

University of Mississippi

Health and Safety Department

Device Authorization

Excerpts from the University of Mississippi Radiological Safety Manual
Refer to the full manual for the complete text of the regulations

The Radiological Safety **regulations and procedures apply** to all persons, who receive, possess, use, or seek to dispose of radioactive materials or radiation producing devices or sealed sources on the University of Mississippi's Oxford campus, with the exception of the persons working for the University Student Health Services.

At no time are radioactive materials or Radiation Generating Devices (X-ray generating units, Electron Capture Units, X-ray Fluorescence Units, etc.) To be acquired, used, transferred, sold, purchased, or disposed of, without prior written authorization from the Radiological Safety Coordinator of the Department of Health and Safety. Failure to adhere to this regulation is in direct violation of the University's Broad License and published state and local regulations.

The **Radiation Safety Subcommittee** is a subcommittee of the Health and Safety Committee. The Radiation Safety Subcommittee will advise and make specific recommendations to the Health and Safety Committee on all matters pertaining to radiological safety. Subcommittee approval of health and safety measures must be obtained in writing before any project involving radioactivity or radiation producing devices are initiated.

Radioactivity refers to the spontaneous emission of ionizing radiation from any material (solid, liquid, or gas).

Ionizing radiation describes high energy photons (x- ray and gamma) and other high energy particles (alpha, beta, and other nucleons) which are capable of producing ionization in substances they pass through.

Radiological Safety refers to the safe use and handling of radioactivity or ionizing radiation on the University's Oxford campus; including, but not limited to, teaching, research, development and use.

The **Radiological Safety Coordinator has the authority** and responsibility to provide overall administrative direction for the radiation safety program of the University.

All personnel (faculty, staff, guests, visiting faculty, and students) working with or handling radioactive materials or operating radiation producing devices are required to be authorized users.

Regular Authorization is only granted to persons who are considered permanent employees of the University and is therefore restricted to full-time faculty and staff. Maintaining Regular Authorization requires that the individual attend the annual Radiological Safety Training Program. Regular Authorization is of indefinite duration, and does not need to be renewed unless revoked under extraordinary circumstances

Temporary Authorization may be granted to an applicant who meets any of the following criteria:

1. The applicant is not a permanent employee of the University
2. The applicant has not had adequate training, or
3. The applicant is a student of the University.

ALL procurement of radioactive materials, whether by purchase, loan, transfer, or gift, MUST receive authorization from the Department of Health and Safety through the Radiological Safety Coordinator. All purchases of Radiation Generating Devices (x-ray machines, electron microscopes, ec.) require prior consultation with and approval from the Radiological Safety Coordinator and the State of Mississippi / Division of Radiological Health. The State of Mississippi does not recognize NRC "LICENSE EXEMPT" quantities of radioactive materials.

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Radioactive materials and radiation generating **devices will not be transferred** from one department or authorized laboratory to another or off campus without prior approval of the Radiological Safety Coordinator.

Radioactive materials may NOT be disposed of by an authorized user or an unauthorized person directly into the sanitary sewage system, into the atmosphere, into laboratory drainage systems, or into regular trash baskets.

Personnel Monitoring - The University and all people covered by this manual shall use procedures or controls that will allow the occupational and public doses to radiation to be **As Low As Reasonably Achievable**.

Occupational Dose Limits for Adults - An annual limit, which is the more limiting of:

- a. The total effective dose equivalent to being equal to 5 rems (0.05 Sv); or
- b. The sum of the deep dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye being equal to 50 rems (0.5 Sv).

The annual **limits to the lens of the eye**, to the skin, and to the extremities which are:

- a. An eye dose equivalent of 15 rems (0.15 Sv), and
- b. A shallow dose equivalent of 50 rems (0.5 Sv) to the skin or to any extremity.

PERSONS UNDER 18 YEARS OF AGE WILL NOT BE ALLOWED TO ENTER, OR TO WORK IN, AN AREA WHERE RADIOACTIVE MATERIALS OR RADIATION PRODUCING DEVICES ARE USED, STORED OR OPERATED.

Dose to an Embryo/Fetus, Regulations for Control of Radiation in Mississippi, Part 801.D.208 - The [University] shall ensure that the dose to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman does not exceed 0.5rem (5 millisieverts). Declared Pregnant Woman-means a woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception.

Personnel will wear an appropriate **monitoring device (Dosimeter)** when any of the following apply:

1. Any person entering an occupational radiation environment in which he or she is likely to receive in excess of 10% of the Maximum Permissible Dose allowed by regulation of penetrating ionizing radiation will be required to wear a Dosimeter appropriate to the type and energy of the radiation to be encountered.
2. Any person working with Beta emitters of energy greater than 0.25 MeV, which does not include Low Energy Radioisotopes such as H-3, C-14, S- 35, C1-36, Ca-45, and Ni-63.
3. Any person working with Neutron sources of any type
4. Any person working with Gamma Emitters of any type
5. Any person working with X-ray producing devices or sources.

Persons are to wear only the dosimeters assigned to them by the Department of Health and Safety. Dosimeters are to be **stored away from sources of radiation**, excessive heat, and moisture when not being worn by personnel for monitoring purposes. Dosimeters are to be worn only when engaged in the occupation which requires monitoring. Persons assigned dosimetry are not to wear dosimeters assigned by the Department of Health and Safety during diagnostic or therapeutic radiation exposure.

Laboratories in which there are sources capable of delivering whole body exposures in excess of 5 mr/hr (0.05 mSv/hr) must have on hand in the laboratory and in good operating condition, **a calibrated monitoring instrument** capable of measuring the exposure or dose rate for the radiation type to be encountered.

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Annual Exposure Reports - All personnel monitored by dosimetry will be notified of the accumulated exposure shortly after the end of the calendar year in which they were monitored. Terminated personnel, who were monitored under the University dosimetry program during the calendar year of their termination, will be provided one final notice of exposure upon request or on the same schedule given for current personnel.

Caution Signs and Labels - Mississippi State Department of Health Form RH-5, "**Notice to Employees,**" will be conspicuously displayed near every entrance and exit in each area where radiation generating devices or radioactive materials are used.

RADIATION GENERATING DEVICES - This category of ionizing radiation producing devices will include, but not be limited to, **x-ray** generating units, x-ray diffraction apparatus, electron microscopes, x-ray fluorescence units, and comparable devices. All persons seeking to use, operate, or possess ionizing radiation producing devices will be approved by the Radiation Safety Subcommittee.

All ionizing radiation producing **devices must be registered** with the Mississippi State Department of Health. Individuals employed by, and/or departments of the University obtaining or planning to obtain radiation producing devices will be required to make application for registration of such devices through Health and Safety. Health and Safety will be notified in writing within five calendar days of the receipt of ionizing radiation producing devices. Such equipment cannot be used, altered, installed, or energized, without written permission of the Radiological Safety Coordinator.

All **x-ray generating devices will be inspected annually for radiation hazards** by the Radiological Safety Coordinator.

The supervisor of an ionizing radiation producing device **will remain solely responsible** for the safe use and operation of the device.

Eating, drinking, smoking, or use of cosmetics, food preparation or storage of items for these purposes will not be permitted in laboratories where radioactive materials or radiation generating devices are used or stored. Empty cups, food wrappers, containers or any waste associated with food will not be allowed inside of any laboratory where Radioactive materials or Radiation Generating Devices are used or stored.

Any person who **suspects overexposure**, which is defined as whole body exposure in excess of 1.25 rem (0.0125 Sv) in 13 calendar weeks, is required to report this fact to the Radiological Safety Coordinator immediately. Any person who ingests, absorbs, inhales, or has skin or eye contact with radioactive materials, in the workplace, must immediately report the incident to the Radiological Safety Coordinator in person or by messenger.

Radiation Hazards in Fires

1. **Attend to injured persons and remove them from harm.**
2. Alert all personnel: Notify all people in the immediate area to evacuate, activate the nearest fire alarm, call 9-911
3. Close all doors and windows to confine the fire.
4. Call the Department of Health and Safety (915 - 5433).
5. Evacuate to a safe area or exit the building. Do not use the elevator.
6. Have a person knowledgeable of the incident and laboratory report to the emergency personnel.