Health Canada Santé Canada

Canada

Canadian National Radon Program Update

Health Canada

CARST Conference

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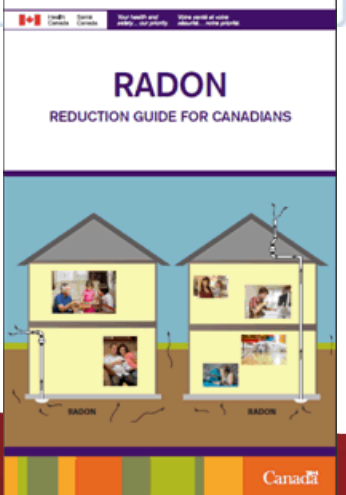
YOUR HEALTH AND SAFETY... OUR PRIORITY.

RADON OUTREACH

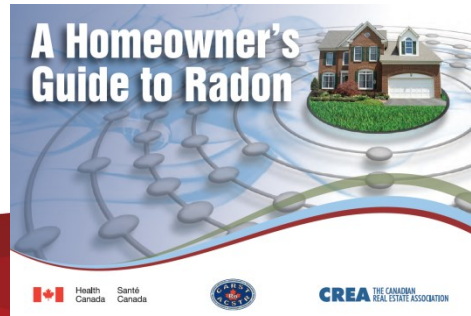


National

- **Promotion and Distribution** of radon outreach materials
- NOVEMBER is Radon Action Month
- **Canada Post's SmartMoves program** to 650,000 + homeowners
- **Pro-active radon engagement** with P&Ts
- **Events and conferences:** home shows, health care, real estate and home builders

Targeted

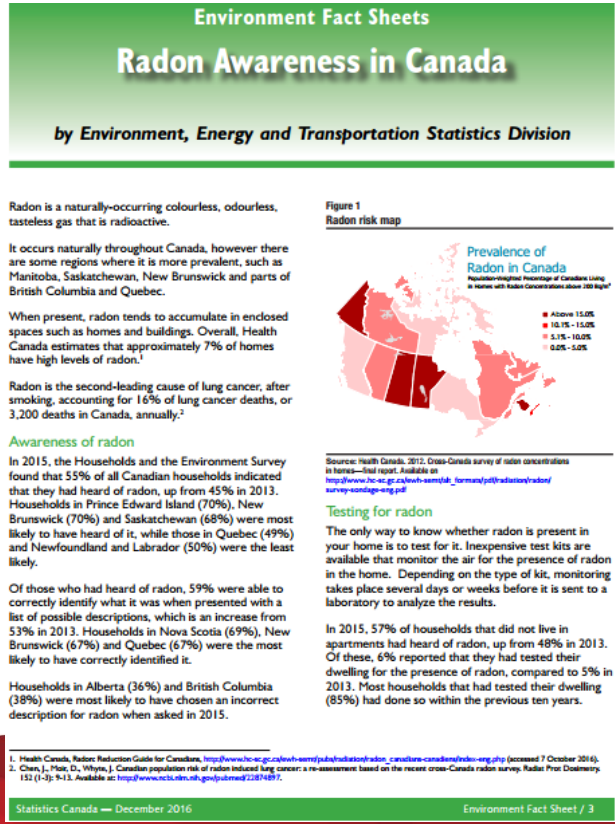
- **Physicians Online** - Radon: Another Reason to Quit
- **MacHealth –** Radon accredited continuing medical education course
- **Pro-active** engagement with **at risk** regions and communities
- **3 Point Home Safety Checklist campaign –** targeting families and childcare sector
- **Canadian Real Estate Association -** co-branded radon publication, blog



RADON Outreach and Engagement 2016-17 Highlights

- Stats Can 2015 results indicate awareness and testing are increasing
  - 55% awareness and 6% testing across Canada
  - NB & PEI highest awareness level at 70%, NB & NS highest testing level 10-11%
  - NF, SK and AB 15-20% increase awareness
  - QC had the lowest level of awareness - < 50%

- Developed a new Radon Infographic focused on ACTIONS to reduce radon exposure – highlights the results of the Mitigation Action Follow-up Survey



Environment Fact Sheets

Radon Awareness in Canada

by Environment, Energy and Transportation Statistics Division

Radon is a naturally-occurring colourless, odourless, tasteless gas that is radioactive.

It occurs naturally throughout Canada, however there are some regions where it is more prevalent, such as Manitoba, Saskatchewan, New Brunswick and parts of British Columbia and Quebec.

When present, radon tends to accumulate in enclosed spaces such as homes and buildings. Overall, Health Canada estimates that approximately 7% of homes have high levels of radon.[1]

Radon is the second-leading cause of lung cancer, after smoking, accounting for 16% of lung cancer deaths, or 3,200 deaths in Canada, annually.[2]

Awareness of radon

In 2015, the Households and the Environment Survey found that 55% of all Canadian households indicated that they had heard of radon, up from 45% in 2013. Households in Prince Edward Island (70%), New Brunswick (70%) and Saskatchewan (68%) were most likely to have heard of it, while those in Quebec (49%) and Newfoundland and Labrador (50%) were the least likely.

Of those who had heard of radon, 59% were able to correctly identify what it was when presented with a list of possible descriptions, which is an increase from 53% in 2013. Households in Nova Scotia (69%), New Brunswick (67%) and Quebec (67%) were the most likely to have correctly identified it.

Households in Alberta (36%) and British Columbia (38%) were most likely to have chosen an incorrect description for radon when asked in 2015.

Figure 1
Radon risk map

Prevalence of Radon in Canada

Source: Health Canada, 2012, Cross-Canada survey of radon concentrations in homes—final report. Available on http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radon/survey-sondage-eng.pdf

Testing for radon

The only way to know whether radon is present in your home is to test for it. Inexpensive test kits are available that monitor the air for the presence of radon in the home. Depending on the type of kit, monitoring takes place several days or weeks before it is sent to a laboratory to analyze the results.

In 2015, 57% of households that did not live in apartments had heard of radon, up from 48% in 2013. Of these, 6% reported that they had tested their dwelling for the presence of radon, compared to 5% in 2013. Most households that had tested their dwelling (85%) had done so within the previous ten years.

1. Health Canada, Radon: Reduction Guide for Canadians, http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radon_canadiens-canadians/index-eng.php (accessed 7 October 2016).
2. Chen, J., Hole, D., Whyte, J. Canadian population risk of radon induced lung cancer: a re-assessment based on the recent cross-Canada radon survey. Radiat Prot Dosimetry. 152 (1-3): 9-13. Available at: http://www.ncbi.nlm.nih.gov/pubmed/22874897.

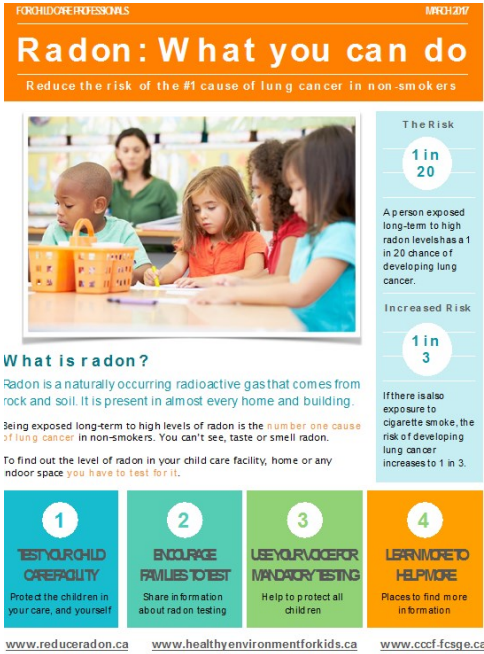
Statistics Canada — December 2016 Environment Fact Sheet / 3

CREA CAFÉ

CREA Blog - November is #RadonActionMonth: 4 things you should know

RADON Outreach and Engagement 2016-17 Highlights

- **Radon Action Challenge** – expanding across Canada - Encourages workplaces to demonstrate commitment to employee health by promoting radon testing and raising awareness among employees.
  - 73 workplaces registered - 50 communities across 6 provinces - sectors include engineering, construction, real estate, auto manufacturing, childcare and education, medical, research/academia and legal.



- **Pilot to engage child care associations on radon policy action** with Cdn Child Care Federation and CPCHE
  - Development and distribution of a briefing note on policies measures
  - Engagement with BC childcare associations to develop an approach to radon policy action

Radon Awareness and Energy Efficiency Pilot Program

- 300 conversations about radon, 170 long-term radon test kits set-up, over 1,500 handouts disbursed

- 9 utility contacts engaged – to determine opportunities and barriers for including radon information in EE programs

2016-17 Regional Highlights

QC

- Radon featured twice onTV show *Entrée Principale* – show hosts tested their homes and one mitigated
- Development of an exposition on environmental health, including radon, at the Biosphere Museum Montreal
- TV and radio special during RAM with MeteoMedia – great exposure

AB and the North

- MoA with Yukon Govt for radon awareness & testing – led to the Department of Health & Social Services wanting to develop a YK radon program
- Successful outreach collaborations with Dr. Goodarzi of U of Calgary.
- Lots of media about radon in YK and AB. YK *Auditor General report*, *1 in 8 Calgary homes have high radon*

ON

- Partnerships and outreach activities with municipalities and PHUs – Guelph, York, London, Windsor-Essex
- Participation in Ontario Public Health Convention with PHO and 3 PHUs
- Presentation to 120 Public Health Inspectors at Ryerson U through invitation from MOHLTC
- Article in the Ontario Respiratory Care Society journal

MB & SK

- Growth of the Take Action on Radon Saskatchewan Coalition led to significant increase in radon awareness
- Cypress Health Region – Radon outreach and testing program – 45% of homes with high radon
- well water testing pilot project on 100 public housing units with the Manitoba Housing Authority

2015-16 Regional Highlights

BC

- Engagement with academia for inclusion of radon in teaching curriculum: Building Sciences, Environmental Health and OHS. BC Institute of Technology, Okanagan College and Simon Fraser University.
- In partnership with key Stakeholders hosted the 5th Annual BC Radon Workshop

ATL

- Radon Exposure in NS Workshop: with St. Mary's University, NS Lung, NS Realtor Association, NS Govt, C-NRPP and CAREX –Well attended by the public - report was published by CAREX
- Bilingual education sessions in Bathurst, NB. Year 2 of the radon testing pilot – partnership with NB Lung and Bathurst municipality.
- NS Lung launched second year of free radon test kit distribution. 400 kits given away, significant media coverage

CHALLENGES

- Converting awareness to behaviour change – increasing testing and mitigation rates and influencing radon related policies and regulation changes
- PT engagement and radon committee / working group that includes govt, as well as NGO and industry
- Lack of financial support for mitigation - There are important segments of the population (low income, young professionals and families) who are not taking action simply due to cost.

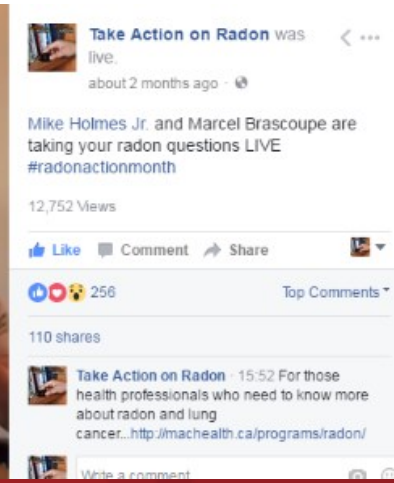
Radon Action Month 2016

National Media Launch - *Test – Reduce – Breathe Easy*.

- Held at Ontario Science Centre with Chief Public Health Officer of Canada and Mike Holmes Jnr.
- Attendees included the Lung Association, C-NRPP, the Radon Safety Institute of Canada, the Canadian Partnership for Children's Health and Environment (CPCHE), Pollution Probe, the Canadian Environmental Law Association (CELA), Health Canada, the Government of Ontario

- **National television and online ads** on CBC and Radio-Canada Network in November, December 2016 and January 2017
  - TV spots reached 1,919,800 Canadians on the CBC News Network and 852,000 Canadians on ICI RDI.

- Hosted a **Facebook Live event with Mike Holmes Jr and Marcel Brascoupe**
  - viewed by 12,888 people, was shared 110 times and had 250 engagements and over 100 questions and comments.



NEW Radon testing and mitigation *Testimonials* from homeowners in each province - "Radon Action Champions" were featured every week in November and December. Their photos and stories were shared via Instagram and Facebook

NATIONAL TECHNICAL OPERATIONS

Highlights:

- Federal Building Testing Program – roughly 20,000 buildings tested to-date- roughly 4% above the 200 Bq/m^3 Canadian guideline
- 2010 National Building Code for protection against radon ingress, and support for provincial and municipal building code changes
- Residential surveys: Cross Canada Radon and a smaller Radon-Thoron survey
- Development of radon measurement and mitigation guidance documents
- Support for developing radon potential mapping methodology
- Development of Canadian National Radon Proficiency Program (C-NRPP) certification program for radon measurement and mitigation professionals
- Development of National standards for radon in new and existing construction with Canadian General Standards Board (CGSB)

NATIONAL RADON PROGRAM

Canadian National Radon Proficiency Program (C-NRPP)

- The Canadian C-NRPP program was launched in 2012 and was fully Canadianized in 2014-administered by Canadian Association of Radon Scientists and Technologists (CARST) with support from Health Canada
- QA Program Implemented
- Exam success rates and number of radon professionals are stable (388 Measurement/204 Mitigation)
- Worked with Radiation Safety Institute of Canada (RSIC) to have an accredited secondary radon chamber in Canada to support the new certification program
- In progress - Portal for harvesting mitigation data from professionals

NATIONAL RADON PROGRAM

Development of National Standards for radon in new and existing construction with Canadian General Standards Board (CGSB)

- Radon Control Options for New Construction in Low Rise Residential Buildings - CAN/CGSB149.11
- Radon Mitigation Options for Existing Low Rise Residential Buildings - CAN/CGSB149.12

- Public Review stages for both drafts were conducted.
- New construction standard: Finalising comments received from Public Review stage.
- Existing construction standard: Completed the review of the comments from a successful Technical Committee ballot

Canadian General Standards Board

NATIONAL RADON PROGRAM - RESEARCH

Mitigation Actions Follow-up Study

(REB-2014-0005)

Objectives :

- Acquire data on radon mitigation rates in Canadian homes that tested above the 200 Bq/m3 guideline in our 2 recent large residential surveys
- Gather data on typical radon reductions achieved by various categories of mitigation strategies in Canadian housing stock/climates
- Gather data on reasons why Canadians have or have not mitigated high radon levels

NATIONAL RADON PROGRAM - RESEARCH
Mitigation Actions Follow-up Study

Mitigation Rates :

- Participants who tested between 150 Bq/m3 and 200 Bq/m3:
  - 5% (31/615) reported that they had performed some form of mitigation

- Participants who tested above 200 Bq/m3:
  - 29% (327/1132) reported that they had performed some form of mitigation

- 294 participants who performed some form of mitigation also agreed to participate in free post-mitigation test

NATIONAL RADON PROGRAM - RESEARCH
Mitigation Actions Follow-up Study

Mitigation Methods and Average Radon Reduction Stats:

- Sealing cracks and entry points: 13%
- Sealing or covering sump pits: 23%
- Increased ventilation: 21%

Average Radon Reduction for ASD Mitigations, installers:

- Certified Mitigators: 88%
- Contractors: 81%
- Self-mitigated: 19%

NATIONAL RADON PROGRAM - RESEARCH
Mitigation Actions Follow-up Study

Top reasons for taking action:

- Results letter said that their levels were high
- Wanted to reduce the radon level in their home
- Concerned about the risk of lung cancer

Top reasons for NOT taking action:

- Didn’t think their radon level was very high
- Perceived cost of the mitigation
- Hadn’t yet found time to mitigate

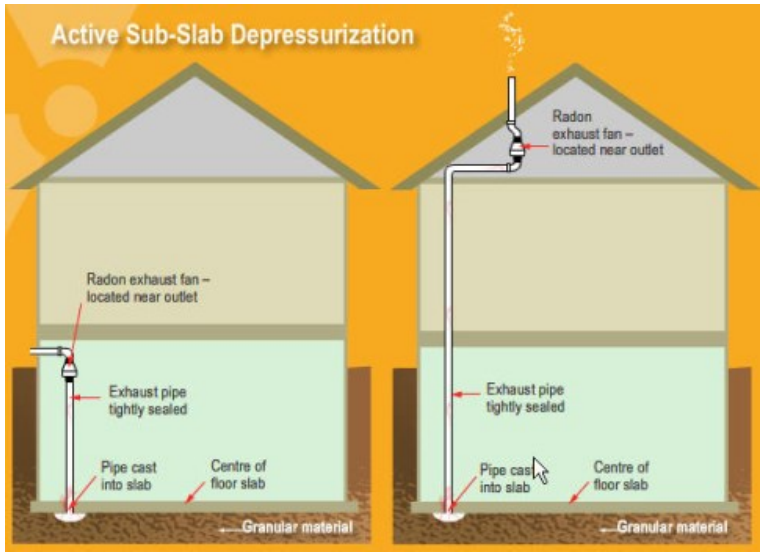
NATIONAL RADON PROGRAM - RESEARCH

Research to Help Decide Which Way to Vent

(REB-2013-0020)

Part 1 – Radon Reduction

- 52 homes with side-wall discharge/indoor fans in the Ottawa-Gatineau area
- Long-term indoor radon measurements (3-months) were performed during the heating season
- Statistics on the radon reduction
  - Average = ~ 90%
  - Median = ~ 94%
  - Highest = ~ 99%



NATIONAL RADON PROGRAM - RESEARCH

Research to Help Decide Which Way to Vent

Part 2 – Dispersion, Five Homes

- Generally 10-15 CRMs were setup at different distances and directions away from the ASD exhaust point.
- Weather station was setup on site to record weather parameters including wind speed and direction.
- One CRM was also setup to measure outdoor background radon levels-far away from ASD outlet.
- Outdoor CRM measurement duration was ~6 hours.
- Most instances radon reduces to less than 200 Bq/m3 within 1-2 m.

NATIONAL RADON PROGRAM - RESEARCH

Toronto Community Housing Buildings: Assessment of Indoor Environmental Quality (REB 2014-0040)

- Determine impact of energy retrofit measures (windows, faucets, lighting, some heating, etc) in Toronto high-rise social housing on indoor environmental quality parameters (CO2, ozone, formaldehyde, VOCs, heavy metals, temp, RH, radon)

- After the energy retrofits are completed the same indoor environmental quality parameter measurements will be repeated during the same time of year to study the effect of the retrofits on indoor environmental quality parameters

NATIONAL RADON PROGRAM-RESEARCH

Toronto Community Housing Buildings: Assessment of Indoor Environmental Quality (REB 2014-0040)

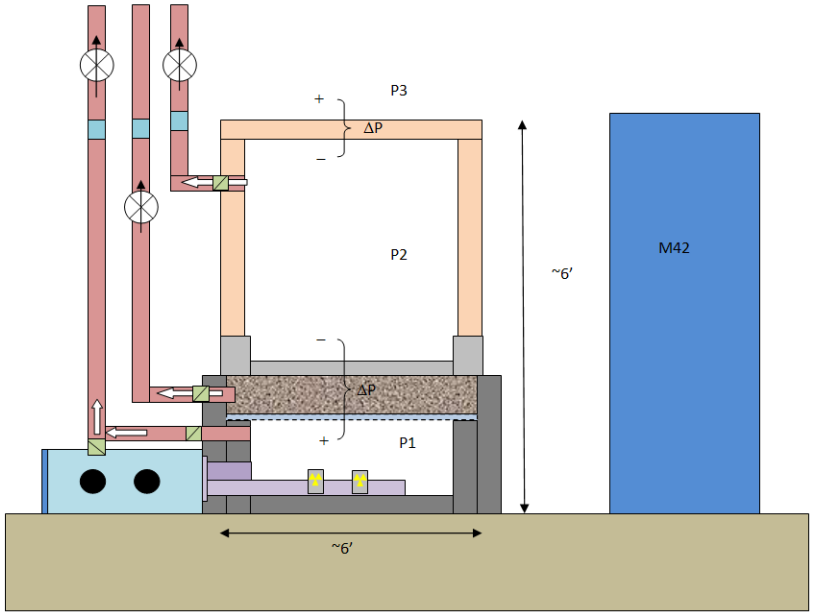
- Pre-retrofit measurement results were analyzed
  - Radon results were low (98% <30 Bq/m3), max was 40 Bq/m3
- Retrofits were conducted last year: Windows, faucets, lighting, heat-pumps, etc…)
- Currently conducting the same indoor environmental quality measurements now that the energy retrofits are complete
- Should have results in the next several months

OTHER RADON RESEARCH

National Research Council (NRC)

- Passive stack geometries

- Research on radon radon cross contamination through ERV core using the Radon Infiltration Building Envelope Test System (RIBETS)



NATIONAL RADON PROGRAM
HC REGIONAL RESEARCH PROJECTS

Atlantic Region (REB2016-0023)

- Town of St. Lawrence Residential Radon Pilot Testing Project
  - St. Lawrence is the site of a fluorspar mine
  - Miners were found to have abnormally high rates of cancer
  - Test town homes and buildings prior to the reopening of the mine

Quebec Region (REB2016-0019)

- Radon in Air and Well Water in Chelsea Pilot Study
  - Test radon in water levels in houses (wells)
  - Test radon in air, on all floor levels in the house

NATIONAL RADON PROGRAM

Revised Testing Guides

- Both the Guide for Testing of Public Buildings and the Guide for Testing Homes were published in 2008 and hence both of these documents were due for an update
- Public Building update was centered around information that we gained from the testing of Federal buildings
- There was also some updating to provide information regarding the need for QA/QC in testing programs
- The Guide for Testing Public Buildings has now been published and resides here: http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radon_building-edifices/index-eng.php
- The Guide for Testing of Homes should be published in the near future

NATIONAL RADON PROGRAM

Future

- Federal Building testing has supported the Canada Labour Code (CLC) requirements for radon – currently sitting at the previous 800 Bq/m^3 guideline value for Federal employees, but harmonization to the 200 Bq/m^3 value is being considered

- Investigate radiobiological mechanisms and biomarkers of general alpha particle exposure – radon specific work is possible

- Is there a smoking gun for radon exposure?

- Posting results of research to Open Data

Thank You