

**Policy on Research and Teaching use of X-ray Emitting Devices.**

Office of the Dean of Arts and Science (Science)

Office of Research

**Statement**

To ensure compliance with Ontario Regulation 861 X-Ray Safety, Health Canada Safety Code 32 (1994) and the addendum (2014), the Radiation Emitting Device regulations and the general duty clause of the Ontario Occupational Health and Safety Act, all devices which emit X-Ray radiation must be registered and all areas where X-Ray emitting devices are located must have a permit. Ontario Regulation 861 stipulates that an employer shall register with the Ministry of Labour, Radiation Protection Service, all locations in which an X-Ray device (permanent or portable) is used. Regulation 861 also stipulates that a the “employer shall designate a person, for each X-ray source, who is competent because of knowledge, training or experience in the use and operation of X-ray sources and in radiation safety practices, to exercise direction over the safe use and operation of the X-ray source”. In addition, Safety Code 32 refers to the requirement that all X-Ray emitting devices meet the engineering requirements listed in the Code as well as the Training requirements for the operator of portable devices.

This policy does not cover X-ray emitting devices used on living persons nor does it cover devices which contain radioactive material. The use of X- rays for medical purposes (used on living humans) is strictly forbidden at Trent University. Any work that includes medical X-rays must be done at a recognized hospital or medical clinic.

**Obtaining an X-ray emitting device permit.**

To obtain a permit, the supervisor shall contact the Radiation Safety Officer, who will complete the appropriate Ministry of Labour application for Review of Permanent X-ray Location. The supervisor will need to supply the following information:

1. Name of the individual who will be the competent supervisor of the device.
2. Building and room location where the device will be used.
3. The make, model and serial number of the proposed device.
4. If necessary, documentation which indicates the device is approved for use in Canada.
5. For portable devices, documentation which shows that the supervisor has completed the appropriate training for use of the device (see below for details).
6. The maximum operating tube voltage and current of the X ray source.

 All personnel who will use the device must also have completed the Radiation Safety Course level 1.

Personnel, other than the designated supervisor, who will operate the device shall be directly supervised by the designated supervisor.

**Acquisition of X-ray emitting devices.**

All new analytical x-ray equipment sold in Canada ***must*** conform to the Radiation Emitting Devices (RED) Regulations at the time of sale. Depending on the analytical X-ray equipment design, Part XIV or Part XV of Schedule II of the RED Regulations may apply. In all cases, X-ray emitting devices shall meet the requirements of the Ontario Electrical Safety Code and shall have certification from an acceptable agency to this effect.

X-ray permits are issued by the Ministry of Labour, Radiation Protection Branch for the locations in which they will be used. Any changes to the supervisor, location of intended use or to the device itself must be communicated to the RSO immediately so that the Ministry can be notified.

Alterations to interlocks and failsafe devices are strictly prohibited at any time.

**Supervisor responsibilities:**

The designated supervisor of an X-ray emitting device has the following responsibilities under Regulation 861:

1. The device, interlocks and failsafe devices shall be kept in good operating order.
2. No person shall use the device except under the supervision of the designated supervisor
3. Doors and entry points to the device shall be appropriately signed.
4. Only properly trained personnel shall use the X-ray emitting device.
5. Shielding (in the room or device) shall be maintained in good working order.
6. The operator of an XRF device in the hand-held or open-beam mode must be XRF certified as administered by NRCan [5]. To perform XRF NDT work, the NRCan XRF-certified operator must be rated at Level 1. The NRCan XRF-certified operator of an XRF device must be rated at Level 2 when
7. training an individual(s) seeking XRF-certified operator certification; or
8. teaching students in an educational or vocational facility where the course curriculum requires hands-on use of the XRF device.

**Radiation Safety Officer Responsibilities:**

The RSO will be responsible for documenting and submitting permit applications to the MOL, RPS and any other record keeping obligations under Regulation 861. As the MOL, PRS branch issues permits, a Trent Permit will not be issued but the RSO will verify and maintain a record of X Ray device location, the name of the supervisor, and will from time to time inspect the facilities under the permit.

The RSO may, if they deem the work immediately dangerous, issue a stop work directive for the use of a X-ray device. The RSO will document the situation and report to the VP Research and Dean who will review the situation and issue corrective actions. Continuing non-compliance with this policy,and/or with OHS Regulation 861, may result in the suspension of research funding and/or progressive disciplinary action according to university policies and procedures.

**Acts and Regulations:**

1. Ontario OHS Regulation 861. X-Ray Safety, Occupational Health and Safety Act, 1990.
2. Department of National Health and Welfare. Radiation Emitting Devices Act, Chapter 34 (1st Supplement), Revised Statutes of Canada. Ottawa, Queen's Printer, Canada Gazette; 1984.
3. Safety Requirements and Guidance For Analytical X-ray Equipment - Safety Code 32 1994
ISBN: 0-660-15602-4 Cat. No.: H46-2/94-186E
4. Addendum to Safety Code 32: Portable, hand-held, x-ray tube based open-beam XRF devicesHealth Canada 2014 HC Pub. No.: 130528
5. NRCan Certification and Examination Preparation Booklet: Operator of Portable X-ray Fluorescence Analyzers (XRF). Version 4- September 2013.

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