FNHC 2025
Webinar Series:

Reducing Radon exposure from the Ground Up

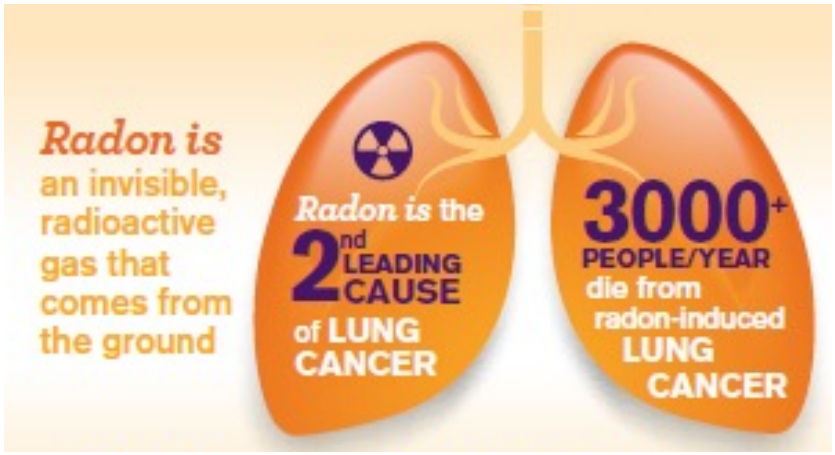
Radon Basics – Health Effects

Radon is the leading cause of Lung Cancer in non-smokers.

Radon greatly increases smoker's risk of getting lung cancer.

Health Canada estimates over **3,000** Canadians per year die of radon-related lung cancer.

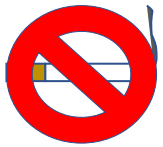
From Health Canada's Radon Gas:It's in your home.
https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/radiation/radon_brochure/radon-brochure-eng.pdf



How do we know that Radon is a health concern?

- Radon is a known carcinogen (Group 1)
- Number one cause of lung cancer in non-smokers
- World Health Organization recommends nations set an action level of between 100 and 300 Bq/m^3

Health Canada's most recent Cross Canada Survey estimates 17% of homes in Canada are ABOVE Health Canada's guideline level & should be reduced.



Radon 800 Bq/m^3

Radon 800 Bq/m^3

1 in 20 non-smokers exposed to a lifetime of high radon will be diagnosed cancer

1 in 3 smokers exposed to a lifetime of high radon will be diagnosed

3000 people per year in Canada are dying of radon related lung cancer.

= 8 people per day

Radon Basics - Source

Radon is a radioactive gas which comes from the soil.

Enters all buildings which have contact with the ground and can move throughout the building, including upper levels.

Typically highest levels are found in the basement or first floor.

Health Canada recommends all buildings be tested using a 3-month test during the heating season and any homes found with levels above 200 Bq/m^3 be reduced.

Where is Radon a concern?

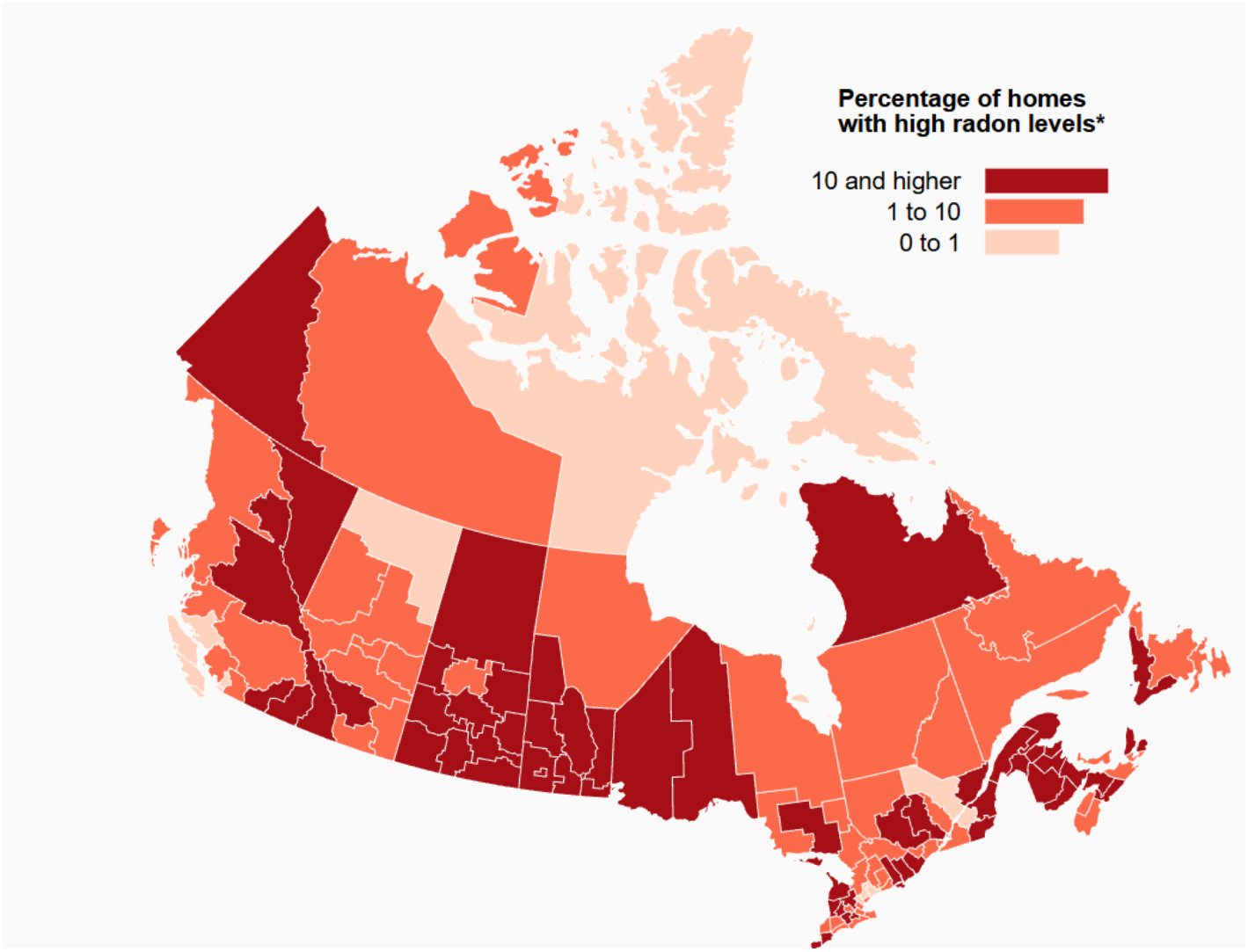
- **Homes**
- **Schools**
- **Any building that has contact with the ground has a potential**

HEALTH CANADA recommends all buildings be tested for **RADON.**

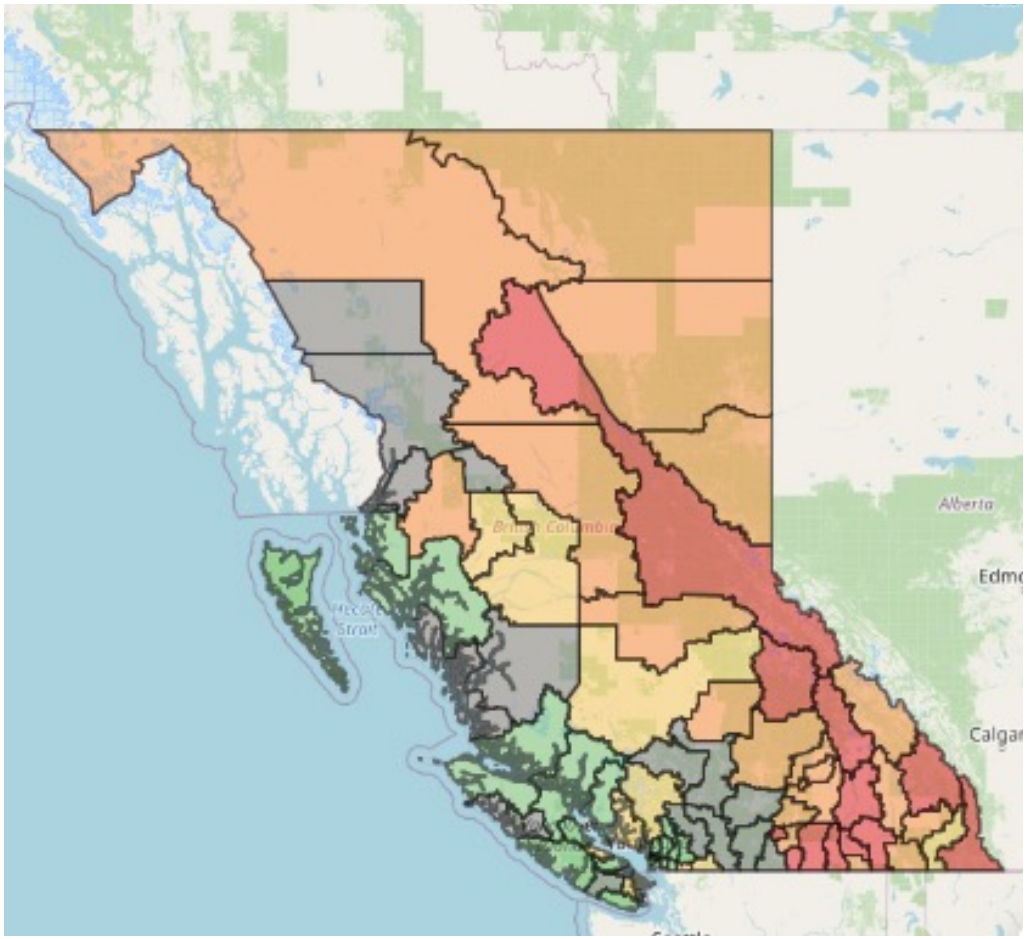
Where is Radon a concern?

- **Big differences can be seen in rates of high radon in different communities in each province.**
- **There are no areas of the country that are “radon free”.**

The only way to know, is to test!

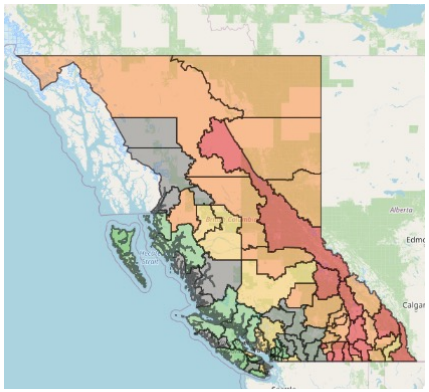


This data is based on Health Canada's 2012 Cross Canada Survey: https://health-infobase.canada.ca/datalab/radon-blog.html



BC – CBC HAS A RADON REPOSITORY MAP

Indoor Radon Exposure in Interior



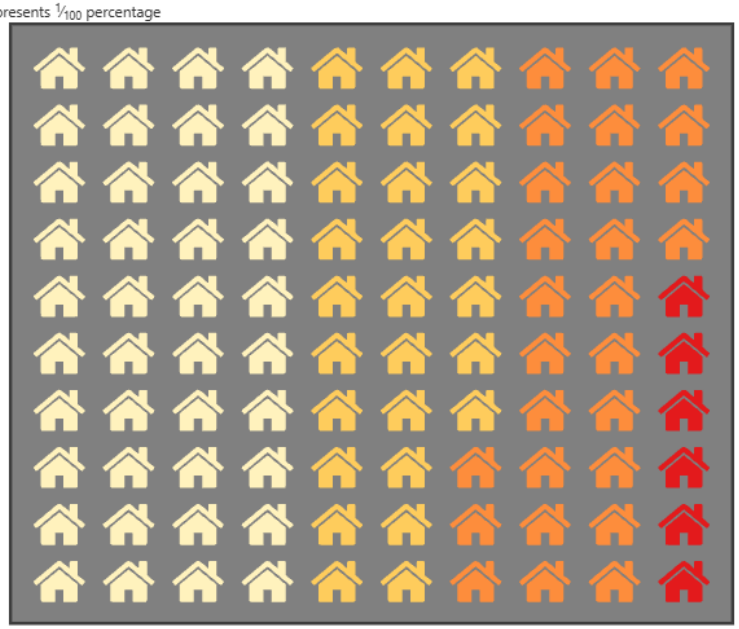
These coloured homes represent the estimated percentage of homes in this region that range in radon levels from 100 Bq/m^3 and under to over 600 Bq/m^3. These estimates are based on **12,543** samples taken in this region.

In this region, we estimate that **27%** of homes tested are in the 201-600 Bq/m^3 range for radon levels and **6%** of homes tested are in the over 600 Bq/m^3 range for radon levels.

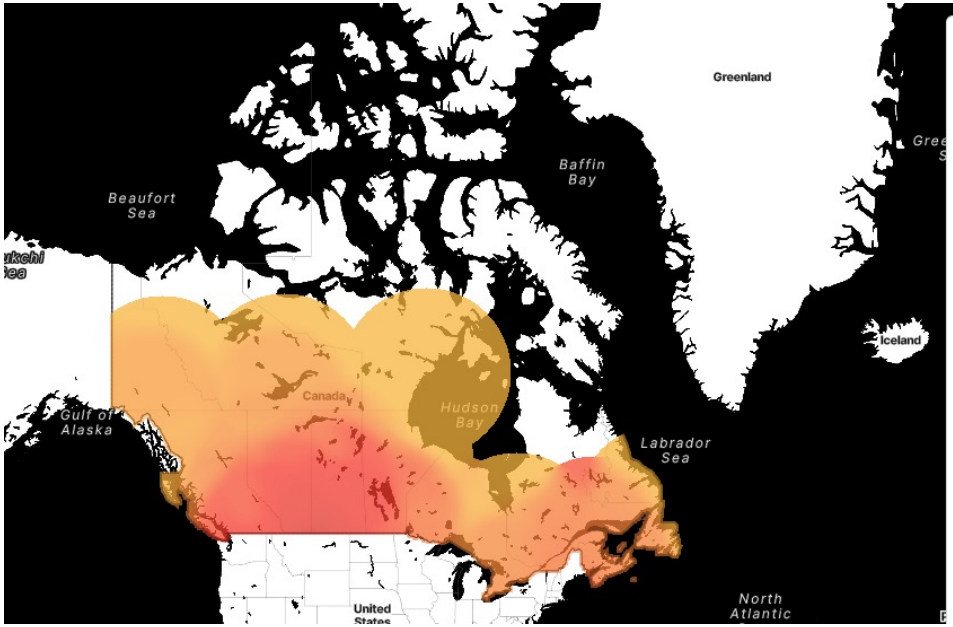
Health Canada recommends to test every home for radon because levels can vary widely from house to house, even in the same neighborhood.

Estimated percentage of homes in each radon concentration range

Each 🏠 represents $^1/_{100}$ percentage



The table below shows you the **risk of developing lung cancer in your lifetime** from living in a home with different levels of radon.



What's Your Radon Risk?

Radon is a colourless, odourless gas that can be harmful to your health. Find out your possible exposure and how it could affect you.

This map only uses data collected from HomeRadonTest.ca. It does not show results from every home and may not reflect the true radon levels in all areas. **This tool is for learning and general information only.** It's not meant to guide personal medical decisions.

You can help improve this map. Every test adds valuable information and helps create a better picture of radon risk across the country.

Start Exploring ↓

https://www.homeradontest.ca/what-is-my-risk

100 Radon Test Kit Challenge Reports

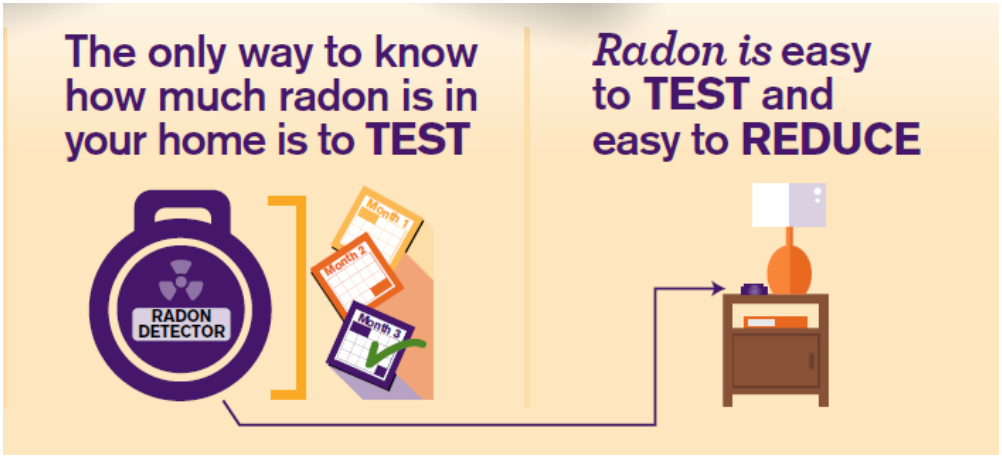
Augusta, ON Baden & Wilmot, ON Cavan Monaghan, ON
Clarence-Rockland, ON Chatham-Kent, ON
Greater Madawaska/Calabogie, ON Leeds and 1000 Island, ON
Mallorytown/ Front of Yonge, ON North Kawartha, ON
North Grenville, ON Ottawa, ON Port Colborne, ON
Renfrew County/ Pembroke, ON St. Thomas and Woodstock, ON

www.takeactiononradon.ca

- **Big differences can be seen in rates of high radon in different communities in each province.**
- **There are no areas of the country that are “radon free”.**

The only way to know, is to test!

HOW do you test for RADON?



Choose a radon measurement device

Alpha-Track (one use devices)

Consumer-grade electronic radon monitors

Electret Ion (E-Perm)

Consumer-Grade Electronic Radon Monitors

	Make/Model	Manufacturers stated Accuracy	Frequency of Reading	Digital Display or cell-phone app	Battery or Plug-in	Approved Find details here:
	Airthings Corentium Home	±10% (after 7 days at 200 Bq/m3), ±5% after 2 months of monitoring	12 hours 24 hours 7 days (first reading will take 24 hrs)	Short-term and long-term average shown on monitor display.	Battery	APPROVED ✔
	Airthings View	After 30 days at 200 Bq/m3, ±10% on the 7 day average and +/- 5% on the 2 month average	Hourly	Short-term average shown on monitor display; long-term average shown on app.	Battery or plug in (USB-C)	APPROVED ✔
	Aranet RN+	±8% Accuracy of 24 h, 7 d, 30 d averages	Can be adjusted to show 10 min, 24h, 7 d or 30d	Display on device shows either short-term or long-term level depending on setting. Long-term shown on app.	Battery	APPROVED ✔
	Ecosense EcoQube	±10% at 370 Bq/m³ after 10 hours of measurement	Takes measurements every 10 minutes; displays an hourly rolling average	Hourly levels are displayed on LED; short-term and long-term averages, and hourly data points on the mobile app.	Plug in	APPROVED ✔
	Ecosense RadonEye	±10% at 370 Bq/m³ after 10 hours of measurement	Takes measurements every 10 minutes; displays an hourly rolling average	Hourly levels are shown on the OLED display; short-term and long-term averages are available in the mobile app	Plug in	APPROVED ✔
	SunRadon Luft	±10% (after 7 days at 200 Bq/m3)	Hourly, (Initial reading takes 90 mins)	Long-term and short-term averages shown on the app. Color coded indication of levels on monitor display.	Plug in	APPROVED ✔

	Manufacturer / Brand	Model / Link to Health Canada recall (when applicable)	NOT APPROVED
	Air Steward	Recalled by Health Canada	✖
	Bootu	RN+80	✖
	Boyd Gresham	Radon Detector – Recalled by Health Canada	✖
	CRACTEC	PRM-03H	✖
	CRACTEC	PRM-03H	✖
	Funny Kitchen	HRDM-02 – Recalled by Health Canada	✖
	HAKINAKU	Smart Radon Gas Detector	✖
	Henchen	Home Radon Detector Recalled by Health Canada	✖
	INKBIRD	Home Radon Meter – Recalled by Health Canada	✖
	INKBIRD	INK-RD2 – Recalled by Health Canada	✖
	LifeBasis	INK-RD2 – Recalled by Health Canada	✖
	LifeBasis	LCARM001 – Recalled by Health Canada	✖
	Radon Guard	Recalled by Health Canada	✖
	Spoleh!	Radon Detector – Recalled by Health Canada	✖

Edit

TESTING YOUR OWN HOME:

PICK A ROOM: choose a room in the lowest-lived in level of your home.
PICK A SPOT: choose a location in the room on a shelf or table (make sure it is off the floor and at least 1 m away from a window)
LEAVE IT FOR A MINIMUM 91 days.

TESTING A COMMUNITY:

- Data tracking: record serial numbers, addresses, start and end dates
- Consider a multi-year program; start with a small batch
- Keep good records of results and mitigation actions; keep in mind radon levels can change with new occupants; consider re-testing cycle

TESTING PUBLIC BUILDINGS:

- Data tracking: record serial numbers, addresses, start and end dates
- Consider a multi-year program; start with a small batch
- Keep good records of results and mitigation actions; keep in mind radon levels can change with new occupants; consider re-testing cycle

TESTING PUBLIC BUILDINGS:

Choose your rooms:

- occupied 4 hrs per day
- test ground contact rooms

TESTING PUBLIC BUILDINGS:

Choose a location in the room:

- away from a window
- up off the floor
- in the breathing zone
- in a location that it can stay for 91 days

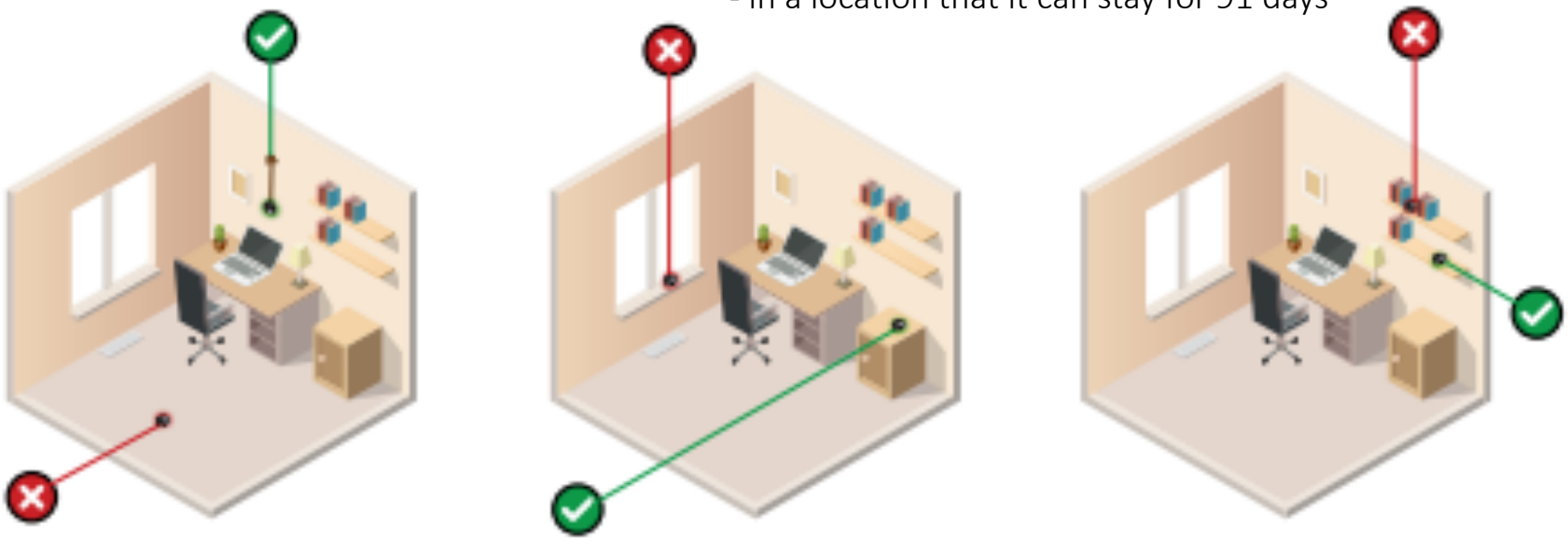


Figure 4. Potential testing locations in an office. Locations that are ***appropriate*** (✓) for radon testing and locations that are ***not appropriate*** (✗) for radon testing are indicated.

Reducing Radon Levels

- While the health risk from radon exposure below the Canadian Guideline is small, there is no level is considered risk-free.

- It is the choice of each homeowner decide what level of radon exposure they are willing to accept.

If your radon level is **below 200 Bq/m³, it is within the Canadian guideline.** Consider retesting within the next 5 years.

REDUCE LEVELS:
When your radon level is **200 Bq/m³ or more, take action to REDUCE radon levels within one year.**

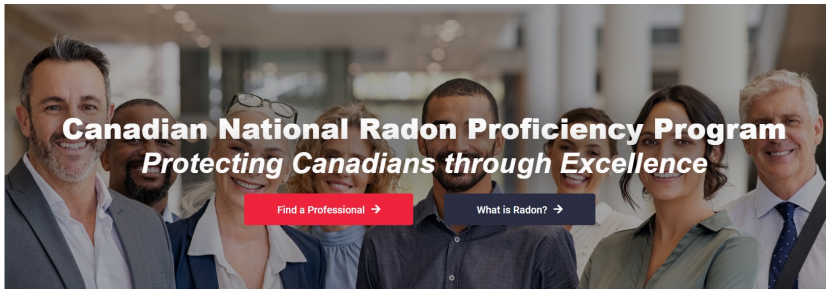
Radon Levels can be reduced

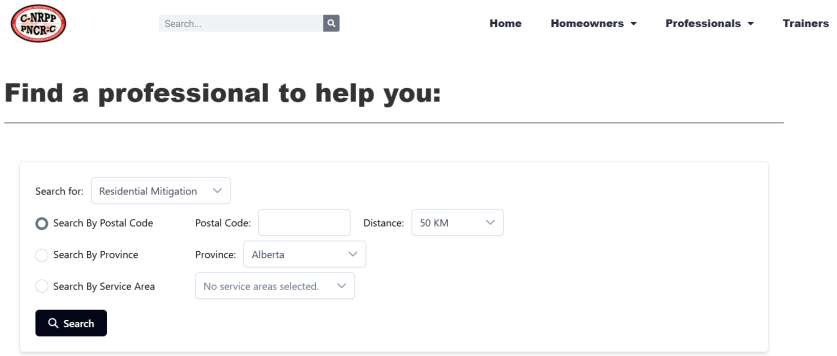
If radon levels are high they can easily be lowered.

The **Government of Canada** recommends action when radon levels are above 200 Bq/m^3 .

Canada has a national certification program, find more information at www.c-nrpp.ca/find-a-professional

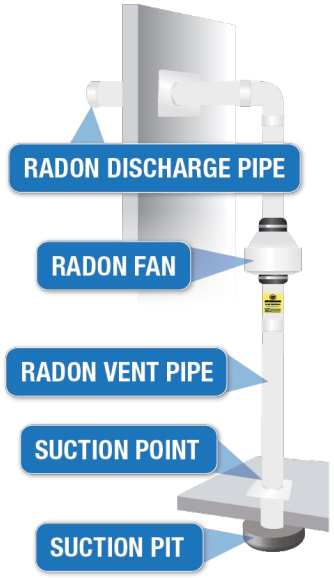
Research shows that certified radon professionals can reduce levels by over 90%.





Canadian National Radon Proficiency Program

www.c-nrpp.ca



What if your level is above the Guideline level?

- A radon mitigation system is the most effective way to reduce radon
- Simple to maintain

ALL HOMES CAN BE FIXED.

Sub-Slab Depressurization

NATIONAL BUILDING CODE

(now also ONTARIO Building code)

includes radon control measures:

- Gravel under the slab
- Well-sealed liner
- Sealed sump pit
- Radon rough-in for future installation, Capped, sealed

BC Building code includes radon control measures:

- Gravel under the slab
- Well-sealed liner
- Sealed sump pit
- EXTENDED Radon rough-in for future installation
- Extended to outside of the building envelope

THIS DATA IS CURRENT TO NOVEMBER 2025.

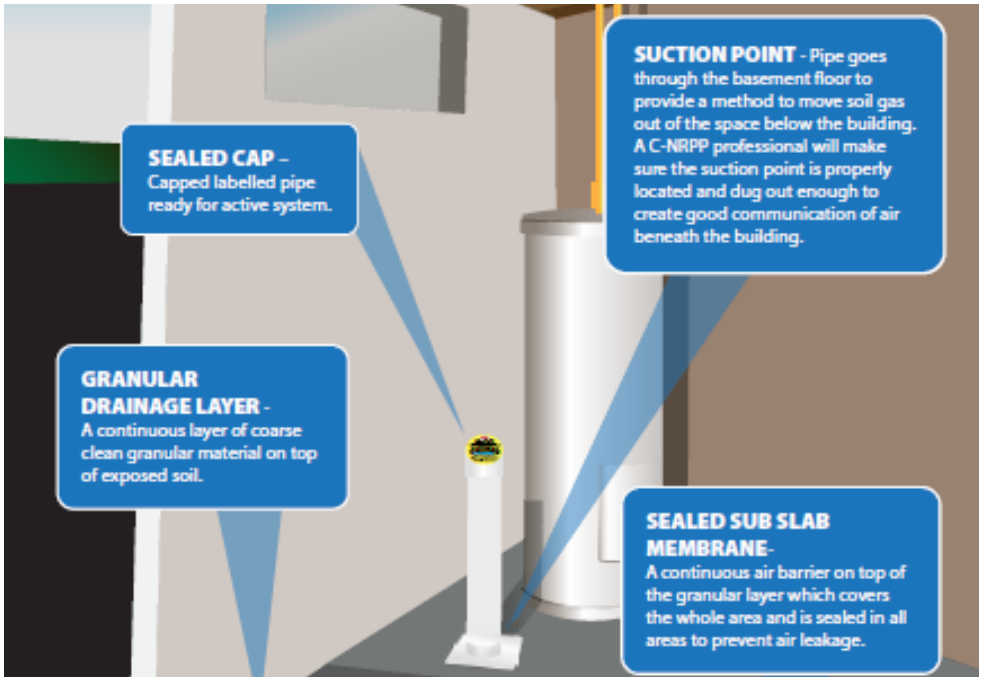
CGSB Standard

Level 1
- granular layer
- Poly liner
- rough-in for active soil depressurization;

Level 2
- Level 1
- full passive vertical radon stack

Level 3
- Level 1
- Level 2
- full active soil depressurization system

CURRENT NATIONAL BUILDING CODE



Course clean granular material under the slab

- No less than 4” layer
- Less than 10% fines
- Void area content 35-40% (ASTM E1465)

Well-sealed sub slab membrane

- Continuous barrier
- Sealed in all areas to prevent air leakage
- Including sealed floor to wall joint

Sealed sump pit

- Sealed with an airtight lid

Radon rough-in for future installation

- Ideally minimum 12” above the floor
- Sealed, capped and labeled in above floor section
- In a location for future installation of mitigation system

MORE TOPICS

BC Codes

- BC Codes 2024
- BC Codes 2018
- Errata & Revisions
- Technical Bulletins
- Code Interpretations
- Other Code Resources
- Letters of Assurance
- BC Public Review
- National Model Codes

BC Codes 2024

Last updated on March 8, 2024

BC Codes 2024 are now in effect, except for adaptable dwellings and earthquake changes which take effect March 10, 2025.

An updated version of the BC Codes 2024 is now available, offering code users new interactive features.

New technical bulletins for the 2024 BC Building Code are now available.

About the BC Codes 2024

BC Codes 2024 are largely based on the National Codes 2020 with some BC-specific variations to reflect the province's geography, climate, local government needs, industry practices, and provincial priorities. Book I (General) and Book II (Plumbing Systems) together form the BC Building Code 2024.

National Code changes incorporated into BC Building Code 2024:

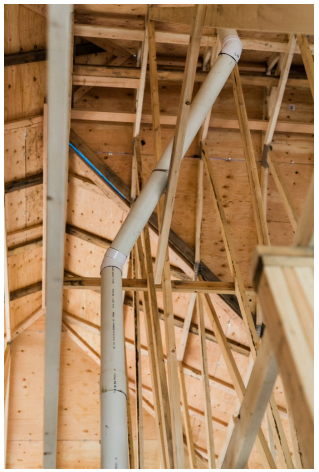
- Enabling mass timber construction
- Requiring rough-ins for radon safety province-wide

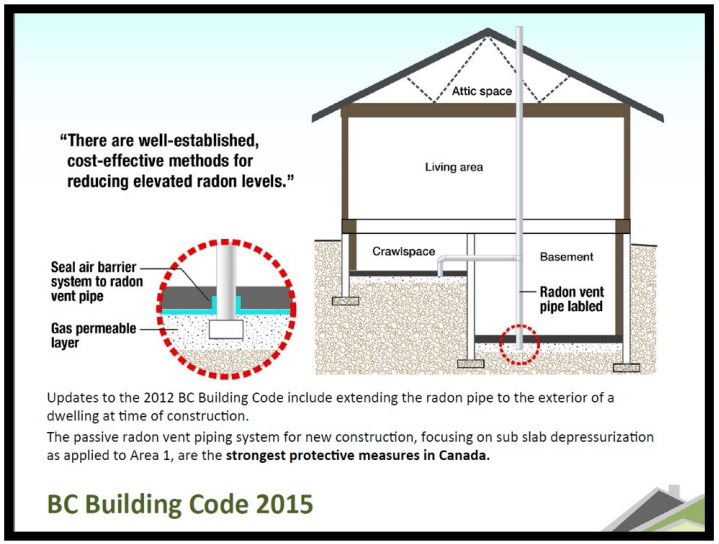
BC-specific changes effective March 2024:

- More complete and specific language for constructing extended rough-ins for radon subfloor depressurization systems
- Adopting cooling requirements to provide one living space that does not exceed 26 degrees Celsius
- Retaining existing ventilation requirements for systems serving single dwelling units

BC-specific changes effective March 2025:

- Requiring 100% adaptable dwellings in large condominium and apartment buildings and the first floor dwelling units in new small apartments and condominiums to be adaptable
- Reinforcement of bathroom walls to allow future installation of grab bars
- Early adopting national provisions to improve earthquake design changes for housing and small buildings with high seismic hazard values





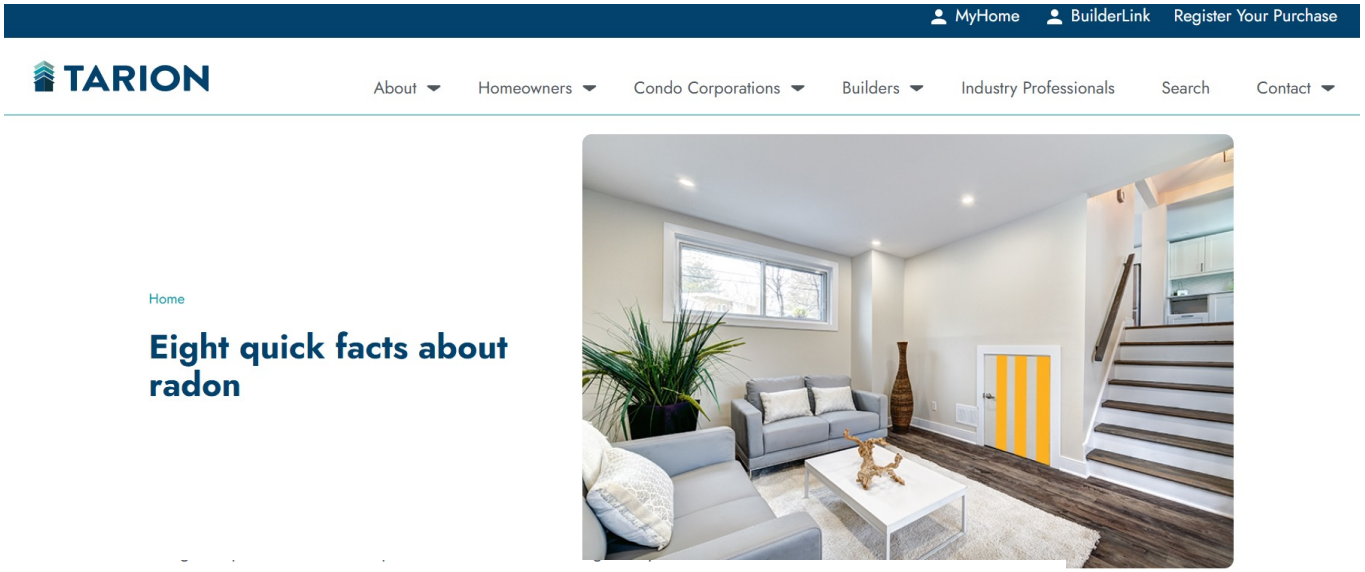
The three levels of protection from radon ingress are the following:

Level 1 = rough-in for active soil depressurization;
Level 2 = full passive vertical radon stack (level 1 plus a stack);
Level 3 = full active soil depressurization system (level 2 plus a fan).

Most provinces and territories already require protection from radon similar to level 1 in all new homes

- level 2 and level 3 requirements in this national standard are intended for higher risk areas.

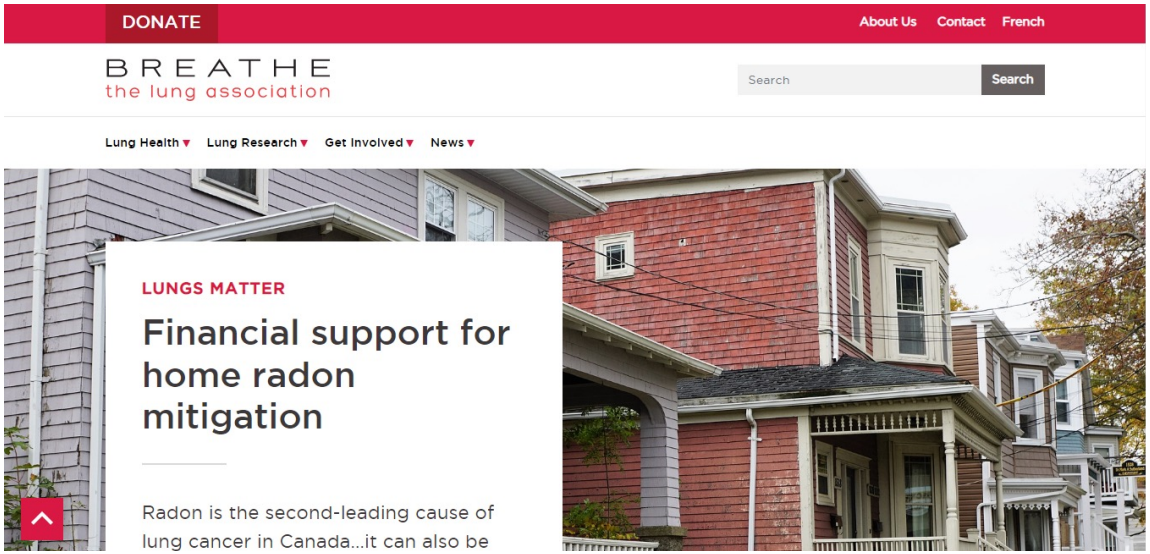
In areas where significant proportions of homes are likely to test above the 200 Bq/m^3 Canadian radon guideline, authorities may find it prudent to adopt either a level 2 or level 3 protection requirement in new construction.



https://www.tarion.com/media/eight-quick-facts-about-radon

***In Ontario,* Tarion Warranty covers new homes for the first seven years after construction.**

If homes test above the Health Canada guideline then the warranty program covers the cost of the radon mitigation system if installed by a C-NRPP Professional.



Lungs Matter

Home Radon Mitigation Grant Program

BREATHE
the lung association

In Partnership with

CARST ACSTR

TAKE ACTION ON RADON

The Canadian Lung Association has recently launched a new grant program to help people across Canada afford radon mitigation services.

The Lungs Matter Grant Program aims to provide financial support to individuals who have been diagnosed with lung cancer and individuals considered a low-moderate income households with priority given to the low-income households.

https://www.lung.ca/lungs-matter-radon-mitigation-support

Worried about the **cost of radon mitigation measures**?

You may be eligible for financing your radon mitigation measures through the Manitoba Hydro Home Energy Efficiency Loan.

Key details:

- Qualifying customers can borrow **up to $5,000** over a 5 year loan term at a competitive interest rate. **No down payment** is needed (**unless your project exceeds the maximum*).
- Monthly payments are conveniently added directly onto your energy bill.
- No penalties for extra payments, or paying off the loan after the first six months.

FINANCING MADE EASIER.

Scan the QR code or go to **hydro.mb.ca/heel** to learn more

To request accessible formats visit **hydro.mb.ca/accessibility**.

Manitoba Hydro
energy for life

White Ribbon Campaign

Free tests for Lung Cancer Patients and Families

- Piloted project with BC Cancer Agency
- Also working with Canadian Cancer Society's Cancer Information and Prevention Specialists
- Presenting to Canadian Association of Nurses in Oncology this November
- Open to anyone across Canada

QUESTIONS?

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