

Application of the NORM Guidelines in Ontario – Workplace responsibilities with regard to Radon

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Legal Disclaimer

This document does not constitute legal advice. Where parties have questions about their rights and obligations under OHSA and its regulations, they should contact their legal counsel or refer to the legislation at:

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o01_e.htm

Purpose and Scope

- The purpose of this presentation is to provide an overview of what the Ministry of Labour (MOL) requires of workplaces with respect to the occupational hazards associated with radon.
- General workplace party requirements under the Occupational Health and Safety Act (OHSA).
- The role and function of the Radiation Protection Field Service (RPFS)
- Overview of the MOL Regulations for Mines and Mining Plants, the Ontario Building Code and the Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM)

Your Rights under the OHSA

- You have the right to:
 - Be provided with information, instruction and supervision to protect your health and safety
 - Be acquainted with any hazard associated with a biological, chemical or physical agent*.
 - Be provided with equipment, materials and protective devices that are maintained in good condition.
 - Bring any occupational health and safety concerns to the attention of your supervisor, employer, worker health and safety representative or JH&S committee
 - Refuse unsafe work without reprisal

Ministry Of Labour Philosophy

- Focus on worker radiation protection – set, communicate, enforce
- Internal Responsibility System
 - Employer responsibilities
 - Designation of competent person
 - Supervisor responsibilities
 - Worker responsibilities

Internal Responsibility System

- The Internal Responsibility System (IRS) means everyone in the workplace has a role to play and a duty to actively ensure workers are healthy and safe. Every worker who is aware of a hazard in the workplace has a duty to report the situation to management. Once a hazard has been identified, the employer and supervisor have a duty to look at the problem and eliminate any hazard that could injure workers or make them ill.

Provincial Responsibilities

- In Canada, Provincial and Territorial governments regulate occupational exposures to X-Ray, Naturally Occurring Radioactive Materials (NORM) and non-ionizing radiation sources. The responsible Provincial agency/Ministry varies from Province to Province.
- Radon, as a NORM, is not under the jurisdiction of the Canadian Nuclear Safety Commission.

Radiation Protection Field Service (RPFS)

- 4 Radiation Protection Officer (RPO)s (MOL Inspectors and Provincial Offences Officers), one radiation protection and monitoring specialist
 - Enforcing worker safety around ionizing radiation hazards (x-ray sources and radioactive materials) and non-ionizing radiation hazards (lasers, EM, UV, IR, microwaves etc)
 - Providing surveillance and scientific support in the event of a nuclear or other radiation incident

Contacting Us

- Initial contact may be made with the general enquiry number of the RPS @ **416-235-5922**
Work requests are assigned to individual inspectors depending on the current workload.
- Alternatively, you may email requests to:
lothar.doebler@mol.gov.on.ca
- One RPO (Peter Fuhry) is based in the London office and covers the Western Region.

Radiation Protection Field Service

- **General Enquiry** **416-235-5922**
 - (Administrative Services Representative)
- **Lothar Doehler (Manager)** **416-235-5765**
- **Osmani Fernandez (RPO)** **416-235-5921**
- **Peter Fuhry (London RPO)** **1-519-646-3222**
- **Edward Fregonese (RPO)** **416-235-5705**
- **Madelaine Fedorowich (RPO)** **416-235-5790**
- **Winnie Ng (RPMS)** **416-235-5916**

complaints/work refusals: 1-877-202-0008

Principles of Radiation Protection

- ALARA – As Low As Reasonably Achievable
- Hierarchy of Engineered Design and Build, Administrative Policy and Procedures and Personal Protective Equipment
- The Fundamental Aspects of Time, Distance and Shielding

Regulations for Mines and Mining

Plants

- Reg. 854, s. 290 (1) Every employer shall ensure that the airborne concentration of radon daughters to which workers may be exposed in an underground mine is reduced to the lowest practical level in accordance with good industrial hygiene practice. O. Reg. 583/91, s. 8.
- (2) An employer shall ensure that no worker who is continuously employed by the employer during a year inhales air which exposes the worker to more than one WLM. O. Reg. 583/91, s. 8
- The NORM guideline and the Canadian Centre for Occupational Health and Safety Centre equate one WLM to 800 Bq/m^3 .

Regulations for Mines and Mining Plants - continued

- An employer is required to have the air tested for the presence of radon daughters by a competent person.
- The tests must be conducted at specific intervals depending on the operational status of the mine and measured levels.
- The employer is also required to keep a record of the results, give a copy to the joint health and safety committee or worker health and safety representative and post the results of all tests for the viewing of workers for at least fourteen days.

The Ontario Building Code: Regulation 332/12 section 9.1.1.7 (Radon)

- (1) In addition to all other requirements, a building in the following designated areas shall be designed and constructed so that the annual average concentration of radon 222 does not exceed 200 Becquerel per cubic meter of air and the annual average concentration of the short lived daughters of radon 222 does not exceed 0.02 working levels inside the building:
 - (a) The City of Elliot Lake in the Territorial District of Algoma,
 - (b) The Township of Faraday in the County of Hastings, and
 - (c) The geographic Township of Hyman in the Territorial District of Sudbury.

Naturally Occurring Radioactive Materials (NORM)

- Section 25(2)(h) of the OHSA, requires an employer to take every precaution reasonable in the circumstance to protect a worker.
- With respect to radon, the MOL's RPFS considers the NORM guideline to be the reasonable precaution in the circumstances.
- <http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/norm-mrn/index-eng.php> (Source Document)

NORM Occupational Group 1

- **Occupationally Exposed Workers** are employees who are exposed to NORM sources of radiation as a result of their regular duties. They are classified as NORM Workers working in an occupational exposure environment, and their average annual effective dose should not exceed a five year average of 20 millisieverts (mSv) which is equivalent to 3000 Becquerel per cubic meter (Bq/m³). Maximum annual dose is 50 mSv.
- These workers would be found in sectors / industries that have an increased likelihood of exceeding public exposure limits.

NORM Occupational Group 2

- **Incidentally Exposed Workers** are employees whose regular duties do not include exposure to NORM sources of radiation. They are considered as members of the public who work in an occupational exposure environment and, as such, the annual effective dose limit for these workers is 1 mSv (200 (Bq/m³)).
- This limit aligns with Health Canada's recommended limit for residential homes and public dwellings and is applicable to the public.

NORM classification – initial assessment and thresholds

- If a workplace falls under the six prone industries and stores, handles or disposes of material containing NORM in excess of the diffuse or discrete limits in the guideline, or;
- Has a suspected incremental effective dose rate in excess of 0.3 mSv annually, then:

The Investigation Threshold of 0.3 mSv is potentially exceeded and a dose assessment should be carried out. For radon the derived working limit is 200 Bq/m³.

NORM classification levels – Unrestricted for Radon

- According to the NORM guideline, an employer should do an assessment of worker exposure where it is suspected, that the public exposure limit may be exceeded. If the estimated incremental annual effective dose to the worker is less than 1.0 mSv/year (200 Bq/m³ for radon), the classification is unrestricted, and no further action is needed to control doses or materials.

NORM classification levels – NORM Management for radon

- Where the estimated annual average concentration of radon gas in an area > 200 but < 800 Bq/m³, the NORM classification is ***NORM Management***
- Requirements include:
- Introduction of incidentally exposed worker and public access restrictions.
- Changes in work practices.
- Reducing radon concentration to below 200 Bq/m³

NORM classification levels – Radiation Protection Management

- Where the estimated annual radon concentration in an area exceeds 800 Bq/m^3 , the classification is Radiation Protection Management. Requirements include:
 - Introduce a formal radiation protection program similar to the formal program required by the CNSC for nuclear energy workers exceeding 5 mSv/a .

Radiation Protection Management – Requirements – The Employer shall:

- Implement a radiation protection program comprising:
 - Management control over work practices
 - Personnel qualification and training
 - Control of occupational and public exposure to radon
 - Planning for unusual situations - emergency
- Provide Information:
 - Inform each occupationally exposed worker in writing or their designation, of risks associated with radiation, of the applicable dose limits (including pregnancy)

Radiation Protection Management – Requirements - continued

- Employers should use a licenced dosimetry service complying with the requirements of S-106 and keep records of all relevant results
- Have protocol to follow if a dose limit is exceeded, including return to work
- Use appropriate labels, signs (at boundaries and point of access) and the Radiation Warning Symbol (trefoil) where warranted

Recent NORM Investigations

- Radioactive waste triggering US border crossing detectors is transported back to origin
- Investigations into worker concerns related to low level radioactive substances in various workplaces
- Mineral extraction and processing
- Port Hope area initiative

The Goal – to make workplaces safe from occupational exposure to radon

- Everyone aware of their responsibilities under the OHSA
- Government policy of set standards, communicate standards, enforce standards
- Compliance to the appropriate standard (Mining Regulations, the Ontario Building Code or NORM guideline)
- Collaboration of all parties to achieve goal

The End – Any Questions?

