



Canadian Chapter of the EIA

Environmental Abatement Council of Ontario Canadian Chapter of the EIA

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Introduction to Radon

Radon is the leading cause of lung cancer in non-smokers and “risk estimates for indoor air carcinogens show that radon gas is the highest priority exposure in Canadian settings”¹.

Radon is produced during the breakdown of uranium in the subsurface. The problem with radon is that it is a naturally occurring radioactive gas that is colourless, odourless and tasteless. Under certain conditions, radon concentrations may become elevated and harmful to human health.

Radon gas released freely from the subsurface and into the atmosphere is not a health concern as it quickly dissipates. However, when radon enters buildings through floor drains, sumps, and cracks in the foundation etc. radon levels can increase and subject occupants to significant health risk (i.e. lung cancer). Long-term radon gas exposure represents an inhalation hazard and is dependent upon such factors as: the concentration of radon, the length of exposure, and the occupant’s smoking habits or their exposure to second-hand smoke.

Radon is the leading cause of lung cancer in non-smokers. Public Health Ontario estimates 16% or 850 lung cancer deaths each year are attributable to radon.² This would indicate that approximately 2 people in Ontario die each day from lung cancer caused by radon exposure. Health Canada estimates the national death rate at 3,200 Canadians per year which is ten times higher than carbon monoxide related deaths at 300 per year.³

It is estimated that 7% of homes in Canada have radon gas levels above the Health Canada guideline of 200 becquerels per cubic metre (Bq/m³).⁴ It should be noted that the United States Environmental Protection Agency (US EPA) provides a guideline of approximately 148 Bq/m³, and the World Health Organization (WHO) recommends a target of 100 Bq/m³ and states action levels should not exceed 300 Bq/m³.

Health Canada encourages Canadians to test their homes and workplaces for radon gas to determine if a radon problem exists and to undertake remedial action whenever the average annual radon concentration exceeds 200 Bq/m³.

Specific methods (e.g. gas collection system rough-in, foundation sealing) can be implemented at the time of building design and construction to reduce radon entry and facilitate the activation of roughed in components as required. Such methods dramatically reduce the complexity of mitigation and installation of active mitigation systems. It is recommended that trained and experienced professionals certified by the Canadian National Radon Proficiency Program (C-NRPP), design and install radon-resistant measures.

Once the building is constructed and occupied, radon testing by a C-NRPP professional must be conducted to determine if activation of the radon reduction system is necessary.

¹ CAREX Canada <https://www.carexcanada.ca/special-topics/radon-in-buildings/>

² Public Health Ontario <https://www.publichealthontario.ca/-/media/documents/ohp-radon.pdf?la=en>

³ Health Canada <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radon-what-you-need-to-know.html>

⁴ Health Canada <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radiation/cross-canada-survey-radon-concentrations-homes-final-report-health-canada-2012.html>