First Nations Housing Conference 2026

Reducing Radon Exposure

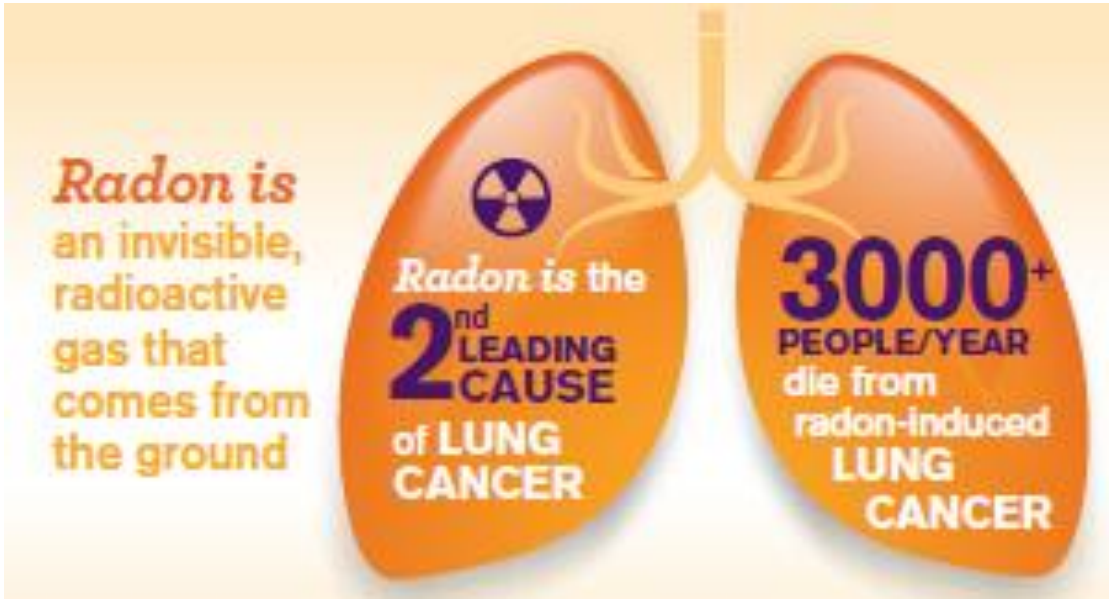
Radon Basics – Health Effects

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.

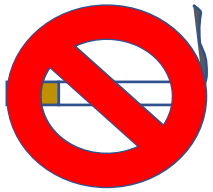
From Health Canada's Radon Gas:It's in your home.
https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/radiation/radon_brochure/radon-brochure-eng.pdf



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

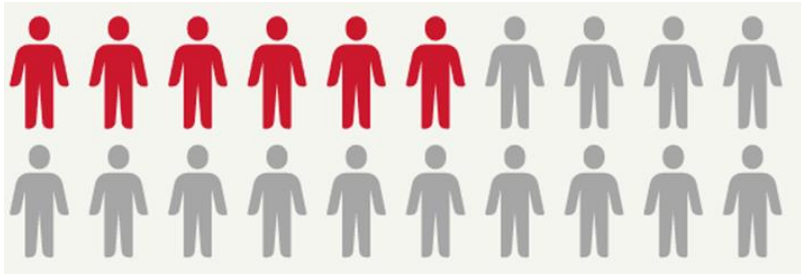
Health Canada's most recent Cross Canada Survey estimates 17% of homes in Canada are ABOVE Health Canada's guideline level & should be reduced.



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

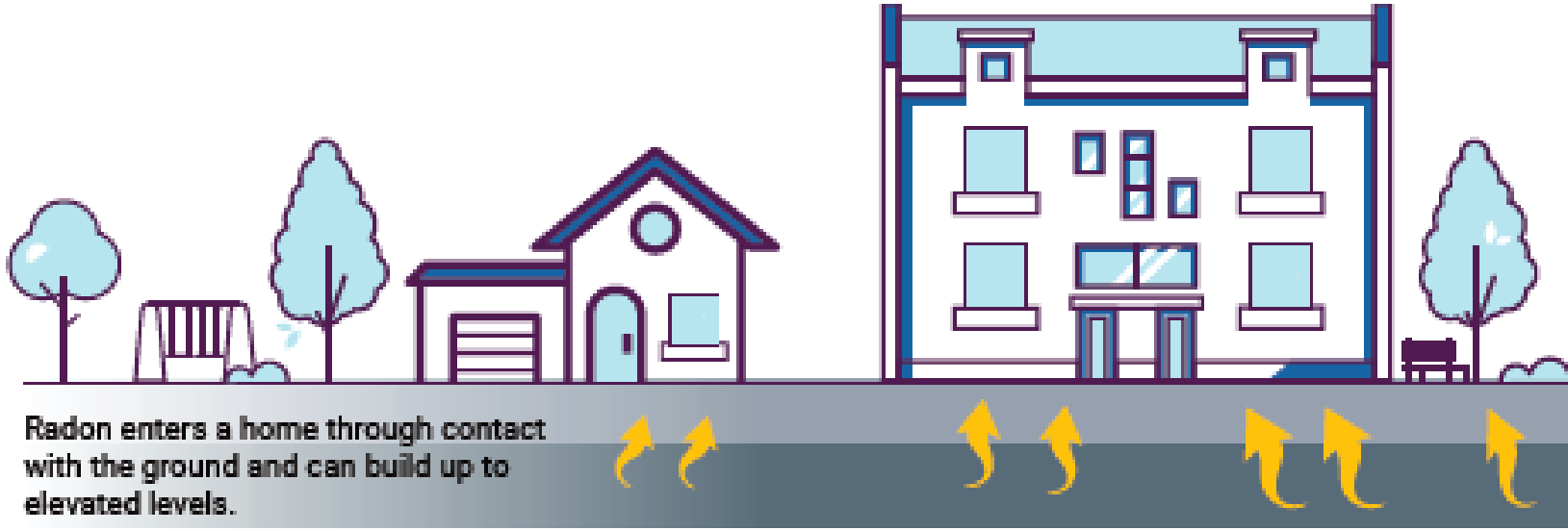
Radon is a radioactive gas which comes from the soil.

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

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

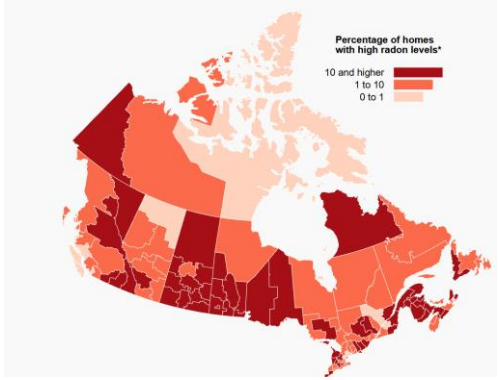
Homes – Schools - Workplaces

Where is Radon a concern?



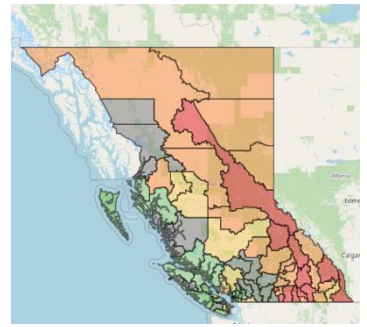
Health Canada recommends all buildings be tested using a 3-month test during the heating season and any homes found with levels above 200 Bq/m^3 be reduced.

Where is Radon a concern?



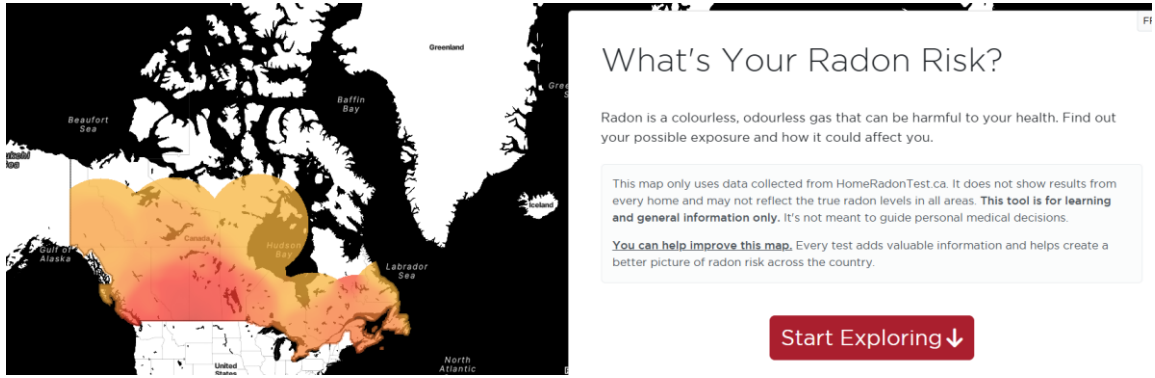
Health Canada's Radon map

- **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".**



BC CDC's Radon Repository

The only way to know, is to test!



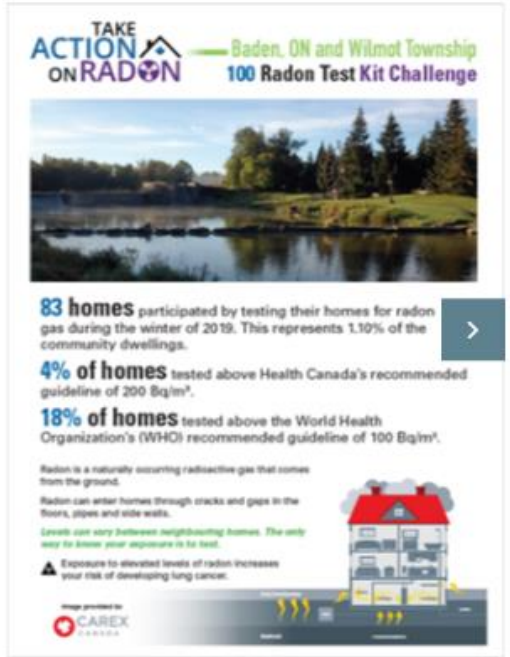
https://www.homeradontest.ca/what-is-my-risk

Check out other provinces

Atlantic | Alberta | British Columbia | Saskatchewan | **Manitoba** | Nunavut | Ontario | Quebec | Northwest Territories | Yukon

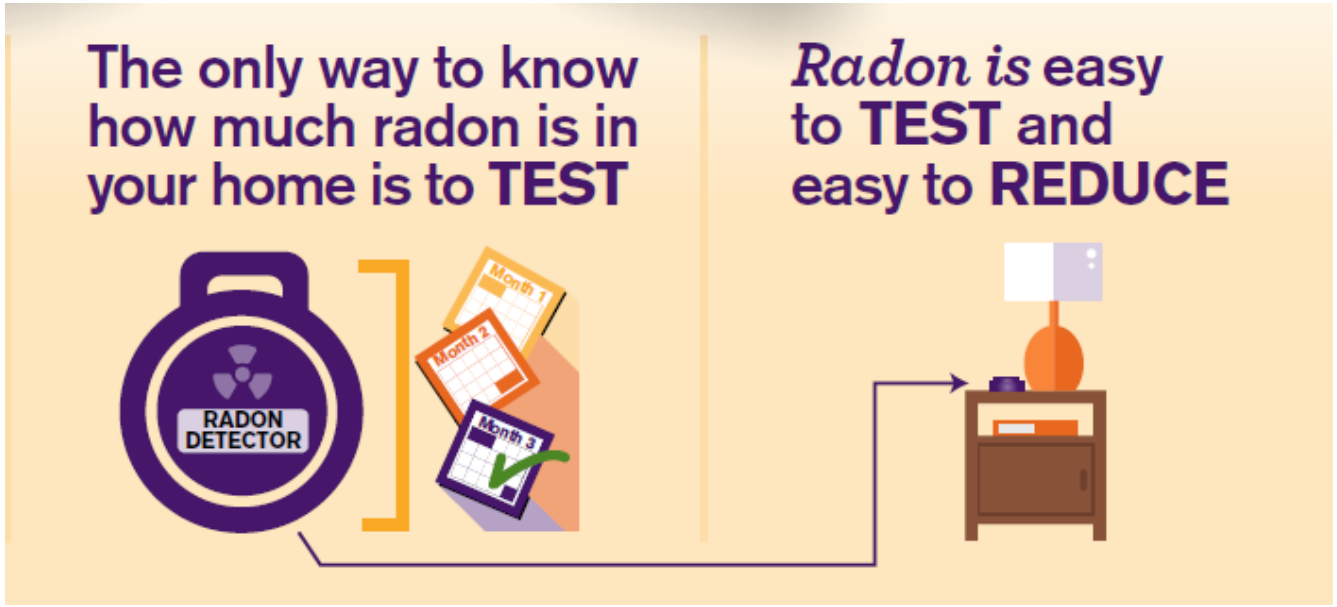
100 Radon Test Kit Challenge Reports

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

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	✗
	CRADTEC	PRM-02H	✗
	CRADTEC	PRM-02H	✗
	Funny Kitchen	HRDM-02 – Recalled by Health Canada	✗
	HAKINAKU	Smart Radon Gas Detector	✗
	Honchen	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	✗
	Spolehli	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

Impact to date / *Impact à ce jour*

160 + Communities */ Communautés*
11 Provinces/Territories / *provinces/territoires*
10+ First Nations */Premières Nations*
2 Métis groups */ groupes métis*

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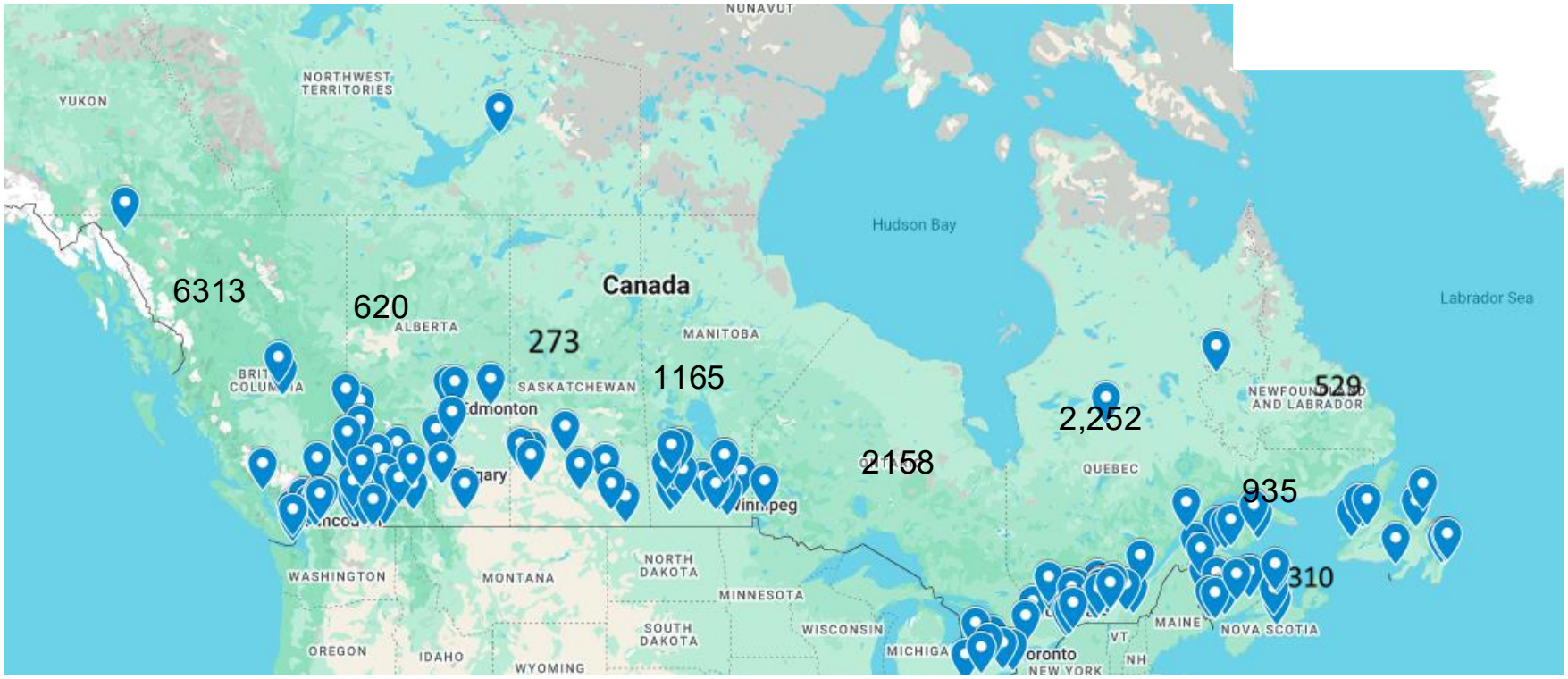
30 000 + detectors distributed / *détecteurs distribués*
74% return rate */ Taux de retour*
21 000 + homes tested */ **foyers testés***



More than 38% of those who've tested over 200 Bq/m³ have Mitigated their homes already!

Plus de 38 % des personnes dont les tests ont révélé plus de 200 Bq/m³ ont déjà pris des mesures pour protéger leur maison !

Program Overview – timeline / *Rapport individuel sur le radon - envoyé par e-mail*

Spring/Summer
Printemps / l'été

Oct/Nov

Spring / *printemps*

Preparation & planning / *Préparation et planification*

General awareness about radon / *Sensibilisation générale au radon*

Receive the detectors / *Recevoir les détecteurs*

Radon Information Session & detector distribution / Séance d'information sur le radon et distribution de détecteurs

Send in your list & wait 100 days / *Envoyez votre liste et attendez 100 jours*

Community collection period / *Période de collecte communautaire*

Receive reports /*Recevoir des rapports*

Note: Most elements of the campaign may be adapted to your community, but there are some aspects that must be respected!

***Remarque** : la plupart des éléments de la campagne peuvent être adaptés à votre communauté, mais certains aspects doivent être respectés !*

Individual Radon Report – emailed

Rapport individuel sur le radon - envoyé par e-mail

1 of 2 2020-03-23

ID
N/A
PAR

123 Main St
Toronto, ON

DESTINATAIRE(S) DU RAPPORT

RAPPORT DE MESURE DE RADON

Description of the measurement

La mesure a été conduite à l'aide d'un détecteur de traces alpha fermé (Radtrak™) conformément aux recommandations de qualité mentionnées dans l'CNRPP-AL-OF-v6.

Les détecteurs sont arrivés à Radonova Laboratories AB le **2020-03-04**.
Ils ont été analysés le **2020-03-11**.

Personne n'a signé la fiche de mesure ni vérifié que les instructions ont été suivies.

Informations du site et adresse

ADRESSE DE LA MESURE

Résultats d'analyse

DÉTECTEUR	PÉRIODE DE MESURE	LIEU DE LA MESURE	ÉTAGE	ACTIVITÉ VOLUMIQUE DU RADON
12345678	2019-11-14 – 2020-02-25			Result

eurofins

Eurofins Radon Testing Sweden AB
Box 63
971 03 LULEÅ
SWEDEN

Website: radon.eurofins.se/en-gb/ C-NRPP ID: **CAL-202502**

Radon Test Report

Report Issue Date: «Report_Issue_Date»

Customer Contact Information:

«First_Name» «Last_Name»

«Mailing_Address»

«Email»

Tested Address:

«Testing_Address»

«CityTown», «Province» <<Postal Code>>

Device Location:

«Device_Location»

Test Device Used: AlphaTrack
C-NRPP Listed Device - Quality Assurance Plan in place.

Detector S/N	Detector Type	Test Start Date	Test End Date	Test Duration	Test Result (Bq/m³)
«Detector_SN»	AlphaTrack	«Test_Start_Date»	«Test_End_Date»	«Test_Duration»	«Test_Result_Bqm»

Results from Lab Section 4 authorized by <<Lab Supervisor>>
Margin of Error +/- <<Margin of Error>>
Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Recommendations:

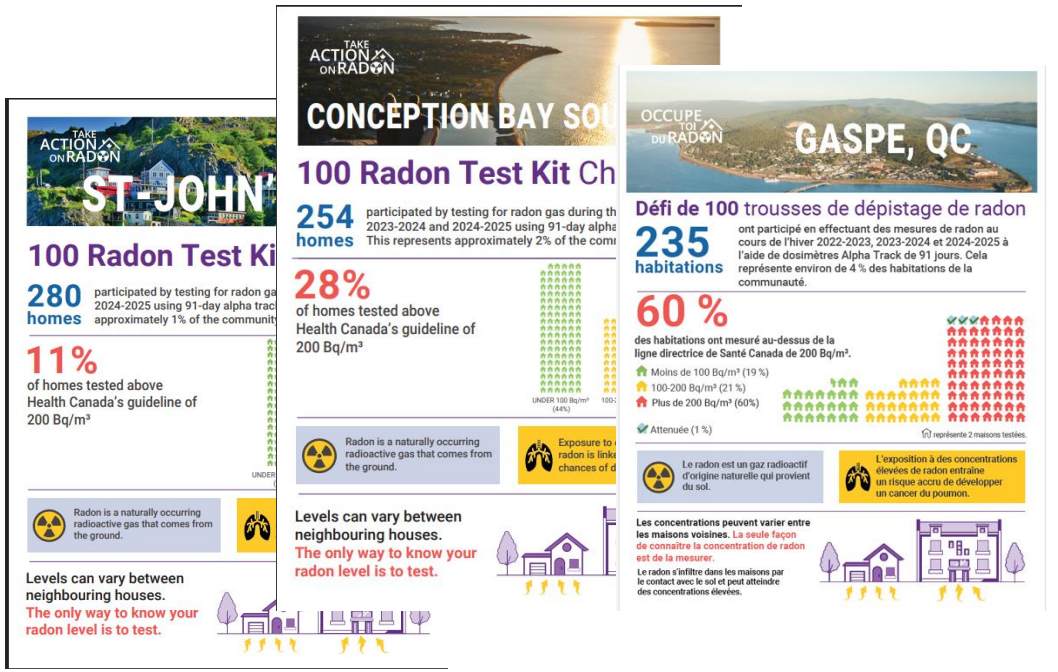
«Additional_information_about_your_sample»

«Recommendations»

You can find a C-NRPP mitigation professional to help you here: https://c-nrpp.ca/find-a-professional/

Need help with interpreting this report? You can find information online: https://takeactiononradon.ca/understanding-your-radon-test-report/

The information in this report will be shared with the Take Action on Radon group.



COMMUNITY REPORT / *RAPPORT COMMUNAUTAIRE*

Reminder: We are here to help answer questions

Rappel : nous sommes là pour répondre à vos questions..

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

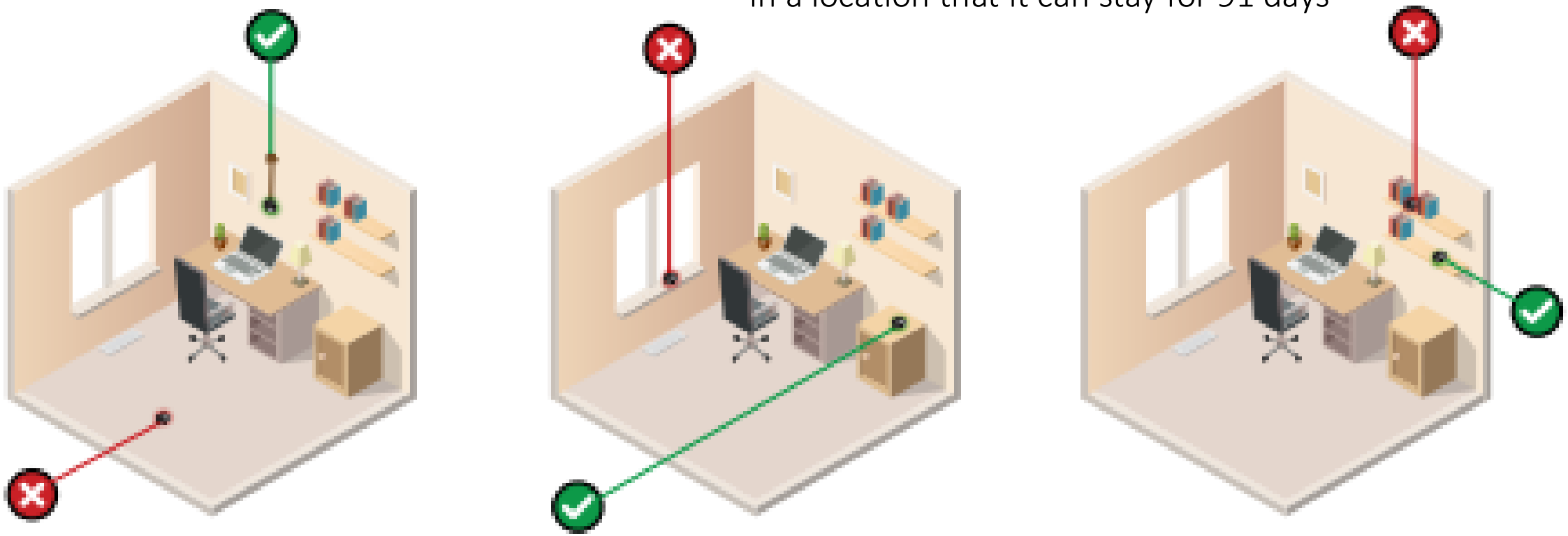


Figure 4. Potential testing locations in an office. Locations that are ***appropriate*** (✓) for radon testing and locations that are ***not appropriate*** (✗) for radon testing are indicated.

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 to 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.**

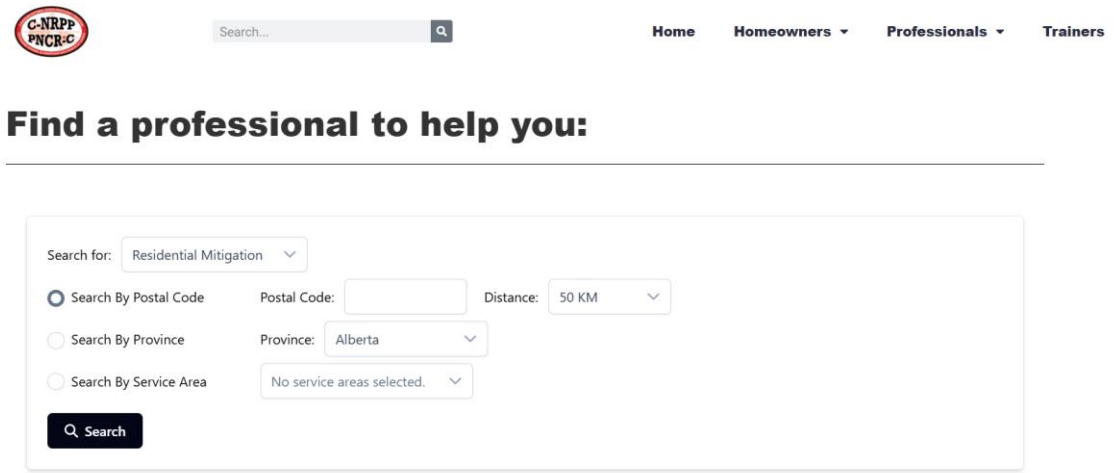
Radon Levels can be reduced

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

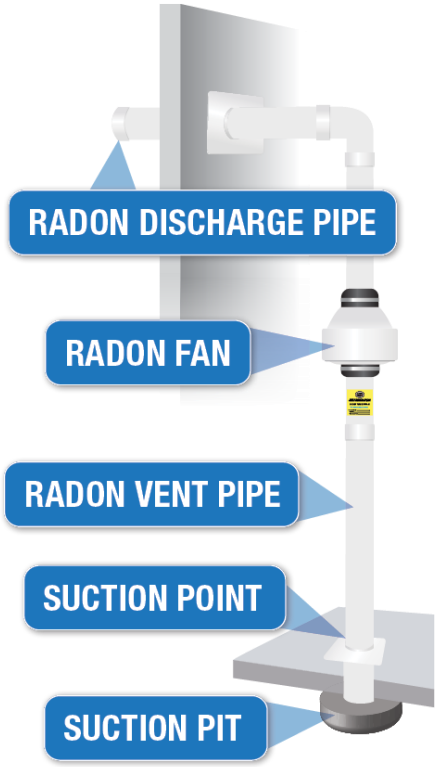
Research shows that certified radon professionals can reduce levels by over 90%.



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
- Needs to be installed properly
- CGSB 149.12
- Need to test after fan is turned on.

ALL HOMES CAN BE FIXED.

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.

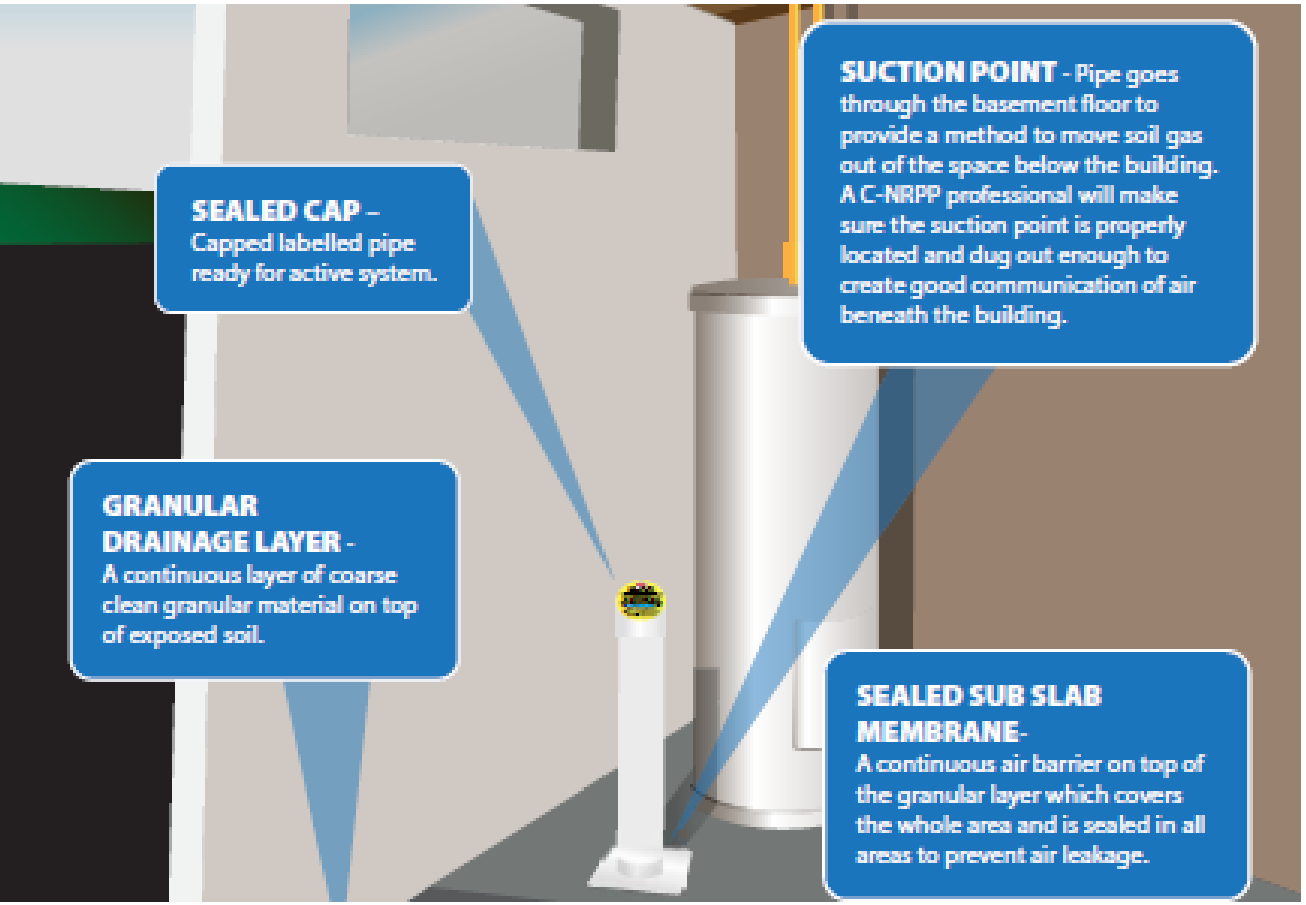
CGSB Standard

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:

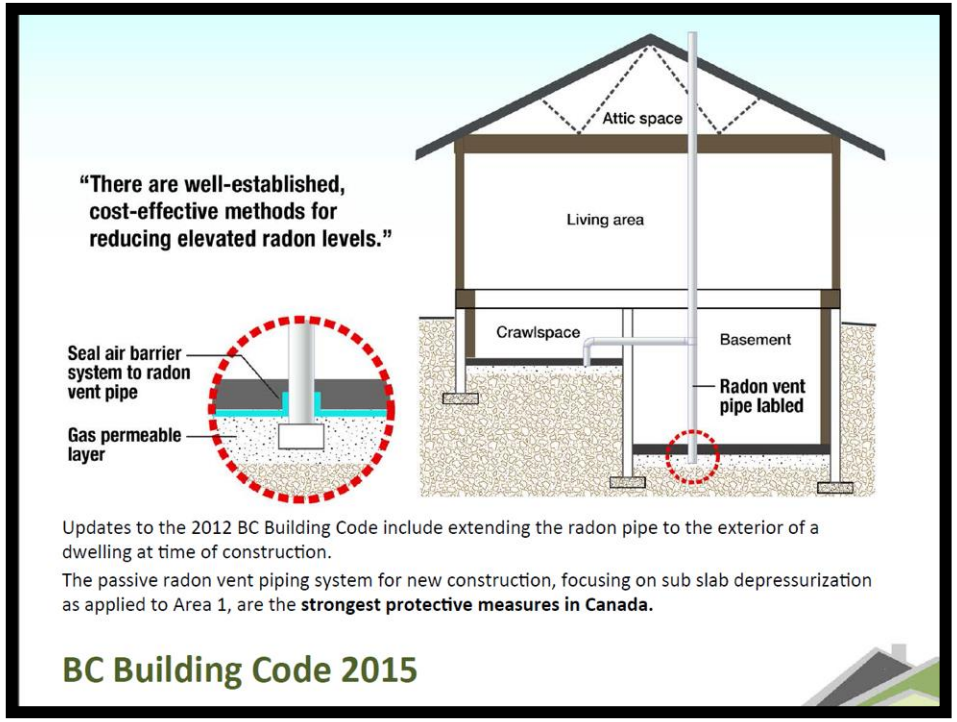
- Enabling mass timber construction
- Requiring rough-ins for radon safety province-wide

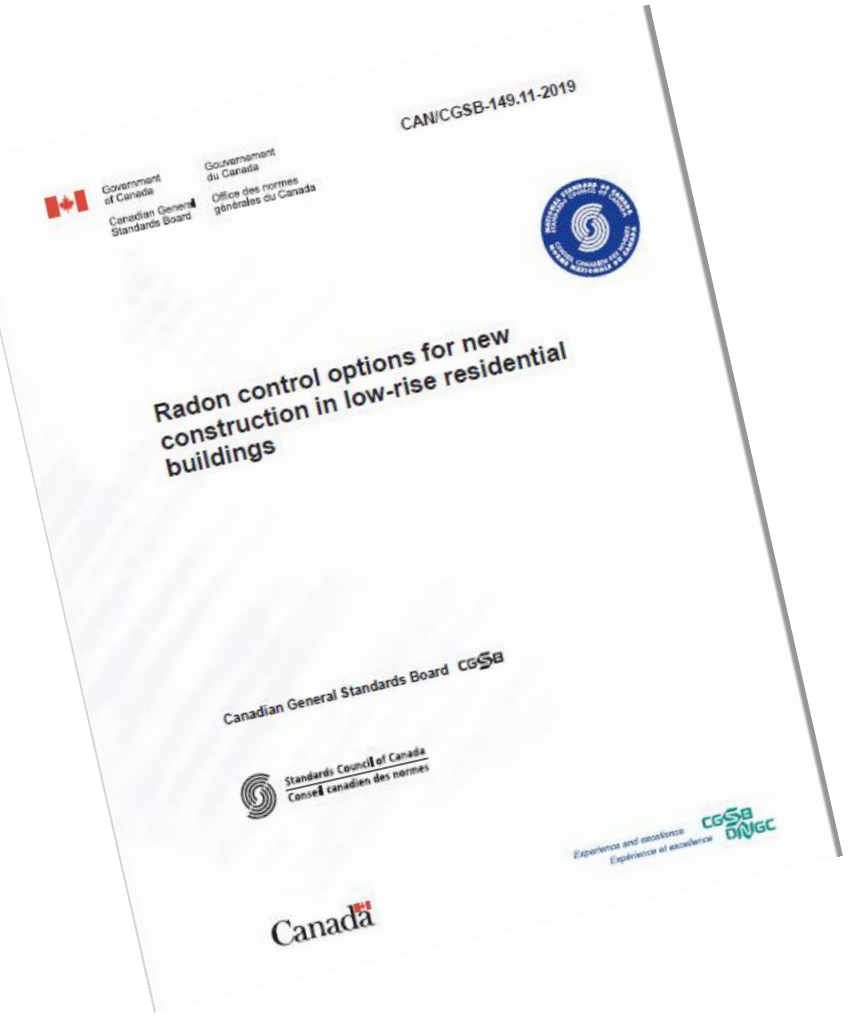
BC-specific changes effective March 2024:

- 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).

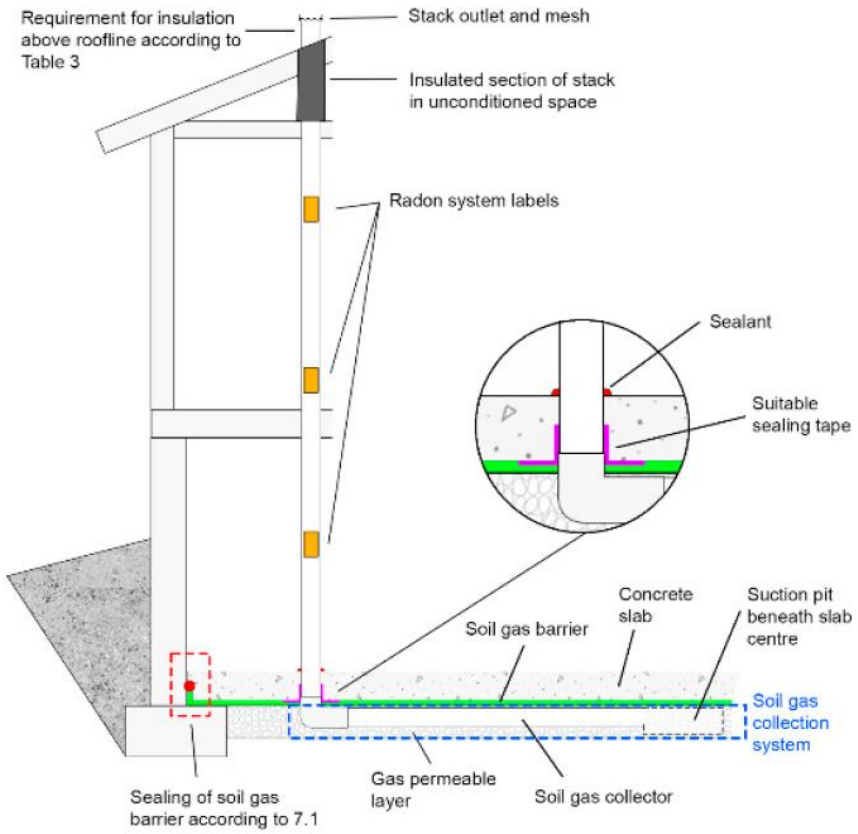
Most provinces and territories already require protection from radon similar to level 1 in all new homes

- 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.

2025 NATIONAL BUILDING CODE

Figure 10 – Level 2 system – Illustrative example of a passive vertical radon stack (not to scale)



Course clean granular material under the slab

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

UPDATED 9.25.3 : Well-sealed sub slab membrane

- Continuous barrier
- Sealed in all areas to prevent air leakage
- Including sealed floor to wall joint
- Requires that air barriers in contact with the ground have overlapping seams that are sealed.

Sealed sump pit

- Sealed with an airtight lid

NEW: Passive vertical stack

- Changes to section 9.13.4 include the addition of passive vertical stack radon mitigation systems to dwelling units and home type care occupancies in contact with the ground.

SPECIALTY PRODUCTS AND SYSTEMS

RADON X – BY IPEX

- Radon specific piping by IPEX
- Conforms to all CGSB requirements

CUFCA RCS

The Canadian Urethane Foam Contractors Association Inc. (CUFCA)

- Radon Control System (RCS®)
- Spray foam is the radon barrier, air barrier and vapour barrier
- Provides thermal break between foundation wall and basement floor slab
- Very effective at controlling diffusion and mass transport of radon
- Unit cost is more than some materials but multifunctionality, simultaneous application and reduced labour costs compared to taping and sealing.
- There are contractors certified in radon and spray foam

System is Listed/Evaluated under

- Canadian Construction Materials Centre - CCMC 14073-R,
- Underwriters Laboratories of Canada - ULC ER-R40284

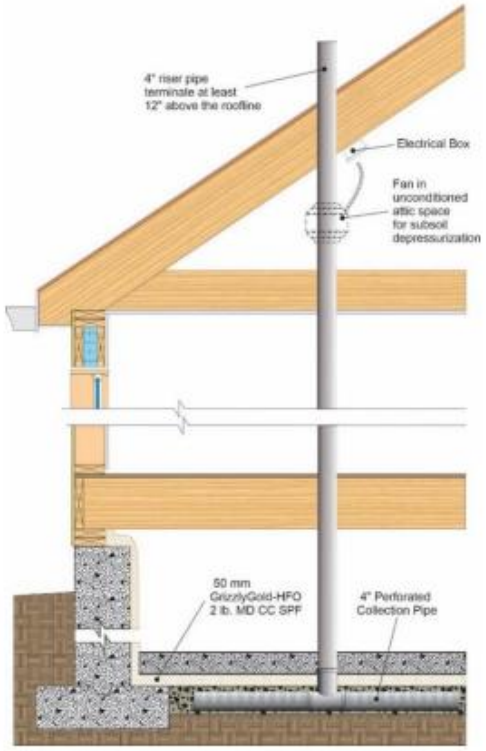
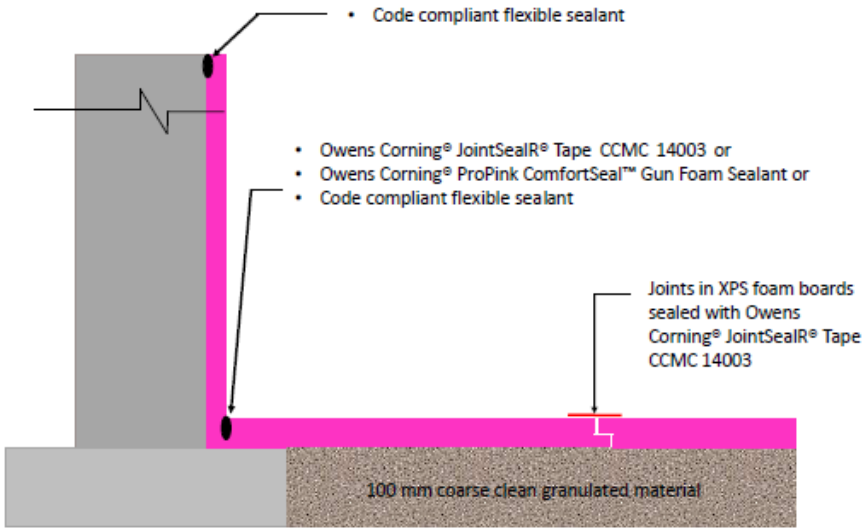
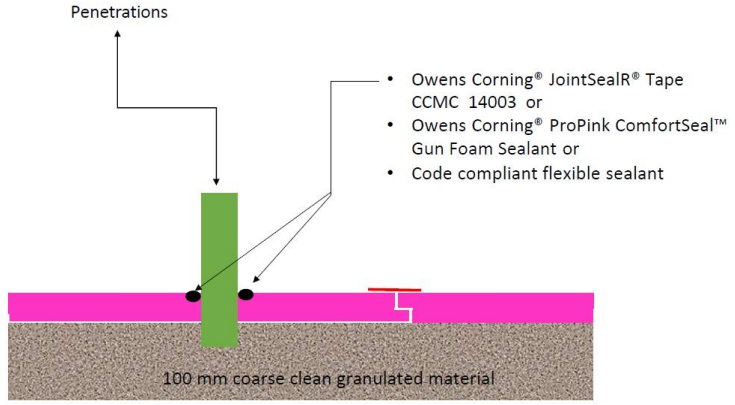


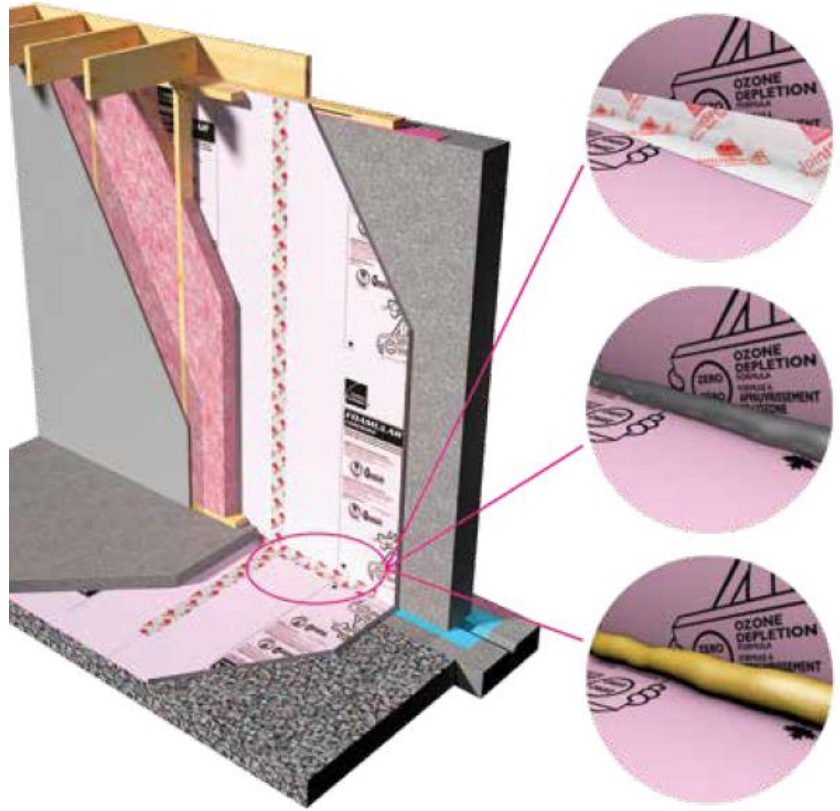
Figure 1:
Installation of CUFCA RCS® for radon control below grade with 100 mm grade bed and roughed-in sub slab radon depressurization system.

CUFCA RCS™
CCMC# 14073-R
RADON CONTROL SYSTEM
IN ONE SEAMLESS APPLICATION

OWENS CORNING – FOAMULAR®



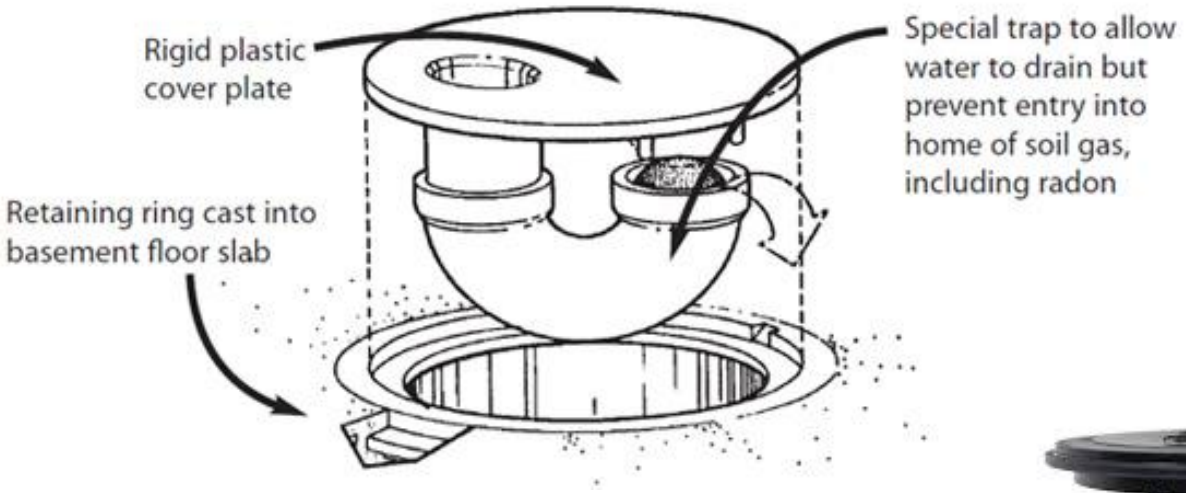


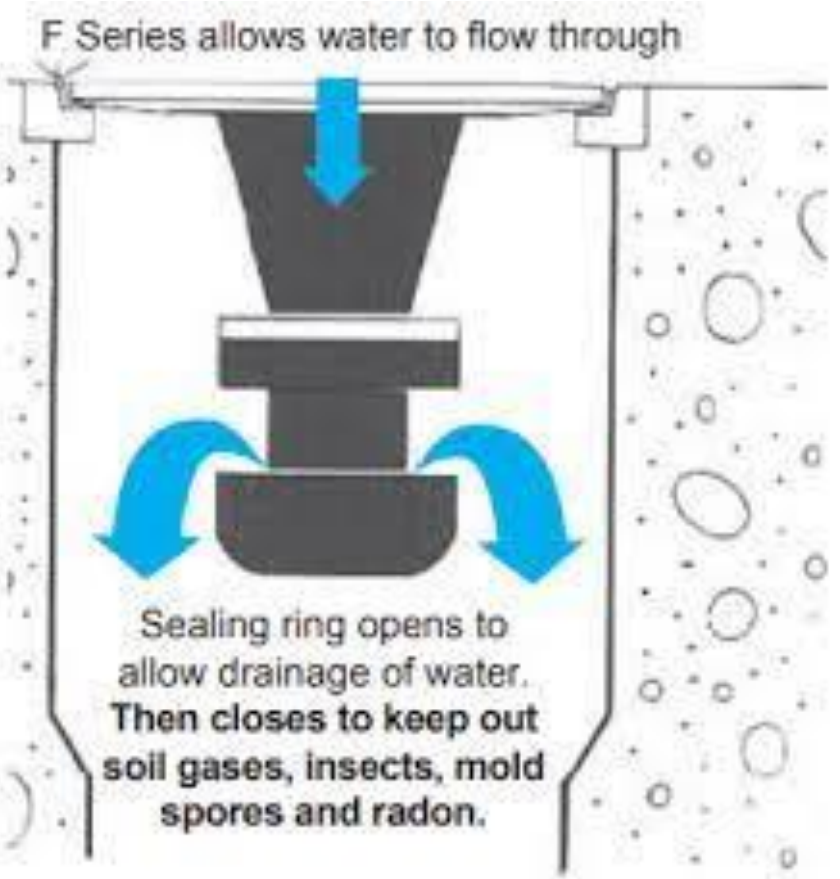


SUCTION PIT CAGES FOR EASY CONSTRUCTION

RadonWest

DRANJER - GAS TIGHT DRAINS





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TARION

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Home

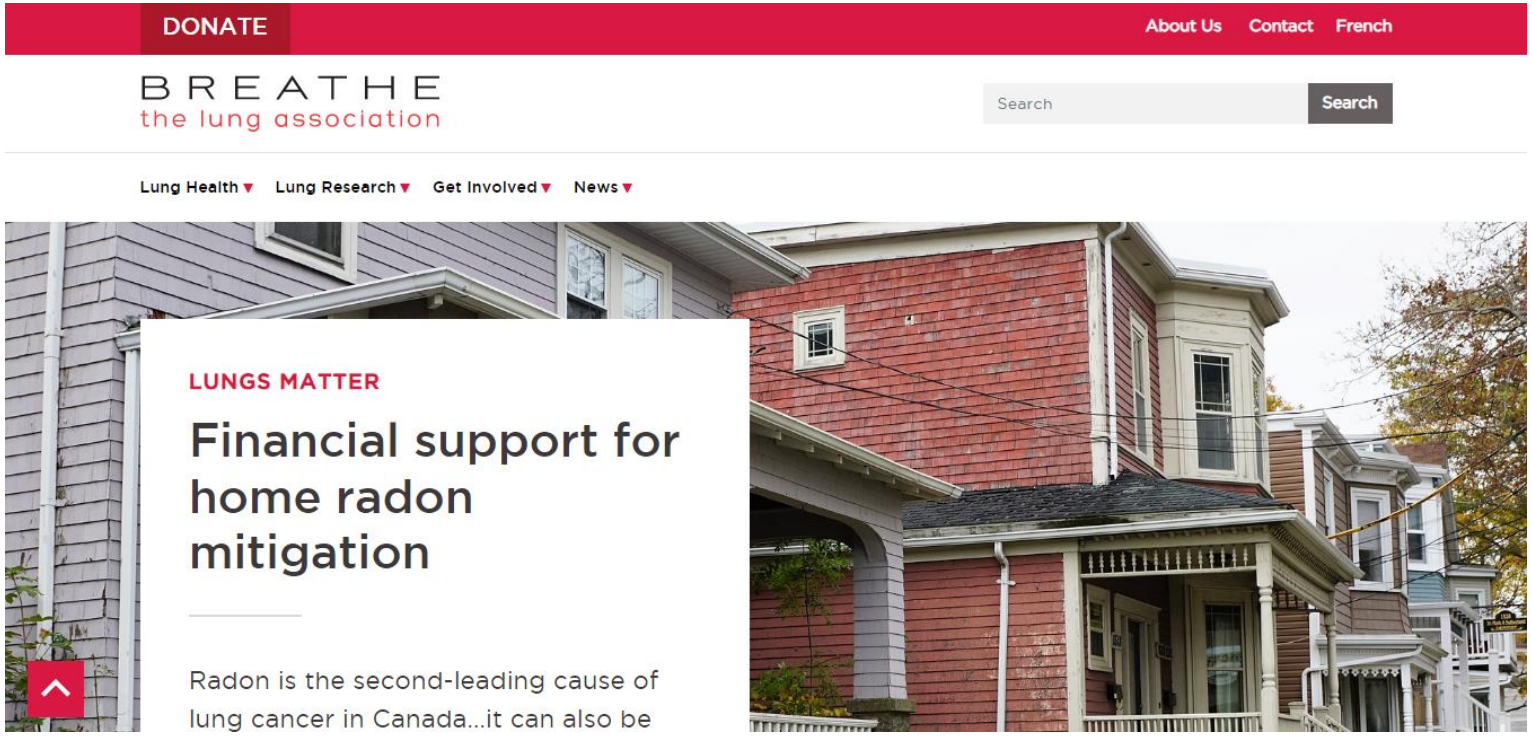
Eight quick facts about radon

8. **The new home warranty covers it.** If your home is less than seven years old and a long-term radon test of at least three months indicates levels higher than 200bq/m3, there is help available for you. Your new home warranty provides radon remediation coverage for seven years from the original possession date, and the maximum coverage was recently increased to $50,000 for homes who have a signed Agreement of Purchase and Sale after February 1, 2021. Report the situation to your builder and Tarion on the applicable warranty claim form. Your builder is required to take appropriate measures to reduce the radon in your home to an acceptable level. And if your builder fails to take action, then Tarion will step in to help.

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.

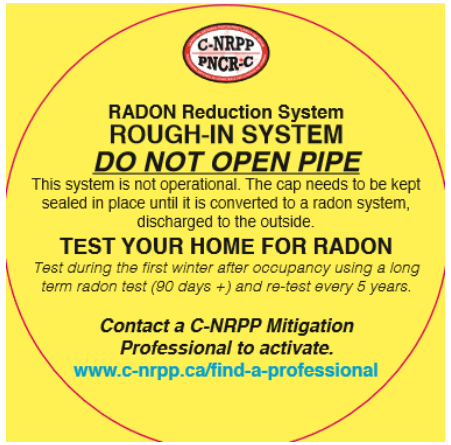
Scan the QR code or go to **hydro.mb.ca/heel** to learn more

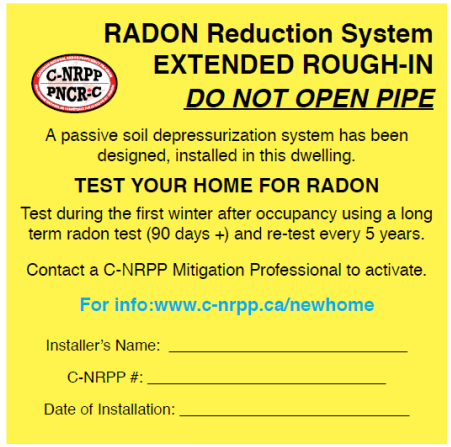
To request accessible formats visit **hydro.mb.ca/accessibility**.

Manitoba Hydro
energy for life

RESOURCES AVAILABLE

Labels available through C-NRPP





Includes consideration for:

Level 1 labels include labels for:
- Air membranes
- Sump pits
- Pipe labels

Level 2 labels include above, plus must include wording and must be applied every 1.8m (6')
- Includes label on electrical panel circuit

Label 3 includes all above plus must include
- fan label
- Active system pressure label

All three levels must also include homeowner radon reduction system package; radon maintenance and information sheets.

C-NRPP Consumer Bulletins

How do I know that my neighbour's radon mitigation system isn't affecting the radon levels inside my house?

The most accurate way to determine levels inside a home is to test the home for radon using a long-term radon monitor. High radon levels can easily be reduced.

To reduce radon levels, a radon mitigation system can be installed. A C-NRPP Certified Radon Mitigation Professional is trained to install a system in accordance with all pertinent standards and guidelines.

A radon mitigation system consists of a pipe extending from below the basement floor slab or membrane, up through the interior where it connects to a fan, then terminates outside the home in the radon discharge pipe. This method of radon mitigation, if properly installed, creates a negative pressure below the slab and/or membrane thus drawing the soil gases out through the installed system rather than allowing them to move from the soil space beneath the building and into the home.

The radon discharge pipe can be located at the side of a house or through the roof, but there are specifications that must be met in order to prevent the radon gas from re-entering the house or entering the neighbouring houses.

If my neighbour has a radon system installed, and the discharge pipe is pointed at my house, how do I know it's not increasing the radon levels in my house?

Research shows that radon disperses quickly once discharged outdoors. Installations standards have set minimum clearance distances for radon system discharge pipes to further ensure that radon-laden air doesn't re-enter the original house or enter the neighbouring house (see reverse). If you are concerned about the radon levels within your home, you should test your own home for radon. Detectors are easily available.

Radon is a naturally occurri radioactive gas that comes from t ground.

Radon is odourless and invisible; the o way to know your radon level is to test.

Exposure to elevated levels of radon linked to increased chances of developi lung cancer.

16% of lung cancers in Canada are linked radon exposure. Radon is the number cause of lung cancer in non-smokers.

Radon enters buildings through conta with the ground.

Health Canada recommends every hor be tested for radon.

Table 1: Clearances

Minimal clearances for all types of radon discharges

Placement of radon discharge pipes shall follow the required minimal clearances listed in Table 1.

Locations	Required minimal clearances (m)
Clearance to a mechanical air supply inlet	1.8
Clearance to permanently closed window	0.3
Clearance to an openable window	1.0
Clearance from a door that may be opened	0.3
Clearance from a door that has an openable window	1.0
Clearance to outside corner	0.3
Clearance to inside corner	0.3
Clearance above paved sidewalk or paved driveway located on public property	2.1
Clearance above grade- from a veranda, a porch, a deck, or a balcony	0.3
Vertical clearance below soffits or from any attic venting component	1.0
Horizontal clearance from an area directly below the discharge where there is a risk of injury from ice falling	1.0
NOTE: The selection of the exhaust point should be made considering maximal available clearances from building openings and from outdoor occupancy areas.	

What research is available on side-wall discharge?

Fixing Houses with High Radon – A Canadian Demonstration CMHC March 2008, Scott, A.G.; Fugler, D.

A test case in Kanata in fall 2007 provided an opportunity to test a side wall installation in Canada in a high-radon home.

Depressurization Residential Radon Mitigations at Kitigan Zibi Anishinabeg: Comparison of Above Ground Level (RIM JOIST) and Above Roof Line Discharge of Radon Mitigation SUB-SLAB Systems; Health Physics 2012 Brossard, M; Brascoupe, M; Brazeau, C; Falcomer, R; Ottawa, B; Scott, A; Whyte, J

Radon Mitigation in Cold Climates at Kitigan Zibi Anishinabeg, Brossard, M; Ottawa, C. B. Falcomer, R; Whyte, J

Other questions? Feel free to contact C-NRPP Offices:

Ph: 204-798-9649 Toll free: 1-855-722-6777
Email: info@c-nrpp.ca

Homeowner Bulletin:
Draft: March 2024

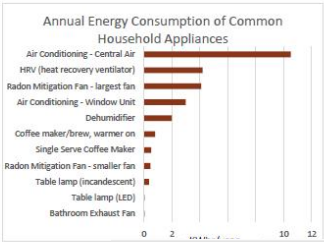
Understanding the **Energy Use of a RADON MITIGATION FAN**

An active mitigation system can lower radon levels in a building, but the fan must run continually. What impact will this have on energy consumption?

This bulletin puts the cost of electricity used by a radon fan into context by comparing its electrical consumption to other commonly used electric appliances.

An active radon mitigation system runs continuously to reduce the radon levels in a building to levels that are as low as reasonably achievable (ALARA). The ALARA concept is important when considering a radioactive gas. All types of radiation exposure are considered using this principal, and radon is no exception. Once a radon mitigation system is installed in a building, ensuring that it runs continuously is critical.

The cost of running an electrical appliance depends on how much electricity the appliance needs (measured in watts [W]), how often the appliance runs (several hours a day or continuously), and the cost of electricity in the region. In the chart to the right and in the table below, we've listed a variety of common household appliances for comparison. The chart provides a comparison of energy use and the table details the energy costs as well. In certain regions of the country, a variety of electricity rates are available: we've used the average rate for each region.



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Homeowner Bulletin:
March 2024

If my house has an HRV/ERV, do I still need to test for radon?

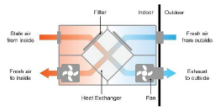
The short answer is yes: if you haven't already tested for radon, it's very important to do so regardless of whether your home has an HRV/ERV. Heat and energy recovery ventilators (HRV/ERV) are systems designed to improve indoor air quality by bringing fresh outdoor air into a home while exhausting stale indoor air. The design of these units allows for some heat (in the case of an HRV) or heat and humidity (in the case of an ERV) to be exchanged between the outgoing indoor air and incoming fresh air, in order to save energy. Depending on how they are functioning, HRV/ERVs could affect your radon levels for better, for worse, inconsistently, or not at all. That's why it's so important to test your home for radon!

HRV/ERVs must be balanced to function properly, which means that the same amount of air is being brought into the home as is being exhausted. When out of balance, a positive or negative pressure can be created in the home. Both situations can have harmful side effects. HRVs and ERVs may be out of balance if they weren't properly installed, if modifications have been made to the ducting or vents, or if the units aren't properly cleaned and maintained. Regular cleaning of the filters is an important part of maintenance that is often neglected.

HRV/ERVs should be cleaned and balanced as per the manufacturer's instructions.

There are simple videos available online, accessible either through the manufacturer's website or YouTube.

Heat Recovery Ventilator



Does your home already have an HRV/ERV?

If your home is already equipped with an HRV or ERV, consulting with a qualified professional to ensure the unit is properly set up and balanced is a good first step in addressing your radon levels. In certain cases, cleaning and adjusting the HRV or ERV has been found to lower radon levels, though this will not be as effective as installing a dedicated radon mitigation system. Even if radon levels aren't reduced, ensuring that your HRV/ERC is functioning properly is a good first step prior to taking further action to reduce your radon levels, such as consulting a C-NRPP radon professional to install a radon mitigation system. **Health Canada recommends every home be tested for radon.**

Continual Radon Monitoring and your HRV/ERV

If you are using an HRV or ERV to manage your radon levels, we recommend that you use a digital radon monitor to continually measure your radon levels. If your HRV/ERV starts to become unbalanced, the digital monitor will alert you to increasing radon levels. The digital monitor will also alert you to season variations in your radon levels. You can find a list of consumer-grade continual radon monitors reviewed by C-NRPP as part of the Consumer Device report here: www.c-nrpp.ca

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https://c-nrpp.ca/wp-content/uploads/2021/04/Homeowner-QA-Side-wall-discharge.pdf

TEST & REDUCE

CARST ACSTR Rn

WWW.CARST.CA

HELPING CANADIANS REDUCE RADON RISK

RESOURCES *FOR* RENTERS

Radon is a naturally occurring, odorless and colourless, radioactive gas that comes from the ground. **Radon** is in every home and type of building in Canada.

Long-term exposure to high levels of radon increases the risk of developing lung cancer. *According to Health Canada, radon is the #1 cause of lung cancer in non-smokers.*

YOU CAN PREVENT EXPOSURE TO HIGH RADON. TO PROTECT YOUR HEALTH, TEST YOUR HOME FOR RADON.

TESTING FOR RADON

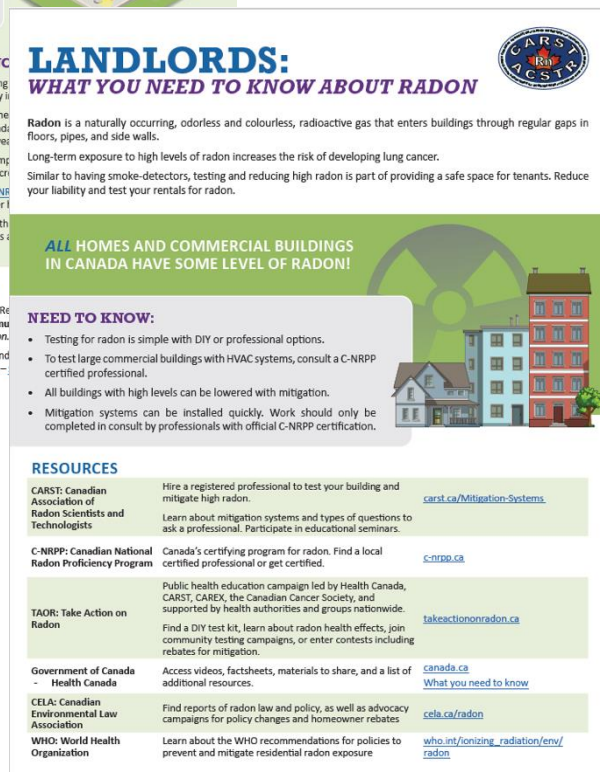
Testing for radon is simple and affordable: takeactiononradon.ca/test

- You can easily test your living space for radon with a DIY test kit (~$60), or request your landlord to hire a professional to test
- Testing is recommended for 3 months (or 91 days) during the winter season or when doors and windows are typically closed
- Test kits are placed in your main living space, then mailed to a lab for analysis. The results are returned directly to you

TALKING TO YOUR LANDLORD

Ask your landlord if they have tested for radon in the past 5 years. **they are unfamiliar with radon. Let them know there are commu support radon testing and mitigation rebates** *(see takeact onnradon.*

Most provinces and territories have tenancy legislation requiring land and comply with health, safety, housing and maintenance standards –



LANDLORDS:
WHAT YOU NEED TO KNOW ABOUT RADON

Radon is a naturally occurring, odorless and colourless, radioactive gas that enters buildings through regular gaps in floors, pipes, and side walls.

Long-term exposure to high levels of radon increases the risk of developing lung cancer.

Similar to having smoke-detectors, testing and reducing high radon is part of providing a safe space for tenants. Reduce your liability and test your rentals for radon.

***ALL* HOMES AND COMMERCIAL BUILDINGS IN CANADA HAVE SOME LEVEL OF RADON!**

NEED TO KNOW:

- Testing for radon is simple with DIY or professional options.
- To test large commercial buildings with HVAC systems, consult a C-NRPP certified professional.
- All buildings with high levels can be lowered with mitigation.
- Mitigation systems can be installed quickly. Work should only be completed in consult by professionals with official C-NRPP certification.

RESOURCES

CARST: Canadian Association of Radon Scientists and Technologists	Hire a registered professional to test your building and mitigate high radon. Learn about mitigation systems and types of questions to ask a professional. Participate in educational seminars.	carst.ca/Mitigation-Systems
C-NRPP: Canadian National Radon Proficiency Program	Canada's certifying program for radon. Find a local certified professional or get certified.	c-nrpp.ca
TAOR: Take Action on Radon	Public health education campaign led by Health Canada, CARST, CAREX, the Canadian Cancer Society, and supported by health authorities and groups nationwide. Find a DIY test kit, learn about radon health effects, join community testing campaigns, or enter contests including rebates for mitigation.	takeactiononradon.ca
Government of Canada - Health Canada	Access videos, factsheets, materials to share, and a list of additional resources.	canada.ca What you need to know
CELA: Canadian Environmental Law Association	Find reports of radon law and policy, as well as advocacy campaigns for policy changes and homeowner rebates	cela.ca/radon
WHO: World Health Organization	Learn about the WHO recommendations for policies to prevent and mitigate residential radon exposure	who.int/ionizing_radiation/env/radon

C-NRPP Technical Bulletin

Mitigation in Multi-Unit Dwellings

November 2021

When mitigating a multi-unit dwelling, ensure you discuss the process with the building owner prior to starting installation.

C-NRPP certified professionals are to reflect high standards and ethics in their work, and comply with recognized standards of practice to protect public health and safety. They communicate clearly and accurately with consumers about their process and the harmful effects of radon gas.

https://c-nrpp.ca/about/

This bulletin is intended to assist mitigation professionals when faced with a mitigation client whose home is part of a multi-unit dwelling.

Multi-unit dwellings include any building used as a residence by more than one family unit, such as town houses and duplexes. Buildings with shared ownership or maintenance such as co-ops, townhouses, condominiums, stratas or vacation timeshare properties may also be considered multi-unit dwellings.

When measuring radon in multi-unit dwellings, whenever possible, best practice is to test the whole building following Health Canada's guidance on public buildings, which includes testing every ground-contact unit.

When mitigating a multi-unit dwelling, ensure you have proper insurance (including adequate liability amounts) and training for the building type. C-NRPP Radon Mitigation training only covers guidance for Part 9 buildings. We recommend you have special training for any commercial buildings.

When installing a mitigation system in a multi-unit dwelling the following things should be considered:

1. Remember your client may not be the owner of the building. Talk to the owne to doing any work; there may be restrictions on work that can be done to the bu in the exterior or any addition to the structure. Not confirming this first may cau time and could result in fines from the ownership group.
2. Buildings must be considered as systems. Many townhouse complexes or semi- common foundation, and this is the typical pathway for radon gas entry into a

   When mitigating these units, best practice is to access all ground-contact level diagnostic testing and to ensure that the mitigation system does not create bac effects on other units. You should discuss a strategy for communicating with all and explain that the most effective strategy will also benefit them by reducing

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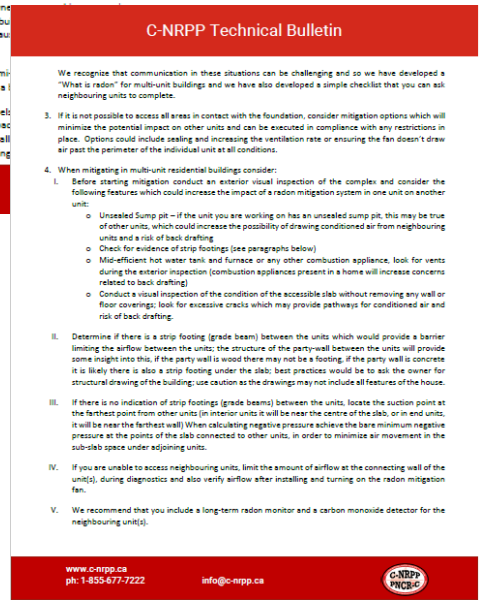

C-NRPP Technical Bulletin

We recognize that communication in these situations can be challenging and so we have developed a "What is radon" for multi-unit buildings and we have also developed a simple checklist that you can ask neighbouring units to complete.

3. If it is not possible to access all areas in contact with the foundation, consider mitigation options which will minimize the potential impact on other units and can be executed in compliance with any restrictions in place. Options could include sealing and increasing the ventilation rate or ensuring the fan doesn't draw air past the perimeter of the individual unit at all conditions.
4. When mitigating in multi-unit residential buildings consider:
   I. Before starting mitigation conduct an exterior visual inspection of the complex and consider the following features which could increase the impact of a radon mitigation system in one unit on another unit:
      - Unsealed Sump pit – if the unit you are working on has an unsealed sump pit, this may be true of other units, which could increase the possibility of drawing conditioned air from neighbouring units and a risk of back drafting
      - Check for evidence of strip footings (see paragraphs below)
      - Mid-efficient hot water tank and furnace or any other combustion appliance, look for vents during the exterior inspection (combustion appliances present in a home will increase concerns related to back drafting)
      - Conduct a visual inspection of the condition of the accessible slab without removing any wall or floor coverings; look for excessive cracks which may provide pathways for conditioned air and risk of back drafting.

   II. Determine if there is a strip footing (grade beam) between the units which would provide a barrier limiting the airflow between the units; the structure of the party-wall between the units will provide some insight into this, if the party wall is wood there may not be a footing, if the party wall is concrete it is likely there is also a strip footing under the slab; best practices would be to ask the owner for structural drawing of the building; use caution as the drawings may not include all features of the house.

   III. If there is no indication of strip footings (grade beams) between the units, locate the suction point at the farthest point from other units (in interior units it will be near the centre of the slab, or in end units, it will be near the farthest wall) When calculating negative pressure achieve the bare minimum negative pressure at the points of the slab connected to other units, in order to minimize air movement in the sub-slab space under adjoining units.

   IV. If you are unable to access neighbouring units, limit the amount of airflow at the connecting wall of the unit(s), during diagnostics and also verify airflow after installing and turning on the radon mitigation fan.

   V. We recommend that you include a long-term radon monitor and a carbon monoxide detector for the neighbouring unit(s).

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- Infographic for Landlords and Tenants

C- NRPP Technical Bulletin:
for Residential Builders and Building Officials

Understanding best practices for installing radon control measures in new construction

PUBLISHED: August 2024

The Canadian National Radon Proficiency Program (C-NRPP) sets the national standards for radon training and certification.

C-NRPP operations are overseen by Health Canada.

What is Radon?

Radon is a naturally occurring, radioactive gas formed by the breakdown of uranium in soil, rock, and water. Radon is invisible, odourless, and tasteless, making it undetectable without proper testing equipment. **All regions of Canada have some level of radon, and it is found in all homes at varying levels.**

Why is Radon Harmful?

Exposure to elevated levels of radon is the leading cause of lung cancer in non-smokers and is responsible for over 3000 deaths each year[1]. Health Canada recommends that all homes and buildings should be tested for radon. If the radon level in a building is above the Canadian guideline level of 200 Bq/m^3, action should be taken to reduce the radon levels to as low as reasonably achievable.

Radon and Newly Constructed Residential Homes

The level of radon in a newly constructed home cannot be predicted ahead of time or measured during construction. It is therefore imperative that all homeowners test their homes for radon by conducting a long-term (91 day) test[2] during the first heating season after completion and occupation of their home. Also, because of the changes that occur in the building envelope during the first three years after construction (due to shrinking concrete and other shifts in the building envelope), we recommend that new homes should be tested for radon a second time during the heating season three years after construction. Links to approved test kit suppliers, electronic radon monitor performance reviews[3], and radon professionals[4] are found at the end of this document.

Understanding Building Codes versus Best Practices

The National Building Code (NBC2020) is a MINIMUM standard that all new homes need to meet. As of 2024, the NBC2020 is applicable in all provinces except for Ontario and only regionally in PEI and Newfoundland and Labrador. The NBC2020 addresses the fact that potentially high radon levels need to be mitigated, but it doesn't provide a method to reduce radon levels. Instead, it provides for a rough-in for future radon reduction in all new homes. The Canadian General Standards Board (CGSB) has developed a best practice document called *Radon control options for new buildings:CAN/CGSB 149.11-2024*[5] which provides extended information to help builders.

Radon Control Measures in the NBC2020

NBC2020 includes the following measures with respect to radon control:

- Granular drainage layer (Section 9.14.4)
- Sealed sub-slab membrane with all cracks/joints sealed, sealed to the foundation wall with flexible sealant (Sections 5.4, 9.13.4.2, and 9.25.3)

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C-NRPP Technical Bulletin

RADON and the impact of ENERGY EFFICIENCY – AIR TIGHTNESS

March 2024

www,c-nrpp.ca

TECHNICAL AUDIENCE: Energy Advisor

This document is developed by C-NRPP for Energy Advisor professionals.

What is Radon?

Radon is a naturally occurring, radioactive gas formed from the breakdown of uranium in soil, rock, and water. Radon is invisible, odourless, and tasteless, making it undetectable without proper testing equipment. All regions of Canada have some level of radon, and it is found in all homes at varying levels.

Why is Radon Harmful?

Health Canada recommends that all homes and buildings should be tested for radon, as radon is a known carcinogen, and action should be taken to reduce radon levels in homes where the radon levels are above the Canadian guideline level of 200 Bq/m^3. Exposure to elevated levels of radon is the leading cause of lung cancer in non-smokers and is responsible for over 3000 deaths each year.

The link between Energy Retrofits and Radon

Since radon is found in indoor air, its levels can be affected by any renovation work that renders a house more airtight. If the amount of fresh air leaking into a home is reduced, the radon levels inside are likely to increase. Alternatively, a well designed retrofit will ensure good airflow, and take steps to ensure radon levels are at safe levels.

Link to RESEARCH: BC Lung's Energy Efficiency and Radon: Making the Connection Focus on health in the balance of energy retrofits and indoor air quality, Dr. Anne-Marie Nicol

Informing Clients About Radon

As an Energy Advisor, you can literally save lives, simply be informing clients about radon while performing your energy assessment. Clients will learn it is important to test for radon after a retrofit and can plan the retrofit process to make any needed radon mitigation easier. Your guidance can lead to radon testing and mitigation at a time when homeowners are making important decisions about changes to their home and reducing radon levels significantly reduces the risk of lung cancer. Taking this proactive approach in advising clients about radon testing and mitigation not only demonstrates your commitment to their well-being, but also reinforces their trust in your services, and ensures you are working as a comprehensive and conscientious professional. **Link to RESEARCH:** BC Lung's Energy Efficiency and Radon: Recognizing Legal Liabilities

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C-NRPP Technical Bulletin:
for Architects and Design Professionals

Interpretive Guide on Canadian referenced RADON Guidelines and Standards for Architects and Design Professionals

The Canadian National Radon Proficiency Program (C-NRPP) sets the national standards for radon training and certification.

DRAFT: 5 February 2026

What is Radon?

Radon is a naturally occurring, radioactive gas formed by the breakdown of uranium in soil, rock, and water. Radon is invisible, odourless, and tasteless, making it undetectable without proper testing equipment. **All regions of Canada have some level of radon, and it is found in all buildings at varying levels. Radon levels can only be determined by testing the air in the building, soil testing is not recommended to determine potential indoor radon levels.**

C-NRPP trains and certifies professionals based on residential techniques, however the principals can be then combined with expertise on commercial buildings for commercial mitigation. You can find a list of C-NRPP Residential or Commercial Mitigation professionals at: www.c-nrpp.ca/find-a-professional

Radon Guidelines and Standard Documents:

In Canada there are various radon related documents which are referenced in code or by various organizations. There exists a level of confusion about which document should be used in a reference in which situations and so this document attempts to set some structure for making those decisions.

How to use this document:

This document is broken into three sections. The first section is a list of all the documents that are relevant to Architects and Design professionals who work with radon mitigation systems. The second section is a brief overview of the radon related matters included in each document listed, and how relevant/up to date the material included is. The third section is a chart intended for use as a reference guide to quickly look up which documents contain information on each area of radon mitigation systems and mitigation processes.

List of building codes/standards that are applicable:

- EPA document - Radon Prevention in the Design and Construction of Schools and Other Large Buildings
- CGSB Standard 149.12 (2024) (existing construction)
- CGSB Standard 149.11 (2024) (new construction)
- AARST Large Building standard
- ANSI/AARST SGM-MFLB-2023 Soil Gas Mitigation Standards for Existing Multifamily, School, Commercial and Mixed-Use Buildings
- ASHRAE 62.1 and clarification
- Alberta Infrastructure Specification

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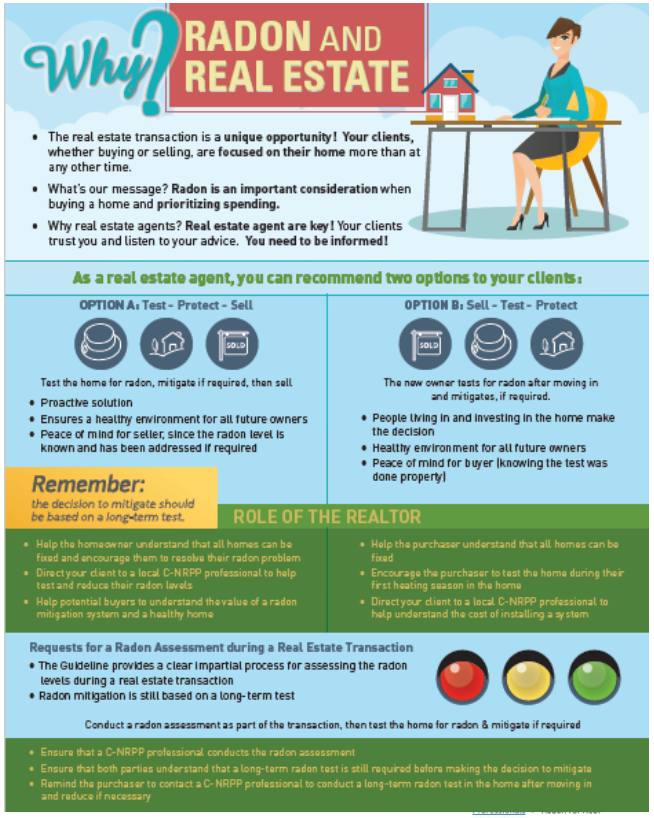
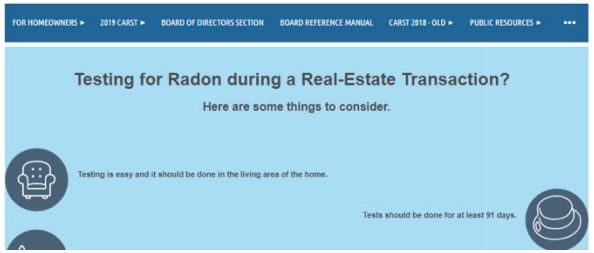
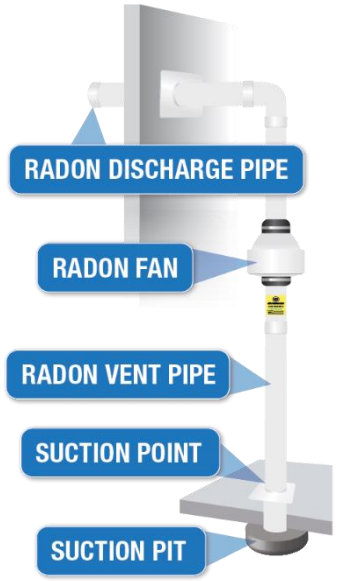
RESOURCES







Real Estate information

https://carst.ca/radon-for-Real-Estate-Agents

Thank you for taking time to join me today.

QUESTIONS?

Pam Warkentin,
Executive Director, CARST/C-NRPP
p_warkentin@carst.ca

Feedback and request additional resources.