

Radon: Realtors can help make progress

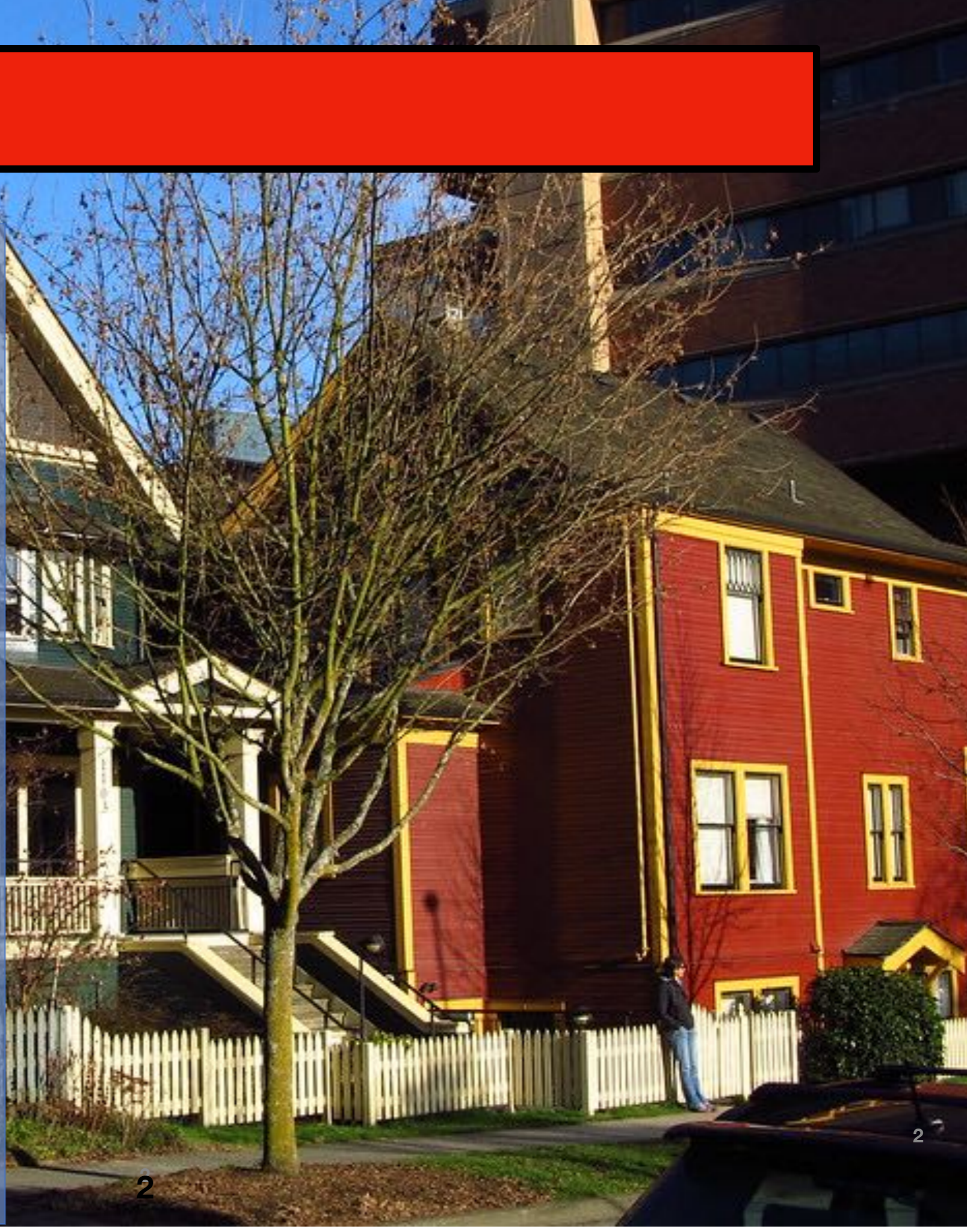
**Presentation to BCREA Community of Practice
December 6, 2023**

**Noah Quastel
director, law and policy,
healthy indoor environments,
British Columbia Lung Foundation**



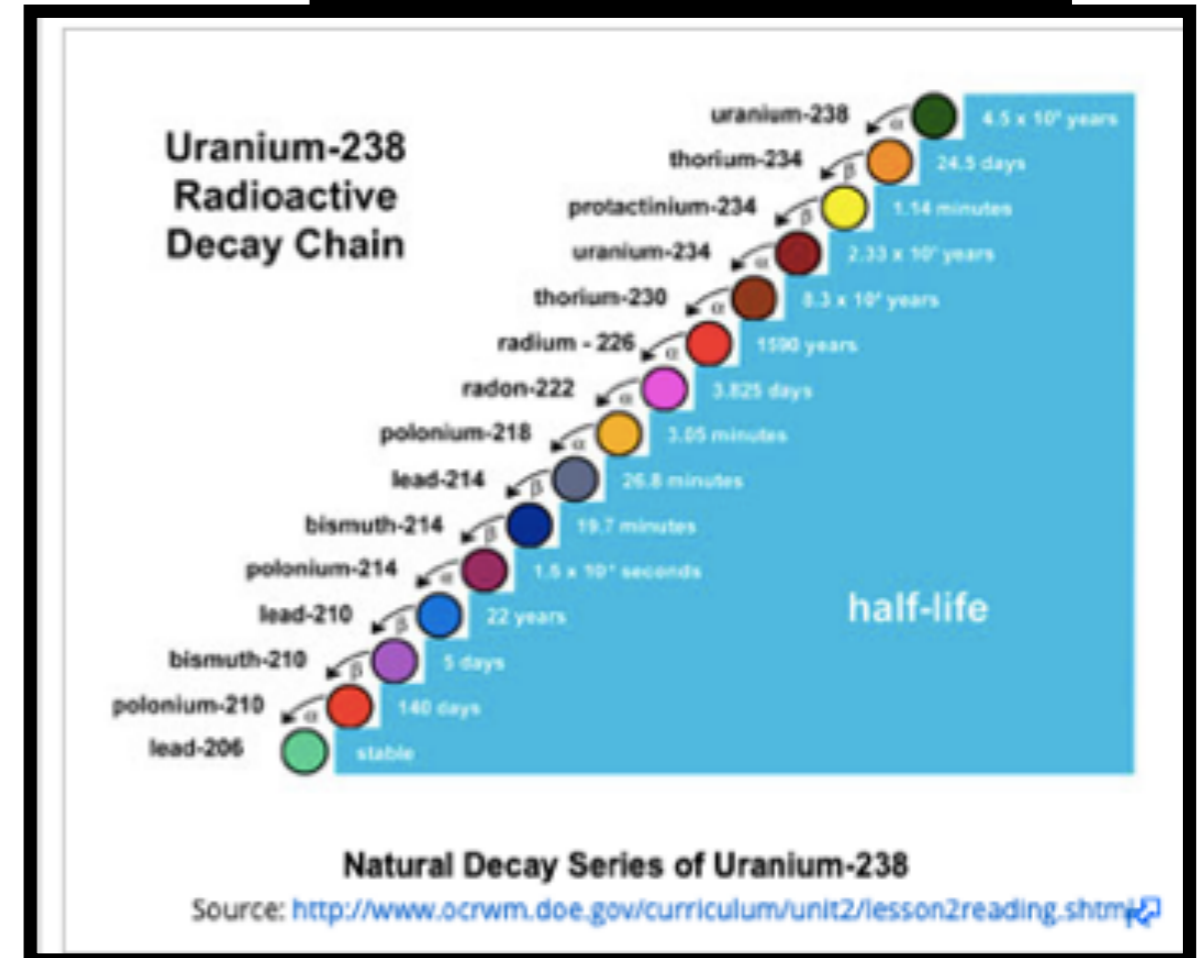
Overview

1. Radon as a Health Challenge
2. How to Test and Fix
3. Radon Levels in BC
4. BC Building Code
5. Our Research on Real Estate Transactions
6. Guidance for Realtors
7. Emerging Themes



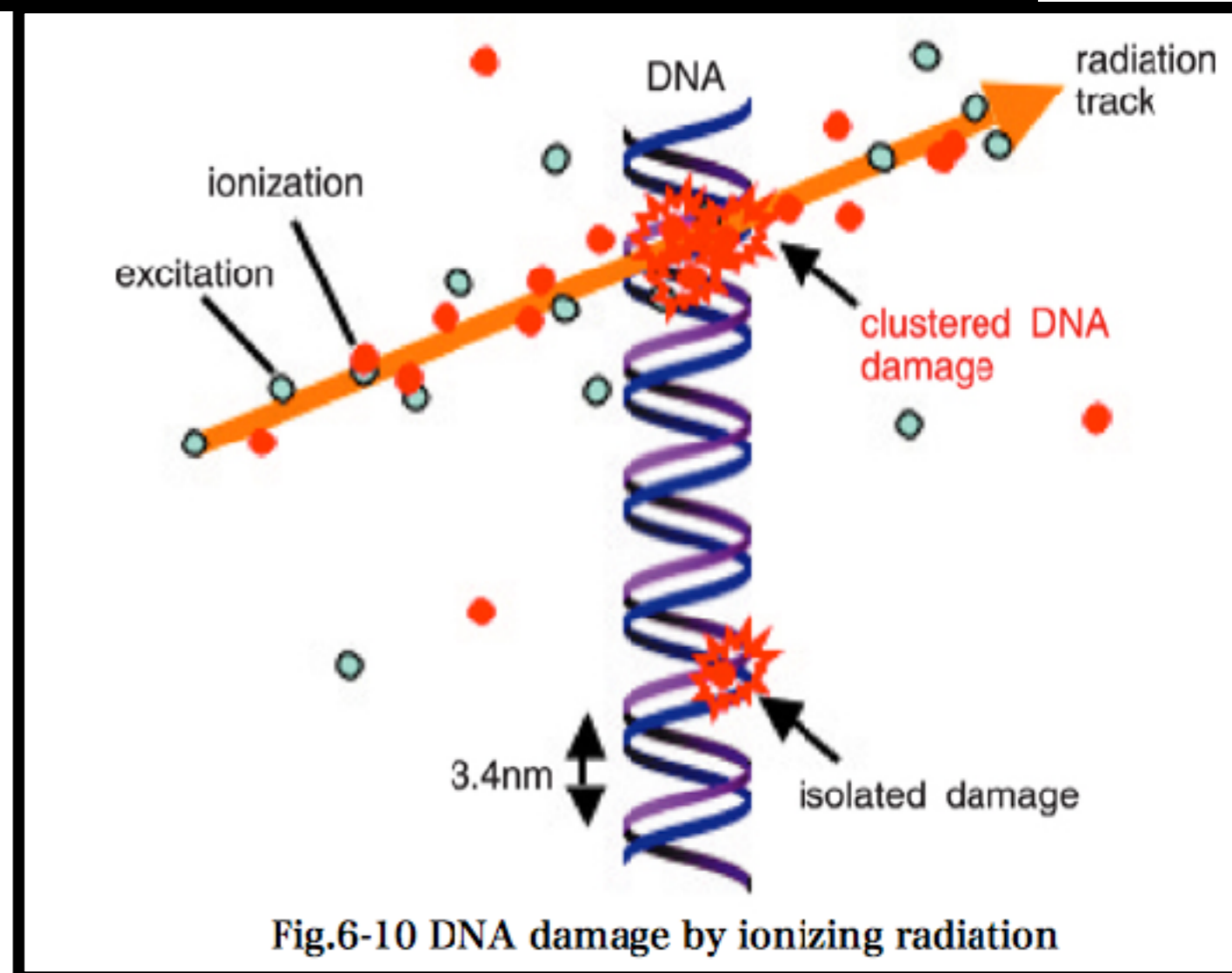
Radon Is a Health Priority

- Radon gas comes from uranium in the earth
- Uranium present in soils across Canada
- Some regions naturally have more uranium
 - Saskatchewan, NWT, Newfoundland, Ontario
 - Interior British Columbia
- Uranium is radioactive and breaks down over time
- Radon is the only GAS phase of uranium decay
- Radon gas is mobile in the soil
- Releases alpha particles when breaks down



Radon leads to damage in lung tissues

- **Alpha particle radiation can completely break DNA bonds**
 - This type of clustered damage is more difficult for cells to repair
- **More dangerous to chromosomes than beta- or gamma- radiation**
- **Radon is classified as a potent, known human carcinogen by the WHO and Health Canada**



Chronic inhalation to radon *clearly* causes lung cancer

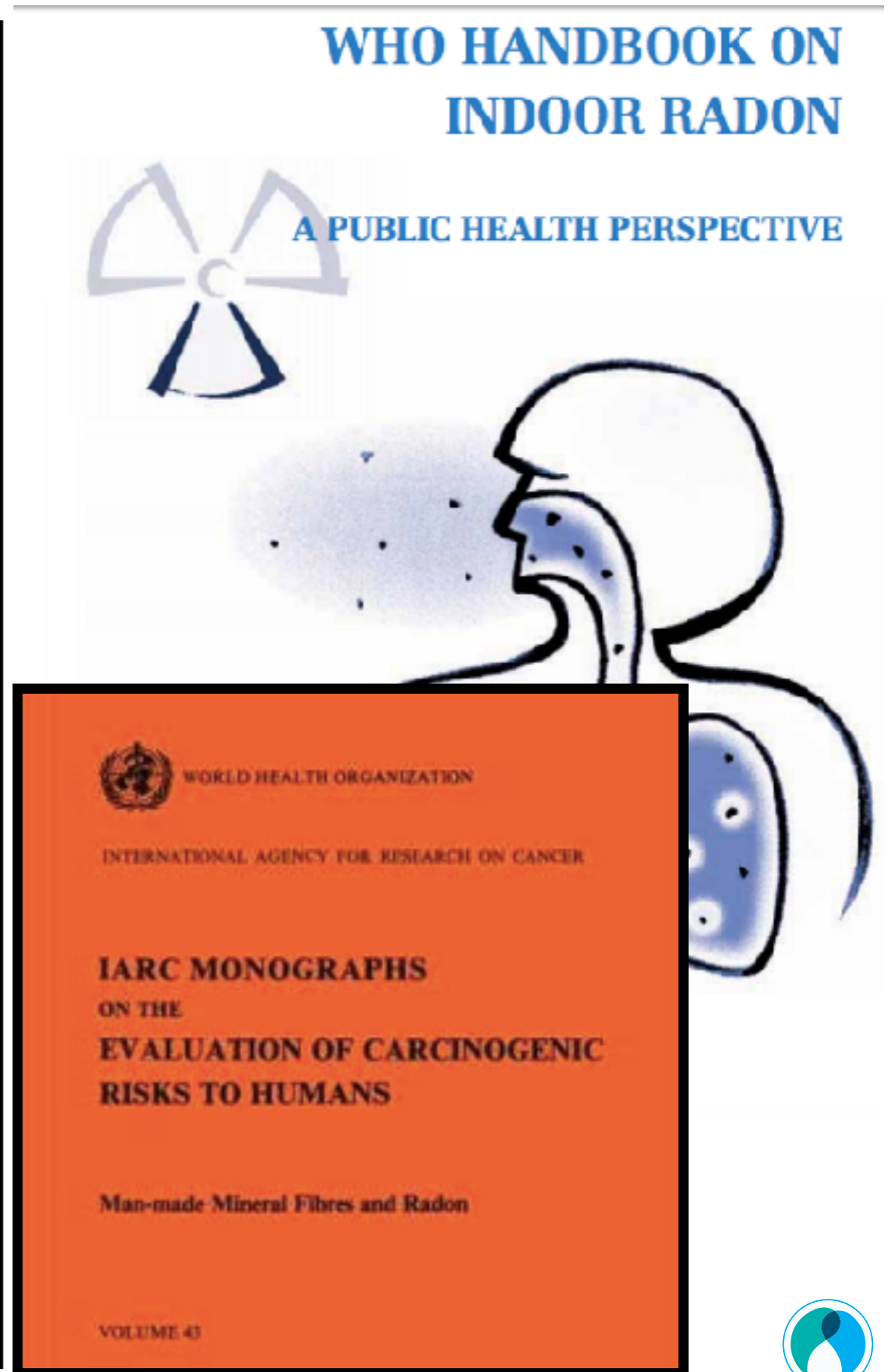
Health Canada estimates 16% of Lung Cancer deaths are from radon

around 3,300 Canadians die from radon-related lung cancer every year

Lung Cancer is the leading cause of cancer death in Canada

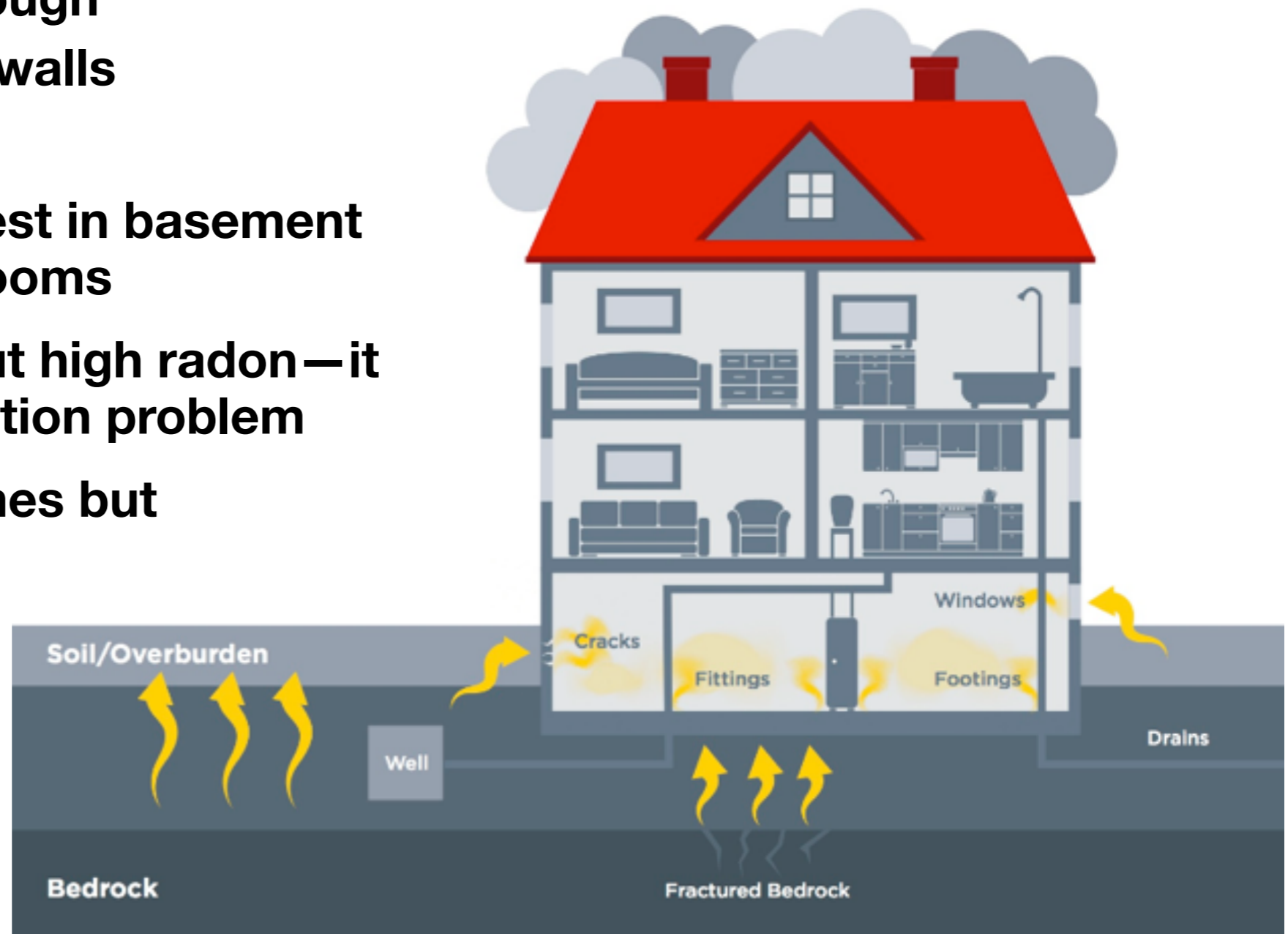
Over 25% of all BC cancer deaths are from Lung Cancer

The majority of those with lung cancer (81%) will die within 5 years



Most Canadian exposure to radon is indoors

- Inside homes and other buildings
- Radon gas enters through
 - cracks in floors or walls
 - sumps or drains
- Levels generally highest in basement and ground contact rooms
- Nothing 'natural' about high radon—it represents a construction problem
- Most exposure in homes but workplaces matter



Radon is a radioactive gas that is released when uranium breaks down in the ground. It can infiltrate our homes in the various ways pictured here but mitigation strategies can reduce this exposure in both new and existing structures.

<https://www.canada.ca/en/health-canada/services/environmental-workplace-health/radiation/radon/government-canada-radon-guideline.html>

Radon guideline

The Canadian guideline for radon is 200 becquerels per cubic metre (Bq/m³).

What the guideline includes and excludes

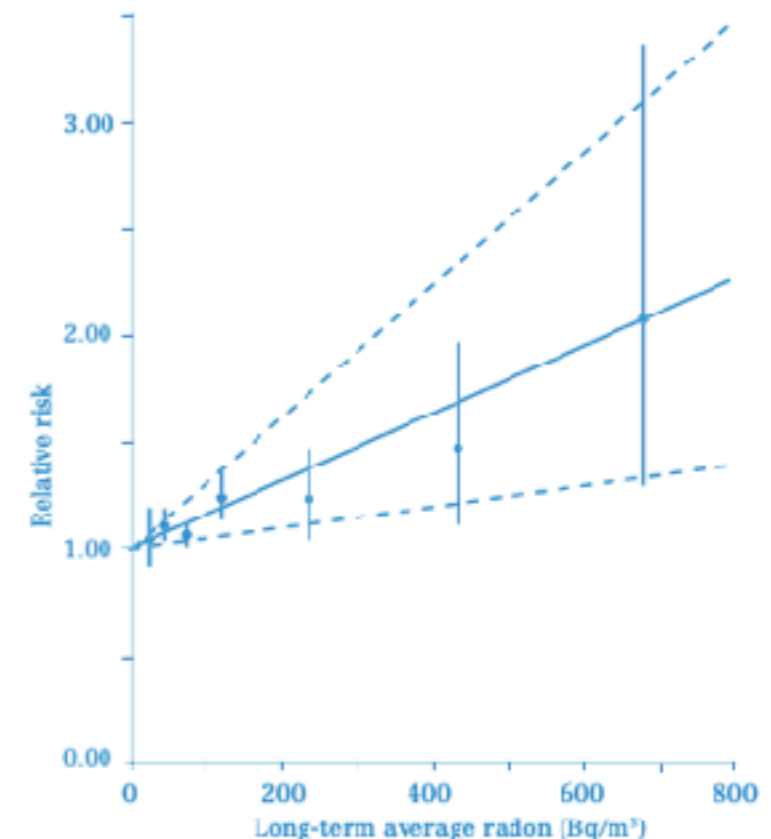
In addition to residential homes, this guideline applies to public buildings and workplaces with an occupancy of more than 4 hours per day. This includes:

- schools
- hospitals
- long-term care residences
- other indoor workplace settings

Any radon exposure carries some incremental risk

16% increase per 100 Bq/m³

The World Health Organization suggests 100 Bq/m³ is a better guideline



Source: Darby et al. 2005
Relative risks and 95% confidence intervals are shown for categorical analyses and also best fitting straight line. Risks are relative to that at 0 Bq/m³.

Figure 1. Relative risk of lung cancer versus long-term average residential radon concentration in the European pooling study

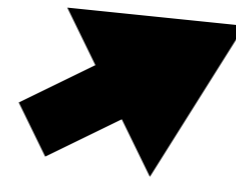
Testing is Easy

Test using one time use 3 month alpha track detector (cost 20 to 50 dollars)

New digital monitors allow for continuous monitoring to evaluate changes over time

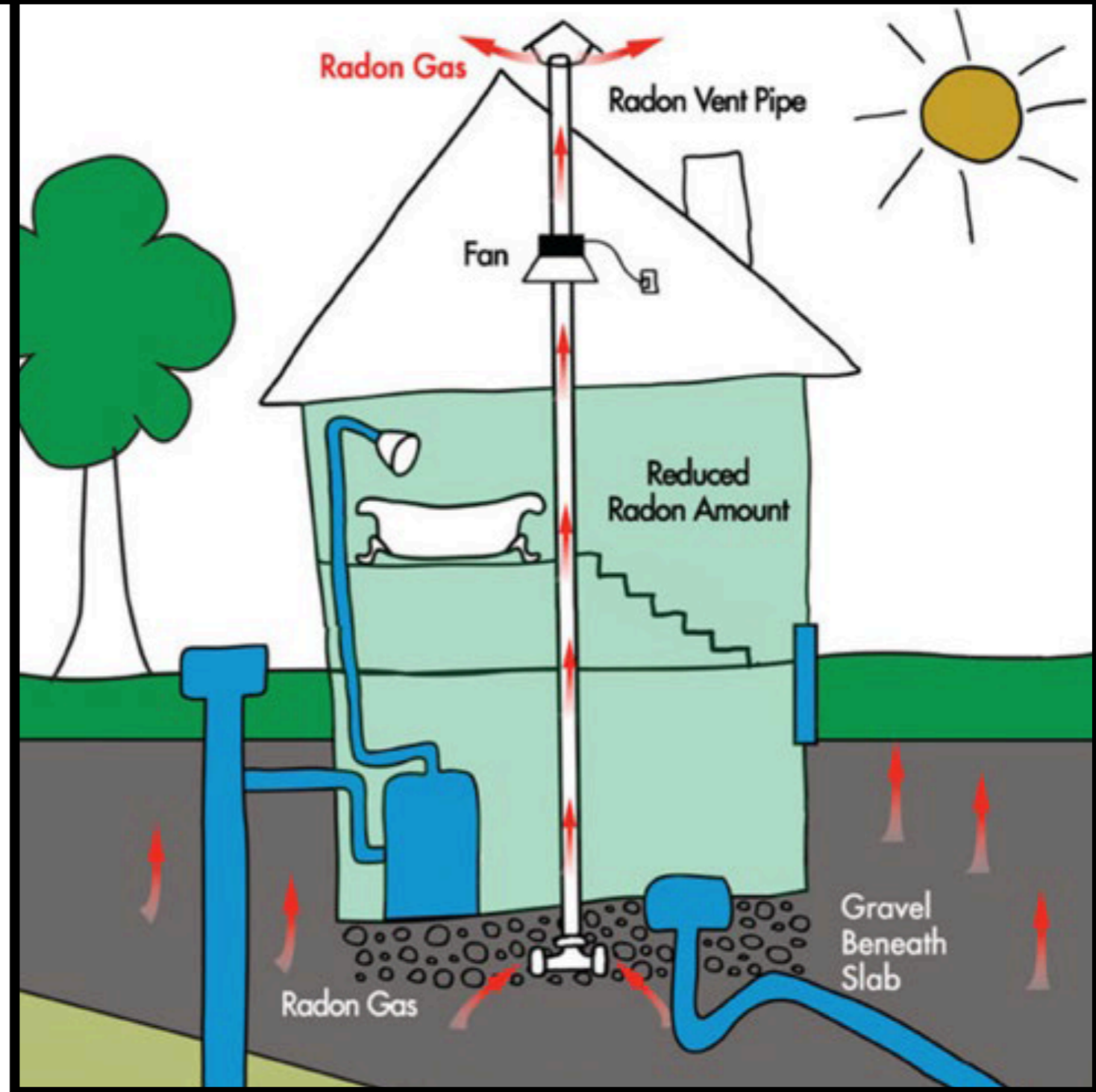
Professional testers and mitigators certified by C-NRPP

- Test homes and workplaces
- <https://c-nrpp.ca/find-a-professional/>

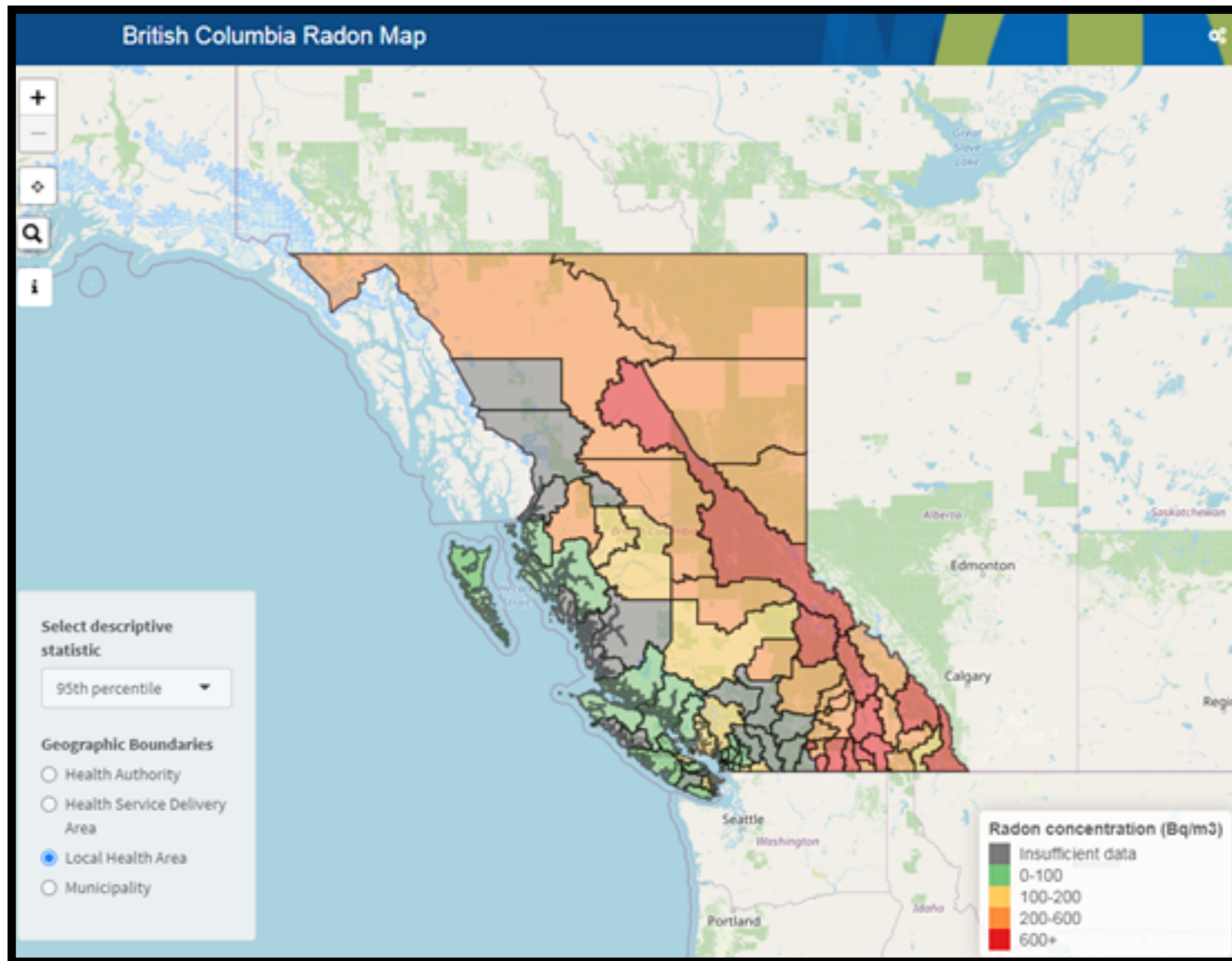


Radon is Easy to Fix

- Homes and workplaces
- In new homes a “passive radon system” will reduce radon by over 50% and may be enough
- If tests show levels over 200 Bq/m³ call CNRPP mitigator
- take measurements and adjust HVAC or install “active” system (with fan) in 1 to 2 days



- Radon levels vary in BC
- Important to know local radon levels—for anyone whose job it is to ensure spaces are safe
- BCCDC now has 17,000+ readings
- Can use map to identify where radon is a problem
- 33% of homes tested in Interior Health over 200 Bq/m³
- 23% in Northern Health
- Some areas lack sufficient sample size of tests



<http://www.bccdc.ca/health-info/prevention-public-health/radon>

<https://bccdc.shinyapps.io/bcradonmap/>

BC Building Code, 2018

Under Division B Section 9.13.4. Soil Gas Control there are requirements for a **rough-ins for a subfloor depressurization system**

Division B Appendix C Climatic and Seismic Information for Building Design in British Columbia. Table C-4 -Locations in British Columbia Requiring Radon Rough-Ins

100 Mile House Abbotsford Ashcroft Atlin Barriere Burns Lake Cache Creek Castlegar Carmi Chetwynd Clearwater Cranbrook Crescent Valley Dawson Creek Dease Lake Dog Creek Duncan Elko Fernie Fort Nelson Fort St. John Genelle Glacier Golden Grand Forks Greenwood Hope Invermere Kamloops Kaslo Kelowna Kimberley Lillooet Little Fort Lytton Mackenzie McBride McLeod Lake Merritt Montrose Nakusp Nelson Osoyoos Penticton Prince George Princeton Quesnel Revelstoke Rossland Salmon Arm Sechelt Smith River Smithers Stewart Taylor Terrace Trail Valemont Vaverby Vernon Whistler Williams Lake

section 1.1.3.3 (2) allows other towns to be added if they choose

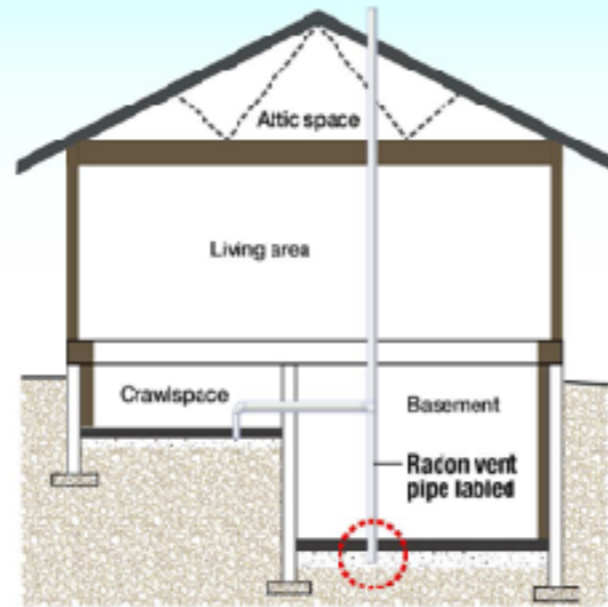
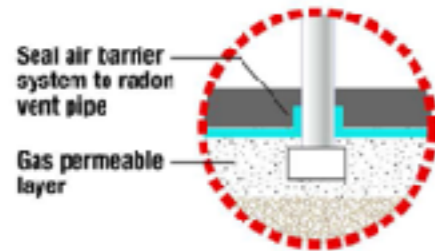
Rough-in stub

- Found in National Building Code, most provinces



BC has modified passive sub-slab depressurization

"There are well-established, cost-effective methods for reducing elevated radon levels."

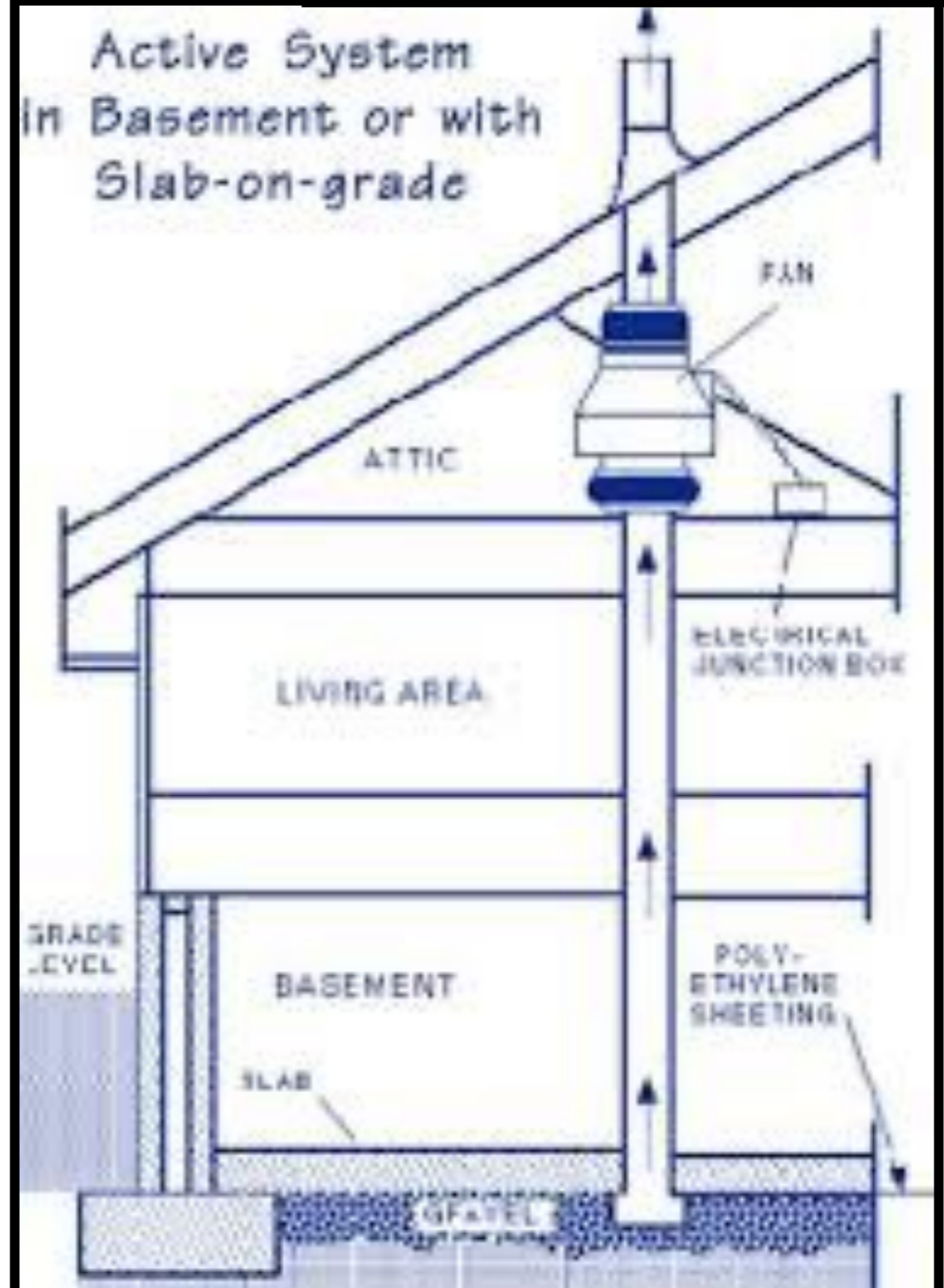


Updates to the 2012 BC Building Code include extending the radon pipe to the exterior of a dwelling at time of construction.

The passive radon vent piping system for new construction, focusing on sub slab depressurization as applied to Area 1, are the **strongest protective measures in Canada.**

BC Building Code 2015

A C-NRPP certified mitigator will likely install this



Potential new 2024 BC Building Code

- **New maps show many places with radon problem**
- **Poor construction of mitigation systems**
- **Confusion of passive radon systems and rough in**
- **Our research found poor piping used, gaps in foundation, too many bends**
- **Newer research by National Research Council found passive systems reduce radon—and reduction of radon ANYWHERE will help save lives (not only homes over 200 Bq/m³)**
- **Public Review Spring 2023**
- **Radon systems for ALL locations in province**
- **New technical specifications to build passive systems**



Limits to Building Code as radon prevention

- **Larger buildings rely on ‘good engineering practice’, not prescriptive paths**
- **Only 1 or 2 percent of buildings are new each year—vast majority of BC buildings have no radon protection in place**
- **Code does not cover post-occupancy behaviour— including testing for radon**
- **Need for new home occupants to test and testing after retrofits**
- **need for specific rules for real estate transactions**
- **Large gaps in provincial legislation**



Radon Matters in Real Estate Transactions

Real estate transactions good place to get people's attention on radon

Close to 7% of owner occupied homes are bought and sold each year in British Columbia

37 US States have laws on disclosure during real estate transactions

Mandatory realtor education in Alberta, Quebec, New Brunswick, Nova Scotia

Clear real estate licensee duties



Radon is a latent defect

A latent defect is one that a reasonable person cannot see on inspection

A seller is required to disclose any **KNOWN** latent defects.

Examples where Canadian courts have found:

- unstable slopes
- defective subfloors
- leaky skylights
- radioactivity
- mould
- water damage

Quebec case of *Pouliot c Leblanc* (2011) finds in principle; common law courts likely to find

Now materials on this from Alberta (RECA) and BC (RECBC)



Other broad legal and ethical principles

act in the best interests of their client **DeJesus v. Sharif 2010**
BCCA 121

disclose to the client all known information with respect to any real estate being dealt with **Real Estate Service Rules 30 (f)**

use reasonable efforts to discover relevant facts that a reasonable purchaser might consider **Real Service Rules (30) (h)**

act honestly, with reasonable care and skill **Real Estate Service Rules 33, 34)**

not give advice based on uninformed positions, or insufficient research, investigation or consultation **Davenport v. Stakiw, 2007**
CanLII 6911 (Ont. Sup. Ct.)

Licensees acting for sellers must inform buyers of latent defects
Real Estate Service Rules 59

BC Lung Research — Realtors Knowledge and Practice

Survey open from Aug 1 2019 to November 1 2019

Local Real Estate Boards advertised

Contest to win an iPad

402 participants

Questions on realtors knowledge of radon

If radon included in normal practice

Awareness of standards and duties



Realtors were not very confident about their knowledge

Answer	BC
What phrase best describes your knowledge of radon?	
Almost Nothing, I am taking this survey as a way of learning	24% 91/373
I have been told its important in real estate practice, but need more information to advise clients	41% 153/373
I am confident in my knowledge and advising clients	10% 37/373

What do you think are Canada's Radon Guidelines ?	
200 Becquerels per cubic metre	19% (70/375)
I have no idea	72% (270/375)

Radon was Seldom Discussed

Most reported that buyer-clients had never voiced concern around radon (83% or 298/360).

Few realtors had ever been given instructions by their buyer-clients to ask about radon in a home: 85% (or 305/361) answered “never” .

Of those who said it had happened, most (61% or 34/56) said it only happened once or twice in their career.

In Kootenays, more than half reported buyers never voicing concern (Kootenays—52% or 47 of 91 respondents

Of 402 respondents, 94.4% said they were not aware of any guidelines or standards around radon that currently apply to BC real estate licensees.



Radon Precautions for Real Estate Professionals

2020

Published on 30 July, 2020 - Practice Guidelines

Radon Checklist for Sellers' Agents

A checklist for real estate professionals to follow when discussing radon gas with seller clients.



Download PDF

Radon Checklist for Buyers' Agents

A checklist for real estate professionals to use with buyer clients when discussing radon gas.



Download PDF

Radon Checklist for Rental Property Managers

A checklist for rental property managers to use when talking to clients about radon gas.



Download PDF

Declares radon a material latent defect

Directs licensees to proactively be informed and ask sellers about radon (both buyers and sellers agents)

Disclosure for tenants

Holdbacks



sellers' agent

- radon levels of 200 Bq/m³ or more constitute a material latent defect and must be disclosed
- ask whether and how property was tested and results
- Say that it is important to conduct a radon test where possible before marketing the home

buyer's agent

- ask the seller or listing agent if a radon test has been completed, and if so, to see the results.
- you have a duty to discover facts about a property that may impact your clients interest

managing brokers

- ensure that real estate professionals at your brokerage understand what radon is, when it must be disclosed, and how to determine what type of testing should be done.

Rental Property Managers

- high (over 200Bq/m³) radon levels constitute a material latent defect that must be disclosed to tenants

BCREA

changes first made in 2020

- PDS
- Course on Radon
- FAQ
- Updated 2022 and this Fall

3. BUILDING Respecting the Unit and Common Property (continued)	YES	NO	DO NOT KNOW	DOES NOT APPLY
HH. To the best of your knowledge, has the Unit been tested for radon? (i) If yes, was the most recent test: <input type="checkbox"/> short term or <input type="checkbox"/> long term (more than 90 days) Level: _____ <input type="checkbox"/> bq/m3 <input type="checkbox"/> pCi/L on _____ date of test (DD/MM/YYYY)				
II. Is there a radon mitigation system in the Unit?				
(i) If yes, are you aware of any problems or deficiencies with the radon mitigation system in the Unit?				
JJ. To the best of your knowledge, has the Common Property been tested for radon? (i) If yes, was the most recent test: <input type="checkbox"/> short term or <input type="checkbox"/> long term (more than 90 days) Level: _____ <input type="checkbox"/> bq/m3 <input type="checkbox"/> pCi/L on _____ date of test (DD/MM/YYYY)				
KK. Is there a radon mitigation system for the Common Property?				
(i) If yes, are you aware of any problems or deficiencies with the radon mitigation system for the Common Property?				



Checklist for Radon Testing

This checklist is designed to help people ensure they have followed the correct procedure in testing for radon. You can keep this checklist for future reference for yourself or if someone asks you about the radon tests you conducted.

This checklist is based on [Health Canada's Guide for Radon Measurements in Residential Dwellings \(Homes\)](#).

Step by step by guide for testing

Follows Health Canada guidance

Diverse uses—buying and selling home, landlord/ tenant

Use to ensure a good test or when you want another person to trust your test

Radon and New Home Warranty

BC/s *Homeowners Protection Act* provides for mandatory home warranty

must provide coverage for defects

- in materials and labour (for a period of at least 2 years),
- defects in the building envelope (for at least 5 years)
- structural defects (for a least 10 years)

Tarion in Ontario covers as a matter of policy.

No decisions in BC

- Private sector home warranty providers

How can Tarion help?

Ontario's new home warranty provides coverage for radon for seven years.

If your home is less than 7 years old and you want to find out if your home is eligible for radon coverage, contact Tarion.

New home owners need to test

Developers (and Realtors) should give new home owners testing devices.



**Talk to Home
Inspectors
About Getting
Certified**

**Short term radon tests
as part of the
inspection process are
discouraged**

**Also most home
inspectors will avoid
discussing radon due
to lack of expertise
and insurance issues**

**However, inspectors
can play a role in
helping your client
identify if radon
systems are working**



c-nrpp.ca

C-NRPP

CANADIAN – NATIONAL RADON PROFICIENCY PROGRAM

BECOME A CERTIFIED PROFESSIONAL

Becoming C-NRPP certified gives you access to programs, training, resources and technology so you can enhance your service offering, reach more customers, learn from experts and continue elevating respect for our industry.

BECOME A C-NRPP RADON MEASUREMENT PROFESSIONAL:

Step 1: Complete Entry Level Radon Measurement Course

2 day classroom course or 16hr Online course

[Click here for a list of courses](#)

Cost is dependent on the course provider.

Cost about \$800

Annual Fees \$175

C-NRPP sets standards and review courses, but independent providers provide delivery.

Step 2: Pass a C-NRPP Entry Level Radon Measurement Exam:

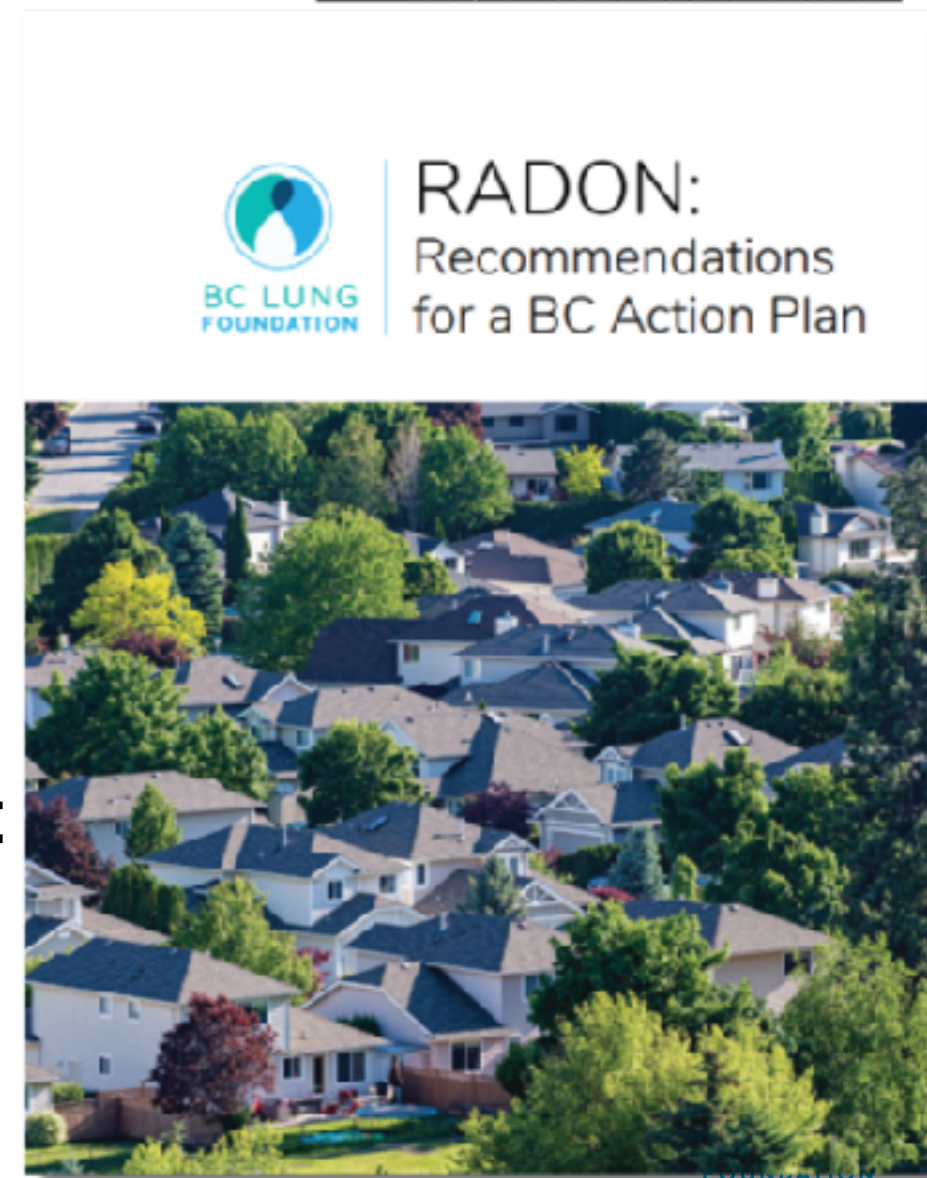
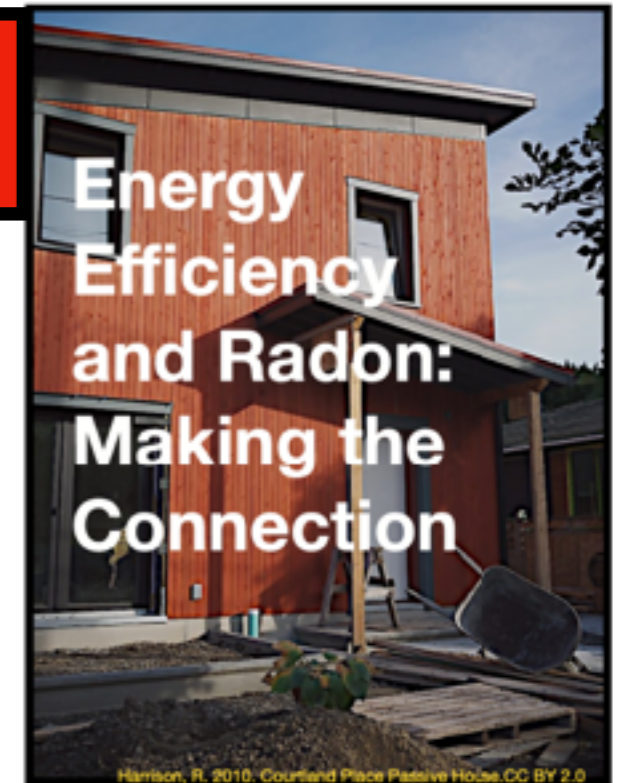
Further areas of concern

Review on energy efficiency and radon

- Radon levels can go up in ‘tight’ energy efficient homes
- Heightened need for radon systems, and testing after occupancy or renovations
- General neglect of issue among energy advisors or grant programs
- Need to test after retrofits

Large gaps in radon protection in BC

Our proposed action plan for BC maps out what can be done



**YOU CAN'T
SMOKE RADON.
IT CAN STILL GIVE
YOU LUNG CANCER.**

TESTING YOUR HOME IS EASY. RADONKILLS.CA

RADONKILLS.CA

**WARNING: RADON GAS IS A SILENT KILLER. THERE ARE NO
COMPELLING EVIDENCE LEVELS OF RADON. RADON EXPOSURE IS
THE SECOND LEADING CAUSE OF LUNG CANCER IN CANADA.
ONLY TESTING CAN ENSURE YOUR HOME IS SAFE.
TESTING IS EASY, INEXPENSIVE, AND CRITICAL TO
ENSURE RADON LEVELS IN YOUR HOME ARE SAFE.**



WARNING

HAVE YOU EVER WONDERED WHY SOME PEOPLE DIE OF LUNG CANCER HAVING NEVER SMOKED A DAY IN THEIR LIFE?

The answer is probably due to **radon exposure**. Radon is the second leading cause of death from lung cancer and kills over 3,000 Canadians every year.

Anyone who smokes knowingly takes that risk, but would you like to take the same risk unknowingly, just by living in your home?

Additionally, if you smoke and are exposed to high concentrations of radon, you are at an exponentially higher risk of developing radon-induced lung cancer.

ORDER YOUR TEST KIT

radonkills.ca

Skills Contest for Students in Interior Health

How do you conduct a Radon test?

Send us your answer for a chance to win.

Prizes include:

- Smart Scale Air Quality Monitor
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester

For more details visit: <https://bclung.ca/radoncontest>

Radon is a radioactive gas that can linger inside your home, school or workplace. It can cause lung cancer.

BC LUNG FOUNDATION Interior Health

What can be done to address high Radon levels?

Send us your answer for a chance to win.

Prizes include:

- Smart Scale Air Quality Monitor
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester

For more details visit: <https://bclung.ca/radoncontest>

Radon is a radioactive gas that can linger inside your home, school or workplace. It can cause lung cancer.

BC LUNG FOUNDATION Interior Health

How does Radon enter a building?

Send us your answer for a chance to win.

Prizes include:

- Smart Scale Air Quality Monitor
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester

For more details visit: <https://bclung.ca/radoncontest>

Radon is a radioactive gas that can linger inside your home, school or workplace. It can cause lung cancer.

BC LUNG FOUNDATION Interior Health

Where are high levels of Radon found in Canada?

Send us your answer for a chance to win.

Prizes include:

- Smart Scale Air Quality Monitor
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester
- Smart Scale Radon Tester

For more details visit: <https://bclung.ca/radoncontest>

Radon is a radioactive gas that can linger inside your home, school or workplace. It can cause lung cancer.

BC LUNG FOUNDATION Interior Health

Details at <https://bclung.ca/radoncontest>



Thank you. Questions?

Noah Quastel

Contact:

nquastel@bclung.ca

778:709.4496

**CONTACT ME FOR BULK
TEST KITS !**

Or buy from BCLung's
website at

<https://bclung.ca/radon>



Photo CC BY-NC-ND 2.0 Anderson, J. 2008 Little House 2. [flickr.com](https://www.flickr.com/photos/andersonj/)

Are projects made possible by funding from



Santé
Canada

vancouver
foundation

