



## Radiation Safety Manual

**Title:** **Radiation Protection Committee and Radiation Safety Program – Terms of Reference**

Number:

RSP-120

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Issued by:	Environmental Health and Safety	Date issued:	October 22, 2004
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### 1.0 Reason for Terms of Reference

The terms of Reference for the Radiation Protection Committee<sup>1</sup> are set out in accordance with the Procedures and the Policy entitled "Radiation Safety", in connection with the Radiation Safety program for all radioactive material, X-ray equipment and other sources of ionizing radiation in all areas under the control of the University of Manitoba.

### 2.0 Terms of Reference

**2.1 Radiation Protection Committee** The University has established and shall maintain a Radiation Protection Committee comprising members of the University community and stakeholders knowledgeable in the safe use of radioactive material, X-ray equipment and other sources of ionizing radiation. The Committee shall report to the Executive Director of Human Resources.

The Radiation Protection Committee is authorized to:

- a) Advise on the safe use of radioactive material, X-ray equipment and other sources of ionizing radiation;
- b) Make recommendations on University Policies and Procedures;
- c) Approve radiation safety procedures and guidelines as developed by the Environmental Health and Safety Office and maintained in the Radiation Safety Manual. The Radiation Protection Committee shall enforce the radiation safety procedures;
- d) Issue Internal Permits to control the use of all licensed activities involving radioactive material, X-ray equipment and other sources of ionizing radiation;
- e) Enforce the Radiation Safety Program and to supervise the external and internal dose monitoring and verification of compliance;
- f) Make determination regarding revoking permits from individuals who contravene these Procedures or the Policy on Radiation Safety;

<sup>1</sup> Effective April 21, 2010, the Radiation Protection Committee shall be the title of the committee formerly known at the Radiation Safety Committee. Any references to the Radiation Safety Committee shall be understood to refer to the Radiation Protection Committee.



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- g) Review reports of all inspections, incidents, unusual occurrences, and other relevant materials from the Radiation Safety Officer and make recommendations as appropriate.

### 2.1.1 Membership

- a) The number of appointed voting members of the Committee shall not be more than ten (10) including the chair;
- b) Appointed members shall serve a term of five (5) years, with the option to serve one (1) additional term for up to five years.
- c) At least one (1) member of the committee shall be a nuclear medicine physician to fulfill the role of medical advisor.
- d) At least one (1) member of the committee shall be a supervising dentist with the Faculty of Dentistry Clinics.
- e) At least one (1) member of the Committee shall represent technical support staff;
- f) At least one (1) member of the Committee shall represent academic staff;
- g) One member shall be nominated by the Director of the Manitoba Institute of Cell Biology to represent this facility;
- h) Alternates shall be appointed during an extended leave of a Committee member;
- i) The Radiation Safety Coordinator and the Assistant Radiation Safety Coordinator shall be non-voting members and shall act as resources to the Committee; and
- j) The Director of the Environmental Health and Safety Office shall be ex-officio non-voting member of the Committee.



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### 2.1.2 Chair

- a) The Chair shall be appointed by the Executive Director of Human Resources in consultation with the Vice-President (Research), Vice-President (Academic) and the Vice-President (Administration).
- b) The Chair may participate to an equal extent as any other member of the Committee, in the discussions and decisions;
- c) The Chair shall select one (1) member of the Committee to be "Vice-Chair" to act on behalf of the Chair in the event of his/her absence.

**2.1.3 Secretariat** The Environmental Health and Safety Office shall provide secretarial support to the committee and:

- a) Maintain a file of all correspondence to and from the committee;
- b) Recording minutes of meetings, for correspondence arising from meetings and for issuing notices of meetings after consultation with the chair;
- c) Maintain a file of minutes of committee meetings and ensuring that:
  - (i) One copy is sent to each member.
  - (ii) One copy is filed with the Environmental Health and Safety Office.
  - (iii) One copy is sent to the Executive Director of Human Resources.
- d) The Environmental Health and Safety Office shall maintain a file of all correspondence to and from the committee.

### 2.1.4 Meetings

- a) The committee shall schedule meetings at least semi-annually.
- b) The date of the next regular meeting shall be determined at each meeting.
- c) Special meetings may be called by the chair, (or vice chair in the event of his/her absence) for the purposes of considering causes of accidents or dangerous occurrences, contamination incidents, high exposures, enforcement or conditions dangerous to safety or health.
- d) The quorum for committee meetings shall consist of one-half the voting members.



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**2.2 X-ray Committee** The University shall establish and maintain an X-ray Committee as a subcommittee to the Radiation Protection Committee comprising of members of the University community and stakeholders knowledgeable in the safe use of X-ray equipment.

- a. The chair of the X-ray Committee shall be a member of the Radiation Protection Committee.
- b. One member of the X-ray Committee shall represent the Faculty of Dentistry Clinics.
- c. Other members shall be nominated by the X-ray Committee Chair to represent the University community as stakeholders that are knowledgeable in the safe use of X-ray equipment.
- d. The X-ray Committee will follow Section 2.1.4 Meetings as above.
- e. The X-ray Committee shall report to the Radiation Protection Committee and have the following mandate and authority:
  - i. Members are responsible to maintain an awareness of all applicable or new revised X-ray equipment regulations and standards.
  - ii. To provide advice on the safe use of X-ray equipment in all areas under the control of the University;
  - iii. To make recommendations on University Governing Documents related to X-ray equipment;
  - iv. To oversee the development, implementation and maintenance of the X-ray Safety Program, including
    1. Control the registration, storage, use, transfer and disposal of all X-ray equipment at The University of Manitoba in conjunction with the Environmental Health and Safety Office;
    2. Implement risk-based procedures to control X-ray hazards;
    3. Define necessary signage related to the X-ray equipment.
    4. Define dosimetry requirements related to X-ray equipment;
    5. An internal permit system for Research X-ray equipment., which will:
      - a. Identify responsibilities of the Permit Holder/Owner of a Research X-ray Equipment;
      - b. Outline the minimum qualifications of persons permitted to use Research X-ray equipment at locations under the control of the University of Manitoba.



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### 2.3 Radiation Safety Officer

The Environmental Health and Safety Office is responsible for the provision of the function of the Radiation Safety Officer. The Radiation Safety Officer administers the Radiation Safety Program, acting in consultation with the Radiation Protection Committee. At least one individual shall be available to fulfill these duties on a full time basis. The duties of the Radiation Safety Officer are:

- a) Advise users of radioactive material, X-ray equipment and other sources of ionizing radiation on their safety concerns and other issues related to the radiation safety program.
- b) Conduct routine compliance inspections of all laboratories and storage areas listed on Internal Permits.
- c) Report results of compliance inspections to Radiation Protection Committee with recommendations for corrective actions where infractions to regulations or University procedures have occurred.
- d) Fulfill the role as outlined in Radiation Safety Procedures (RSPs) regarding emergency procedures and investigate all Major Radiological Incidents, supervise the cleanup and corrective action.
- e) Authorize purchases of radioactive materials; and coordinate and monitor the acquisition, transportation, storage, use and disposal of radioactive material, X-ray equipment and other sources of ionizing radiation.
- f) Investigate all significant personnel exposures and provide direction for bioassays and necessary safety precautions and report significant exposures to the Radiation Protection Committee.
- g) Coordinate and develop training programs on radiation safety and provide advice to University personnel on the use of radioactive material, X-ray equipment and other sources of ionizing radiation.
- h) Process applications for Internal Permits and make recommendations on them to the Radiation Protection Committee.
- i) Maintain records of permits, personnel exposure, unusual occurrences, and other activities involving radioactive material, X-ray equipment and other sources of ionizing radiation.
- j) Advise the Radiation Protection Committee on current Canadian Nuclear Safety regulations and any other regulations governing the use of radioactive material, X-ray equipment and other sources of ionizing radiation; and policy matters as well as on operations and activities of the Radiation Safety Program.



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- k) Prepare draft copies of the Radiation Protection Committee annual report and any license application for presentation to the Radiation Protection Committee.
- l) Communicate effectively with the Canadian Nuclear Safety Commission (CNSC) and ensure the timely amendment to the CNSC licence application.
- m) Establish and maintain effective communication with provincial agencies governing radiation and X-ray safety as required.
- n) Prepare drafts of policies and procedures for the committee to oversee the use of radioactive material, X-ray equipment and other sources of ionizing radiation.
- o) Prepare draft Radiation Safety Procedures (RSPs) outlining practical procedures and conditions including the definition of Action Levels that will help achieve the highest possible degree of safety in the use of radioactive material, X-ray equipment and other sources of ionizing radiation within the University. These procedures shall be designed to achieve the highest level of security of radioactive material, X-ray equipment and other sources of ionizing radiation and limit doses to persons and the environment to As Low As Reasonably Achievable (ALARA), social and economic factors taken into account. These procedures shall be documented in the Radiation Safety Manual.
- p) Designate Nuclear Energy Workers based on proposed projects and exposure histories and inform workers in writing of:
  - i. Their designation,
  - ii. The risks associated with this type of work, including the risks associated with embryos and fetuses to radiation,
  - iii. The applicable effective dose limits and equivalent dose limits,
  - iv. The worker's dose levels.
- q) Approve the design of new laboratories designated for use of radioactive material using the Controlled Product Standard.
- r) Serve other functions as defined by other University policies and procedures.



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### 2.4 Internal Permit Holder

The Internal Permit Holder is responsible to:

- a) Be aware of and comply with all safety rules and procedures as identified in the Radiation Safety Manual and conditions on the Internal Permit, such as:
  - i. Supervise all Designated Workers and visitors to ensure the safe conduct of work performed in approved locations.
  - ii. Post and make available necessary rules and regulations, including the Radiation Safety Manual, to Designated Workers.
  - iii. Report to the Radiation Safety Officer all changes to information found on the Internal Permit.
  - iv. Assign duties to Designated Workers that include as appropriate: regular contamination monitoring and inventory, record-keeping, receiving of shipments of radioactive materials, waste disposal, thermoluminescent dosimeter (TLD) service, cleaning and securing of approved locations.
- b) Maintain and update records on inventory, purchase and disposal of radioactive material and X-ray equipment. The Permit Holder's signature (or the Laboratory Radiation Supervisor) is required on the Radioisotope Purchase Forms and any requests to transfer radioactive materials.
- c) Ensure that all Designated Workers as listed on the Internal Permit are aware of all radiation safety procedures;
- d) Ensure that all Designated Workers are trained to work safely with radioactive materials or X-ray equipment and to provide site-specific training in the safe use of radioactive materials and X-ray equipment;
- e) Regularly assess and inspect their areas for compliance with radiation safety procedures;
- f) Evaluate the potential hazard of all new procedures involving radioactive material or X-ray equipment and provide information to service personnel in conjunction with the Radiation Safety Officer. Develop site-specific procedures to mitigate the hazards; communicate these procedures to all staff, students and visitors, and supervise the following of these procedures.
- g) Ensure resources are available to meet with the requirements in the Radiation Safety Manual.
- h) Ensure that any incidents that occur in their area are promptly reported to the Environmental Health and Safety Office, including reporting to the Radiation Safety Officer, any incident in which they believe there may be:



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- i. A significant increase in the risk to the environment or the health and safety of persons;
  - ii. A threat to the maintenance of security or an incident with respect to security;
  - iii. A failure to comply with the conditions of the Internal Permit;
  - iv. An act of sabotage, theft, loss or illegal use of possession of radioactive materials or X-ray equipment;
  - v. A release to the environment above the quantities of radioactive material that has not been authorized by the Internal Permit; or
  - vi. A known or suspected radiation exposure or contamination that may exceed established limits.
- i) May appoint a LABORATORY RADIATION SUPERVISOR to act as an alternate in the event of his/her absence.

### 2.5 Laboratory Radiation Supervisor's Responsibilities

- a) Must be a Designated Worker. Designated Workers are personnel listed on the Internal Permit as approved to work with radioactive material.
- b) Assist the Permit Holder to carry out his duties as specified above.
- c) Report to the Radiation Safety Officer, any incident in which they believe there may be:
  - i. A significant increase in the risk to the environment or the health and safety of persons;
  - ii. A threat to the maintenance of security or an incident with respect to security;
  - iii. A failure to comply with the conditions of the Internal Permit;
  - iv. An act of sabotage, theft, loss or illegal use of possession of radioactive materials or X-ray equipment;
  - v. A release to the environment above the quantities of radioactive material that has not been authorized by the Internal Permit; or
  - vi. A known or suspected radiation exposure or contamination that may exceed established limits.



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### 2.6 Designated Workers Responsibilities

- a) Observe and obey all conditions of the Internal Permit, and all safety rules and other measures prescribed in procedures that are site specific or as identified in the Radiation Safety Manual.
- b) Comply with measures established by the University and the Permit Holder to protect the environment and the health and safety of persons, maintain security, control the levels and doses of radiation, and control the releases of radioactive materials to the environment.
- c) Participate and follow guidance and direction as provided in radiation safety training.
- d) Use equipment, devices, facilities and clothing for protecting the environment or the health and safety of persons, or for determining doses of radiation, dose rates or concentrations of radioactive materials in a responsible and reasonable manner and in accordance with the University procedures.
- e) Take all reasonable precautions to ensure their own safety, and the safety of other persons, the protection of the environment, and the maintenance of security. Perform work in a manner that will minimize radiation exposure (ALARA).
- f) Report to the Radiation Safety Officer, any incident in which they believe there may be:
  - i. A significant increase in the risk to the environment or the health and safety of persons.
  - ii. A threat to the maintenance of security or an incident with respect to security.
  - iii. A failure to comply with the conditions of the Internal Permit.
  - iv. An act of sabotage, theft, loss or illegal use of possession of radioactive materials or X-ray equipment.
  - v. A release to the environment above the quantities of radioactive material that has not been authorized by the Internal Permit.
  - vi. A known or suspected radiation exposure or contamination that may exceed established limits
- g) Must give feedback to their supervisor if a procedure is inappropriate, impractical or unsafe.
- h) Must not initiate or participate in any activity that may endanger the health and safety of anyone.



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Additions to Glossary of Radiation Definitions:

In the current version of The University of Manitoba Radiation Safety Policy, Procedure and all the RSPs in the Radiation Safety Manual, the term “other sources of ionizing radiation” is used. As we move forward with the implementation of an X-ray Equipment Permit, we propose to add, as appropriate “X-ray equipment” as defined below. As well, we would like to propose the following definition of ‘radioactive material’.

**X-ray:** means artificially produced electromagnetic radiation of wave length shorter than 0.000 000 25 mm (0.25 nanometers).

**X-ray equipment:** X-ray equipment or X-ray machine means an operable device, the principle purpose and function of which is the production of X-rays, together with such ancillary apparatus as may be necessary for this purpose. For locations in the province of Manitoba, X-ray equipment is governed by the Manitoba “X-ray Safety Regulation 341/88R”

**Clinical X-ray equipment,** for the purposes of this manual, shall refer to X-ray equipment that is used on human subjects to provide medical or dental care. The safe use of dental X-ray equipment is additionally guided by the Health Canada “Recommended Safety procedures for the Use of Dental X-ray Equipment- Safety Code 30”.

**Research X-ray equipment,** for the purposes of this manual, shall refer to X-ray equipment that in is not used to provide medical or dental care on human subjects, that is either:

**Analytical X-ray equipment** is equipment that is not used on humans and is additionally guided by the Health Canada “Safety Requirements and Guidance for Analytical X-ray Equipment (Environmental Health Directorate; Safety Code – 32, 1994)”, or

**Any X-ray equipment when it is used to irradiate humans under a research study protocol.**

**Radioactive material:** For the purposes of this manual, the term “*radioactive material*” shall be limited to materials used for their radioactive properties in the course of research or teaching. Further, “*radioactive material*” means an unstable isotope of an element that decays, or disintegrates spontaneously, emitting radiation of sufficient energy to create charged particles by adding or removing an electron or breaking chemical bonds.