

Radiation Safety Program

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1. PURPOSE and APPLICABILITY

1.1

This policy is designed to ensure that all University and affiliated institution activities and operations involving the use of radioactive materials/x-rays are performed in such a way as to protect users, staff, patients, and the general public from exposure. The operating philosophy of the University and affiliated institutions is to maintain all radiation exposures As Low As Reasonably Achievable (ALARA).

1.2

This policy applies to all University and affiliated institution employees and students who receive, possess, use, transfer, own, or acquire any source of ionizing radiation or radioactive material.

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2. DEFINITIONS and SCOPE

2.1

Radioactive materials include any material that spontaneously emits ionizing radiation.

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2.2

Ionizing Radiation is electromagnetic radiation (x-ray and gamma-ray photons) or particulate radiation (beta particles, electrons, positrons, neutrons, and alpha particles) capable of producing ions by direct or secondary processes.

2.3

ALARA is an acronym for "as low as reasonably achievable," a level to which radiation protection aims to reduce occupational exposures. ALARA is achieved through good radiation protection planning and practice, backed by management commitment.

3. ROLES and RESPONSIBILITIES

3.1

The Radiation Safety Committee (RSC) is a committee responsible for development and administration of the radiation safety program at the University and affiliated institutions. It establishes policies and enforces compliance with the program. The RSC has the authority

and responsibility for approval of all proposals for radionuclide use and x-ray users. The RSC meets on at least a quarterly basis.

3.2

The Radiation Safety Officer (RSO) is an individual responsible for the daily implementation of the radiation safety program in accordance with directives from the RSC, license provisions, and regulatory requirements. As the authorized representative of the Radiation Safety Committee, the RSO supervises all radiation control activities. The RSO is responsible for ensuring the safe use of radiation and radioactive materials and for meeting ALARA levels.

3.3

The Office of Environmental Health and Radiation Safety (EHRS) is the lead office for radiation safety at the University and affiliated institutions. Details of these duties and responsibilities are described in the appropriate radiation safety manuals (radioisotopes and x-rays). (See Section 5).

3.4

A Licensee is an individual authorized in writing by the RSC to use radioactive materials in laboratory research or class instruction. The official document providing the defined scope of authorization is known as a license (see Section 4.2 for license definition). A licensee is responsible for the radiation control activities under his/her license.

3.5

A Radiation Worker is an individual who works with ionizing radiation and receives radiation safety training. She/he is responsible for following all applicable regulations pertaining to the use of x-rays and/or radioactive materials as presented in the Radiation Safety Manual, in the license, and in notices issued by the RSO.

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4. PROCEDURES

4.1 Radiation Safety User's Guides

The University of Pennsylvania has a variety of Radiation Safety User's Guides for the applicable use of ionizing radiation. These manuals are written descriptions of the radiation safety programs. The user's guides identify the procedures, record keeping, material control and accounting. All Licensees and Workers are required to comply with all requirements and operating procedures specified in these documents.

4.2 License to Use Radioactive Material

All individuals who wish to independently use radioactive material must apply to the RSC for a license. The license evaluations take into consideration the adequacy of facilities and equipment, training and experience of the user, and the operating or handling procedures. The RSC reviews and approves University and affiliated institutions protocols prior to use of the radioactive material.

4.3 Training

All individuals who wish to work with ionizing radiation, including radionuclides or x-rays, receive appropriate instruction in radiation safety. The training requirements are presented

in the respective Radiation Safety Manuals as determined by the Radiation Safety Committees.

4.4 Surveys and Audits

Radiation users conduct personal surveys and monitor workspaces before leaving the laboratory and take any necessary remedial or control measures. EHRS also conducts periodic radiation surveys of the areas where radioactive materials are used or stored. The inspections are conducted in accordance with the requirements of the regulations or license condition.

4.5 Radioactive Waste

EHRS handles and processes radioactive waste in a cost effective and environmentally safe manner in accordance with all applicable regulations.

4.6 Spills and Emergencies

The Licensee is responsible for all remedial actions in responding to emergencies. EHRS must be notified under the following conditions:

- Radioactive contamination outside a licensed area
- Deliberate misuse of radioactive materials. All inquiries will be kept in confidence. (Deliberate misuse of RAM will result in loss of use privileges and could result in criminal action.)
- Known or suspected personnel contamination, inhalation, injection, or ingestion of RAM.
- Any accident resulting in direct exposure to personnel.
- Known or suspected loss of radioactive material, including loss to the air or sewer.v
- Contaminated or damaged radioactive material shipments.

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5. KEY REFERENCES

The documents listed below may be obtained from the Office of Environmental Health and Radiation Safety.

[Radiation Safety User's Guides](#)

PA RAM License #0131

PA DEP Regulations Title 25 PA Code 215-228

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