Radiation – Know The Laws of Your Province

Radiation protection regulations are essential for ensuring the safe use of X-ray machines and other radiation-emitting devices in workplaces. These regulations require **employers** to maintain equipment, enforce exposure limits, and designate qualified personnel to oversee radiation safety. Protective measures include shielding, personal dosimetry, and restricted access to radiation areas. Workers **must** be trained in safe operation procedures and the health risks associated with radiation exposure. While general safety principles are upheld across Canada, specific regulations vary by province and territory to address unique healthcare, industrial, and research applications. Compliance with these regulations reduces radiation risks, prevents overexposure, and promotes a safe working environment.

FEDERAL

In Canada, **employers must** address radiation protection under the **Radiation Protection Regulations, Sections 3 to 8 and Canada Occupational Health and Safety Regulations, Section 10.26. Employers** are responsible for implementing radiation protection programs, ensuring workers' exposure is as low as reasonably achievable, monitoring radiation doses, and providing safety training. They **must** also inform nuclear energy workers of radiation risks and ensure compliance with exposure limits.

Obligations of Licensees and Nuclear Energy Workers – Radiation Protection Regulations

Administration of Nuclear Substance for Medical Purposes

When a nuclear substance is administered to a person for therapeutic purposes, the licensee **must** inform the person of methods for reducing the exposure of others – including the caregiver or anyone else providing care and assistance – to radiation from the person. **Section 3.**

Radiation Protection Program

Every licensee **must** implement a radiation protection program and **must**, as part of that program,

> (a) keep the effective dose and equivalent dose received by and committed to persons as low as reasonably achievable, taking into account social and economic factors, through the implementation of:
>
> > (i) management control over work practices,
> > (ii) personnel qualification and training,
> > (iii) control of occupational and public exposure to radiation, and
> > (iv) planning for unusual situations; and
>
> (b) ascertain the quantity and concentration of any nuclear substance released as a result of the licensed activity
>
> > (i) by direct measurement as a result of monitoring, or
> > (ii) if the time and resources **required** for direct measurement as a result of monitoring outweigh the usefulness of ascertaining the quantity and concentration using that method, by estimating them. **Section 4(a).**

Provision of Information

(1) Every licensee **must** inform each nuclear energy worker, in

writing,

a. of the fact that the worker is a nuclear energy worker;
b. of the risks associated with radiation to which the worker may be exposed in the course of their work;
c. of the applicable effective dose limits and equivalent dose limits prescribed by sections 13 to 15;
d. of the worker's radiation dose levels, received on an annual basis; and
e. of the worker's responsibilities during an emergency and the risks associated with radiation to which the worker may be exposed during the control of an emergency.

(2) Every licensee **must** inform each female nuclear energy worker, in writing,

a. of the risks associated with the exposure of embryos and fetuses to radiation and the risks to breastfed infants from the intake of nuclear substances;
b. of the importance of informing the licensee, as soon as feasible, in writing, that the female nuclear energy worker is pregnant or breastfeeding;
c. of the rights of a pregnant nuclear energy worker and the rights of a breastfeeding nuclear energy worker under section 11; and
d. of the applicable effective dose limits for pregnant nuclear energy workers prescribed by section 13.

(3) Every licensee **must** obtain from each nuclear energy worker who is informed of the matters referred to in paragraphs (1)(a) and (b) and subsection (2) a written acknowledgement

that the worker has received the information. **Section 7(1) to (3).**

For more information:

- Action Levels. **Section 6(1)(2).**
- Requirement to Use Licensed Dosimetry Service. **Section 8(1)(2).**
- Ionizing and Non-ionizing Radiation. **Section 10.26(1) to (4).**

Further details can be found at the Radiation Protection Regulations and Canada Occupational Health and Safety Regulations.

ALBERTA

In Alberta, **employers must** address radiation exposure under the **Occupational Health and Safety Code, Part 20, Sections 291 to 291.7, and Radiation Protection Act, Section 2 to 7. Employers** are responsible for implementing safe work practices, ensuring radiation exposure remains as low as reasonably achievable, and complying with dose limits specified in Schedule 12. They **must** provide shielding, monitoring (dosimetry), and protective measures for pregnant and young workers, while also ensuring proper certification and registration for radiation equipment.

Part 20 – Radiation Exposure

Prevention and Protection

If a worker may be exposed to ionizing radiation at a work site, an **employer must:**

(a) develop and implement safe work practices and procedures to be used when the worker works with or approaches the radiation source,

(b) if practicable, involve affected workers in the development and implementation of the safe work practices and procedures, and

(c) inform affected workers of the potential hazards, including reproductive hazards, of ionizing radiation and the radiation source and the precautions to be taken to protect the workers and other persons from those hazards. **Section 291(a) to (c).**

Shielding

An **employer** that uses radiation equipment or a radiation source that produces ionizing radiation **must** ensure that the structural shielding design for the radiation facility is adequate to ensure that the maximum effective dose limits and maximum equivalent dose limits specified in Tables 1 and 2 respectively of Schedule 12 are not exceeded. **Section 291.1.**

X-Ray Equipment

An **employer must** ensure that the use, operation, handling, installation, calibration, testing, demonstration, service, repair, maintenance, or disposal of:

a. x-ray equipment used in a veterinary practice complies with *Radiation Protection in Veterinary Medicine: Recommended Safety Procedures for Installation and Use of Veterinary X-ray Equipment: Safety Code 28* (1991), published by Health Canada,
b. baggage inspection x-ray equipment complies with *Requirements for the Safe Use of Baggage X-ray Inspection Systems: Safety Code 29* (1993), published by Health Canada,
c. x-ray equipment used in a dental practice complies with *Radiation Protection in Dentistry: Recommended Safety Procedures for the Use of Dental X-ray Equipment: Safety Code 30* (Revised 2000), published by Health Canada,
d. analytical x-ray equipment complies with

- *Safety Requirements and Guidance for Analytical X-ray Equipment: Safety Code 32* (1994), published by Health Canada, and
- *Addendum to Safety Code 32: Portable, Hand-held, X-ray Tube Based Open-beam XRF Devices* (2014), published by Health Canada,

e. industrial x-ray equipment complies with *Radiation Protection and Safety for Industrial X-ray Equipment: Safety Code 34* (2003), published by Health Canada, and

f. x-ray equipment used for medical diagnosis complies with *Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities: Safety Code 35* (2008), published by Health Canada. **Section 291.2(a) to (f).**

Lasers

In this section, "health care facility" means a facility where laser radiation is administered for diagnostic, therapeutic or research purposes by health professionals. **Section 291.3(1).**

An **employer must** ensure that the use, operation, handling, installation, calibration, testing, demonstration, service, repair, maintenance or disposal of lasers:

a. in a health care facility complies with CAN/CSA Z386:20, *Safe Use of Lasers in Health Care* published by the Canadian Standards Association, and

b. in a facility other than in a health care facility, complies with ANSI Standard Z136.1-2014, *American National Standard for Safe Use of Lasers* published by the American National Standards Institute. **Section 291.3(2).**

Radiation Exposure Limits

An **employer must** ensure that a worker's exposure to ionizing radiation is kept as low as reasonably practicable. **Section 291.4(1).**

An **employer must** ensure that a worker's exposure to ionizing radiation does not exceed any of the applicable maximum dose limits listed in Schedule 12, Tables 1 and 2. **Section 291.4(2).**

A worker who uses radiation equipment, non-ionizing radiation equipment or a radiation source **must** ensure that exposure of any person to radiation is kept as low as reasonably practicable. **Section 291.4(3).**

An **employer must** ensure that a worker's exposure to non-ionizing radiation does not exceed any of the applicable maximum exposure limits listed in Schedule 12, Tables 3 and 4. **Section 291.4(4).**

An **employer must** ensure that:

a. a worker who uses or may be exposed to radiation through the use of any ionizing radiation equipment described in subsection (2) is provided with and uses an appropriate device, provided by a dosimetry service provider licensed by the Canadian Nuclear Safety Commission, to monitor the worker's personal exposure to ionizing radiation,
b. the records obtained from the monitoring are kept for at least 5 years,
c. affected workers are informed of and have access to their personal exposure records, and
d. the dose of a worker as determined by monitoring pursuant to clause (a) is reported to the National Dose Registry. **Section 291.5(1).**

The ionizing radiation equipment referred to in subsection (1)(a) is:

a. diagnostic or therapeutic x-ray equipment,
b. particle accelerators,
c. industrial x-ray equipment,
d. irradiation x-ray equipment, and

e. any other ionizing radiation equipment for which the registration certificate requires monitoring of the personal exposure of radiation workers. **Section 291.5(2).**

For more information:

- Additional protections for pregnant and young workers. **Section 291.6(1)(2).**
- Designated radiation equipment – registration certificate required. **Sections 291.7(1) to 291.7(6).**
- Part 1 – Prohibited radiation equipment. **Section 2(a) to (d).**
- Maximum exposure limits for ionizing radiation. **Section 3(1) to (4).**
- Monitoring of worker ionizing radiation exposure. **Section 4(1)(2).**
- Pregnant radiation workers. **Section 5(1)(2).**
- Minimum age for certain users. **Section 6(a)(b).**
- Maximum exposure limits for non-ionizing radiation **Section 7(1) to (3)**

Further details on the Occupational Health and Safety Code and Radiation Protection Act can be found at *alberta.ca* and *canlii.org*.

BRITISH COLUMBIA

In British Columbia, **employers must** address radiation exposure under the **Occupational Health and Safety Regulation, Part 7, Division 3, Sections 7.17 to 7.25. Employers** are responsible for ensuring worker exposure to ionizing and non-ionizing radiation remains below regulated limits, implementing exposure control plans, providing monitoring (dosimetry) for workers exceeding action levels, and ensuring that all radiation-emitting equipment meets safety standards.

Part 7: Noise, Vibration, Radiation, and Temperature

Division 3 – Radiation Exposure

Definitions

In this Division:

"*action level, ionizing radiation*" means an effective dose of 1 milliSievert (mSv) per year;

"*action level, non-ionizing radiation*" means the exposure limits for the general public referred to in section 7.19(4) or, if no public limit is referred to, it means the maximum exposure limit for workers referred to in section 7.19(4);

"*effective dose*" means the amount of ionizing radiation, measured in mSv, absorbed by the worker's whole body, adjusted for the energy level and type of radiation and the differing susceptibilities of the organs and tissues irradiated, and if only part of the body is exposed the effective dose is the sum of the weighted equivalent doses in all irradiated tissues and organs;

"*equivalent dose*" means the amount of ionizing radiation, measured in mSv, absorbed by a specific body part and adjusted for the energy level and type of radiation. **Section 7.17.**

Application

(1) This Division applies to all sources of ultrasonic energy, non-ionizing and ionizing radiation, including radiation sources governed by the *Nuclear Safety and Control Act* (Canada), except as otherwise determined by the Board.

(2) This Division does not apply to medical or dental radiation received by a patient, or to natural background radiation, except as specified by the Board. **Section 7.18.**

Exposure Limits

(1) A worker's exposure to ionizing radiation **must** not exceed

any of the following:

(a) an effective dose of 20 mSv over any period of 12 consecutive months;
(b) with respect to exposure to the lens of an eye,

(i) an equivalent dose of 50 mSv over any period of 12 consecutive months that starts on or after December 1, 2021, and
(ii) an equivalent dose of 100 mSv over any period of 60 consecutive months that starts on or after December 1, 2021;

(c) with respect to exposure to the skin, averaged over any 1 cm^2 area at a nominal depth of 7 mg/cm^2, regardless of the area exposed, an equivalent dose of 500 mSv over any period of 12 consecutive months;
(d) with respect to exposure to the hands and feet, an equivalent dose of 500 mSv over any period of 12 consecutive months.

(2) If a worker declares the worker's pregnancy to the **employer**, the worker's effective dose of ionizing radiation, for the remainder of the pregnancy, from external and internal sources, **must** be limited by the **employer** to the lesser of:

(a) 4 mSv, or
(b) the dose limit specified for pregnant workers under the *Nuclear Safety and Control Act* (Canada).

(3) The **employer must** ensure that the exposure of workers to ionizing radiation is kept as low as reasonably achievable below the exposure limits.
(4) The **employer must** ensure that a worker's exposure to non-ionizing radiation does not exceed the exposure limits specified in:

(a) for radiofrequency:

(i) *Health Canada Safety Code 25, Short-Wave Diathermy Guidelines for Limiting Radiofrequency Exposure,* 1983, as amended from time to time;
(ii) *Health Canada Safety Code 26, Guidelines on Exposure to Electromagnetic Fields from Magnetic Resonance Clinical Systems,* 1987, as amended from time to time;
(iii) *Health Canada Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz,* 1999, as amended from time to time, and

(b) for lasers:

(i) *ANSI Standard Z136.1-2000, Safe Use of Lasers,* as amended from time to time;
(ii) *ANSI Standard Z136.2-1997, Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources,* as amended from time to time;
(iii) *ANSI Standard Z136.3-1996, Safe Use of Lasers in Health Care Facilities,* as amended from time to time;
(iv) *CSA Standard Z386-01, Laser Safety in Health Care Facilities*, as amended from time to time, except as otherwise determined by the Board.

(5) A worker's exposure to ultraviolet radiation produced by equipment or industrial processes **must** not exceed the threshold limit values specified in the American Conference of Governmental Industrial Hygienists publication entitled *Threshold Limit Values and Biological Exposure Indices,* dated 2003, as amended from time to time. **Section 7.19(1) to (5).**

Exposure Control Plan

(1) If a worker exceeds or may exceed an action level, ionizing radiation or action level, non-ionizing radiation, the **employer must** develop and implement an exposure control

plan meeting the requirements of section 5.54(2).

(2) The instructions to workers developed under subsection (1) **must** be posted or otherwise available in the work area or near the applicable equipment controls. **Section 7.20.**

Records

The **employer must:**

(a) maintain and make available to the Board,

(i) for at least 10 years, records of radiation surveys, and
(ii) for the period that the worker is employed plus 10 years, records of exposure monitoring and personal dosimetry data, and

(b) make the records available to workers. **Section 7.25(a)(b).**

For more information:

- Reproductive hazards. **Section 7.21(1)(2).**
- Monitoring exposure. **Section 7.22.**
- Standards for use of equipment. **Section 7.23(a) to (e).**
- Radiation surveys. **Section 7.24(a) to (c)**.

Further details on the Occupational Health and Safety Regulation can be found at *worksafebc.com*.

MANITOBA

In Manitoba, **employers must** address radiation exposure under the **Workplace Safety and Health Act – Part 6, Section 6.8 to 6.13 and Part 3 – Radiation Protection Act, Sections 24 to 29**. **Employers** are responsible for ensuring radiation exposure is minimized, providing personal dosimeters to workers, maintaining records of exposure, and ensuring protective equipment is available. **Employers must** also monitor and report

overexposure incidents and provide additional protections for pregnant workers.

Part 3 – Application of and Exposure to Ionizing Radiation

Limits of Exposure to Persons

(1) An ionizing radiation operator **must** ensure that exposure of persons to ionizing radiation is kept as low as is reasonably practicable given the circumstances of the procedure being performed. **Section 24(1).**

Limits of Exposure to Workers

(2) An owner **must** ensure that exposure of ionizing radiation workers to ionizing radiation does not exceed any prescribed maximum dose limit. **Section 24(2).**

Dosimeters to be Provided to Workers

(1) An owner of ionizing radiation equipment **must** provide a personal dosimeter that meets the prescribed requirements to each ionizing radiation worker. **Section 25(1).**

Function of Dosimeter

(2) The dosimeter's function is to monitor the ionizing radiation worker's occupational exposure to ionizing radiation. **Section 25(2).**

Dosimeters to be Worn by Workers

(3) An ionizing radiation worker **must** wear a personal dosimeter:

> (a) whenever present in an ionizing radiation equipment location or a potential exposure area; and
> (b) while working with ionizing radiation equipment, including while receiving training on the equipment. **Section 25(3).**

Maintaining Dosimeters

(4) An owner of ionizing radiation equipment **must** maintain each dosimeter, or cause it to be maintained, in a condition that allows the dosimeter to properly perform its intended function. **Section 25(4).**

Owner must Provide Protective Equipment

(1) An owner of ionizing radiation equipment **must** provide protective equipment to each ionizing radiation worker. **Section 26(1).**

Records and Reports of Radiation Exposure – Workers

(1) An owner of ionizing radiation equipment **must**, in accordance with the regulations,

> (a) make and maintain records of each ionizing radiation worker's exposure to ionizing radiation based on the worker's dosimeter readings; and
> (b) report, or cause to be reported, the dose records for each ionizing radiation worker to a dosimeter registry. **Section 27(1)(a)(b).**

Records and Reports to be Made Available to a Worker

(2) On an ionizing radiation worker's request, an owner of ionizing radiation equipment **must** make the records and reports relating to that worker available to the worker. **Section 27(2).**

Records of Radiation Exposure – Patients

An owner of ionizing radiation equipment **must**, in accordance with the regulations, make and maintain records of each patient's exposure to ionizing radiation or cause them to be made and maintained. **Section 28.**

Overexposure to Radiation – Persons Subject to Maximum

Exposure Limits

(1) An overexposure to ionizing radiation occurs when a person for whom there is a maximum dose limit is exposed to ionizing radiation in an amount that exceeds the maximum dose limit. **Section 29(1).**

Overexposure to Radiation – Patients and Non-Patient Subjects

(2) An overexposure to ionizing radiation occurs when a patient or non-patient subject is:

(a) exposed to ionizing radiation in an amount greater than the intended dose; or
(b) exposed unintentionally to ionizing radiation. **Section 29(2).**

For more information:

Part 6 – Personal Protective Equipment

- Skin protection. **Section 6.8(1)(2).**
- Protective clothing. **Section 6.9(1)(2).**
- Protective headwear for non-construction project sites. **Section 6.10(1) to (3).**
- Protective headwear at construction project site. **Section 6.11(1)(2), 6.12(1) to (3).**
- Eye and face protectors. **Section 6.13(1)(2).**

Further details on the Radiation Protection Act and Manitoba Workplace Safety and Health Act and Regulation can be found at *gov.mb.ca* and *gov.mb.ca*.

NEW BRUNSWICK

In New Brunswick, **employers must** address radiation exposure under the **Radiological Health Protection Act, Sections 2 to 10, and 14 to 17** and the **Occupational Health and Safety Act, Part XIX.1, Sections 298.11 to 298.9. Employers must** ensure

radiation equipment is properly installed, maintained, and operated, that workers are informed of exposure risks, and that protective equipment and dosimetry monitoring are provided. **Employers must** also monitor radiation doses, report overexposure incidents, and provide additional protections for pregnant workers.

XIX.1 – Radiation Safety

Operator Qualifications

(1) A person who operates X-ray equipment for the irradiation of human beings **shall** be:

(a) a radiation technologist registered with the New Brunswick Regulatory College for Medical Radiology Technologists,
(b) a dental hygienist registered with the New Brunswick College of Dental Hygienists,
(c) a formally trained dental assistant registered with the New Brunswick Dental Society,
(d) a dentist registered with the New Brunswick Dental Society,
(e) an interventional radiologist or an interventional cardiologist registered with the New Brunswick Medical Society,
(f) a chiropractor registered with the New Brunswick Chiropractors Association, or
(g) a student undergoing a course of instruction in a school approved by the Canadian Association of Medical Radiation Technologists, the Canadian Dental Association, the Canadian Medical Association or the Canadian Chiropractic Association.

(2) A person who operates X-ray equipment other than for the irradiation of human beings **shall:**

(a) be competent in maintaining or testing X-ray equipment,
(b) be competent in X-ray radiation physics,

(c) be licensed as a veterinarian by the New Brunswick Veterinary Medicine Association,
(d) be certified as a Level I, II or III industrial radiographer, in accordance with the CGSB standard CAN/CGSB-48.9712-2014, Non-Destructive Testing – Qualification and certification of NDT Personnel or a standard offering equivalent or better protection, or
(e) work under the direct and close supervision of a person referred to in paragraphs (a) to (d).

(3) Despite subsection (2), any person may operate X-ray equipment other than for the irradiation of human beings if the X-ray source, the object or a portion of the object being exposed to X-rays and any detection device are enclosed within a cabinet preventing access to and protecting persons from exposure to the X-ray beam. **Section 298.11(1) to (3).**

X-Ray Equipment

An **employer** and an X-ray radiation worker **shall** each ensure that X-ray equipment is installed, used, maintained, repaired and inspected in accordance with:

(a) the manufacturer's specifications,
(b) the Radiation Emitting Devices Act (Canada),
(c) the appropriate safety code listed below, as published by the Minister of Health Canada and amended from time to time,

(i) Safety Code 28: "Radiation Protection in Veterinary Medicine: Recommended Safety Procedures for Installation and Use of Veterinary X-Ray Equipment",
(ii) Safety Code 29: "Requirements for the Safe Use of Baggage X-Ray Inspection Systems",
(iii) Safety Code 30 (2022): "Radiation Protection in Dentistry – Safety Procedures for the Installation, Use and Control of Dental X-ray Equipment",
(iv) Safety Code 32: "Safety Requirements and Guidance

for Analytical X-Ray Equipment”,
(v) Safety Code 34: “Radiation Protection and Safety for Industrial X-ray Equipment”,
(vi) Safety Code 35: “Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities”, and
(vii) Safety Code 36: “Radiation Protection and Quality Standards in Mammography – Safety Procedures for the Installation, Use and Control of Mammographic X-ray Equipment”, and

(d) any other procedure approved by the Chief Compliance Officer. **Section 298.2.**

Dose Limits

(1) An **employer** or an owner of X-ray equipment **shall** ensure that X-ray equipment is installed in a place that is shielded, using as dose constraint for design purposes the dose limits set out in subsection (2). **Section 298.21(1).**

(2) An **employer** or an owner of X-ray equipment **shall** ensure that X-ray equipment is used and maintained in a manner so that an X-ray radiation worker’s radiation exposure does not exceed the following dose limits:

(a) whole body (E or effective dose) 20 mSv per year;
(b) lens of the eye (H or equivalent dose) 150 mSv per year; and
(c) the skin of hands, feet and the face (H or equivalent dose) 500 mSv per year. **Section 298.21(2).**

(3) An **employer shall** ensure that an X-ray radiation worker who has informed the **employer** in writing that they are pregnant does not receive radiation exposure to the surface of their abdomen in excess of 2 mSv for the balance of the pregnancy starting from the date on which the **employer** is informed of the pregnancy. **Section 298.21(3).**

(4) The dose limits **shall** not include natural radiation and radiation exposure from personal medical and dental procedures. **Section 298.21(4).**

For more information:

- Radiation exposure pursuant to Radiological Health Protection Act, **Sections 2 to 10, and 14 to 17.**

Occupational Health and Safety Act, Radiation Safety Part XIX.1

- Nuclear energy workers. **Section 298.3.**
- **Section 298.4.**
- Duty to inform. **Section 298.5.**
- **Section 298.6(1)(a) to (e), 298.6(2).**
- Radiation exposure. **Section 298.7(1) to (3).**
- Medical examination. **Section 298.8(1)(2).**
- **Section 298.9.**

Further details on the Radiological Health Protection Act and General Regulation – Occupational Health and Safety Act can be found at *canlii.org* and *laws.gnb.ca*.

NEWFOUNDLAND & LABRADOR

In Newfoundland and Labrador, **employers must** address radiation exposure under the **Radiation Health and Safety Act, 2021**, **Sections 11 to 16** and **Radiation Health and Safety Regulations**, **Sections 3 to 20**. **Employers must** ensure that radiation equipment is properly installed, maintained, and operated only by qualified personnel, that workers are informed of exposure risks, and that dosimetry monitoring and protective equipment are provided. **Employers** are **required** to monitor radiation doses, report overexposure incidents, and provide additional protections for pregnant workers.

Prohibition

A person **shall** not operate or permit the operation of radiation equipment unless the equipment and installation comply with these regulations. **Section 3.**

Operation by Unqualified Persons Prohibited

(1) A person **shall** not use a radiation installation or radiation equipment for the irradiation of human subjects unless that irradiation is prescribed.

(2) A person **shall** not prescribe the use of radiation equipment for the irradiation of human subjects unless that person is:

(a) a medical practitioner as defined by the *Medical Act* ;

(a.1) a nurse practitioner licensed under the *Registered Nurses Act* ;

(b) a practitioner as defined by the *Dental Act* ; or
(c) a chiropractor as defined by the *Chiropractors Act.*

(3) A person **shall** not use a radiation installation or radiation equipment for the irradiation of human subjects unless that person is:

(a) a medical practitioner as defined by the *Medical Act* ;
(b) a practitioner as defined by the *Dental Act* ;
(c) registered as a medical radiation technologist by the Canadian Association of Medical Radiation Technologists;
(d) a graduate of the Combined Medical Laboratory X-Ray Course;
(e) a person who is using the radiation installation or radiation equipment under the direct supervision of a practitioner as defined by the *Dental Act* ; or
(f) a chiropractor as defined by the *Chiropractors Act.*

(4) Notwithstanding subsection (3), a person who is:

(a) undergoing a course of instruction in radiation

technology approved by the minister; or
(b) a candidate for certification as a medical radiation technologist by the Canadian Association of Medical Radiation Technologists may, under the instruction or direction of a person referred to in subsection (3), operate radiation equipment for the irradiation of human subjects.

(5) A person who has completed a course of instruction in radiation technology approved by the minister and is authorized by the director may, in circumstances or places where the services of a person authorized by subsection (3) to use radiation equipment cannot reasonably be made available, operate radiation equipment for the irradiation of human subjects. **Section 10(1) to (5).**

Minimum Age for Radiation Worker

(1) An owner **shall** not employ a person as a radiation worker unless that person is at least 18 years of age.

(2) Subsection (1) does not apply to a person employed as a medical radiation technologist in training. **Section 12(1)(2).**

Maximum Dose for Radiation Workers and Others

(1) Radiation workers **shall** not be exposed to ionizing radiation in excess of the maximum permissible dose as set out in the Schedule, Parts I and II, to these regulations.

(2) A medical radiation technologist in training **shall** not receive while being so occupied a dose of the gonads and bone marrow in excess of 500 millirem in a one year period.

(3) A student under 16 years of age **shall** not receive a dose to the gonads and bone marrow in excess of 100 millirem in a one year period during the course of receiving training.

(4) A student 16 years of age or over **shall** not receive a dose to the gonads and bone marrow in excess of 500 millirem in a

one-year period in the course of **required** training.

(5) A radiation worker, or a medical radiation technologist in training or student who is pregnant or who suspects she is pregnant **shall** not while occupied as a radiation worker or a medical radiation technologist in training or a student receive a dose to the abdomen in excess of 500 millirem during the remaining period of pregnancy.

(6) A person in charge of an experiment or training demonstration in which radiation equipment is being used **shall** so plan the experiment or demonstration that a person exposed to radiation from that experiment during the experiment or demonstration **shall** not receive more than 10 millirem. **Section 13(1) to (6).**

Safety Instructions

(1) The owner of radiation equipment **shall**, before a radiation worker uses the radiation equipment or before a radiation worker enters a space where radiation is used, provide the worker with safety instructions covering:

(a) the safe operation of the equipment;
(b) the protective procedures to be followed;
(c) the use of protective equipment; and
(d) procedures to be followed in the event of an accident.

(2) The safety instructions **shall** be in writing, and

(a) **shall** be posted near the control of the equipment; or
(b) **shall** be given in individual copies to the worker.

(3) The safety instructions **shall** identify:

(a) the owner or a person employed by the owner who is entitled by these regulations to control radiation exposures to human beings; or
(b) a person who has satisfied the minister as to his or her ability to ensure compliance with instructions and

maintenance of physical and procedural radiation hazard control.

(4) The owner or persons employed and identified by him or her according to subsection (3) **shall** satisfy themselves by adequate supervision or review that the instructions have been understood and are being followed.

(5) The radiation worker **shall** follow the safety instructions given to him or her by the owner.

(6) There **shall** be a prominent warning system and appropriate warning symbol outside the door of each room where radiation equipment is installed. **Section 16(1) to (6).**

For more information:

- Irradiation of non-human subjects. **Section 11(a) to (d).**
- Personnel monitoring and record keeping. **Section 14(1)(2).**
- Procedure in case of pregnancy. **Section 15(1)(2).**
- Accident reporting. **Section 18(a) to (g).**
- Equipment construction, installation, and maintenance. **Section 19(1) to (6).**

Radiation Health and Safety Regulations

- Responsibility of owner. **Section 11(1)(2).**
- Implementation of safety measures and procedures. **Section 12(1) to (5).**
- Requirements for use of radiation equipment. **Section 13.**
- Deviation from regulations. **Section 14(1) to (3).**
- Inspectors and Powers. **Section 15 and 16.**

Further details can be found at the Radiation Health and Safety Regulations and Radiation Health and Safety Act.

NOVA SCOTIA

In Nova Scotia, **employers must** address radiation exposure

under the **Radiation Emitting Devices Regulations**, **Sections 2.1 to 14.1. Employers must** ensure that radiation equipment is registered before use, that workers are informed of exposure risks, and that protective measures, including personal radiation monitoring devices and safety training, are provided. Additionally, radiation warning signs **must** be posted, and inspections **must** be permitted. **Employers must** take remedial action to correct unsafe conditions and report any overexposure incidents.

Registration (Ionizing Device)

Prior to Installation

No person **shall** install or permit the installation of a new, used or modified ionizing device in any place until the owner of the device has forwarded a completed Application for Registration (Ionizing Device) in the form contained in Appendix I to these regulations to the Nova Scotia Department of Health and a registration for that ionizing device has been issued pursuant to these regulations. **Section 3.1.**

Prior to Use

No person **shall** use or permit the use of any ionizing device unless such ionizing device has been registered pursuant to these regulations or the regulations referred to in Section 13.1, and such registration is in force and has not been cancelled or suspended. **Section 3.2.**

Sections 3.1 and 3.2 exclude radioactive substances and those installations or devices which require licensing by the Atomic Energy Control Board of Canada. **Section 3.3.**

On receipt of a completed Application for Registration (Ionizing Device), the Minister may issue or cause to be issued registration in respect of each ionizing device covered by the Application and each registration **shall** remain in force during the ownership of the ionizing device by the person or

corporation named on the registration, subject to continued compliance with these regulations and any conditions attached to the registration as determined by periodic inspection or otherwise. **Section 3.4.**

Prior to registration of an ionizing device, the ionizing device and the radiation installation in which it is to be installed may be inspected by the Radiation Health Officer and following such an inspection the Radiation Health Officer **shall** make a recommendation to the Minister with regard to the issuing of a registration. **Section 3.5.**

No person or corporation having or obtaining registration of an ionizing device **shall:**

a. install or cause to be installed any different ionizing device; or
b. install or cause to be installed any additional ionizing device; or
c. modify or cause to be modified an existing ionizing device or radiation installation in any manner which may affect the radiation safety of the ionizing device or radiation installation. **Section 3.6.**

On the advice of the Radiation Health Advisory Committee, the Minister may at any time revoke, cancel, amend or modify any of the conditions under which a registration for an ionizing device has been issued. **Section 3.7.**

Inspection

For the purposes of these regulations, the owner or operator of a radiation installation and the owner or operator of radiation emitting equipment, including owners or operators using radioactive substances, **shall:**

(a) permit a Radiation Health Officer to

(i) enter, at any reasonable time, the radiation

installation or the place where the radiation emitting equipment is used, and

(ii) carry out such technical tests or measurements as may be **required** in order to establish the condition of the radiation emitting equipment or the radiation installation or both;

(b) provide such information as the Radiation Health Officer may request, concerning

(i) the extent and manner of use of the radiation emitting equipment,

(ii) the qualifications and training of the radiation workers,

(iii) the protective measures, including monitoring procedures, which have been established, and

(iv) any matter relating to the overexposure to radiation of any person;

(c) permit the Radiation Health Officer to interview radiation workers in private;

(d) maintain the record specified in Appendix II "RECORDS" attached to and forming part of these regulations and facilitate the review of such records relating to **employee**s, including radiation workers; and

(e) report any incident leading to the exposure or suspected exposure of any person to excess radiation. **Section 4.1(a) to (e).**

Use

If, on the advice of the Radiation Health Advisory Committee, the Minister is satisfied either:

a. that a radiation installation or radiation emitting equipment is in such condition or is so constructed or is so placed that it cannot be used without risk of unnecessary exposures of persons to radiation; or
b. that any radiation installation or radiation emitting

equipment is used in such a manner as to cause risk of unnecessary exposure of persons to radiation; or

c. that any radiation installation or radiation emitting equipment is exposing persons to radiation beyond the exposure limits defined in the regulation the Minister may, by order, do any one or more of the following:

(i) prohibit the use of the radiation installation or radiation emitting equipment,
(ii) if capable of repair, alteration or modification, prohibit the use of a radiation installation or radiation emitting equipment until satisfactorily so repaired, altered or modified,
(iii) require the owner or operator of the radiation installation or radiation emitting equipment to take any such action as may be specified by the Minister so as to remedy the danger of unnecessary exposure to any person. **Section 5.1(a) to (e).**

Nothing in these regulations limits the kind or quantity of radiation that may be deemed necessary for diagnostic or therapeutic purposes by or under the direction of a person qualified to provide patients with care and treatment by means of radiation. **Section 5.2.**

Safety

On the recommendation of the Radiation Health Officer the owner of any radiation installation **shall:**

a. post radiation warning signs or install warning devices;
b. provide radiation workers and other occupationally exposed persons with personal radiation dose-recording devices;
c. provide safety training for radiation workers and other occupationally exposed persons; and
d. provide to all radiation workers and other occupationally exposed persons appropriate protective

equipment and clothing. **Section 7.1(a) to (d).**

For more information:

- Advisory Committee. **Section 2.1 to 2.7.**
- Remedial action. **Section 6.1 to 6.3.**
- **Section 8.1 to 8.3.**
- Exposure limits. **Section 9.1.**
- **Sections 10.1, 10.2.**
- **Section 11.1.**

Further details on the Radiation Emitting Devices Regulations can be found at *canlii.org*.

NORTHWEST TERRITORIES

In the Northwest Territories, **employers must** address radiation exposure under the **Occupational Health and Safety Regulations, Sections 345 to 350. Employers** are responsible for ensuring that workers using ionizing radiation equipment for medical, dental, veterinary, or industrial purposes meet qualification and training standards. **Employers must** also reassess and modify the work of pregnant workers to limit exposure and ensure that protective measures such as dosimetry monitoring, safety training, and proper shielding are in place.

Duty of Employer and Worker

(1) An **employer** who requires or permits the use of an ionizing radiation installation or use of ionizing radiation equipment by a worker in the diagnosis or treatment of human beings, **shall** ensure that the worker is:

(a) a duly qualified medical professional with specialized training in radiography;
(b) a person licensed to practice dentistry under the Dental Profession Act, or a dental hygienist or dental therapist as each is defined in the Dental Auxiliaries Act;
(c) a medical radiation technologist or X-ray technician,

whose experience and qualifications are approved by the Chief Safety Officer;

(d) a student who is under the direct supervision of an individual who possesses the qualifications set out in paragraphs (a), (b) or (c); or

(e) an individual who

(i) is trained to carry out the procedures for which the equipment is to be used, and

(ii) demonstrates to the satisfaction of the Chief Safety Officer that they possess adequate knowledge of the equipment, the biological effects associated with the equipment's use and the necessary safety procedures.

(2) If an **employer** requires or permits the use of an ionizing radiation installation or use of ionizing radiation equipment by a worker in the diagnosis or treatment of animals, they **shall** ensure that the worker is:

(a) a veterinary surgeon entitled to practice veterinary surgery under section 5 of the Veterinary Profession Act;

(b) an animal health technician under the direct supervision of a veterinarian; or

(c) a student under the direct supervision of an individual who possesses the qualification set out in paragraph (a) or (b).

(3) An **employer** who requires or permits the use of an ionizing radiation installation or use of ionizing radiation equipment by a worker for a purpose other than in the diagnosis or treatment of human beings or animals, **shall** ensure that worker:

(a) possesses the qualifications or otherwise meets the requirements set out in a code of practice;

(b) understands the procedures for which the equipment is to be used; and

(c) possesses the knowledge necessary to adequately manage or control the ionizing radiation installation or ionizing radiation equipment and knowledge of the necessary safety procedures.

(4) An individual **shall** not operate an ionizing radiation installation or ionizing radiation equipment unless they possess the qualifications set out in subsections (1), (2) or (3). **Section 349(1) to (4).**

Qualifications of Workers

(1) In this section,

“Safety Code 29” means Health Canada standard Requirements for the Safe Use of Baggage X-ray Inspection Systems, Safety Code 29 (1993), as amended from time to time;

“Safety Code 32” means Health Canada standard Safety Requirements and Guidance for Analytical X-ray Equipment, Safety Code 32 (1994), as amended from time to time;

“Safety Code 34” means Health Canada standard Radiation Protection and Safety for Industrial X-ray Equipment, Safety Code 34 (2003), as amended from time to time.

(2) Safety Code 29, Safety Code 32 and Safety Code 34 are adopted.

(3) A worker **shall** not use an ionizing radiation installation or ionizing radiation equipment for industrial radiography unless they comply with the requirements of Safety Code 34.

(4) A worker **shall** not use an ionizing radiation installation or ionizing radiation equipment for industrial radiography unless they:

(a) have successfully completed the Canadian General Standards Board (CGSB) Canadian Nuclear Safety Commission Exposure Device Operators Examination;

(b) have successfully completed the equivalent of the CGSB Level 1 Certification Examination in Industrial Radiography; or
(c) are under the direct supervision and continuous observation of an individual who satisfies the requirements of paragraph (a) or (b).

(5) A worker **shall** not use an ionizing radiation installation or ionizing radiation equipment for a purpose other than diagnosis or treatment of human beings or animals or for industrial radiography unless they comply,

(a) in the case of baggage X-ray equipment, with the requirements of Safety Code 29; or
(b) in the case of analytical X-ray equipment, with the requirements of Safety Code 32 **Section 350(1) to (5).**

For more information:

Part 7 – Personal Protective Equipment

- Eye and Face Protection. **Section 97(1) to (4).**
- Skin Protection. **Section 98(1) to (3).**

Part 23 – Radiation

- Pregnancy of Occupational Worker. **Section 345(1) to (3).**

Further details on the Occupational Health and Safety Regulations can be found at *canlii.org*.

NUNAVUT

In Nunavut, **employers must** address radiation exposure under the **Occupational Health and Safety Regulations, Sections 345 to 350. Employers** are responsible for ensuring that workers using ionizing radiation equipment for medical, dental, veterinary, or industrial purposes meet qualification and training standards. **Employers must** also reassess and modify the work of pregnant workers to limit exposure and ensure that

protective measures such as dosimetry monitoring, safety training, and proper shielding are in place.

Duty of Employer and Worker

(1) An **employer** who requires or permits the use of an ionizing radiation installation or use of ionizing radiation equipment by a worker in the diagnosis or treatment of human beings, **shall** ensure that the worker is:

(a) a duly qualified medical professional with specialized training in radiography;
(b) a person licensed to practice dentistry under the Dental Profession Act, or a dental hygienist or dental therapist as each is defined in the Dental Auxiliaries Act;
(c) a medical radiation technologist or X-ray technician, whose experience and qualifications are approved by the Chief Safety Officer;
(d) a student who is under the direct supervision of an individual who possesses the qualifications set out in paragraphs (a), (b) or (c); or
(e) an individual who

(i) is trained to carry out the procedures for which the equipment is to be used, and
(ii) demonstrates to the satisfaction of the Chief Safety Officer that they possess adequate knowledge of the equipment, the biological effects associated with the equipment's use and the necessary safety procedures.

(2) If an **employer** requires or permits the use of an ionizing radiation installation or use of ionizing radiation equipment by a worker in the diagnosis or treatment of animals, they **shall** ensure that the worker is:

(a) a veterinary surgeon entitled to practice veterinary surgery under section 5 of the Veterinary Profession Act;
(b) an animal health technician under the direct

supervision of a veterinarian; or
(c) a student under the direct supervision of an individual who possesses the qualification set out in paragraph (a) or (b).

(3) An **employer** who requires or permits the use of an ionizing radiation installation or use of ionizing radiation equipment by a worker for a purpose other than in the diagnosis or treatment of human beings or animals, **shall** ensure that worker:

(a) possesses the qualifications or otherwise meets the requirements set out in a code of practice;
(b) understands the procedures for which the equipment is to be used; and
(c) possesses the knowledge necessary to adequately manage or control the ionizing radiation installation or ionizing radiation equipment and knowledge of the necessary safety procedures.

(4) An individual **shall** not operate an ionizing radiation installation or ionizing radiation equipment unless they possess the qualifications set out in subsections (1), (2) or (3). **Section 349(1) to (4).**

Qualifications of Workers

(1) In this section,

“Safety Code 29” means Health Canada standard Requirements for the Safe Use of Baggage X-ray Inspection Systems, Safety Code 29 (1993), as amended from time to time;

“Safety Code 32” means Health Canada standard Safety Requirements and Guidance for Analytical X-ray Equipment, Safety Code 32 (1994), as amended from time to time;

“Safety Code 34” means Health Canada standard Radiation Protection and Safety for Industrial X-ray Equipment, Safety

Code 34 (2003), as amended from time to time.

(2) Safety Code 29, Safety Code 32 and Safety Code 34 are adopted.

(3) A worker **shall** not use an ionizing radiation installation or ionizing radiation equipment for industrial radiography unless they comply with the requirements of Safety Code 34.

(4) A worker **shall** not use an ionizing radiation installation or ionizing radiation equipment for industrial radiography unless they:

(a) have successfully completed the Canadian General Standards Board (CGSB) Canadian Nuclear Safety Commission Exposure Device Operators Examination;
(b) have successfully completed the equivalent of the CGSB Level 1 Certification Examination in Industrial Radiography; or
(c) are under the direct supervision and continuous observation of an individual who satisfies the requirements of paragraph (a) or (b).

(5) A worker **shall** not use an ionizing radiation installation or ionizing radiation equipment for a purpose other than diagnosis or treatment of human beings or animals or for industrial radiography unless they comply,

(a) in the case of baggage X-ray equipment, with the requirements of Safety Code 29; or
(b) in the case of analytical X-ray equipment, with the requirements of Safety Code 32 **Section 350(1) to (5).**

For more information:

Part 7 – Personal Protective Equipment

- Eye and Face Protection. **Section 97(1) to (4).**
- Skin Protection. **Section 98(1) to (3).**

Part 23 – Radiation

- Pregnancy of Occupational Worker. **Section 345(1) to (3).**

Further details on the Occupational Health and Safety Regulations can be found at *canlii.org*.

ONTARIO

In Ontario, **employers must** ensure radiation protection under the **Healing Arts Radiation Protection Act**, including **Sections 5 to 9 and 4, 13 and 22 of the R.R.O. 1990, Reg. 861: X-RAY SAFETY. Employers must** ensure that only qualified professionals operate X-ray machines, which **must** meet safety standards and be maintained in safe operating conditions. A radiation protection officer **must** be designated for each facility to oversee compliance and worker safety. **Employers must** follow prescribed regulations, including training requirements, exposure limits, and record-keeping. Inspectors may issue orders to enforce compliance.

Radiation Protection Officer

Use of X-Ray Machine

(1) No person **shall** operate an X-ray machine for the irradiation of a human being unless the person meets the qualifications and requirements prescribed by the regulations. **Section 5(1).**

Persons Deemed to be Qualified

(2) The following persons **shall** be deemed to meet the qualifications prescribed by the regulations:

1. A legally qualified medical practitioner.
2. A member of the Royal College of Dental Surgeons of Ontario.
3. A member of the College of Chiropodists of Ontario who

has been continuously registered as a chiropodist under the *Chiropody Act* and the*Chiropody Act, 1991*since before November 1, 1980 or who is a graduate of a four-year course of instruction in chiropody.

4. A member of the College of Chiropractors of Ontario.
5. A member of the College of Medical Radiation and Imaging Technologists of Ontario.
6. A member of the College of Dental Hygienists of Ontario. **Section 5(2).**

Instructions Required

(1) No person **shall** operate an X-ray machine for the irradiation of a human being unless the irradiation has been prescribed by,

(a) a legally qualified medical practitioner or another person prescribed by the regulations;
(b) a member of the Royal College of Dental Surgeons of Ontario;
(c) a member of the College of Chiropodists of Ontario who has been continuously registered as a chiropodist under the *Chiropody Act* and the *Chiropody Act, 1991* since before November 1, 1980 or who is a graduate of a four-year course of instruction in chiropody;
(d) a member of the College of Chiropractors of Ontario; or
(g) a member of the College of Nurses of Ontario who holds an extended certificate of registration under the *Nursing Act, 1991* or another person prescribed by the regulations. **Section 6(1)(a) to (d), (g).**

Causing or Permitting Use of X-Ray Machine

No person **shall** cause or permit any other person to operate an X-ray machine for the irradiation of a human being unless the other person meets the qualifications and requirements prescribed by the regulations. **Section 7.**

X-Ray Machine Standards

No person **shall** operate an X-ray machine for the irradiation of a human being, unless the X-ray machine meets the standards prescribed by the regulations. **Section 8.**

(1) The owner of a portable X-ray machine or an installed X-ray machine **shall** designate a person as the radiation protection officer for the portable X-ray machine or the facility in which the X-ray machine is installed if he or she meets the qualifications prescribed by the regulations and is,

(a) a legally qualified medical practitioner;
(b) a member of the Royal College of Dental Surgeons of Ontario;
(c) a member of the College of Chiropodists of Ontario who has been continuously registered as a chiropodist under the *Chiropody Act* and the *Chiropody Act, 1991* since before November 1, 1980 or who is a graduate of a four-year course of instruction in chiropody; or
(d) a member of the College of Chiropractors of Ontario. **Section 9(1)(a) to (d).**

Responsibilities

(4) A radiation protection officer for a facility is responsible,

(a) for ensuring that every X-ray machine operated in the facility is maintained in safe operating condition; and
(b) for such other matters related to the safe operation of each X-ray machine in the facility as are prescribed by the regulations. **Section 9(4).**

For more information:

- Order by Director or inspector. **Section 13.**
- **Section 22(a) to (l).**

Further details can be found at the Healing Arts Radiation Protection Act and R.R.O. 1990, Reg. 861: X-RAY SAFETY.

PRINCE EDWARD ISLAND

In Prince Edward Island, **employers must** address radiation exposure under the **Radiation Safety Regulations**, **Sections 3, 10, 14, and 17** and **Occupational Health and Safety Act General Regulations**, **Section 10.1 to 10.5**. **Employers** are responsible for registering radiation equipment, ensuring inspections, and maintaining compliance with safety standards. They **must** also provide protective measures for workers, including safety training, warning signs, and shielding from non-ionizing radiation sources such as lasers, infrared, and ultraviolet radiation. Additionally, pregnant workers **must** be reassessed to limit exposure, and radiation equipment **must** be operated only by qualified personnel.

Radiation Safety Regulations

Registration of Radiation Equipment

(1) No person **shall** install or permit the installation of a new, used or modified radiation emitting device in any place until the owner of the device has forwarded a completed application form for ownership registration of radiation equipment (Schedule 1) to the Department.

Inspection

(2) Prior to registration of a radiation emitting device, the device and the radiation installation in which it is to be installed, **shall** be inspected by a Radiation Safety Officer.

Use

(3) No person **shall** use or permit the use of any radiation emitting device unless such device has been registered pursuant to these regulations and such registration is in force and has not been cancelled or suspended. **Section 3(1) to (3).**

Radiation Worker Qualifications

(1) An owner **shall** not employ as a radiation worker any person:

(a) who is under eighteen years of age; or
(b) who has been found by a medical authority to be unfit for such employment.

(2) Clause 1(a) does not apply to a person employed as a radiation technologist in training. **Section 10(1)(2).**

Exception

(1) A radiation worker, radiation technologist or radiation student who knows that she is pregnant, **shall** report that fact to her **employer** or the person in charge of her training.

Pregnancy

(2) If the pregnant person desires to continue in employment or training, the **employer** together with the pregnant person will assess and revise as indicated the employment duties or training activities to ensure the maximum permissible dose for a pregnant person is not exceeded. If reassignment is not possible, then the pregnant **employee**, if she wishes to continue working, will acknowledge in writing that she has been informed by a radiologist of the risks involved and has accordingly accepted those risks.

(3) No woman **shall** be denied employment by virtue of the fact that she is pregnant unless there is evidence that she has exceeded the maximum permissible dose for a pregnant person. **Section 11(1).**

Responsibilities of Owner, Inspection, and Testing

An owner **shall:**

(a) permit a Radiation Safety Officer to enter at any reasonable time the place where the radiation emitting device is used;

(b) furnish such information as the Radiation Safety Officer may request concerning

(i) the extent and manner of use of the radiation emitting device,
(ii) the qualifications and training of the person using and operating the radiation emitting device or directing its operation,
(iii) the protective procedures that have been established, or
(iv) the circumstances surrounding any incident which might have involved an undue exposure of any person; and

(c) permit the Radiation Safety Officer to make whatever technical tests are necessary in order to establish an estimate of the dose that a person in the vicinity of the radiation emitting device may receive or may have received. **Section 14(a) to (c).**

Responsibilities of Owner, Warnings

(1) The owner of a radiation emitting device **shall:**

(a) post in an obvious place placards supplied by the Department on which there appears an abstract of this regulation or applicable part thereof;
(b) post radiation warning signs or install warning devices prescribed by the Department; and
(c) when so directed by the Department discontinue the use of the radiation emitting device until such changes have been made respecting it or its manner of operation as the Department may direct.

(2) Directions from the Department to the owner of a radiation emitting device **shall** be in writing and specify the time within which compliance **shall** be effected. **Section 17(1)(2).**

For more information:

Part 10 – Non-Ionizing Radiation

- Laser radiation. **Section 10.1.**
- Infra-red radiation. **Section 10.2(1).**
- Protective equipment. **Section 10.2(2).**
- Ultra-violet radiation. **Section 10.3.**
- Microwave and radio frequency radiation. **Section 10.4(1)(a) to (c).**
- Power density. **Section 10.4(2).**
- **Section 10.5.**

Further details on the Radiation Safety Regulations and Occupational Health and Safety Act General Regulations can be found at *canlii.org* and *princeedwardisland.ca*.

QUÉBEC

In Québec, **employers must** address radiation exposure under the **Act Respecting Occupational Health and Safety, Sections 71, 72, 142, 143, 144, and 343. Employers** are responsible for shielding workers from intense infra-red and ultra-violet radiation, ensuring protective screens, gloves, and eye protection for workers exposed to hazardous radiations. Workers exposed to ionizing radiation **must** be monitored with dosimetry, and those receiving an overdose **must** undergo medical examinations at regular intervals. Additionally, eye and face protection that complies with CAN/CSA Z94.3 standards **must** be provided and maintained for workers exposed to particles, dangerous substances, or intense radiation.

Division XVI – Hazardous Radiations

Infra-red radiation: All intense infra-red radiation sources **shall** be shielded by a worker preventive measure, such as a heat absorbent screen or a water screen. **Section 142.**

Ultra-violet radiation: In areas where operations producing dangerous emanations of ultra-violet radiations such as arc

welding and cutting and resistance welding are carried out, the following precautions **shall** be taken:

1. enclose the emanation sources with protective screens;
2. protect the hands and forearms of workers exposed to appreciable doses with gloves or protective creams;
3. protect eyes and face as **required** under section 343. **Section 143.**

Ionizing radiation: Workers exposed to ionizing radiation **shall** be monitored by dosimetry.

In the event of an overdose, workers thus exposed **shall** undergo medical examinations at more or less regular intervals, depending on the duration of exposure. **Section 144.**

Division XXX – Means and Equipment for Individual and Group Protection

Eye and face protectors: The wearing of an eye protector or a face protector acquired on or after 5 May 2011 and complying with the CAN/CSA Z94.3 Eye and Face Protectors standard is mandatory for any worker who is exposed to a danger that may cause injury to his eyes or face by:

1. particles or objects;
2. dangerous substances or molten metals;
3. intense radiation.

However, protectors in good condition and complying with the CAN/CSA Z94.3-92, CAN/CSA Z94.3-99 or CAN/CSA Z94.3-02 standard are considered to offer adequate protection. **Section 343.**

Storage and Handling of Dangerous Substances – Division X

Hazardous product: In this Division, “hazardous product” means a hazardous product within the meaning of the Hazardous Products Information Regulation (chapter S-2.1, r. 8.1).

A dangerous substance that is both a hazardous product and one appearing on the list in Schedule II **shall** meet the requirements of this section applying to it, as regards each and every category to which it belongs both as a hazardous product and a substance appearing on the list. **Section 71.**

Safety precautions: The storage and handling of dangerous substances **shall** be so controlled as to prevent accidental spillage or lighting of these substances. The following precautions **shall** be taken:

1. separate or isolate any dangerous substances which when mixed with other substances, may cause a fire or an explosion, or may discharge flammable or toxic gases;
2. keep containers, piping and other apparatus in good working order;
3. clean immediately but safely any dangerous substance spilled on floors or shelves;
4. when pouring from one container to another, use a secure recipient taking into account the type of dangerous substance being poured;
5. depending on the category in which the dangerous substance is classified, it **shall** comply with sections 77 to 99. **Section 72.**

Further details on the Act Respecting Occupational Health and Safety can be found at *legisquebec.gouv.qc.ca*.

SASKATCHEWAN

In Saskatchewan, **employers must** ensure radiation safety under the **Occupational Health and Safety Regulations**, **Section 6-21, 7-8, 7-9**, and the **Radiation Health and Safety Regulations, 2005, Sections 3, 12, 15, 26, 28, 30, 31**. **Employers** handling radioactive substances **must** develop safe work practices, inform radiation workers of risks and dose limits, and provide protective equipment. Only qualified personnel may operate radiation equipment, with mandatory inspections: annually for

medical X-ray, every three years for dental, and every five years for veterinary equipment. **Employers must** also implement exposure controls for laser and ultrasound equipment and provide eye, face, and skin protection for radiation-exposed workers.

Part 6 – General Health Requirements

Radioactive Substances

(1) Subject to Part V of The Saskatchewan Employment Act and The Radiation Health and Safety Regulations, 2005 if a radioactive substance or a device containing a radioactive substance is handled, used, stored or disposed of an **employer**:

> (a) in consultation with the committee, the representative or, if there is no committee or representative, the workers, **shall** develop safe work practices and procedures to handle, use, store and dispose of radioactive substances or devices containing radioactive substances; and
> (b) on request, **shall** make available to the committee, the representative or the workers any licence issued to the **employer** pursuant to the Nuclear Safety and Control Act (Canada).

(2) An **employer shall** ensure that the safe work practices and procedures developed pursuant to clause (1) (a) are implemented. **Section 621(1)(2).**

Part 7 – Personal Protective Equipment

Eye and Face Protectors

(1) If there is a risk of irritation or injury to the face or eyes of a worker from f lying objects or particles, splashing liquids, molten metal or ultraviolet, visible or infrared radiation, an **employer** or contractor **shall** provide industrial eye or face protectors and require the worker to use them.

(2) If an industrial eye or face protector is **required** by

these regulations to be provided or used, the industrial eye or face protector **must** be approved.

(3) An **employer** or contractor **shall** take all reasonable steps to ensure that a worker does not perform electric arc welding if another worker may be exposed to radiation from the arc, unless the other worker is using a suitable industrial eye protector or is protected from the radiation by a suitable screen.

(4) A worker **shall** not perform electric arc welding if another worker may be exposed to radiation from the arc, unless the other worker is using a suitable industrial eye protector or is protected from the radiation by a suitable screen. **Section 78(1) to (4).**

Skin Protection

(1) If there is a risk of injury to the skin of a worker from sparks, molten metal or radiation, an **employer** or contractor **shall** provide, and require the worker to use, approved protective clothing or covers or any other safeguard that provides equivalent protection for the worker.

(2) If there is a risk of injury to the skin of a worker from fire or explosion, an **employer** or contractor **shall** provide the worker with, and require the worker to use, outer fire-resistant clothing that:

(a) meets an approved industry standard; and
(b) is appropriate to the risk.

(3) If there is a risk of injury to the skin of an electrical worker from arc flash, an **employer** or contractor **shall** provide the electrical worker with, and require the electrical worker to use, arc flash protection that meets an approved standard. **Section 79(1) to (3).**

Part 2 – Ionizing Radiation

Provision of Information

(1) An owner **shall** ensure that a radiation worker is informed, in writing:

(a) that the worker is a radiation worker;
(b) of the risks associated with radiation to which the worker may be exposed in the course of work; and
(c) of the applicable effective dose limits and equivalent dose limits set out in section 4.

(2) An owner **shall** ensure that a female radiation worker is informed, in writing:

(a) of the risks associated with the exposure of embryos and fetuses to radiation;
(b) of the importance of informing the owner, as soon as is practicable, in writing, that the female radiation worker is pregnant;
(c) of the rights of a pregnant radiation worker pursuant to subsection (3); and
(d) of the applicable effective dose limits for pregnant radiation workers set out in section 4.

(3) On being informed by a radiation worker that the worker is pregnant or suspects that the worker is pregnant, the owner or operator of the ionizing radiation equipment or ionizing radiation installation **shall**, in order to comply with subsection 4(1), reassess and, if necessary, revise the employment duties or educational activities of the worker. **Section 3(1) to (3).**

Qualifications of Operators

1. For the purposes of clause 5-6(7)(a) of the Act, the operator of an ionizing radiation installation, or of ionizing radiation equipment, that is used for industrial radiography, **shall** comply with the requirements of the Radiation Protection and Safety for

Industrial X-ray Equipment, Safety Code 34, 2003, published by Health Canada.

2. For the purposes of clause 5-6(7)(a) of the Act, the operator of an ionizing radiation installation, or of ionizing radiation equipment, that is used for a purpose other than diagnosis or treatment relating to human beings or animals or for industrial radiography **shall** be trained to carry out, in a safe manner, the procedures for which the equipment is to be used, and:

(a) in the case of baggage X-ray equipment, **shall** be familiar with and adhere to the requirements of the Requirements for the Safe Use of Baggage X-Ray Inspection Systems, Safety Code 29, 1993, published by Health Canada; or

(b) in the case of analytical X-ray equipment, **shall** be familiar with and adhere to the requirements of the Safety Requirements and Guidance for Analytical X-Ray Equipment, Safety Code 32, 1994, published by Health Canada. **Section 12(1)(2).**

Frequency of Inspections

1. An inspection **required** by subsection 14(1) is to be carried out:
   (a) not less than once per year for medical X-ray equipment;
   (b) not less than every 3 years for dental X-ray equipment; and
   (c) not less than every 5 years for veterinary X-ray equipment.
2. An inspection **required** by subsection 14(1) is to be carried out after substantial alteration as defined in section 5-3 of the Act or repair. **Section 15(1)(2).**

For more information:

Part 3 – Non-ionizing Radiation – Division 2 – Laser Radiation

- Duty to inform. **Section 26(a)(b).**
- Qualifications of operators. **Section 28.**

Division 4 – Ultrasound Equipment

- Qualifications of operators – diagnostic. **Section 30.**
- Qualifications of operators – therapeutic. **Section 31(a) to (h).**

Further details on the Occupational Health and Safety Regulations and Radiation Health and Safety Regulations can be found at *saskatchewan.ca* and *scotsk.ca*.

YUKON

In Yukon, **employers must** ensure radiation safety under the Radiation Protection Regulations**, including Sections 3 to 25**. **Employers must** register radiation equipment, follow installation standards, and maintain protective shielding to limit exposure. Regular equipment inspections and maintenance records are **required**. **Employers must** monitor worker radiation exposure using dosimeters, maintain dose records, and ensure pregnant workers are reassessed to limit exposure. In case of incidents or overexposure, **employers must** notify authorities and take corrective action. **Employers must** also develop a code of practice for safe radiation operations and provide worker training.

General Obligations of Owners and Users – Radiation Protection

Every person who becomes an owner of an x-ray machine, a source that is not an x-ray machine, or laser equipment **shall** complete and deliver Form A to the board within 30 days of becoming an owner. **Section 3.**

Installation of Radiation Equipment

(1) All installations of radiation equipment **shall** be made in accordance with the recommendations of the manufacturer, using

the “Recommended Safety Procedures for Installation and Use” published by the Department of National Health and Welfare as a minimum standard.

(2) If requested by the board, the owner of an x-ray machine **shall** provide drawings of the intended installation and those drawings **shall:**

(a) identify the owner of the x-ray machine and the owner of the premises,

(b) show the proposed location of the x-ray machine,

(c) indicate the occupancy of adjacent rooms, offices or other accommodation, including those above and below the space in which the x-ray machine is to be installed, and

(d) indicate the additional structural shielding to be installed on the boundaries of the space in which the x-ray machine is to be installed. **Section 4(1)(2).**

(1) Every installation of an x-ray machine **shall** be shielded with a primary protective barrier and a secondary protective barrier so that no x-ray worker receives a whole body dose equivalent of more than 100 milliard per week.

(2) Where lead shielding is used as a barrier, it **shall** be mounted in such a manner as to avoid sagging or damage.

(3) Windows, doors, joints between different material, and other openings **shall** be so constructed that they meet the same protection standards referred to in subsection (1).

(4) All doors leading directly into an x-ray room **shall** be fitted with self-closing devices and **shall** have warning signs prominently displayed to alert persons to the presence of x-rays. **Section 5(1) to (4).**

(1) Every vendor of radiation equipment and associated apparatus **shall**, after it is installed or otherwise placed in

the operator’s premises and before it is certified as being operable, complete an inspection of its electrical and mechanical components and notify the board of the inspection.

(2) Where radiation equipment and associated apparatus has, subsequent to its manufacture, been discovered to be hazardous and as a result it has been necessary to remove or replace any assembly or components, the supplier of the radiation equipment and associated apparatus **shall** notify the board in writing specifying:

(a) the name and mailing address of the supplier,

(b) the name and address of the owner to whom the equipment is about to be or has been transferred,

(c) the identification and brand name of the equipment,

(d) the model and serial number or other identification number of the equipment, and

(e) the action, if any, which have been taken by the supplier to remove from operation or to retrofit the assembly or equipment. **Section 6(1)(2).**

Maintenance of Radiation Equipment

An owner of an x-ray machine **shall** ensure the machine is maintained in safe operating condition. **Section 7.**

(1) Every owner of an x-ray machine **shall** make arrangements for regular inspection of the equipment, in a manner and to a degree in keeping with the manufacturer’s recommendations.

(2) A copy of the inspection report, with documentation of any maintenance work performed on the equipment, **shall** be retained on the premises. **Section 8.**

Prohibited Radiation Equipment

No person **shall** operate any x-ray equipment unless it is being

used for its intended purpose. **Section 9.**

Radiation Exposure and Dose Limits

(1) When requested by the board, and on the advice of a qualified medical practitioner, the owner of an x-ray machine or source **shall** arrange for the medical examination of an x-ray worker employed by the owner, at the expense of the owner.

(2) The examination by a qualified medical practitioner **shall** include such tests as he or she may consider necessary. **Section 10(1)(2).**

(1) The dose of ionizing radiation received by an x-ray worker, radiation technician in training, or student **shall** be systematically checked:

(a) in the case of x or gamma radiation exposure, by a film badge or pocket ionization chamber, and

(b) in the case of low energy beta rays, neutrons, alpha rays, or other corpuscular radiation, by on-site monitoring or other procedure acceptable to the board.

(2) Every person employing an x-ray worker or in charge of training being received by a radiation technician in training or student **shall** maintain a separate cumulative record on a continuous permanent basis for each of such workers, radiation technicians in training, or students indicating:

(a) the extent to which the worker, radiation technicians in training, or student has been exposed to ionizing radiation,

(b) all previous radiation exposure history received from any radioactive substances deposited within the body of the worker, radiation technicians in training, or student, and

(c) the results of any evaluation of doses received from any radioactive substances deposited within the body of the worker, radiation technicians in training, or student.

(3) Records maintained under subsection (2) **shall** be available to examination upon the request of the board.

(4) An x-ray worker, trainee, or student **shall** assist in making previous radiation exposure history available for the purpose of subsection (2).

(5) The owner of an x-ray machine **shall** ensure that personal dosimeters are worn by all x-ray workers while performing their duty. **Section 11(1) to (5).**

(1) An x-ray worker, radiation technician in training or student who knows or suspects that she is pregnant **shall** report such fact or suspicion to her **employer** or the person in charge of her training.

(2) If a pregnant person wants to continue in employment or training, the **employer** together with the pregnant person, **shall** reassess and revise as indicated the employment duties or educational activities, as the case may be, so that the maximum permissible dose of .1 rad per month during the remaining period of pregnancy is not exceeded. **Section 12(1)(2).**

An x-ray worker, a radiation technician in training, or a student **shall** not be exposed to ionizing radiation in excess of the maximum permissible dose outlined in Table 1. **Section 13.**

A person in charge of an experiment or teaching demonstration in which radiation equipment is being used **shall** so plan the experiment or demonstration that a person exposed to radiation from such equipment during the experiment or demonstration **shall** not receive more than ten milliard. **Section 14.**

For more information:

- Notice of Incidents, Losses, Overexposures. **Section 15(a) to (e).**

- Code of Practice. **Sections 16, 17, and 18.**
- Eligibility for X-Ray Training and Operation. **Sections 19, 20.**
- Laser Operations. **Sections 21, 22, 23, 24, and 25.**

Further details on the Radiation Protection Regulations can be found at *wcb.yk.ca*.