Intake (ALI) per year) shall participate in a bioassay program.

- 9.3.1.1 Participation in a bioassay program shall be determined by the RSO after evaluation of the work/activities of the individual.

- 9.3.1.2 Bioassays are for the purpose of regulatory compliance, not health assessment.

- 9.3.2 Guidelines for the use of bioassay and the communication of bioassay records to RWs at Georgia Tech are provided in Procedure 9038.

- 9.3.3 Participation requirements for each individual in the bioassay program shall be sent to the responsible AU.

- 9.3.3.1 Individuals may also be requested to participate in the bioassay program when an event has occurred.

- 9.3.4 Failure to participate as requested may result in suspension of privileges to work with RAM at Georgia Tech.

9.4 Records

- 9.4.1 Dosimetry and bioassay records shall be maintained as permanent records of Georgia Tech.

- 9.4.2 Annual dose records shall be sent to the individual utilizing an NRC Form 5 or equivalent. Individuals may request to view or receive a copy of their own dose record at any time.

- 9.4.3 If an organization requests the dosimetry record of a current or former RW, Georgia Tech shall provide this record only after receiving a copy of the request containing the signature of the RW giving permission for Georgia Tech to release the record to that organization.

- 9.4.4 If a RW is issued dosimetry and that RW has been monitored for radiation dose at another organization within the past calendar year, ORS shall



attempt to obtain the RW's prior dose history by sending a Form RS-114, Request for Previous Occupational Radiation Exposure. The RW's annual limit will be adjusted accordingly.



10. FACILITY REQUIREMENTS

10.1 Facility & Posting Requirements

- 10.1.1 Laboratories where RAM or radiation machines are to be used shall meet the minimum requirements listed in [Procedure 9300](#).
- 10.1.2 Rooms and areas authorized for the use of RAM or radiation machines shall be posted according to [Procedure 9310](#).
- 10.1.3 ORS must be informed of any changes to facilities that might affect radiation safety (e.g., an alteration to a shielded wall).



11. SAFE USE OF RADIOACTIVE MATERIAL

11.1 Procurement & Receipt of Licensed or Exempt RAM

11.1.1 ORS shall be informed of all shipments of licensed or exempt RAM onto Georgia Tech campus. In order to purchase, borrow, or otherwise acquire licensed or exempt RAM, the AU shall follow [Procedure 9501](#).

11.1.2 All licensed or exempt RAM sent to Georgia Tech shall be shipped to and received by ORS for an initial survey to ensure that leakage did not occur during transportation and that the new radioactive material is added to the inventory database, all following [Procedure 9251](#).

11.2 Use of RAM

11.2.1 Only persons who have obtained RW status according to [Procedure 9501](#) may work with licensed or exempt RAM.

11.2.2 RWs shall follow the steps in [Procedure 9501](#) for personal protective equipment, safe use of radiation, and maintaining a current inventory.

11.2.3 Eating, drinking, smoking, or applying cosmetics is prohibited in areas where licensed or exempt RAM is used or stored.

11.2.4 All RAM must be secured to prevent unauthorized removal when unattended. Doors to enclosed RAM laboratories must be closed and locked when personnel are not present. Neighborhood labs are required to have the RAM locked in storage (e.g., in a locked freezer, cabinet, etc.) when not in use.

11.2.5 All unattended RAM must be labeled according to [Procedure 9310](#). Waste must be labelled according to [Procedure 9290](#).

11.2.6 RWs shall survey areas where RAM is used for contamination and dose rates according to [Procedure 9317](#).

11.2.7 Sealed RAM sources shall be tested for leakage or contamination on a routine basis by ORS according to Procedure 9312.

11.3 Disposal of RAM

11.3.1 ORS is responsible for the final disposal of all licensed or exempt RAM.

11.3.2 Radioactive waste shall be stored in the lab until picked up by ORS in appropriate containers according to [Procedure 9290](#).



11.3.3 RAM shall not be discarded down the sink or sewer without written authorization from the RSO.

11.4 Transfer of RAM

11.4.1 Licensed or exempt RAM shall be transferred to another AU within Georgia Tech by the transfer process outlined in [Procedure 9501](#).

11.4.2 Licensed or exempt RAM shall only be shipped from campus by ORS. The RSO must approve all shipments or loaning of licensed or exempt RAM. Procedure 9510 details the requirements for these shipments.

11.5 Laboratory Closeout

11.5.1 AUs are required to notify ORS prior to relocating or leaving a laboratory approved for licensed or exempt RAM.

11.5.2 Once all RAM has been removed from the lab, ORS will conduct surveys according to Procedure 9318.

11.6 Contracted RAM Services

11.6.1 Contracted services utilizing gamma imagers, lead paint analyzers, etc. should, prior to use, notify ORS with a copy of each of the following:

- State of GA license or equivalent
- Policy and Procedures
- Training Records

11.6.2 Contractors using their own RAM sources are responsible for their own personnel dosimetry and training.

11.6.3 The RSO may do an on-site survey where ionizing radiation use is occurring or suspected.



12. SAFE USE OF RADIATION MACHINES

12.1 Procurement

The AU shall inform ORS prior to acquiring any radiation machine. Georgia Tech Procurement may not process requisitions for radiation machines without RSO approval. The procedure for radiation machine acquisition is described in [Procedure 9502](#) or [9503](#), depending on the type of radiation machine.

12.2 Receipt

12.2.1 ORS shall register all x-ray units with the State of Georgia Department of Community Health.

12.2.2 After installation, but prior to the first use of a radiation machine, ORS shall perform an initial inspection of the unit.

12.3 Operating Procedures

12.3.1 Only persons who have obtained RW status may work with radiation machines.

12.3.2 Only RWs who have been trained in the operating procedures of the particular unit may operate the unit.

12.3.3 All operators of radiation machines shall follow the requirements found in [Procedure 9502](#) or [9503](#), depending on the type of radiation machine. These procedures includes requirements for the following:

12.3.3.1 General Safety Provisions

12.3.3.2 Safety Systems and Interlocks

12.3.3.3 Signs, Labels, and Signals

12.3.3.4 Radiation Exposure Control

12.3.3.5 Barriers and Shielding

12.3.3.6 Radiation Surveys

12.3.3.7 Maintenance Requirements

12.3.3.8 Security

12.3.3.9 Disposal



12.3.4 All radiation machines must be secured to prevent unauthorized use when unattended.

12.4 Contracted Radiation Machine Services

12.4.1 Contracted services utilizing mobile x-ray imagers, lead paint analyzers, etc. should, prior to use, notify ORS with a copy of each of the following:

- State of GA registration or equivalent
- Policy and Procedures
- Training Records

12.4.2 Contractors using their own radiation machines are responsible for their own personnel dosimetry and training.

12.4.3 The RSO may do an on-site survey where ionizing radiation use is occurring or suspected.



13. EMERGENCY RESPONSE

13.1 Spills/Releases of RAM

- 13.1.1 In the event of a spill of RAM, all RWs shall follow [Procedure 9303](#).
- 13.1.2 ORS shall assist in any incident involving personal contamination, contamination exceeding levels specified in [Procedure 9317](#), or if the RW requests assistance.

13.2 Events Requiring Notification

The RW shall notify ORS upon discovery or suspicion of any of the following:

- 13.2.1 Accidental radiation exposure from radiation machines
- 13.2.2 RAM contamination of the skin
- 13.2.3 Ingestion or inhalation of RAM
- 13.2.4 Any incident where significant unexpected radiation exposure is suspected
- 13.2.5 Any spill of licensed or exempt RAM involving personal contamination or contamination levels exceeding levels specified in [Procedure 9317](#)
- 13.2.6 Any missing source of licensed or exempt RAM
- 13.2.7 Any incident in a RAM laboratory involving fire, flood, theft, or other abnormal occurrence
- 13.2.8 Any dosimeter that has been contaminated or left in an area where it was exposed to radiation that would not be representative of its owner's occupational exposure

14. BIBLIOGRAPHY

Georgia Department of Community Health, Rules and Regulations for X-Ray,
Chapter 111-8-90

Georgia Department of Natural Resources, Rules and Regulations for Radioactive
Materials, Chapter 391-3-17

Georgia Tech Policy Library, “Minors in Laboratories, Hazardous Areas and Animal
Facilities”

University System of Georgia, Human Resources Administrative Practice Manual:
Employment



15. LIST OF PROCEDURES REFERENCED IN THIS MANUAL

| Procedure Number | Procedure Title |
|-----------------------------|--|
| 0155 | Training Requirements for Unescorted Access or Administrative IC Access to the Radiological Science and Engineering Laboratory |
| 6100 | Emergency and Non-Emergency Notification |
| 9038 | Bioassay Program |
| 9251 | Procedure for Receiving and Opening Radioactive Packages |
| <u>9290</u> | <u>Radioactive Waste Management and Disposal</u> |
| <u>9300</u> | <u>Facility Requirements & Guidelines for Radioactive Material or Radiation Machine Laboratories</u> |
| <u>9303</u> | <u>Guidelines for Handling Radioactive Spills</u> |
| <u>9306</u> | <u>Preparation and Maintenance of Radiation Work Permits (RWP)</u> |
| <u>9310</u> | <u>Posting and Labeling for Radioactive Materials and Radiation Machines</u> |
| 9312 | Sealed Sources Leak Test |
| <u>9316</u> | <u>Personnel Dosimetry</u> |
| <u>9317</u> | <u>Routine Surveys for Open Source Radioactive Material Labs</u> |
| 9318 | Radioactive Material Laboratory Closeout |
| <u>9501</u> | <u>Control and Accountability of Radioactive Materials</u> |
| <u>9502</u> | <u>Control and Accountability of Radiation Machines</u> |
| 9503 | <u>Control and Accountability of Particle Accelerators</u> |
| 9510 | Radioactive Material Shipment |