CARST2024 - Moncton, NB

April 24-27, 2024

https://www.carst.ca/page-1859848

Board of Directors (please stand)












What is CARST? Our role in the words of our members….

Our MISSION…

CARST's mission is to bring together individuals and organizations who are driven to help Canadians reduce their radon exposure and prevent lung cancer from radon.
We provide a place where Canadians can find information, resources and professionals to help them understand how to reduce their radon risk.
We provide our members with radon-relevant resources, opportunities to learn more about radon research, standards and best practices, and a place to connect with other stakeholders across the country.

Notre MISSION…

La mission de CARST est de rassembler des individus et des organisations déterminés à aider les Canadiens à réduire leur exposition au radon et à prévenir le cancer du poumon dû au radon.
Nous fournissons un endroit où les Canadiens peuvent trouver de l'information, des ressources et des professionnels pour les aider à comprendre comment réduire leur risque de radon.
Nous fournissons à nos membres des ressources, des opportunités d'en apprendre davantage sur la recherche, les normes et les meilleures pratiques sur le radon, et un endroit pour se connecter avec d'autres parties prenantes à travers le pays.

CARST Goals (past and upcoming)

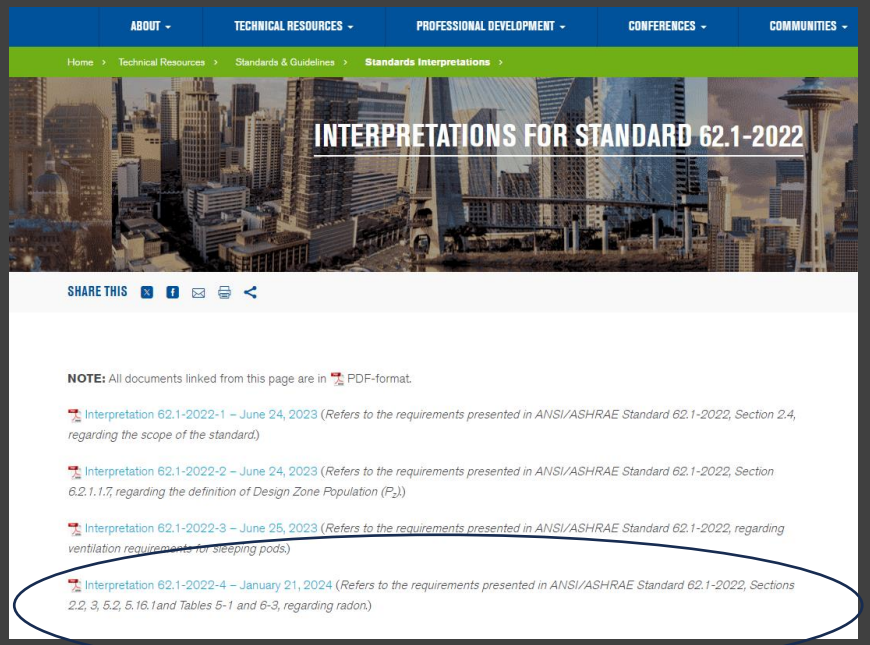
Past Goals brought us to where we are Today

- Making connection with key stakeholders (Real Estate, Medical professionals, builders, municipalities)
- Make progress in schools testing for radon
- Improve builder education.
- Increase membership (double the non-C-NRPP membership)
- Increase Radon Awareness & Remediation Rate
- Annual Public Awareness Campaign
- Keep our mindset and language focused on a health-based model (as low as reasonably achievable)
- Tenant protection, workers and children protection, institutional, commercial/industrial
- Successful major public awareness campaign
- Increase budget
- Increase sponsorship

Current Goals move us Forward

- Engaging with professionals through Townhall Meetings
- Continued awareness, with an additional focus on medical professionals
- Mitigation grants- provincial, federal, tax credits, CLA awareness
- Should radon by a protected profession / skilled trade – what would this look like?
- Improved standards/accountability/consistency for professionals advertising C-NRPP certification
- Improve communication/awareness/efforts new construction
- Increase membership base
- Continue to keep our mindset and language focused on a health-based model (as low as reasonably achievable)
- Continue roll out of new Certificate Courses for Real Estate Agents and Energy Auditors

ASHRAE Standard 62.1-2022 (IC 62.1-2022-4) Interpretation



https://www.ashrae.org/technical-resources/standards-and-guidelines/standards-interpretations/interpretations-for-standard-62-1-2022

INTERPRETATION IC 62.1-2022-4 OF
ANSI/ASHRAE STANDARD 62.1-2022
VENTILATION AND ACCEPTABLE INDOOR AIR QUALITY

Approved: January 21, 2024

Request from: Pam Warkentin, Canadian Association of Radon Scientists and Technologists (CARST) / Canadian – National Radon Proficiency Program (C-NRPP), 4 Donald McClintock Bay, Winnipeg, MB R2G 3N3.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 62.1-2022, Sections 2.2, 3, 5.2, 5.16.1and Tables 5-1 and 6-3, regarding radon.

Background: Radon is a naturally occurring, radioactive gas which is odourless and tasteless. A CARST/C-NRPP member was informed by a building consultant that radon is classified as Class 4 air and that ASHRAE standards apply to radon mitigation system discharge points.

Although the radon levels at the discharge pipe (i.e. exhaust point) can be above applicable US-EPA, Health Canada, Canada Labour Code, or World Health Organization permissible exposure concentrations, the radon concentrations have been demonstrated to dissipate to outdoor ambient air concentrations within 6' (2m). Please see reference documents listed below.
Reference documents:

- Fixing Houses with High Radon – A Canadian Demonstration CMHC March 2008, Scott, A.G.; Fugler, D.
- 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.
- Health Canada's Summary Report on Active Soil Depressurization (ASD) Field Study June, 2016.
- Re-Entrainment and Dispersion of Exhausts from Indoor Radon Reduction Systems: Analysis of Tracer Gas Data, Henschel, D. B.
- Measuring At-Grade Radon Mitigation Exhaust At-Grade Radon Mitigation Exhaust, Bill Broadhead.
- Reducing Radon Levels in Existing Homes: A Canadian Guide for Professional Contractors, Health Canada
- National Standard of Canada: Radon Mitigation options for existing low-rise residential buildings.

Interpretation No.1: CARST/C-NRPP's interpretation is that ASHRAE Standard 62.1-2022 does not specify air classification or distances from radon mitigation system discharges to outdoor air intakes, but it does allow for AHJ to define the design requirements for radon mitigation systems.

Question No.1: Is this interpretation correct?

Answer No.1: Yes.

Interpretation No.2: Per the description of Classes 1 through 4 in an Informative Note (not an official part of the standard) to section 5.13.1, the classification of such air would presumably depend on the radon concentration. In Canada, the appropriate clearances for radon exhausts (at any radon concentration) and the separation distance from potential re-entrainment points has been determined by authorities having jurisdiction (for example, Health Canada's *Reducing Radon Levels in Existing homes: A Canadian Guide for Professional Contractors* and the Canadian General Standards Board (CGSB) CAN_CGSB P29-149-012-2017 and CAN_CGSB P29-149-011-2019) or current published versions. The above documents are a resource for the AHJ in making their determination and do not contradict with ASHRAE Standard 62.1-2022.

Question No.2: Is this interpretation correct?

Answer No.2: Yes.

Comments No.2: In Section 5.13.1 Classification, Standard 62.1-2022 states that "Air (return, transfer, or exhaust air) leaving each space or location shall be designated at an expected air-quality classification not less than that shown in Table 6-1, 6-2, or 6-3 or as approved by the AHJ. Therefore, since Standard 62.1does not provide a classification for radon extraction/mitigation systems, the Standard allows the AHJ to make that determination.

The C-NRPP has partnered with Toole Peet Navacord to create an Insurance Package exclusive to C-NRPP Members at a preferred rate. The program covers your exposures for General Liability as well as Professional Liability.

The application is simple, online and provides coverage for radon measuring or both radon measuring and mitigation operations. The program offers the following limits:

Professional Liability: $2,000,000

Commercial General Liability (CGL): $2,000,000

With an option to purchase $5,000,000 CGL

VIPPRO

Sign up for RONA Program:
https://forms.office.com/r/MegbdiLWht

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Policy Advocacy

Mr. Albas is working on a Private Members bill that would allow Individuals to withdraw up to $15,000 towards radon mitigation

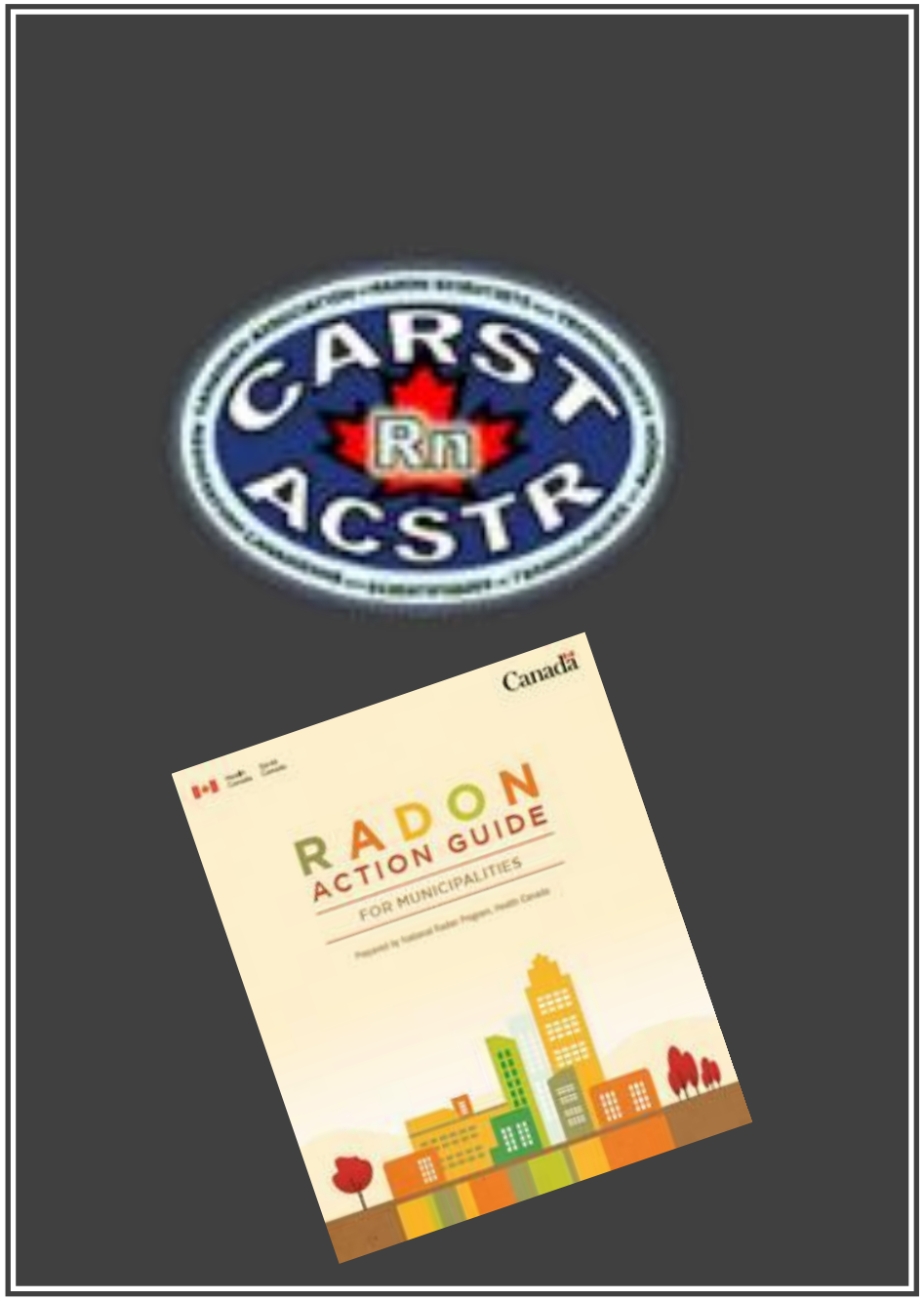
In Manitoba, Jamie Moses, MLA
Mr. Moses was working on a Private Members bill that would require the province to test their own buildings for radon.

Building Code Review

Board members and members have participated in discussions and observers on meetings

Conference Attended

- OBOA Conference – September 2023
- Doctors Conference – November 2023



CARST Municipal Survey

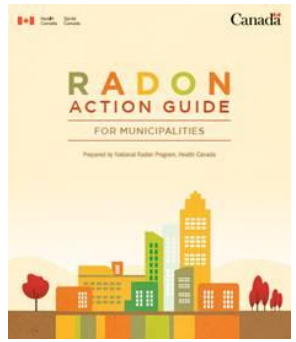
CARST is gradually surveying all municipalities across Canada to:

- Gain insights into each community's awareness of radon,

- Determine what radon actions have been taken in the community

- Learn how CARST can best support each municipality in taking radon action and promoting radon awareness.

CARST Municipal Survey - Responses



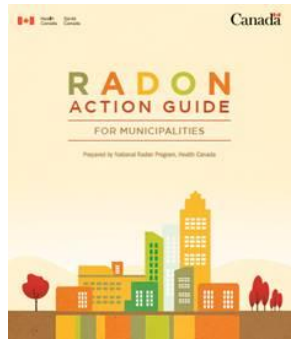
Survey now distributed in:

Saskatchewan
Alberta
New Brunswick
Manitoba
Nova Scotia
BC

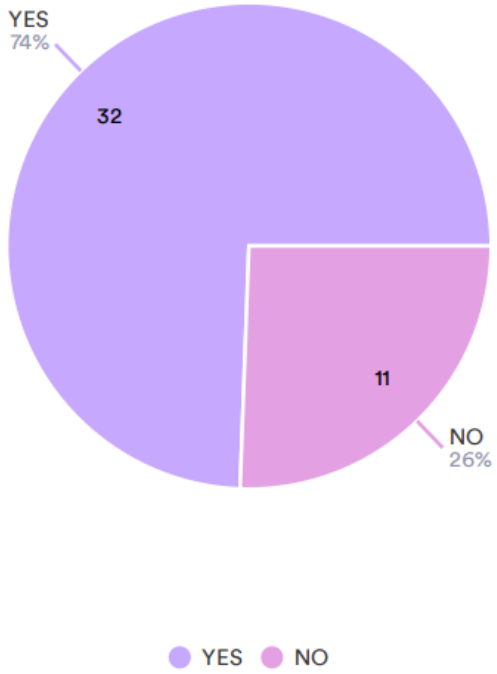
Responses from:

CAO
Councillor
Building Official
Mayor
Other

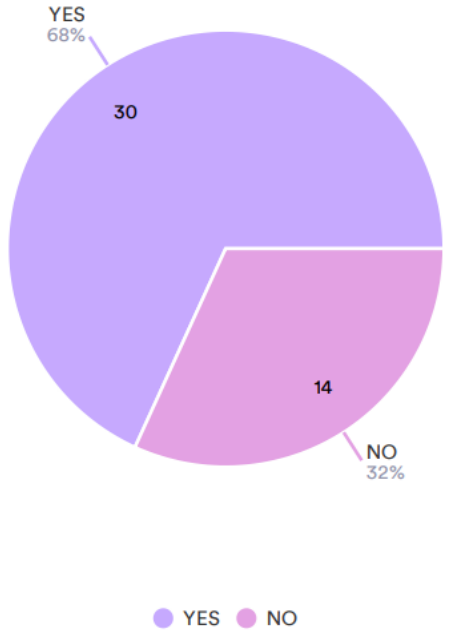
CARST Municipal Survey – Level of Awareness



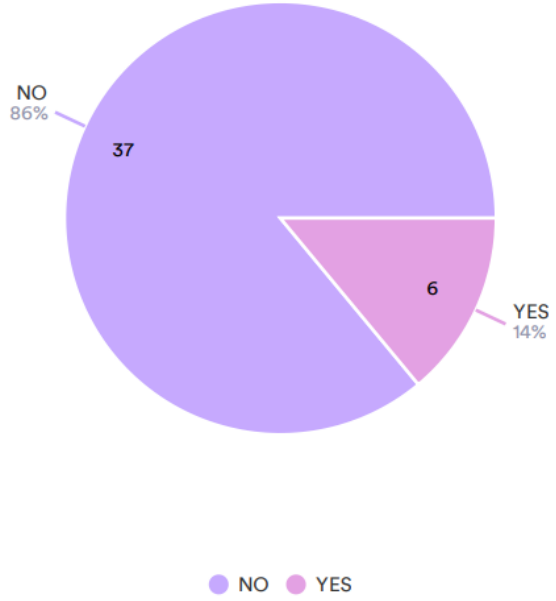
Are you aware of what radon is?



Did you know that long-term exposure to elevated radon levels increases the risk of developing lung cancer?



Prior to receiving this email, were you aware that Health Canada has developed a Radon Action Guide for Municipalities?



CARST Municipal Survey – Next Steps

Do you have any suggestions on how CARST can better support your municipality in taking radon action?

Partner with Alberta Municipalities to do some general messaging on it to boost general elected official awareness. It's not taken very seriously in this province from what I can see. Few people understand the risks posed, particularly in modern buildings prior to 2014 or thereabouts when new codes came in.

"Provide information about the risks of radon and its effects. Is it commonly occurring in Central Alberta? I thought radon was more of a problem in Central Canada. Provide information on mitigation - If mitigation strategies are completely out of reach there is incentive to bury one's head in the sand. If mitigation can be done cost effectively then it makes sense to test existing buildings and mitigate if necessary.“

"provide a template for collaboration with other stakeholders. provide a template for municipalities to allow CAO and council to understand the procedures involved with testing and how to act on the results."

provide a much better explanation as to why Health is not a provincial responsibility.

Supply more information to have available for residents and test kits to complete.

I have requested to be a part of the 100 test challenge

Offer more information and incentives for residents, business owners, municipalities to test for radon.

more information

Come visit us at a town meeting and talk to our town residents. They would receive the information a lot better coming from educated professionals outside of council. Grant options, how they or we can apply, and of course explaining how dangerous it is and the long term affects will help get people involved.

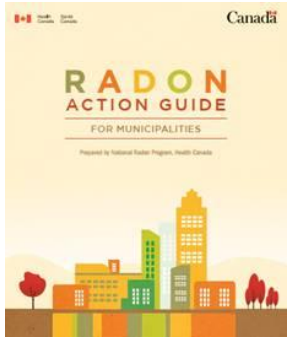
This survey is the first of the push for radon action, so no comment at this time.

More information on how it found and grants to be able to do the testing

provide free radon testing kits

No idea where to even begin.

Provide municipalities with a better understanding of what it is and ways to share with the community. Provide pamphlets and newsletters to send out
Send information through the mail to our residents



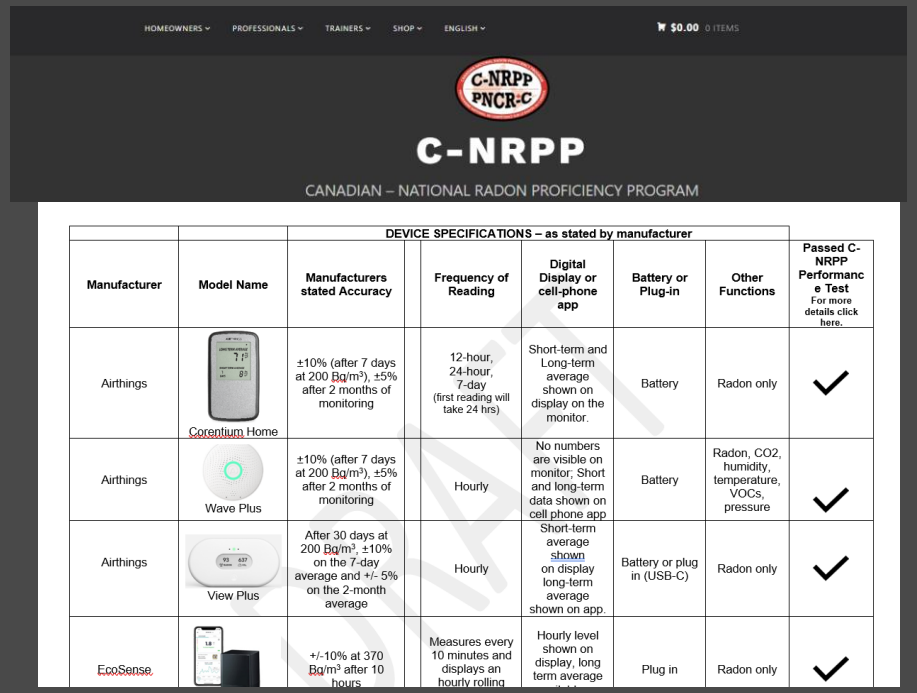
C-NRPP Updates

- Intercomparison Project(s): passive and electronic
- Multi Unit Testing Project
- New Technical Bulletins

Canadian - National RADON Proficiency Program

- **C-NRPP Measurement Certification** – 16hrs course work (available in French and English; online)
- **C-NRPP Mitigation Certification** – 24hrs course work, plus full hands-on mitigation install; (available in French and English; online and in-person); measurement is a pre-requisite
- **C-NRPP CRNCH** (Controlling Radon in New Canadian Home) course for New Construction – 4-6hrs course work; (available in French and English; online and in-person)
- **Real Estate Certificate Course** – 2 1-hr sessions

www.c-nrpp.ca



DEVICE SPECIFICATIONS – as stated by manufacturer

Manufacturer	Model Name	Manufacturers stated Accuracy	Frequency of Reading	Digital Display or cell-phone app	Battery or Plug-in	Other Functions	Passed C-NRPP Performance Test For more details click here.
Airthings	Corentium Home	±10% (after 7 days at 200 Bq/m³), ±5% after 2 months of monitoring	12-hour, 24-hour, 7-day (first reading will take 24 hrs)	Short-term and Long-term average shown on display on the monitor.	Battery	Radon only	✓
Airthings	Wave Plus	±10% (after 7 days at 200 Bq/m³), ±5% after 2 months of monitoring	Hourly	No numbers are visible on monitor. Short and long-term data shown on cell phone app	Battery	Radon, CO2, humidity, temperature, VOCs, pressure	✓
Airthings	View Plus	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 display long-term average shown on app.	Battery or plug in (USB-C)	Radon only	✓
EcoSense		+/-10% at 370 Bq/m³ after 10 hours	Measures every 10 minutes and displays an hourly rolling	Hourly level shown on display, long term average	Plug in	Radon only	✓

Over the past few years, electronic radon monitors have become increasingly available and popular with consumers.

C-NRPP regularly conducted a series of performance tests.

The CONSUMER REPORT summarizes the different devices that have been tested. These devices cannot be professionally calibrated and are not approved by C-NRPP for use by radon measurement professionals.

Canadian National Radon Proficiency Program (C-NRPP)

https://c-nrpp.ca/wp-content/uploads/2023/10/Digital-Device-Report-Oct-2023.pdf

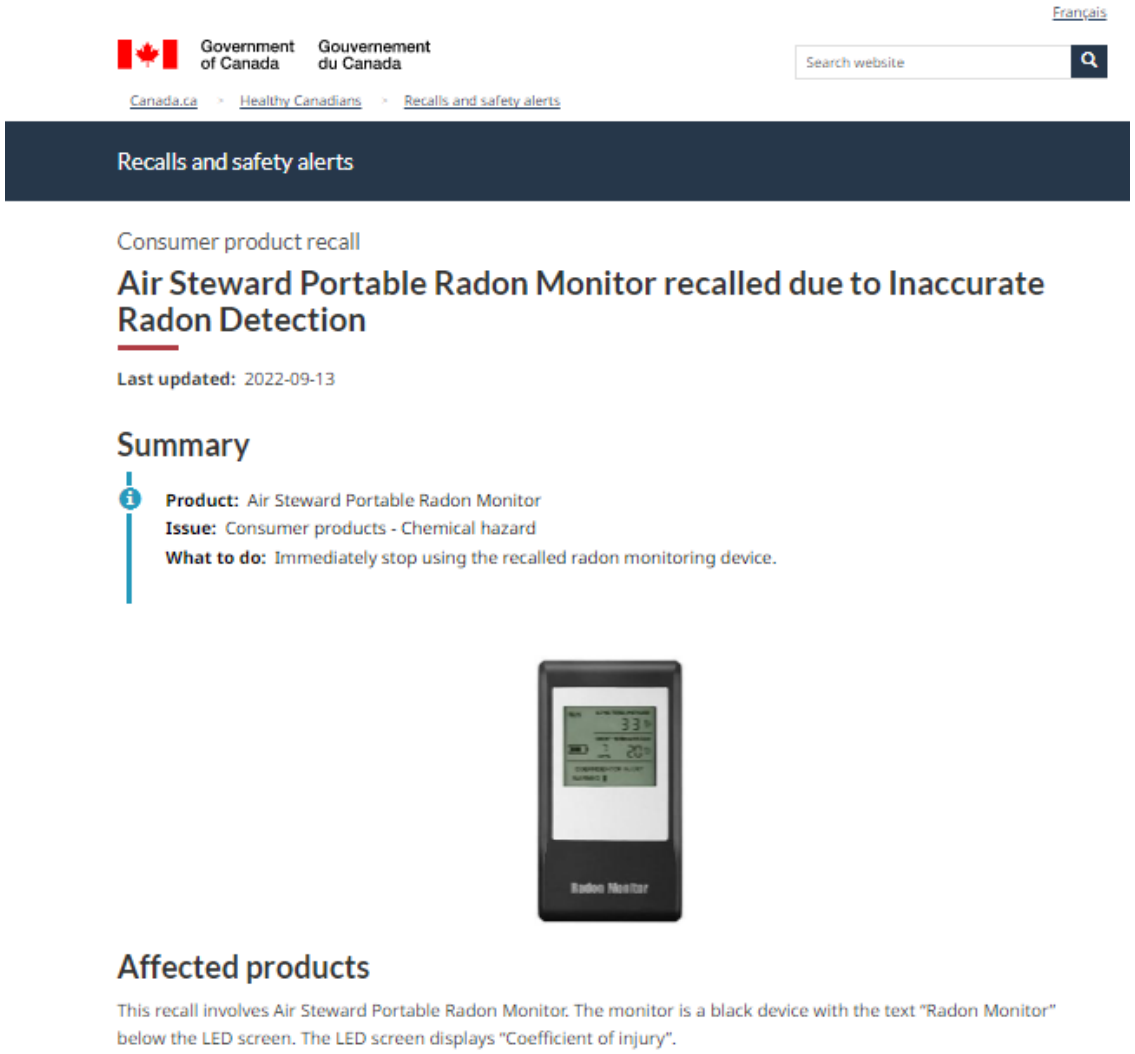
PRODUCT RECALL:

We recommend that you not sell these devices and advise homeowners that they do not accurately measure radon levels.

https://twitter.com/GovCanHealth/status/1567648984675622913

PRODUCT RECALL: - AIR STEWARD

We recommend that you not sell these devices and advise homeowners that they do not accurately measure radon levels.
https://recalls-rappels.canada.ca/en/alert-recall/air-steward-portable-radon-monitor-recalled-due-inaccurate-radon-detection



Français

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Canada.ca › Healthy Canadians › Recalls and safety alerts

Recalls and safety alerts

Consumer product recall

Air Steward Portable Radon Monitor recalled due to Inaccurate Radon Detection

Last updated: 2022-09-13

Summary

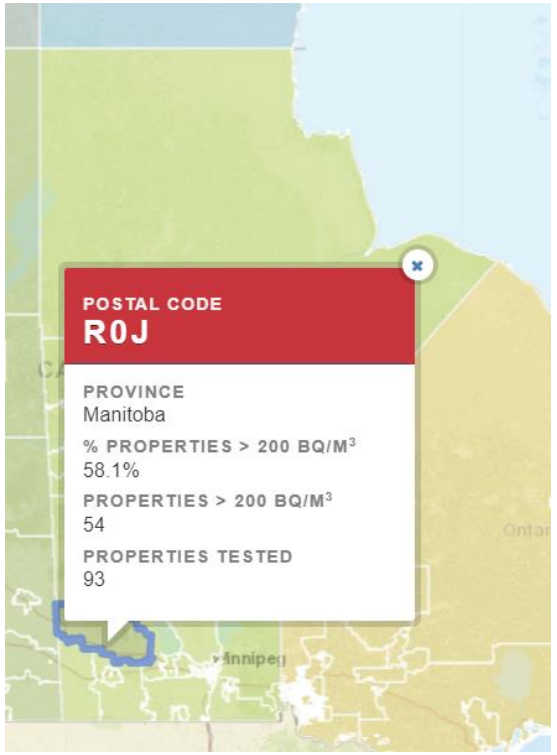
Product: Air Steward Portable Radon Monitor
Issue: Consumer products - Chemical hazard
What to do: Immediately stop using the recalled radon monitoring device.

Affected products

This recall involves Air Steward Portable Radon Monitor. The monitor is a black device with the text "Radon Monitor" below the LED screen. The LED screen displays "Coefficient of injury".

C-NRPP RADON MAP

www.c-nrpp.ca/radon-map



Changes since the previous edition

(CGSB 149.12)

- includes existing buildings, not just low-rise residential buildings
- Includes information for both:
  - Active soil depressurization – the preferred method for reducing radon levels in existing buildings.
  - Ventilation – an alternative method for reducing radon levels that may be more feasible when active soil depressurization is not possible for a particular building.
- **Note: Sealing of potential entry points is considered a prerequisite for both of the above methods.**
- A more comprehensive step-by-step description of fan-sizing and system design has been included; sections have been rearranged; definitions updated.

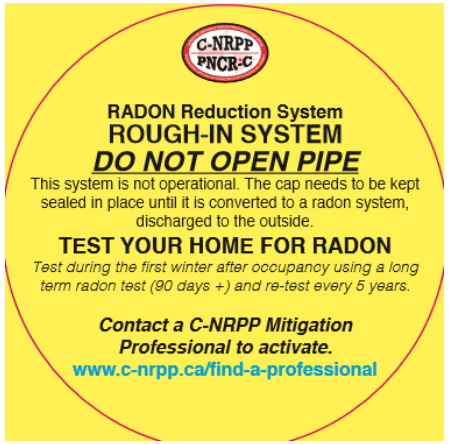
CGSB Updates – 149.11

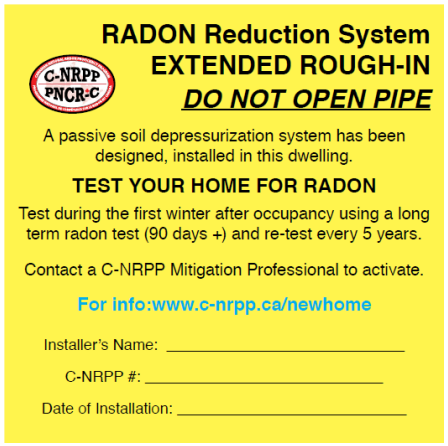
Changes since the previous edition

There have been several changes to CAN/CGSB-149.11-2019. These changes are as follows:

- The scope of the standard has been expanded to new buildings, not just low-rise residential buildings. For further details, see 1.1 for a statement on building applicability.
- The standard now provides technical solutions for two levels of radon control options during the construction of a building. These two levels are as follows:
  - Level 1 – radon rough-in;
  - Level 2 – vertical passive radon stack.
- Level 1 provisions now feature two types, to reflect the industry practice to sometimes extend a radon rough-in pipe to the outside through a rim-joist or sidewall. This extended rough-in is now referred to as a Level 1b system. In this standard, the conventional description of a rough-in system is now referred to as a Level 1a system.
- Details on a Level 3 system (active soil depressurization), that previously appeared in CAN/CGSB-149.11-2019, is now only described in CAN/CGSB-149.12-2024, *Radon Mitigation Options for Existing Buildings.*
- As a result of the above changes, the title, introduction and scope of this standard have been modified.
- Figure 1 has been added for clarity regarding the components of, and relationship between Level 1a, Level 1b, Level 2 and Level 3 systems across both this standard and CAN/CGSB-149.12-2024.
- Terms and definitions, normative references and bibliography have been updated and expanded.
- Figures and tables have been added to provide further guidance on soil gas barrier installation and building clearances.
- Sections of the standard were rearranged to better reflect the order of construction of a radon control system.
- The pipe standards references have been updated to reflect current Code requirements and to add specific marking requirements for pipe products made specifically for Radon gas.

Labelling Considerations





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

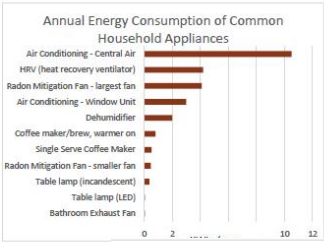
Understanding the **Energy Use of a RADON MITIGATION FAN**

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.



www.c-nrpp.ca
ph: 1-855-677-7222 info@c-nrpp.ca

Homeowner Bulletin:
March 2024

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

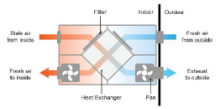
The short answer is yes: if you haven't already tested for radon, it's very important to do so regardless of whether your home has an HRV/ERV. Heat and energy recovery ventilators (HRV/ERV) are systems designed to improve indoor air quality by bringing fresh outdoor air into a home while exhausting stale 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

C-NRPP Technical Bulletins

C-NRPP Technical Bulletin

Understanding RADON and the impact of ENERGY EFFICIENCY – AIR TIGHTNESS

TECHNICAL AUDIENCE: Energy Advisor

DRAFT: March 2024

What is Radon?

Radon is a naturally occurring, radioactive gas formed from the breakdown of uranium i
Radon is invisible, odourless, and tasteless, making it undetectable without proper t
regions of Canada have some level of radon, and it is found in all homes at varying level

Why is Radon Harmful?

Health Canada recommends that all homes and buildings should be tested for radon
carcinogen, and action should be taken to reduce radon levels in homes where the radc
Canadian guideline level of 200 Bq/m^3. Exposure to elevated levels of radon is the leadir
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
airtight. If the amount of fresh air leaking into a home is reduced, the radon levels inside
This doesn't mean that energy retrofits are a bad idea, it simply means that it's all t
consider air quality (and specifically radon) when planning energy retrofits.
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

Informing Clients About Radon

As an Energy Advisor, you can literally save lives, simply by informing clients about rado
your energy assessment. Clients will learn it is important to test for radon after a retrof
retrofit process to make any needed radon mitigation easier. Your guidance can lead to
mitigation at a time when homeowners are making important decisions about changes
reducing radon levels significantly reduces the risk of lu[No Title] Taking this proactive
clients about radon testing and mitigation not only demonstrates your commitment to t
also reinforces their trust in your services, and ensures you are working as a compreher
conscientious professional. **Link to RESEARCH:** BC Lung's Energy Efficiency and Radon: R
Liabilities

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C-NRPP Technical Bulletin

Information for Clients

To help you provide clear information to your clients about radon, we've developed a one-page informative document that you can pass along, either in printed or electronic format. This document includes important links to references and resources. When it comes to radon, you don't need to have all the answers, but you're an invaluable conduit to spread the information to homeowners at a critical time.
Link to HOMEOWNER RESOURCE: C-NRPP's 1 pager for Homeowners (in development)
Link to HOMEOWNER RESOURCE: Health Canada's Radon and Energy Retrofits.

Radon Basics: Testing

Radon levels vary from day to day and week to week, so it's important to conduct a long-term test of at least 90 days to get a good estimate of the average annual radon level in a home. Short-term radon testing options also exist, lasting anywhere from a few days to a couple of weeks. However, short term tests can be inaccurate, and fail to inform homeowners of their actual risk from radon.

To test for radon, homeowners may purchase a single-use kit (available online from multiple retailers in Canada – complete listing linked here), or a continuous electronic radon monitor (available online from multiple retailers - performance reviews linked here). Homeowners may also consult a certified radon measurement professional from C-NRPP (list linked here).

Radon Basics: Mitigation

No matter what the results of a radon test, the good news is that there are effective radon mitigation systems available to reduce the radon in any home! Homeowners can consult a list of certified radon mitigation professionals to find someone in their region.

[No Titl

Additional References:
Energy Efficiency and Radon: Gaps in the System we analyze the current energy efficiency system in Canada and find serious gaps in protection from radon.
Energy Efficiency and Radon: Solutions Moving Forward we suggest concrete changes, including new guidance from Natural Resources Canada, ensuring energy advisors are trained in radon, and that radon mitigation be considered a vital part of the energy upgrade process by contractors, grant programs and lenders.
Energy Efficiency and Radon: Guide for Renovation we set out step by step how renovators can meet the standard of care for protecting clients from radon.

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RADON AND ENERGY RETROFITS – A GUIDE FOR HOMEOWNERS

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.

Action should be taken to reduce radon levels in homes where the radon levels are above the Canadian guideline level of 200 Bq/m3.

Exposure to elevated levels of radon is the leading cause of lung cancer in non-smokers.

Over 3000 people a year die of radon-related lung cancer in Canada.

THE LINK BETWEEN ENERGY RETROFITS AND RADON

Since radon is found in indoor air, its levels can be affected by any renovation work that effects the building envelope and airflow patterns (both natural and mechanical). If the amount of fresh air leaking into a home is reduced, the radon levels inside are likely to increase. This doesn't mean that energy retrofits are a bad idea, it simply means that it's all the more important to consider air quality (and specifically radon) when planning energy retrofits. Talk with your renovator about good ways to plan for your future radon mitigation.

How radon enters the house - Stack Effect

RADON BASICS: TESTING

Radon levels vary from day to day and week to week, so it's important to conduct a long-term test of at least 90 days to get a good estimate of the average annual radon level in a home. Short-term radon testing options also exist, lasting anywhere from a few days to a couple of weeks. However, short term tests can be inaccurate, and fail to inform homeowners of their actual risk from radon.

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RADON BASICS: MITIGATION

No matter what the results of a radon test, the good news is that there are effective radon mitigation systems available to reduce the radon in any home! Homeowners can consult a list of certified radon mitigation professionals to find someone in their region, www.carst.ca/Mitigation-Systems.

C-NRPP Consumer Bulletins

Homeowner Bulletin:
Draft: March 2024

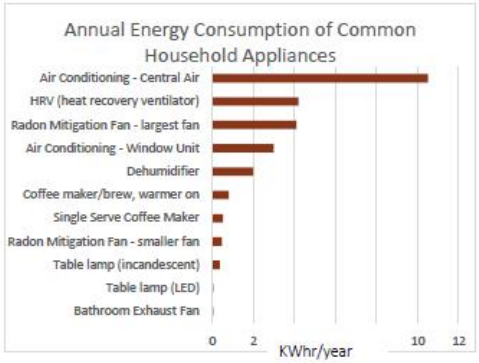
Understanding the **Energy Use of a RADON MITIGATION FAN**

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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info@c-nrpp.ca

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.

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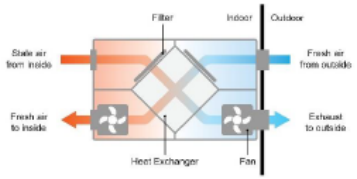

Does your home already have an HRV/ERV?

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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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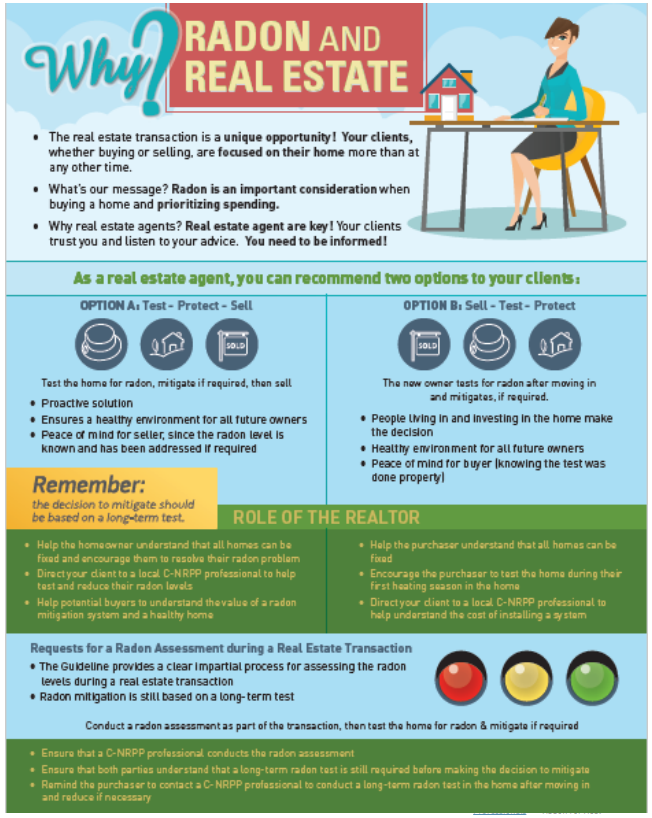
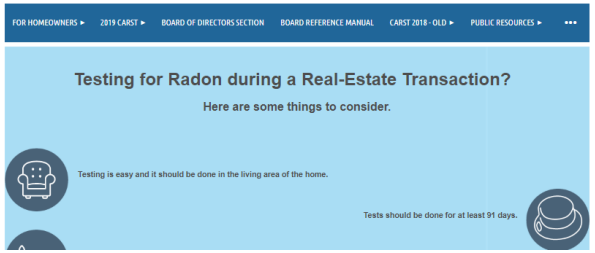
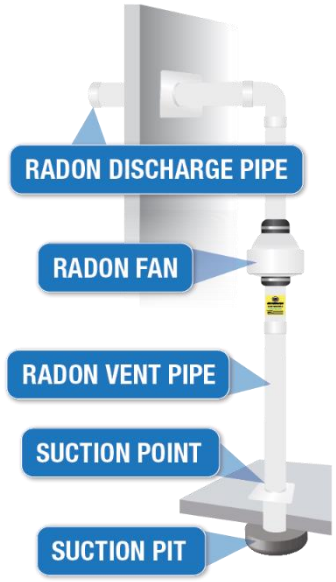
RESOURCES







Real Estate information

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

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

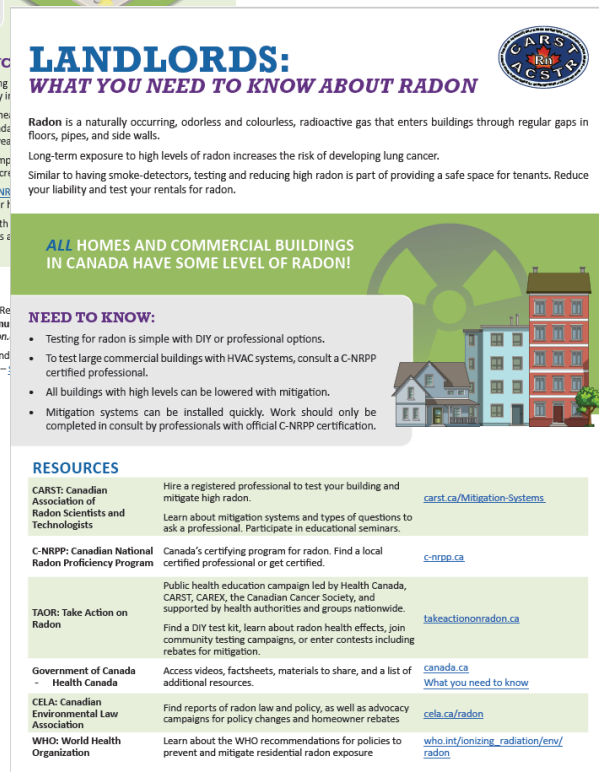
Testing for radon is simple and affordable: takeactiononradon.ca/test

- 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. Re
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

1. Remember your client may not be the owner of the building to doing any work; there may be restrictions on work that can in the exterior or any addition to the structure. Not confirmin time and could result in fines from the ownership group.
2. Buildings must be considered as systems. Many townhouse common foundation, and this is the typical pathway for radc

When mitigating these units, best practice is to access all gr diagnostic testing and to ensure that the mitigation system c effects on other units. You should discuss a strategy for com and explain that the most effective strategy will also benefi

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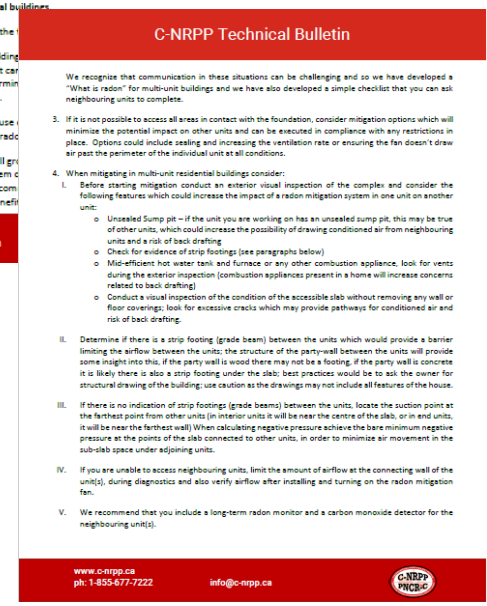

C-NRPP Technical Bulletin

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**
- **Join our Working Group on Multi-Units**

Join us May 8, 2024
CARST Annual General Meeting - online
4pm PDT, 5pm MDT/CST, 6pm CDT, 7pm EDT, 8pm ADT, 8:30 NDT
l'assemblée générale annuelle de l'ACSTR se tiendra le 8 mai 2024 en ligne

Open to all CARST Members
tous les membres de l'ACSTR sont les bienvenus

Also, watch for the next round of regional Townhall meetings!

CARST Regional Townhall Meetings held in 2023

Spring – Fall - Winter

Please join us for one of our CARST Regional Town Hall meetings where you will have an opportunity to participate in discussions with other members from your region.

Next dates TBA.