CHAPTER 7 RADIOLOGICAL POSTINGS

1.0 GENERAL POSTING INFORMATION

1.1 Regulatory Documents and Notices

- Current copies of the University of Georgia Radioactive Materials Licenses, Parts 19 and 20 of Title 10 of the Code of Federal Regulations, this Radiation Safety Manual, and other radiation safety program documents may be examined at the Radiation Safety Office, Environmental Safety Division.
- In the event that the Georgia Department of Natural Resources issues a notice of violation involving radiation safety, it will be posted within two working days after receipt of the document from the Department. In addition, the response to any such notice shall be posted for a minimum of five working days or until corrective action has been completed, whichever is later. These notices and responses will be posted and available for examination at the Radiation Safety Office, Environmental Safety Division.

1.2 Radiological Postings

1) Radiological postings shall be used to alert personnel to the presence of radiation and radioactive materials and to aid them in minimizing exposures and preventing the spread of contamination.

2) Signs shall contain the standard radiation symbol (trefoil) colored magenta or black on a yellow background. Lettering shall be either magenta or black. Magenta is the preferred color over black. All posting signs and labels should be of the same design and consistent with industry standard postings. Signs and labels should not be altered or defaced in any way to change their meaning. Inserts (on signs containing insert slots) may be changed, as appropriate.

3) Signs shall be conspicuously posted, clearly worded, and may include radiation safety instructions.

4) Radiological postings should be displayed only to signify actual or potential radiological conditions. Signs used for training should be clearly marked, such as “For Training Purposes Only.”

5) Postings should not be positioned to obstruct other safety or security signs, markings, or equipment.

6) If more than one radiological condition (such as radioactive materials and radiation) exists in the same area, each condition should be identified. When appropriate, signs should be placed in order from greatest to least significant radiological hazard.

7) When required, boundaries for posted areas should consist of permanent structures (such as walls or fences) or specific radiological demarcations (such as yellow and magenta rope, chain, or tape). A continuous boundary (except for a designated entry/exit) is required for posting of High Radiation and Contamination Areas.

8) Posting of doors should be such that the postings remain visible when doors are open or closed.

9) A radiological posting that signifies the presence of an intermittent radiological condition should include a statement specifying when the condition is present, such as “Caution: Radiation Area When Red Light is On.”

10) Trained or designated personnel may provide continuous coverage, in lieu of postings and barricades, for a limited duration (typically one business day) or until a barricade and postings

can be established. In such instances designated personnel shall maintain control of entry into and exit from the affected area.

2.0 POSTING WITH SIGNS

2.1 Laboratory Door Signs

A caution sign shall be posted at each laboratory entrance door where radiological hazards are present. Standard placards are provided by the Environmental Safety Division (ESD) for all laboratory entrance ways. Radiological postings, as well as other hazard signs, should be affixed to the placards as appropriate for the individual laboratory.

The sign shall include, in addition to the standard radiation symbol and wording, any special precautions to be observed when entering the area and the name of a person to be contacted in case of emergency.

Signs of this type may be obtained from ESD.

2.2 Other Types of Signs

The following signs should be used at the entrance door, or within the laboratory, as appropriate for the locations and radiological hazards present or likely to be present in the affected area.

1) **Notice to Employees**

The Georgia Department of Natural Resources form "Notice to Employees", or an RSO-approved equivalent shall be posted where licensed radioactive materials are used or stored.

2) **Caution-Radioactive Materials**

This sign shall be posted where licensed radioactive materials are used or stored.

3) **Caution-Radiation Area**

This sign shall be posted in any location, accessible to individuals, where the radiation levels could result in an individual receiving a radiation exposure in excess of 5 millirem in any one hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

4) **Caution-High Radiation Area**

- This sign shall be posted at the boundary to any location, accessible to individuals, in which the radiation levels could result in an individual receiving a radiation exposure in excess of 100 millirem in any one hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.
- High radiation areas require specific controls such as physical boundaries, warning devices, interlocks, etc. or shall be locked or continuously guarded to prevent unauthorized entry.
- Signs for devices which emit ionizing radiation capable of producing a high radiation area only when turned on (x-ray devices, tele therapy units, etc.) should include an additional description such as "when unit is operating", or an RSO approved equivalent.
- The Radiation Safety Officer, or designee, shall be notified prior to the conduct of any work activity that is planned or suspected to result in the production of any high radiation area that has not been previously approved.

5) **Caution-Contamination Area**

- This sign should be posted for areas accessible to personnel entry that exceed the ALARA action levels for transferable contamination as described in Chapter 6 of this manual.
- Refer to Chapter 6, section 7.1, for additional information regarding transferable contamination action levels and appropriate actions.
- This sign will normally be used only as a temporary measure, pending decontamination of the affected area.
- Contamination on the interior surfaces of closed containers or components should be posted with a radioactive materials tag or label instead of a contamination area sign.

6) **Caution-High Intensity X-Ray Beam**

- This sign shall be posted or adjacent to each x-ray tube housing so as to be clearly visible to any individual who may be working in close proximity to the beam path.
- This sign applies to non-medical open beam x-ray equipment.
- Additional information about postings for x-ray devices may be found in the Georgia Department of Human Resources, Chapter 290-5-22, *Rules and Regulations for X-Rays.*

3.0 POSTING WITH TAGS, LABELS, AND TAPE

Radiological tags, labels, or tape shall be used when there is a need to caution personnel regarding radiation or contamination hazards from specific items and it would be impractical to use the larger signs normally used for radiological postings.

The following instructions apply to the use of tags, labels, and tape:

1) The most commonly needed tags and labels have the standard radiation symbol and the words "Caution, Radioactive Material."

2) As a general rule, locations within posted laboratories that can be closed (freezers, refrigerators, fume hoods, cabinets, etc.) require posting if radiological hazards lie within.

3) Radiological tags or labels should be used to label items with internal or potential internal contamination.

4) In addition to the standard radioactive material markings, labeling of containers of radioactive material should include the isotope, quantity, and assay date.

5) Items that do not contain radioactive material, are not contaminated, or are not likely to become contaminated or to contain radioactive material should not be posted with radiological markings even if they are used for radiological work. For example, a balance that is kept clean and free of contamination that is used to weigh radioactive materials contained in Petri dishes need not be labeled. A mechanical pipette device dedicated for use with liquid radioisotopes would be appropriate to label (or to keep in a labeled stand or enclosure) due to the potential for internal and external contamination of the device.

6) Packaged radioactive material should have the label or tag visible through the package or affixed to the outside.

7) Labeling for sealed sources should include the isotope, quantity, and assay date. Sources which are too small to be labeled with all of the stated information should be labeled, at a minimum, with the words "Caution, Radioactive Material" and the standard radiation symbol.

8) Radiological warning tape, consisting of yellow and magenta striping with the standard radiation symbol, and/or "Caution, Radioactive Material" tape, should be used as a demarcation of the boundaries of small work areas. An example is a designated area on a bench top covered with absorbent paper and used for radioisotope work. Dedicated radiological work surfaces should not be used for non-radiological work. All items within the boundaries of this type of posted area should be considered potentially contaminated until proven otherwise by a radiological survey.

9) Instrumentation or equipment that contains radioactive materials shall be labeled with the words "Caution, this instrument contains Radioactive Materials" or an RSO approved equivalent.

4.0 POSTING AND LABELING OF RADIOACTIVE WASTE CONTAINERS

- When a waste container is in use, post the container with a "Caution Radioactive Material" label/tag.
- Waste container labels should include the isotope(s) and estimated maximum quantity (i.e. mCi amount).
- Waste containers that are empty should be labeled as such.
- Complete the appropriate paperwork for each waste container in accordance with Chapter 10, *Radioactive Waste Handling and Disposal*.
- The use of a labeled shielding enclosure for a waste container does NOT eliminate the need to label the waste container within.

5.0 EXEMPTIONS TO POSTING REQUIREMENTS

The following items/locations are <u>not</u> required to be posted in accordance with this procedure.

1) Industrial products that contain exempt quantities of radioactive materials, including; smoke detectors, self-illuminated signs, etc.

2) Naturally occurring radioactive material (NORM) in exempt quantities or concentrations.

3) X-ray, imaging devices, and radioactive materials controlled under medical (human) use protocols or that are controlled in accordance with Chapter 290-5-22, *Rules and Regulations for X-Rays.* This includes a posting exemption for Radiation Areas and High Radiation Areas that are due exclusively to diagnostic or therapeutic radiation producing equipment used in the healing arts.

4) Radioactive material shipments that are packaged and labeled in accordance with 49 CFR 172 (DOT regulations).

5) Any radioactive materials in quantities less than the amounts specified in 10 CFR 20 Appendix B, Table 2.

6) Individual containers of radioactive materials in quantities less than the amounts specified in 10 CFR 20 Appendix C, as long as the containers are properly controlled to prevent unauthorized access, use, or disposal.

7) Manufactured products containing exempt radioactive materials as defined by the Georgia Department of Natural Resources in Rule 391-3-17.02, *Licensing of Radioactive Material*.

8) Items or situations otherwise exempted from posting as described by the Georgia Department of Natural Resources in Rule 391-3-17.03, *Standards for Protection Against Radiation.*