

RADIATION SAFETY POLICY

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Originating Office: Office of the
Vice-President, Services

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PREAMBLE

Ionizing radiation emitted from nuclear substances, radiation devices and radiation-emitting devices is an essential tool in both research and teaching activities of universities. Since ionizing radiation is potentially hazardous, both from radio-toxicity and external exposure, strict regulations have been developed in the form of legislation and institutional policies to protect employees, students, research subjects and the general public from unnecessary or potentially harmful levels of radiation exposure.

PURPOSE

The University is committed to providing a safe research, teaching and work environment. All persons working with nuclear substances or radiation-emitting devices are expected to comply with this Policy and procedures in the [Radiation Safety Manual](#) (the "[Manual](#)").

SCOPE

This Policy applies to all persons working in University facilities and all persons on University premises, including but not limited to University faculty, staff, students, research subjects and authorized visitors.

This Policy deals with issues of authority and responsibility. It does not deal with issues related to use of non-ionizing radiation.

This Policy is to be interpreted in such a way as to not conflict with or supersede any other University Policy including but not limited to the following related policies:

Environmental Health and Safety Policy [VPS-40](#)

Policy on Injury/Incident Reporting and Investigation [VPS-42](#)

Policy on First Aid and Medical Emergencies [VPS-45](#)

Policy for the Management of Hazardous Materials [VPS-47](#)

Hazardous Materials Spill Response Policy [VPS-48](#)

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Biosafety Policy [VPS-52](#)

Policy on the Ethical Review of Research Involving Humans [VPRGS-3](#)

DEFINITIONS

For purposes of this Policy:

“ALARA” refers to the principle of keeping radiation exposure “As Low as Reasonably Achievable”

“Internal Radiation Permit” (“IRP”) means an authorization to work with nuclear substances, radiation devices or radiation-emitting devices excluding use in humans

“Nuclear Substance” refers to radionuclides

“Nuclear Medicine” involves the administration of radionuclides to humans

“Radiation” refers to ionizing radiation only

“Radiation Device” is an instrument containing a radioactive source used for its radiation properties

“Radiation-Emitting Device” is a machine capable of generating X or Gamma radiation

“Radiology” involves external exposure of humans to Radiation

“Responsible User” is an IRP holder, Nuclear Medicine Facility Manager or Human Research Studies Investigator.

For more comprehensive definitions and terms, please refer to the [Manual](#).

POLICY

Composition and Mandate of the University Radiation Safety Committee (“URSC”)

1. The Vice-President, Services has authorized the URSC to establish policies concerning the usage of Radiation from sources such as Nuclear Substances, Radiation Devices and

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Radiation-Emitting Devices, on behalf of the University. Such policies shall be enforced through the activities of the Chair of the URSC and the Radiation Safety Officer (“RSO”).

2. The URSC shall deal with the Canadian Nuclear Safety Commission (“CNSC”) and other appropriate government agencies at the federal, provincial or municipal level, on behalf of the University, and shall assume the responsibility for compliance, by all persons working or occupying University facilities or premises, with government statutes and regulations related to use of Radiation and Nuclear Substances established by these agencies.
3. The URSC shall consist of:
 - a Chair
 - the RSO
 - the Director of Environmental Health & Safety (EH&S)
 - a representative of the Office of Research
 - one (1) member from each Department of the University in which radioisotopes, Radiation Devices or Radiation-Emitting Devices are used with at least one member from each campus,
 - in deliberations involving research subjects, a Nuclear Medicine specialist, radiologist and/or health physicist, and
 - in deliberations involving radiation-emitting devices, a person expert in the field.

All members of the URSC shall be appointed by the Vice-President, Services on the basis of theoretical or practical expertise related to Radiation work.

4. The Director of EH&S, the representative of the Office of Research and the RSO shall be *ex-officio* members of the URSC.
5. The URSC will:
 - i. advise the Vice-President, Services regarding policies on radiation safety, and working conditions in radiation controlled areas. In particular, the URSC will advise with respect to use, storage, and disposal of Nuclear Substances and operation of both Radiation Devices and Radiation-Emitting Devices

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- ii. advise its Chair regarding approval of IRP applications, laboratory designation for radioisotope handling or storage, the operation of a Radiation Device or a Radiation-Emitting Device, approval of protocols for use of radioisotopes or Radiation in humans, disciplinary action for violation of regulations, special problems on Radiation monitoring or decontamination and enforcement of government statutes and University regulations and/or policies pertaining to Radiation hazards
 - iii. approve annual reports on Nuclear Substance usage authorized under the Nuclear Substances and Radiation Devices Licence (“NSRDL”) for both consolidated use and human research studies presented by the RSO for submission to the CNSC
 - iv. review and periodically update the [Manual](#) which provides policies and standard procedures for the purchase, handling, storage, disposal, and emergency measures for all Radiation sources within the University
 - v. review reports from the Human Research Ethics Committee(s) (“HREC”), as such committee is defined in the *Policy for the Ethical Review of Research Involving Humans (VPRGS-3)*, or the external equivalent, and detailed operating procedures regarding the administration of unsealed Nuclear Substances to, or external irradiation of, research subjects prior to authorizing any such activities. The process will include a review of prior validation of the scientific merit and justification for research involving human subjects. These procedures shall be in accordance with federal, provincial and municipal statutes and derived regulations, as well as with all University safety policies.
6. The Chair of the URSC:
- i. in conjunction with the Applicant Authority, acts as the Signing Authority on all CNSC license applications and documents, on behalf of the University
 - ii. corresponds with appropriate federal, provincial and municipal departments and agencies, on behalf of the University, with respect to activities involving Radiation and radioactive materials
 - iii. with the approval of the URSC, authorizes and issues IRPs and protocols involving human subjects and amendments to such IRPs and protocols

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- iv. authorizes the closing of facilities or restricting access to rooms in which radioisotopes, Radiation Devices or Radiation-Emitting Devices are in use if a hazard is deemed to be excessive by the RSO or URSC, or in emergency situations; immediately informs the Director of Security, the Director of EH&S, the appropriate facility manager(s) about such closing and requests the RSO to change or post appropriate signs.
7. The RSO:
- i. ensures that all handling of radioactive material and operation of Radiation Devices are carried out in accordance with CNSC regulations and licence conditions and that operation of Radiation-Emitting Devices conforms to federal, provincial and municipal regulations and guidelines
 - ii. ensures that all persons working directly with radioisotopes or Radiation are in possession of an IRP, specific authorization documents for work on human subjects issued by the URSC or are identified specifically on an IRP, authorization document or CNSC licence
 - iii. provides application forms for IRP applications and appropriate Radiation safety information bulletins and guidelines for those requesting such material
 - iv. authorizes and oversees the purchase of all radioactive materials, Radiation Devices and Radiation-Emitting Devices
 - v. maintains accurate inventories of all radioactive materials and records locations of Radiation Devices and Radiation-Emitting Devices
 - vi. ensures that a dosimetry monitoring service is provided by all units working with Radiation and monitors exposure records for all those issued personal radiation dosimeters
 - vii. carries out routine monitoring of labs/rooms in which Nuclear Substances are handled or Radiation fields are generated and maintains records of inspections and survey results. Additional monitoring may be carried out at the request of the URSC Chair.
 - viii. supervises laboratory decontamination as required

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- ix. maintains inventory and calibration records of Radiation monitoring equipment including contamination meters and survey instruments
- x. is responsible for coordinating the collection and disposal of radioactive waste exceeding limits for disposal by normal garbage or sewer
- xi. organizes transportation of radioactive materials outside University premises, if required
- xii. maintains copies of all licences, permits, regulations, guidelines, authorizations and contingency plans for access in the event of an emergency
- xiii. reports accidents and emergencies involving Radiation and infractions of CNSC, provincial regulations or University policies to the Chair of the URSC
- xiv. ensures that the Director of Security, the Director of EH&S and appropriate facility manager(s) are informed and appropriate signs are posted and removed, in cases of laboratory or facility closure for safety reasons
- xv. maintains adequate supplies of radioactive-waste disposal materials, protective clothing, decontamination materials, and warning signs and has an operational portable contamination and survey meter for emergency use
- xvi. under the direction of the URSC, instructs faculty, staff and students on general safety policies and practices related to working with Radiation.

Licensing and Authorizations

- 8. The CNSC issues the University an NSRDL for consolidated uses of Nuclear Substances. Such NSRDL grants the URSC the authority to issue IRPs to persons using radioisotopes and/or Radiation in all applications except those involving humans. The CNSC also issues a separate NSRDL for human research studies (“HRSL”) and for diagnostic nuclear medicine (“DNML”).
- 9. The URSC approves IRPs for Responsible Users under the terms of the NSRDL for consolidated uses and specifies guidelines and restrictions on amounts, doses, locations, procedures and persons authorized to work with radioisotopes, Radiation Devices and Radiation-Emitting Devices.

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10. All procedures involving use of radioisotopes in, or external Radiation exposure of, humans will comply with all conditions specified on the HRSL or DNML, any applicable IRP requirements or conditions imposed by URSC and the required authorizations of the HREC.

Responsible Users

11. Responsible Users:
 - i. have authorization from URSC to work with radioisotopes, Radiation Devices or Radiation-Emitting Devices, to supervise the execution of such work by properly trained staff or students and to manage any approved facilities in which these activities are carried out; this includes IRP holders, Human Research Studies Investigators and Nuclear Medicine Facility Managers
 - ii. must comply with all conditions of CNSC licensing, the [Manual](#) and any special conditions specified on their IRPs or directives and authorizations from the RSO or URSC
 - iii. ensure that all persons involved with handling radioisotopes, or operating Radiation Devices or Radiation-Emitting Devices under their supervision, or in facilities under their jurisdiction, comply with all federal, provincial and municipal legislation as well as the relevant policies and procedures in the [Manual](#)
 - iv. are responsible for providing adequate training on facility-specific safety and on standard operating procedures for all workers listed on their IRPs, authorization documents or licences
 - v. establish adequate security and safety precautions to prevent unauthorized access to radioactive materials, Radiation Devices or Radiation-Emitting Devices to prevent accidental exposure, contamination or loss of radioactive materials
 - vi. provide previously approved detailed standard operating procedures to the RSO and Radiology or Nuclear Medicine technical staff for all activities involving administering radioisotopes or exposure of human subjects to external Radiation
 - vii. ensure that informed consent has been obtained and that all research subjects have been given explicit and complete information regarding any health risks associated with the procedures involved

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- viii. ensure that all procedures directly involving human subjects are carried out by qualified technicians following approved standard operating procedures under direct supervision of a qualified medical practitioner
 - ix. develop work practices and procedures for all staff which strive to minimize Radiation exposures to co-workers, research subjects and the general population according to the ALARA principle
 - x. ensure Radiation-Emitting Devices, imaging and monitoring equipment are calibrated/certified and maintained according to approved protocols in standard operating.
12. All persons working with Radiation or radioactive materials will comply with all CNSC licensing conditions and the detailed internal regulations, guidelines and general operating procedures which are contained in the [Manual](#).
13. Failure of Responsible Users to comply with regulations, specified in the NSRDL for consolidated use, HRSL, DNML, IRP or conditions in URSC or HREC approvals constitutes grounds for suspending further purchases of radioactive materials or non-renewal of Radiation permits; the RSO and/or Chair of the URSC may terminate any operations involving Radiation which jeopardize health, safety or environment.