

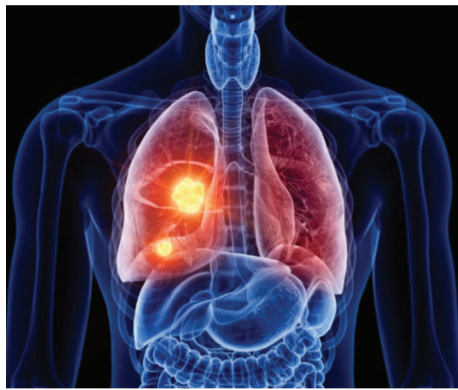
# Radon-Induced Lung Cancer – Prevention – What Property Managers need to know...

By Robert Maccarrone  
Radon Specialist  
Canada Radon

There are simple ways that Canadians look after their health, choosing healthy foods, regular exercise and a good night sleep. These are healthy habits that are engrained in our minds, we need to add proper and regular radon testing to our list.

Why?

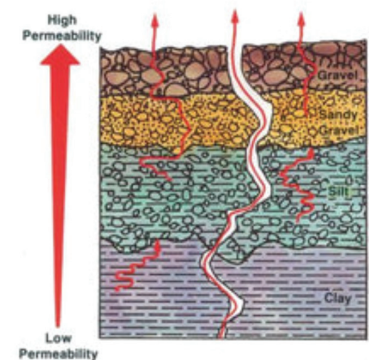
- o Long-term exposure to high levels of radon gas is the leading cause of lung cancer in non-smokers, and the second-leading cause of lung cancer after smoking.
  - o Radon is a naturally occurring, radioactive gas that can build up in ANY building, regardless of the building's location, age, size, design or upkeep.
  - o Despite being a preventable cancer, more than 3,000 Canadians are dying per year from radon related lung cancer.
  - o The latest numbers released by StatsCan this October show that 56% of Canadians (52% of Ontarians) have heard of radon, yet less than 9% of the population has tested their home for radon.
  - o Radon can be up to 8x more harmful to smokers than non-smokers, and up to 10x more harmful to children than adults.
- o Radon-related lung cancer is responsible for more Canadian deaths per year than motor vehicle collisions, house fires, carbon monoxide poisonings, and accidental drowning combined.
  - o A recent study found that people who act quickly to reduce their radon exposure could reduce their lifetime risk of lung cancer by as much as 40%.
  - o In contrast, the study found “extreme cases” where those who did nothing to mitigate high radon levels endured decades of “exposure to radiation levels exceeding those normally only seen after a nuclear accident”.



building has a potential to have elevated radon levels.

Because radon gas is colourless, odourless and tasteless, the ONLY way to know if radon is present in dangerous levels is to have your building tested.

Radon gas is released during the decay of uranium in rocks and soils. It is generated naturally by the bedrock below our buildings all across Ontario and Canada.



In Canada, radon levels are measured in the units of Becquerels per cubic meter (Bq/m<sup>3</sup>). Concentrations in the outside air we breathe are considered non-hazardous and typically in the range of 5-30 Bq/m<sup>3</sup>. Radon becomes a health hazard at higher levels.

While Health Canada recommends radon mitigation at radon levels of 200 Bq/m<sup>3</sup>, the US EPA recommends 150 Bq/m<sup>3</sup> while the World Health Organi-

## What Is Radon and Where Does It Come From?

Radon is present, in varying concentrations, in every region of Canada – every

zation (WHO) recommends a level of 100 Bq/m<sup>3</sup>.

Regardless of these guidelines, no amount of radon is healthy, and radon levels should be kept as low as practically possible.

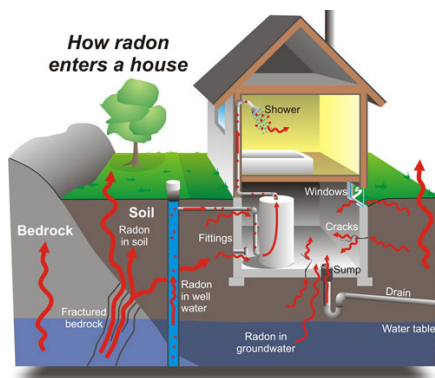
## How Does Radon Get Into A Building?

Radon can enter buildings through cracks and openings in floors, leading to higher levels, especially in basements and lower floors. Over time, exposure to radon increases the risk of developing lung cancer. Health Canada estimates that over 3,000 Canadians die each year due to radon gas exposure.

For most of the year, the air pressure inside your building is lower than the pressure in the soil surrounding your foundation. This difference in pressure can draw air and other gases in the soil, including radon, into the house.

Gas containing radon can enter your building at any opening where it contacts the soil. These openings can be present even in well-built and new dwellings.

Potential entry routes for radon in buildings with poured concrete foundations include cracks, areas with exposed soil or rocks, openings for utility fixtures or hollow objects such as support posts.



Because radon is an inert, monatomic gas that is much smaller than a water molecule, it can find its way into a building's basement or 'on-grade' floor by several different routes:

- Open cracks, seams or gaps in the floor slab, foundation walls, windows, plumbing, or conduit entering the building below grade
- Open sump wells, floor drains, and crawlspaces
- Through our water taps and shower heads

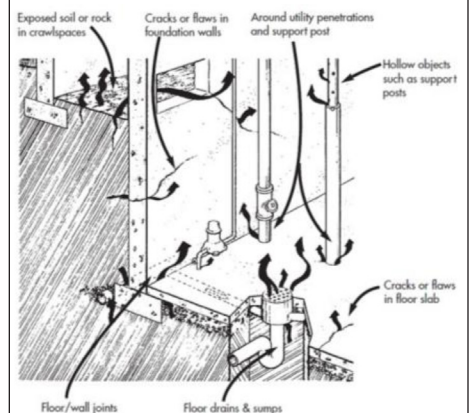
The air pressure inside your building is usually lower than in the soil surrounding the foundation. This difference in pressure draws air and other gases, including radon, from the soil into your building.



Because newer buildings are generally more airtight, even with the use of heat recovery ventilation, radon can accumulate to hazardous levels indoors.

The air pressure inside your home is usually lower than in the soil surrounding the foundation. This difference in pressure draws air and other gases, including radon, from the soil into your home.

Because newer homes are generally more airtight, even with the use of heat recovery ventilation, radon can accumulate to hazardous levels indoors<sup>2</sup>



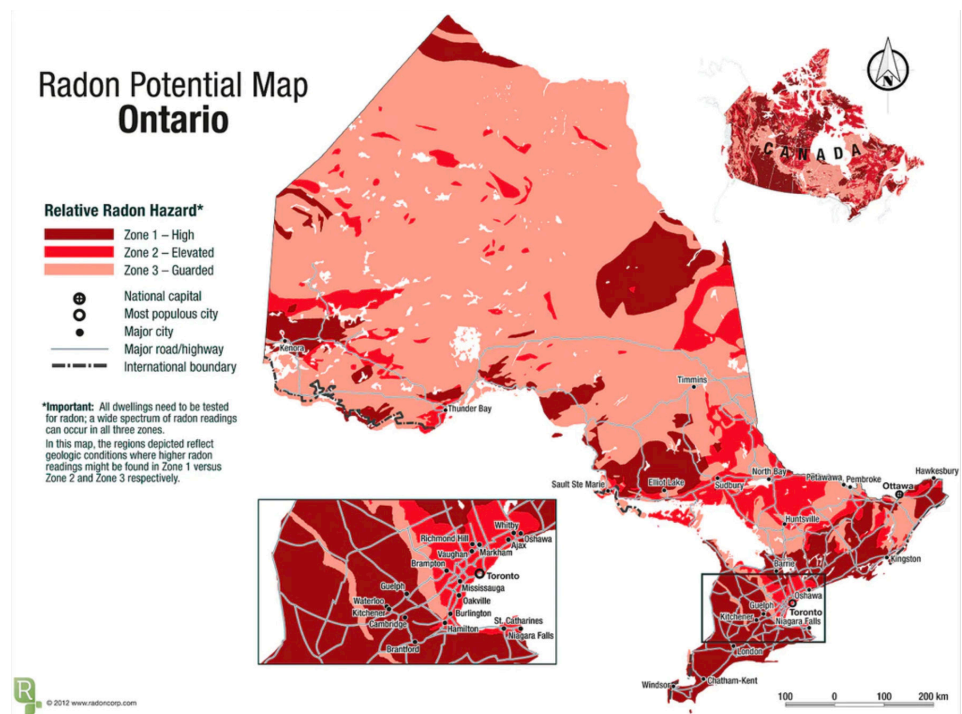
<sup>2</sup> <https://evict radon.org/news/dr-goodarzi-interview-the-impact-of-radon-on-dna/>



## Which Buildings Might Have A Problem?

Almost all buildings have some radon. The levels can vary dramatically even between similar buildings located next to each other. The amount of radon in a building will depend on many factors including:

- **Geology:** Radon comes from the decay of naturally occurring uranium in the bedrock beneath our homes, daycares, schools and workplaces. If such a deposit exists, radon gas will be generated and can find its way through the soil and into dwellings above the source. Uranium containing bedrock has been mapped across Canada as an indicator of “Relative Radon Hazard” (source: Radon Environmental)
- **Soil Characteristics:** Radon concentrations can vary significantly depending on the uranium content of the soil. As well, radon flows more easily through some soils than others, for example sand versus clay.
- **Construction Type:** The type of building and its design affect the amount of contact with the soil and the number and size of entry points for radon.
- **Foundation Condition:** Foundations with numerous cracks and openings have more potential entry points for radon.
- **Occupant Lifestyle:** The use of exhaust fans, windows and fireplaces, for example, influences the pressure difference between the house and the soil. This pressure difference can draw radon indoors and influences the rate of exchange of outdoor and indoor air.
- **Weather:** Variations in weather (e.g., temperature, wind, barometric pressure, precipitation, etc.) can affect the amount of radon that enters a building.



Because there are so many factors, it is not possible to predict the radon level in a building; the only way to know for sure is to test.

## What's Involved In Radon Measurement?

Health Canada recommends conducting a long-term radon test for a minimum of 91 days, ideally during the heating months (typically November through April) to obtain an accurate average radon level in a given building.

This test should be conducted every 2 years on the lowest ‘occupiable’ level of the building using a Health Canada approved radon measurement device or continuous radon monitor. One of the most common and reliable, Health Canada approved radon measurement devices is the “Alpha-Track Detector”, shown below:



Short-term tests should be avoided as they can indicate low radon levels when in fact average annual radon levels are high.

A recent study found that those who concluded from a single test that the property’s radon levels were low, did not intend to test again. Since radon levels are constantly changing, this behavior could result in long-term exposure to elevated radon levels.

For Property Managers, it may be necessary to demonstrate both due diligence and neutrality when conducting radon tests on their properties and wish to hire a certified and insured radon professional.

If a building is found to have high levels of radon, a certified radon professional can help determine the best course of action for reducing radon levels. Typically, this will involve installing a mitigation system which effectively reduces radon levels inside the building. Costs for radon mitigation vary but are often comparable to replacing a furnace or installing central air conditioning.



## Why work with a Professional?

The Canadian National Radon Proficiency Program (C-NRPP) is a Health Canada approved certification program that establishes guidelines and provides training and resources for the provision of radon services by professionals.

C-NRPP Certified professionals must maintain a valid license, re-qualify every 2 years, and are certified to work in every province and territory in Canada. C-NRPP certified professionals must comply with recognized standards of practice to protect public health and safety and are subject to a formal C-NRPP complaint review process.

## Case Law and Municipal Authority to “Take Action On Radon”

*Provinces and territories have laws that specify that a landlord must provide housing that is safe and in good repair.<sup>40</sup> In In Ontario and Quebec tribunals have found that these clauses give tenants the right to have elevated radon addressed.<sup>41</sup> Tenants will also be protected by Occupiers Liability law, which gives a right to sue for*

*damages where injuries such as lung cancer are caused by unsafe premises.<sup>42</sup> (all references taken from the Health Canada publication cited below).*

In July 2017, a 78 year old tenant in Ontario undergoing cancer treatment argued that he had experienced harm to his health as a result of the condition of the unit and claimed several repair issues including radon ([see section 15 on in the link](https://www.canlii.org/en/on/onltb/doc/2017/2017canlii60362/2017canlii60362.html)). A 100% rent abatement was warranted until repairs were complete, including ensuring that radon gas average concentrations were mitigated as per Health Canada guidelines (<200 Bq/m<sup>3</sup>). <https://www.canlii.org/en/on/onltb/doc/2017/2017canlii60362/2017canlii60362.html>

In July 2022, Health Canada released their handbook entitled “Radon Action In Municipal Law – Understanding the legal powers of cities and towns in Canada”. Among other topics, it provides insight into the ability of municipal government to effect changes that address radon health risks, landlord-tenant law, low radon requirements for public spaces and standards of maintenance/housing standards across Canada.

### Highlights include:

- Municipalities can take action on ra-

don including rules covering rental accommodation, even when higher orders of government have not yet done so. For instance, Kelowna, BC’s Official Community Plan (OCP) (2011) objectives include “Support the creation of affordable and safe rental, non-market and/or special needs housing”. Radon action is an obvious addendum to these strategies and easily fits into their mandate.

- Many publicly owned housing corporations have taken steps to address radon at both the provincial<sup>43</sup> and municipal level.<sup>44</sup>
- In some cases, provincial housing authorities incorporate radon protection into their Design Guidelines. For instance, Manitoba Housing’s Design Guidelines for Multi-Unit Affordable and Social Housing (2017) include provisions for radon control.<sup>45</sup>
- “Clean Air” or “Health” bylaws could be expanded to include rules requiring testing and necessary mitigation of radon in public indoor spaces.
- municipalities could expand clean air/health bylaws or create new radon bylaws on the basis of the very general powers to pass health related regulations (or, in some cases, general environmental powers).

## What's Next?

There is a growing case for Property Management policies to include radon testing and mitigation as part of the due diligence process.

The latest StatsCan results, released Oct 2022, show that only 42% of Canadians (38% of Ontarians) have heard of radon and said it is a health hazard and less than 9% of Canadians (<7% of Ontarians) have tested their radon levels. Public awareness is growing, but still low. Government and advocacy groups are working hard to raise radon awareness.

At a time when climate change initiatives put heightened emphasis on building retrofits to improve insulation and energy efficiency, tighter building envelopes can lead to higher radon levels unless properly addressed.

In parallel, municipalities are under tremendous pressure to preserve and improve physical and mental health to avoid overburdening our medical system.

With proper testing, early detection and prompt mitigation of elevated radon levels, radon-induced lung cancer is a very preventable home/school/workplace health hazard that can be eliminated reliably, quickly and affordably.

For more information, please contact:

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*A Healthy Home Is A Happy Home ...  
Why Risk it? ♦*



## Annual General Meeting

**In conjunction with the 2023 IHM Conference**

**May 11, 2023 | 1:15 pm**

**Casablanca Hotel, Grimsby, Ontario**

We are pleased to advise that the Annual General Meeting (AGM) of the Institute of Housing Management will be held on Thursday, May 11, 2023 at 1:15 pm at the Casablanca Hotel, Grimsby, ON.

The AGM will take place in conjunction with the 2023 Annual Educational Conference "Professional Development - Here's Looking At You", which is scheduled for May 11-12, 2023.

We hope you will be able to attend the AGM. If you cannot attend, we hope that you will put forward your proxy and comments directly to the IHM Office so they can be included in the decision making process.

### **Available Documentation:**

[Notice of Meeting](#)

[Call for Nominations](#)

[Proxy](#)

## CALLING ALL PROPERTY MANAGERS...

We know that a Property Manager's job can be both challenging and interesting. How often have you come to work with your day all planned in your head only to have something unexpected come along? We are looking for some stories to share with your colleagues in the Property Management field.

If you have an interesting story that you would be willing to author, please contact the Newsletter Committee at [info@ihmcanada.net](mailto:info@ihmcanada.net)