RADIATION SAFETY AWARENESS FOR REGULAR STAFF

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Environmental Health and Safety Office
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Employer has a duty to:

- Inform of Potential for Hazard
- To keep exposure low
- To have safe work procedures
Light is a familiar form of radiation. Light from a bulb is also considered radiation though it is not harmful.

For a bulb or a fire: the illumination and heat decreases the further you get away; radioactivity decreases in much the same way.
RADIATION IS:

- Extremely low frequency (ELF)
- Very low frequency (VLF)
- Radio waves
- Microwaves
- Infrared radiation
- Visible light
- Ultraviolet radiation
- X-rays
- Gamma rays

The image also includes a frequency spectrum with non-ionizing radiation on the left (e.g., ELF, VLF, radio waves, microwaves, infrared radiation, visible light) and ionizing radiation on the right (e.g., ultraviolet radiation, x-rays, gamma rays).
RADIOACTIVE MATERIALS

“Low level ionizing radiation may induce pre-mature aging and cancer.

Please do your part by following the instructions in the pamphlets.

The exposure from radioactive materials used in areas controlled by the University of Manitoba is so small that the increase risk is insignificant.
WHAT KINDS OF RADIOACTIVE MATERIAL ARE USED AT THE UNIVERSITY?

RADIOACTIVE CHEMICALS (open source radioactive materials)
- Usually have volume of less than one milliliter (cubic centimeter)
- Occasionally radioactive liquids are injected or ingested by animals that are kept in labs or animal care facilities

SEALED SOURCE RADIOACTIVE MATERIAL
- Small sealed sources are often used as calibration or check sources.
- Larger sealed sources may be used in specialized equipment for Mossbauer, X-ray diffraction or to measure soil moisture.
HOW IS RADIOACTIVE MATERIAL CONTROLLED AT THE UNIVERSITY?

- The Canadian Nuclear Safety Commission (CNSC) issues a license to the UofM to use radioactive materials
- Radiation Protection Committee oversees all licensed activities at the University
- Internal Radioisotope Permit in order to purchase, possess, store, use, and dispose radioactive material

*Only persons listed on an internal radioisotope permit may handle radioisotopes* and in locations listed under permits

The Environmental Health and Safety Office (EHSO):
- Radiation Safety Manual (online)
- General radiation safety training
- Annual inspections
- Centralized inventory
- Disposal of radioactive waste

HOW ARE RADIOISOTOPE PERMITTED LOCATIONS IDENTIFIED?

Rooms permitted to use radioactive material will have one of the following symbols posted on a sign at the entrance:

**CAUTION:** Generally, we say you may enter and perform duties

**DO NOT ENTER:** Special procedures required. Do not enter unescorted except for Life Safety or Building Safety reasons.

The sign at the entrances also has Emergency Contact information for that particular room and the phone numbers for Environmental Health and Safety Office and UM Security Services (24 hour).
CHECK DOOR SIGN FOR ADDITIONAL INFORMATION
PROPOSED REVERSIBLE DOOR SIGNS

**BUILDING | ROOM**

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**EMERGENCY CONTACTS**

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This sign may only be removed by Radiation Safety Staff (204 789-3616 / 204 789-3654)

1 – After normal working hours, call Security Services at **555**, **#555**
(unusing cell phone with Rogers Wireless or MTS) or dial **474-9341**.

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**Caution:**

**Radioisotopes**

**BUILDING | ROOM**

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HOW IS RADIOACTIVE MATERIAL LABELLED?

Generally - Never touch anything labeled “RADIOACTIVE” The trefoil could be red, black or magenta.
WASH HANDS TO REMOVE HAZARDOUS MATERIALS CONTAMINATION

- With soap
- Rinse with water
  - Down the drain is legal
LAB STAFF MEASURE TO BE SURE THERE IS NO CONTAMINATION:

Wipe test, then

Well counter

Or Survey Meter
IS THERE ANYTHING ELSE I SHOULD KNOW ABOUT HAZARDOUS MATERIALS WORK AREAS?

- Radioactive material is never to be left unsecured unless under direct supervision of permitted workers. *Please lock and close the room door if you are the last to leave the permitted area.*
- No food or drink or ‘evidence of food consumption’ in lab garbage/waste containers.
WHAT IF I DISCOVER UNATTENDED HAZARDOUS MATERIAL IN A PUBLIC AREA? OR A SPILL?

- Secure the area if possible.
- Step back - try to stay at least 2 meters away.
- Notify the UM Environmental Health and Safety Office at 204 474-6633 during business hours or UM Security Services at 555/ 204 474-9341 after hours.

Hazardous materials spills are generally cleaned up by the permitted lab staff.

**Spill clean up is NOT a job for caretakers, housekeeping or security.**
WHAT DO I DO IN CASE OF A FIRE OR EXPLOSION IN LABORATORY?

- First aid takes precedence over radioactive contamination control. Care should be taken to protect the first-aider from potential hazardous exposure to chemical, biological or radioactive materials.

- Activate Fire Alarm and follow evacuation procedures.

- Stay at least 2 meters away from any possible contamination.

- Potentially contaminated people should remain on scene at a safe distance until cleared by Radiation Safety personnel.
HOW CAN I STAY SAFE?

At the University, safe to be within 2 meters for a short time (up to 1hr).

Remember these four rules to reduce your risk:
- Don’t remove **shielding** (lead or plastic).
- Limit the **time** you spend in these areas marked with the radiation warning symbol or trefoil.
- Maximize the **distance** between you and the radioactive material.

- Use good lab hygiene – lab coats, gloves and wash your hands when leaving research areas and always wash your hands before eating, applying cosmetics or smoking.
TRAINING GOALS

- Radiation Sources and Risks
- University Door Signs
- What you can do to stay safe
  - Keep **Shielding** between you and the hazard
  - Limit the **Time** within 2 meters
  - Keep your **Distance** - outside room
  - For open sources - contamination control is like infection control—wash hands, don’t spread