Helping clients to manage radon



Eric Walker *Yes Healthy Home Property Inspection Ltd.*



I help clients "take control of their health"



YesHealthyHome.ca

Home

A major, avoidable source of mortality

- ✓ Lung cancer is by far the leading cause of cancer death in Canada (1 in 4).
- ✓ Radon is the #1 cause of lung cancer in non-smokers (#2 cause in smokers) responsible for over 16% of all lung cancer deaths. Smoking risk ▼ Radon risk ▲
- ✓ For each 100 Bq/m³ increase of radon exposure there is an 11% to 19% increase in certain lung cancers.

Typical annual mortality in Canada:





\checkmark The highest priority indoor carcinogen



CAREX Canada risk estimates for indoor air carcinogens show that radon gas is the highest priority exposure in Canadian settings. Setton E. et al. "Risk-based indicators of Canadians' exposures to environmental carcinogen<u>s." Environ Health 2013;12(1):15</u>





✓ Youngest population exposed to highest levels





Lack of awareness & action

Test for radon?





BC Building Code 2018: "For locations identified in this table as not requiring a radon rough-in, there is not sufficient evidence to determine an elevated risk of the presence of indoor radon levels exceeding Health Canada guidelines at the time of publication.."

Campbell River	Not Required	
Carmi	Required	Requiring Radon Rough-Ins (see Article 9.13.4.2.) ⁽¹⁾ ming part of Appendix C
Castlegar	Required	Radon Rough-In Required/Not Required
Chetwynd	Required	
Chilliwack	Not Required	-
Clearwater	Required	
Colwood	Not Required	
Comox	Not Required	
Coquitlam	Not Required	
Courtenay	Not Required	
Cranbrook	Required	
Crescent Valley	Required	
Crofton	Not Required	
Dawson Creek	Required	
Dease Lake	Required	
Delta	Not Required	-
Dog Creek	Required	
Duncan	Required	





Industry opinion

- Past unintended consequences due to inadequate government research include leaky condo, as well as asbestos and urea formaldehyde insulation.
- All were the result of fast-tracking energy efficiency in homes without due diligence.
- The latest health and safety issue is toxic radon gas shown to increase in energy efficient homes.
- In 2017 the BC government enabled municipalities to fast-track energy efficiency via the Step Code, despite concerns about radon.
- Radon is site-specific and every home should be tested. Contrary to BC's radon map, there are no safe regions for radon.
- Canada's radon maximum of 200 Bq/m³ is likely unsafe over the long-term, especially for children and those with health issues. The World Health Organization's maximum is 100 Bq/m³.
- The lesson is municipalities do not have the expertise to fast-track building codes. Their goals to be leaders in energy efficiency must not undermine health and safety – the foundation of building codes.
- VRBA continues to advocate for a single building code standard based on National Code diligence supported by research, proven practice, and affordability.

National standards

"There are no areas of Canada that are radon free. The level of radon in a completed home cannot be predicted; hence all homeowners **<u>need to test</u>** their homes for radon"

"Remedial measures should be undertaken whenever the average annual radon concentration exceeds 200 Bq/m³.

No [radon] level can be considered risk free. It is the choice of each homeowner to decide what level of radon exposure they are willing to accept.

When remedial action is taken, the radon level should be reduced to a value as low as practicable."

Radon mitigation options for existing low-rise residential buildings CAN/CGSB-149.12-2017 (Reaffirmed January 2023)

Real estate regulator

Section 30 (Duties to Clients) & Section 59 (Disclosure of Latent Defects) of the Real Estate Services Rules set out obligations for real estate licensees:

Advise Sellers and Landlords That Radon Levels of 200 Bq/m3 or More Constitute a Material Latent Defect and Must be Disclosed to Buyers and Tenants

Advise Your Buyer or Tenant Client of the Importance of Radon Testing

14 FEBRUARY 2024

Radon Disclosure Reminder

"If you are working as a buyer's agent, it's a good idea to ask the seller or listing agent if a radon test has been completed, and if so, to see the results.

Potential buyers won't discover radon levels through pre-purchase inspections because testing takes three months to complete."

Building Construction Year

Increasing exposure

2008 National Radon Program focused on eduction & research. 2010 Radon rough-ins required for new home construction (BC 2024).

• **2020** BCFSA radon precaution guideline of 200 Bq/m³ as a material latent defect requiring disclosure.

CANADA / BC

• 2024 OPTIONAL radon testing.

• **2024** Home owner responsible for radon testing and mitigation.

New Canadian buildings have **463% higher radon** than Swedish counterparts

SWEDEN

- 1979 Radon commission set up
- 1980 Compulsory radon limits
- **1985** Local health authorities responsible to test homes for radon.
- 1985 Subsidies for radon mitigation.
- **1993** Target to mitigate 80% of homes over 400 Bq/m³ in 10 years.
- **1993** Long term target to reduce all buildings to below 50 Bq/m³.

Increasing exposure in homes

CANADIAN RADON exposure differs based on <u>when</u> your house was built

Calculated from radon data and property metrics from 29,550 residential properties as part of the **Evict Radon National Study** (www.evictradon.org)

Where does radon come from?

Uranium (metal)

• Found in all rock, soil, water

• Half life of 4.5 Billion years

How radon gets into homes

Stack effect

- Active in every home
- Creates negative pressure (suction) at the foundation

Exhaust appliances

Create negative pressure

How radon gets into homes

Foundation gaps

- Perfect sealing is difficult to achieve.
- Many foundation penetrations.
- Concrete shrinks + cracks as it cures.
- Radon levels increase after new construction.
- A finger size gap can create a radon problem.

How radon gets into homes

Foundation gaps

Smoke tests

What affects radon levels?

- Larger footprints.
- Taller ceilings.
- Fewer storeys.
- Newer windows.
- Roof insulation with high R values.
- Heat recovery ventilators (HRVs).
- Newer construction.

https://evictradon.org/

What affects radon levels?

• Open or close a window

Yes! Healthy Home

Radon reduction strategies

Radon reduction strategies

2024 BC Building Code: requires a radon pipe terminating **outside** (Level 2).

BC building code 2024

Floors-on-ground shall accommodate the future installation of a *subfloor depressurization system* by installing a **radon vent pipe** that:

- \checkmark can be connected to a depressurization fan
- \checkmark terminates outside the building*
- ✓ is clearly labeled every 1.8 m and at every change in direction.

* Because the BCBC specifies this is a rough-in for a future active depressurization system, the radon pipe can be side-vented, unlike a passive depressurization system that must be roof vented for stack effect.

L2. Passive

+ Home owner gets a long term radon test kit (testing is optional).

How can you help clients?

Duty to inform

- Radon is a primary risk for lung cancer.
- Radon exposure is increasing in newer homes (on average).
- Radon testing is easy, remediation can be highly effective.
- Reduce radon to as low as reasonably achieveable.

Duty to disclose

• Radon over 200 Bq/m³ is a material latent defect.

But wait...

- IF radon testing is not required, should we be...
- Passive: wait for the buyer to ask about radon?
- Active: recommend radon testing?

Being passive will become less effective More radon rough-ins + vent pipes = more radon questions

Active radon testing has an advantage Because... a home's radon "performance" is not fixed

Same home, very different test result

Bq/m³

Depends on lifestyle, ventilation, appliances, renovations...

Bq/m³

You can add value By optimising the radon test result

This provides a reference for the buyer Because the radon test conditions are in the report

Advantages

 \checkmark Discloses how to get a certain radon level \blacktriangleright NOT RANDOM

 $\checkmark\,$ If buyer tests under different conditions $\,\,\blacktriangleright\,$ NO CONFUSION

Permanent monitoring (radon/humidity/CO₂/VOCs)

- ✓ Alarms for unexpected changes (renovations).
- ✓ Convenient dashboard access.
- $\checkmark\,$ Diagnose ventilation problems (HRVs).
- \checkmark Avoid fungal growth issues (humidity).
- ✓ Avoid cognitive dysfunction (CO_2).
- \checkmark Control toxic chemical exposure (VOCs).
- ✓ COMBINED, COST-EFFECTIVE SOLUTIONS

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Thank you!

Questions or comments?

