POSTING AND LABELING FOR RADIOACTIVE MATERIALS
AND RADIATION MACHINES

1.0 PURPOSE
To describe posting and labeling requirements for areas and items containing radioactive material or a radiation machine.

2.0 SCOPE
This procedure applies to any room where radioactive material (RAM) is used or stored at Georgia Institute of Technology (Georgia Tech). It also applies to the areas within a room that RAM is used or stored, and any container or equipment that contains or could contain RAM or radioactive contamination.

This procedure applies to any room where a radiation machine is used at Georgia Tech and the radiation machine itself.

3.0 RESPONSIBILITIES
3.1 It is the responsibility of the Office of Radiological Safety (ORS) to post areas meeting the conditions specified in this procedure, and to provide any postings or labels required.

3.2 It is the responsibility of the Radiation Worker to ensure that postings and labels remain current and in good condition, and to notify the ORS if replacement postings or labels are required.

4.0 REFERENCES/REQUIREMENTS
4.1 Requirements and Specifications
4.1.1 State of Georgia, Rules and Regulations for Radioactive Materials, Chapter 391-3-17
4.1.2 State of Georgia, Rules and Regulations for X-Ray Machines, Chapter 290-5-22
4.1.3 10 CFR 20, “Standards for Protection Against Radiation”
4.2 Equipment/Materials Required
4.2.1 Postings and Labels in Appendix A

5.0 DEFINITIONS
5.1 Radiation Area – an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose in excess of 5 mrem in one hour at 30 centimeters from any source of radiation or from any
surface that the radiation penetrates or anywhere an individual could receive a dose of 100 mrem or greater in any 5 consecutive days. See Appendix A, Table 1 for image.

5.2 **High Radiation Area** – an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 100 mrem in one hour at 30 centimeters from any source of radiation or from any surface that the radiation penetrates. See Appendix A, Table 1 for image.

NOTE: Rooms or areas in which diagnostic x-ray systems are used for healing arts purposes are not considered High Radiation Areas.

5.3 **Very High Radiation Area** – an area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads in one hour at one meter from a radiation source or from any surface that the radiation penetrates. See Appendix A, Table 1 for image.

5.4 **Airborne Radioactivity Area** – a room, enclosure, or operating area in which airborne radioactive materials, composed wholly or partly of licensed materials, exist in concentrations:

5.4.1 In excess of the derived air concentrations (DACs) specified in Appendix B to 10 CFR 20.1001-20.2401, or

5.4.2 To such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6% of the annual limit on intake (ALI) or 12 DAC-hours

5.4.3 See Appendix A, Table 2 for image.

6.0 **PROCEDURAL STEPS**

6.1 Posting of Rooms or Areas

6.1.1 For any area meeting the specifications of Radiation Area, High Radiation Area, Very High Radiation Area, or Airborne Radioactivity Area, the appropriate sign shall be posted on the door to the room or entry to the area.

6.1.2 If the locations within the room or area meeting the specifications of Radiation Area, High Radiation Area, or Very High Radiation Area are subject to change, a map indicating dose rates shall be posted on the door to the room or entry to the area.
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6.1.3 Every door to a room or area that contains or may contain RAM shall also be posted with “Caution Radioactive Materials”, “No Eating, Drinking, or Smoking”, and “Notice to Employees”. See Appendix A, Tables 2 and 4 for images.

NOTE: For a neighborhood laboratory, each door that leads to the area with the neighborhood laboratory shall be posted with all required postings.

6.1.4 Every door to a room or area containing an x-ray machine shall be posted with “Caution X-Rays”. See Appendix A, Table 3 for image.

6.1.5 Any radiation machine not otherwise covered in this procedure shall be posted according to appropriate State of Georgia regulations.

6.1.6 All designated entryways at and within the Radiological Science and Engineering Laboratory in the Boggs Building shall have the current Emergency Telephone Roster posted. The current version of this roster is available from ORS.

6.2 Labels

6.2.1 RAM Labels

6.2.1.1 Any location within a room where RAM may be used or stored shall be labeled with “Caution Radioactive Materials”.

Examples: fume hood, freezer, refrigerator, centrifuge, lab bench

6.2.1.2 Neighborhood RAM labs shall label RAM use areas within the lab.

Examples: RAM tape on the floor or bench, use of caution cones

6.2.1.3 Unattended containers of RAM not in the original source vial shall be labeled with the isotope, activity, date, and chemical components or other hazards.

6.2.1.4 RAM packaged and labeled for transport in accordance with the regulations of the Department of Transportation (DOT) and/or International Air Transport Association (IATA) are not required to have additional markings or labels.

6.2.1.5 Empty uncontaminated containers that previously held RAM shall have all radioactive labels or markings removed or defaced prior to being removed from a Radioactive Material Area.
6.2.2 X-Ray Machine Labels

6.2.2.1 Each x-ray machine or control panel shall be labeled with “Caution X-Ray This Equipment Produces X-Rays When Energized”. See Appendix A, Table 3 for image.

   NOTE: Diagnostic x-ray machines used for healing arts purposes shall instead bear the following statement: “Warning: This x-ray unit may be dangerous to patient and operator unless safe exposure factors and operating instructions are observed”.

6.2.2.2 The tube head of each analytical x-ray machine shall be labeled with “High Intensity X-Ray Beam”. If the tube head is not accessible, the closest accessible surface shall be labeled. See Appendix A, Table 3 for image.

6.2.3 Other Radiation Machines

6.2.3.1 Any radiation machine not otherwise covered in this procedure shall be labeled according to appropriate State of Georgia regulations.

7.0 RECORDS

7.1 It is not anticipated that records will be generated as a result of implementation of this procedure. However, should records be generated, they shall be maintained for the life of the facility.
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Appendix A – Sample Postings and Labels

Equivalent postings or labels may be used instead of the version shown.

Table 1 – Dose Rate Areas

<table>
<thead>
<tr>
<th>Description</th>
<th>Section Reference</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation Area</td>
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</tr>
<tr>
<td>High Radiation Area</td>
<td>5.2</td>
<td><img src="" alt="Image" /></td>
</tr>
<tr>
<td>Very High Radiation Area</td>
<td>5.3</td>
<td><img src="" alt="Image" /></td>
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</tbody>
</table>
### POSTING AND LABELING FOR RADIOACTIVE MATERIALS AND RADIATION MACHINES

**Table 2 – RAM**

<table>
<thead>
<tr>
<th>Description</th>
<th>Section Reference</th>
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<td>Airborne Radioactivity</td>
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</tr>
<tr>
<td>No Eating, Drinking, or Smoking</td>
<td>6.1.3</td>
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</tr>
<tr>
<td>Radioactive Material</td>
<td>6.1.3</td>
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## POSTING AND LABELING FOR RADIOACTIVE MATERIALS AND RADIATION MACHINES

### Table 3 – X-Ray Machines

<table>
<thead>
<tr>
<th>Description</th>
<th>Section Reference</th>
<th>Image</th>
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</thead>
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<tr>
<td>X-Ray Radiation</td>
<td>6.1.4</td>
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</tr>
<tr>
<td>This Equipment Produces X-Rays When Energized</td>
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<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>High Intensity X-Ray Beam</td>
<td>6.2.2.2</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
</tbody>
</table>
NOTICE TO EMPLOYEES

STANDARDS FOR PROTECTION AGAINST RADIATION

YOUR EMPLOYER’S RESPONSIBILITY

Reports on your Radiation Exposure History

1. The Georgia Department of Natural Resources rules entitled, “Radiological Materials,” require that your Employer give you a written report if you receive any exposure in excess of any applicable limit, as set forth in Chapter 391-3-17 of the Employers’ Radioactive Materials license.

2. If you work where personnel monitoring is required, and if you request information on your radiation exposure:
   a. Your Employer must advise you annually of your exposure to radiation.
   b. Your Employer must furnish you a complete personnel exposure record, detailing any overexposures to radiation.
   c. Your Employer must give you a written report, upon termination of your employment, of your radiation exposure.

INSP ECTIONS

All activities under the Employer’s Radioactive Materials license are subject to inspection by representatives of the Georgia Department of Natural Resources. In addition, any worker, or representative of workers, who believes that the facility or a condition of the State has violated the Employer’s Radioactive Materials license with regard to radiological working conditions in which the worker is engaged, may require an inspection by serving a notice of alleged violation to Georgia Department of Natural Resources. The request must set forth the specific grounds for the notice and must be signed by the worker or by the representative of the workers.

POSTING REQUIREMENT

Copies of this notice must be posted in a sufficient number of places in every establishment where employees are employed in activities licensed pursuant to Georgia Department of Natural Resources’ Rules 391-3-17. This posting permits employees working in or frequenting any portion of a controlled area to observe a copy on the way to or from their place of employment.

LEGAL AUTHORITY: Official Code of Georgia Annotated (O.C.G.A.) § 31-13

Revised: September 2013