RADIATION SAFETY POLICY

Effective Date: November 14, 2023

Approval Authority: Vice-President, Services and Sustainability

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SCOPE

This Policy applies to all Members (as defined below) of Concordia University (the "University") undertaking Controlled Activities involving Nuclear Substances or Radiation-Emitting Devices, on or off University Property (as such terms are defined below).

This Policy also applies to all Members of the University who will access areas where Controlled Activities involving Nuclear Substances or Radiation-Emitting Devices will take place. This Policy does not apply to the use of non-ionizing radiation.

PURPOSE

Nuclear Substances and Ionizing Radiation (as defined below) have the potential, if not managed in accordance with applicable laws, regulations and standards, to have adverse effects on public health and safety, the environment or national security. The purpose of this Policy is to ensure that all activities involving Nuclear Substances and Radiation-Emitting Devices at the University comply with federal, provincial and municipal legislation, and conform to standards of practice.

This Policy also provides an overview of the mechanisms that are in place to administratively manage and control access to Nuclear Substances and limit exposure to Ionizing Radiation risks. Proper implementation of this Policy will serve to protect Members of the University, the public, and the environment.

DEFINTIONS

For the purpose of this Policy, the following definitions apply:

"Authorized User" or "Authorized Worker" means a Member of the University who is listed on an Internal Radiation Permit (as defined below) and who is authorized to conduct Controlled Activities with Nuclear Substances or Radiation-Emitting Devices in approved locations.

"Controlled Activities" means possessing, handling or using, producing, storing, permitting any person access to, transferring, transporting, importing or exporting, releasing or otherwise abandoning Nuclear Substances or Radiation-Emitting Devices.

"Internal Radiation Permit" or "IRP" means the document authorizing the permit holder to conduct Controlled Activities with Nuclear Substances or Radiation-Emitting Devices on University Property. In addition, the Internal Radiation Permit Holder (IRPH) may have Authorized Users to whom they may delegate some of their responsibilities, or who may engage in the permitted activities.

"Internal Radiation Permit Holder" or "IRPH" means the Member who holds a valid IRP.

"Ionizing Radiation" means energetic particles (alpha particles, beta particles as energetic electrons or positrons, neutrons or protons) or electromagnetic waves (gamma-ray or x-ray) of sufficient energy to liberate an electron from an atom and create an ion pair.

"Member(s)" means:

a) Worker – a person, including a Student (as defined below) in the cases determined by regulation, who, under a contract of employment or a contract of apprenticeship, even without remuneration, carries out work for the University.
b) Contract Worker – a person hired by another employer but carrying out work on University Property.
c) Visitor/Volunteer – an individual who is present on University Property who is neither a worker, contract worker nor a Student.

"Nuclear Substance" means:

a) deuterium, thorium, uranium or an element with an atomic number greater than ninety two;
b) a derivative or compound of deuterium, thorium, uranium or of an element with an atomic number greater than ninety two;
c) a Radioactive Nuclide (as defined below);
d) a substance that is prescribed as being capable of releasing nuclear energy or as being required for the production or use of nuclear energy; or
e) a radioactive by-product of the development, production, or use of nuclear energy.

"Open Source" means a Radionuclide that is accessible, in solid, liquid or gas form.

"Radiation", means Ionizing Radiation.

"Radiation Device" means a device containing more than the exemption quantity of a Nuclear Substance and that enables the Nuclear Substance (as defined below) to be used for its Radiation properties, and a Device that contains a radium luminous compound. Although the Ionizing Radiation is accessible, the Nuclear Substance or Sealed Source (as defined below) is designed to be inaccessible in the device.

"Radiation-Emitting Device" means a device regulated by Health Canada that is capable of generating high-energy charged particles or electromagnetic radiation without the presence of a Nuclear Substance.

"Radiation Safety Manual" means the manual that contains the Radiation Safety Program.

"Radiation Safety Program" means the program that provides the framework for radiation safety and specific requirements for conducting Controlled Activities with Nuclear Substances or Radiation-Emitting Devices.

"Radiation Safety Officer" or "RSO" means the individual(s) designated to the Canadian Nuclear Safety Commission (CNSC) who reports to the Vice-President, Services and Sustainability, and is responsible for the implementation and enforcement of the Radiation Safety Program at the University.

"Radioactive Nuclide" or "Radio Nuclide" means an isotope that emits energy to its environment, either as a particle or as an electromagnetic wave, with sufficient energy to ionize a nearby particle or create an ion pair. Radioactive Nuclide or Radio Nuclide are identified in the schedules of the *Nuclear Substances and Radiation Devices Regulations (SOR/2000-207)*.

"Sealed Source" means a sealed container housing a Radionuclide that is used for its radiation properties. Although the Ionizing Radiation is accessible, the Radionuclide is inaccessible as it remains sealed away.

"Student(s)" means any person registered in a course or program on a full or part-time basis, for credit or not, and includes undergraduate and graduate students, independent students as well as visiting students, exchange students and interns.

"University Property" means the premises owned or leased by the University.

"University Radiation Safety Committee" or "Committee" means the body constituted and appointed by Vice-President, Services and Sustainability, to oversee the Radiation Safety Program at the University.

POLICY

Radiation Safety Program

1. The University shall establish and maintain a Radiation Safety Program that complies with all federal, provincial and municipal legislation and conforms to recognized codes and standards of practice, including, but not limited to the list provided in Appendix-A.

Licenses

2. Issued by the CNSC, the governmental body authorized to regulate activities under the *Nuclear Safety and Control Act (S.C. 1997, c. 9)*, the University possesses licences (Consolidated Use of Nuclear Substances and Radiation Devices Licence & Human Research Studies Licence) which permit specific activities involving Nuclear Substances. The University shall abide by the conditions of these licences and limit activities involving Nuclear Substances to those authorized. The University shall impose similar constraints to provide a similar level of safety for activities involving Radiation-Emitting Devices emitting ionizing radiation in accord with safety codes issued by Health Canada.

Radiation Safety Manual

3. The University shall ensure that the Radiation Safety Manual is available to all Members of the University and that it is reviewed periodically and updated whenever there are changes in legislation, university operations, recognized codes and standards of practice.

Designation of Radiation Safety Officer

4. The University shall designate an RSO to oversee the Radiation Safety Program. The RSO has the authority to immediately suspend or terminate all or any operations involving Nuclear Substances or Radiation-Emitting Devices that they judge to be an immediate or significant threat to public health and safety, the environment or national security. This

authority cannot be modified or revoked except as permitted by applicable law or regulation.

Nuclear Substances Inventory

5. The University shall maintain an up-to-date inventory of all Nuclear Substances and Radiation-Emitting Devices on University Property.

Internal Radiation Permit

6. An IRP is issued on behalf of the Committee by the RSO to a Member and authorizes them to conduct Controlled Activities with Nuclear Substances or Radiation-Emitting Devices in approved locations, in compliance with the CNSC-issued license to the University and with all other Radiation Safety related legislations, standards and guidelines.

Radiation Safety Training

7. All Members conducting Controlled Activities with Nuclear Substances or Radiation-Emitting Devices shall receive appropriate training, as stipulated in the Radiation Safety Manual.

University Radiation Safety Committee

8. The Committee shall be maintained to fulfill the responsibilities of an institutional radiation safety committee as described in *Radiation Protection Programs for Nuclear Substance and Radiation Devices Licenses*.

9. The Committee shall establish Terms of Reference that sets out the administrative and operating procedures for the Committee.

Responsibilities

10. The University's *Environmental Health & Safety Policy* (VPSS-40) designates responsibilities for health and safety.

Vice-President, Services and Sustainability

11. The Vice-President, Services and Sustainability shall have administrative responsibility for the Radiation Safety Policy and Program. The Vice-President, Services and Sustainability is responsible for maintaining the Committee, designating the RSO, and ensuring sufficient personnel and resources are available for the administration and enforcement of this Policy and the Radiation Safety Program.

Vice-President, Research and Graduate Studies

12. The Vice-President, Research and Graduate Studies is responsible for ensuring compliance with this Policy and the Radiation Safety Program within their area.

Environmental Health and Safety

13. The Director of Environmental Health and Safety (EHS) is responsible for managing the development, administration and enforcement of the Radiation Safety Program, and ensuring that the program is compliant with all federal, provincial and municipal legislation, and the standards of practice. The Director of EHS is responsible for reviewing and monitoring compliance with the Radiation Safety Program.

Radiation Safety Officer

14. The RSO is responsible for the administration of the Radiation Safety Program on a day-to-day basis, including conducting risk-based assessments, training, updating the Radiation Safety Manual, issuing Internal Radiation Permits and maintaining the Inventory of Nuclear Substances, Sealed Sources, Radiation Devices, and Radiation-Emitting Devices. The RSO ensures that all Controlled Activities with Nuclear Substances and Radiation-Emitting Devices are conducted in accordance with applicable legislation, internal procedures and recognized codes and standards of practice.

The Committee

15. The Committee assists the RSO with verifying that all Controlled Activities with Nuclear Substances or Radiation-Emitting Devices at the University are conducted in accordance with applicable legislation, internal procedures and recognized codes and standards of practice.

16. The Committee supports the RSO with risk assessments, radiation safety protocol reviews and approvals, disputes about radiation safety matters, or other radiation safety or security concerns.

Deans, Chairs, and Research/Unit Directors

17. Deans, department chairs, and research/unit directors are responsible for ensuring compliance with this Policy and the Radiation Safety Program within their respective areas.

Internal Radiation Permit Holders and Authorized Users

18. IRPH and Authorized Users are responsible for complying with the Radiation Safety Program and all its components, CNSC Licence compliance conditions, and Internal Radiation Permit conditions.

Members of the University

19. Members who are not IRPH or Authorized Users are not permitted access to Nuclear Substances or Radiation-Emitting Devices nor are they permitted to participate in Controlled Activities involving Nuclear Substances and Radiation-Emitting Devices unless they have received University-specified training and information and appropriate supervision is provided.

Policy Responsibility and Review

20. The overall responsibility for implementing and recommending amendments to this Policy shall rest with the Vice-President, Services and Sustainability.

Appendix-A

- *Nuclear Safety and Control Act (S.C. 1997, c. 9)*
- *General Nuclear Safety and Control Regulations (SOR/2000-202)*
- *Radiation Protection Regulations (SOR/2000-203)*
- *Nuclear Substances and Radiation Devices Regulations (SOR/2000-207)*
- *Packaging and Transport of Nuclear Substances Regulations, 2015 (SOR/2015-145)*
- *Nuclear Security Regulations (SOR/2000-209)*
- *Radiation Emitting Devices Act (R.S.C., 1985, c. R-1)*
- *Radiation Emitting Devices Regulations (C.R.C., c. 1370)*
- *Safety Requirements And Guidance For Analytical X-ray Equipment - Safety Code 32*
- *Safety Code 35: Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities*
- *REGDOC-1.6.2, Radiation Protection Programs for Nuclear Substances and Radiation Devices Licences*
- *REGDOC-2.1.2, Safety Culture*
- *REGDOC-2.5.6, Design of Rooms Where Unsealed Nuclear Substances are Handled*
- *REGDOC-2.7.1, Radiation Protection*