



# Scan of First Nations, Inuit and Metis radon research across the country

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# Outline

1. The National Collaborating Centre for Environmental Health (NCCEH)
2. Radon and First Nations housing
3. Literature Search within peer reviewed publications
4. Results
5. Conclusions

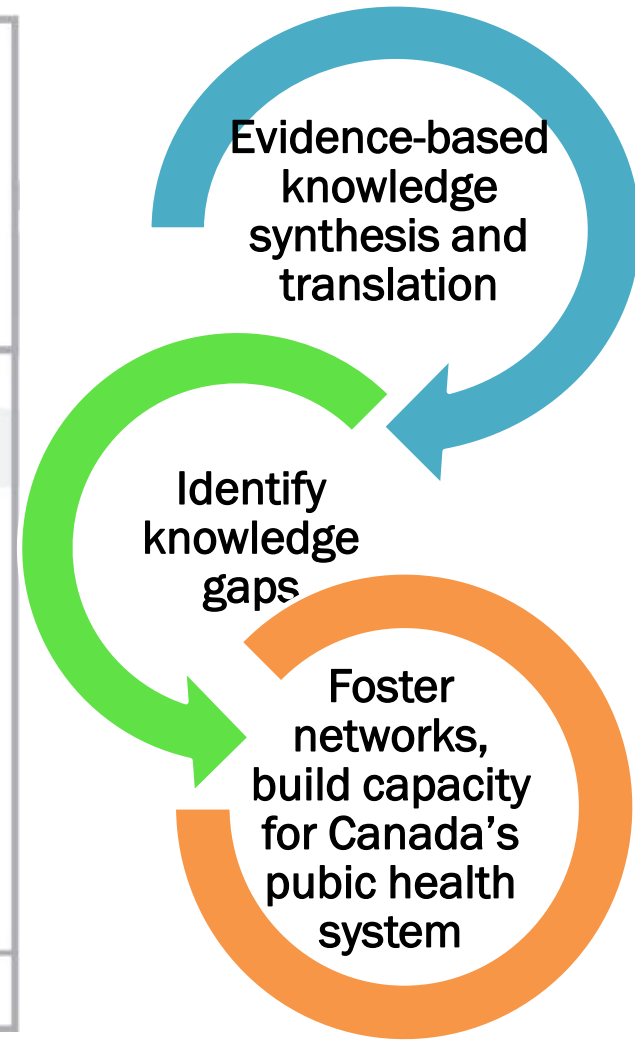


National Collaborating Centres  
for Public Health

Centres de collaboration nationale  
en santé publique



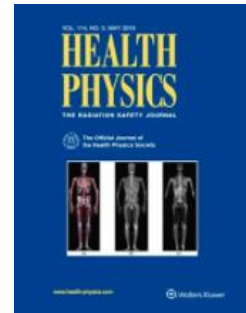
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# First nations housing

- Well-described problems around housing in FN communities
  - Urban and rural homes
  - Poorly constructed
  - Over-crowding
- Maintenance, ownership issues
- Focus of contaminants often on mould, second-hand tobacco smoke

# Enacting change: evidence-informed policy and practice



- Public health programming increasingly encouraged to use *evidence* to inform policy and practice
  - Generally research from peer-reviewed literature
  - Government reports
- **What evidence exists in the literature on First Nations radon testing, policy and practice?**
- Methods for scan
  - Literature review of peer reviewed and grey literature
  - Search Terms: radon/first nations/innuit/metis/indigenous
  - All databases and government sites

# Literature Review results- peer review literature

Year	Author	Title	Region
2017	Sarkar, A, Wilton, D, Fitzgerald, E	Indoor Radon in Mico-geological setting of an indigenous community in Canada (n=25)	Labrador
2015	Brossard, M, Ottawa, CB, Falcomer, R, Whyte, J	Radon mitigation in cold climates at Kitigan Zibi Anishinabeg (n=85)	Quebec
2012	Brossard, M, Brascoupe M, Ottawa, C, Falcomer, R, Ottawa, W, Scott, A, Whyte, J	Residential Radon Mitigations at Kitigan Zibi Anishinabeg: Comparison of Above Ground Level (RIM JOIST) and Above Roof Line Discharge of Radon Mitigation SUB-SLAB Depressurization Systems (n=10)	Quebec
2011 ?	Nowicki, V	The Occurrence of Radon on the Tobique First Nation Reserve and its Implication for Radon Occurrence Along the Saint John River Valley , <a href="https://pdfs.semanticscholar.org/dd6f/4c810fb0cc6b0c7f42586f9c10ff0bffd593.pdf">https://pdfs.semanticscholar.org/dd6f/4c810fb0cc6b0c7f42586f9c10ff0bffd593.pdf</a> (n=350)	New Brunswick

# Literature review results: grey literature

- Federal government radon buildings program
  - Included some FN administration buildings, schools, childcare facilities
  - <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/radiation/radon/radon-testing-federal-buildings-highlights.htm>
- Federal Government- Canada Gazette 2007, Kitigan Zibi community testing (government report) (n=~450 homes)
- Prince George Metis Housing Society research program in Prince George BC - Urban, multifamily housing unit
  - Multiple partners, including Radon Aware, CCS, Canadian Home Builders Association of Northern BC, Northern Health, FBC
  - [http://www.radonaware.ca/database/files/library/BCLung\\_Radon\\_AHSCaseStudy\\_.pdf](http://www.radonaware.ca/database/files/library/BCLung_Radon_AHSCaseStudy_.pdf)
  - Emphasized importance of funding and community engagement



## Historical Radon potential and measured survey of FN communities 1993

Follow-up testing by  
Health and Welfare  
Canada

- 70% of communities in high radon potential regions
- 5.6% of homes above 800 bq/m<sup>3</sup>
- Methods and primary data not found

Cocksedge, W, et al. 1993 in Shives, R, Ford, K and Charbonneau, B Geological Survey of Canada, Minerals Resources Division, 1995 Workshop Manual OPEN FILE 3061

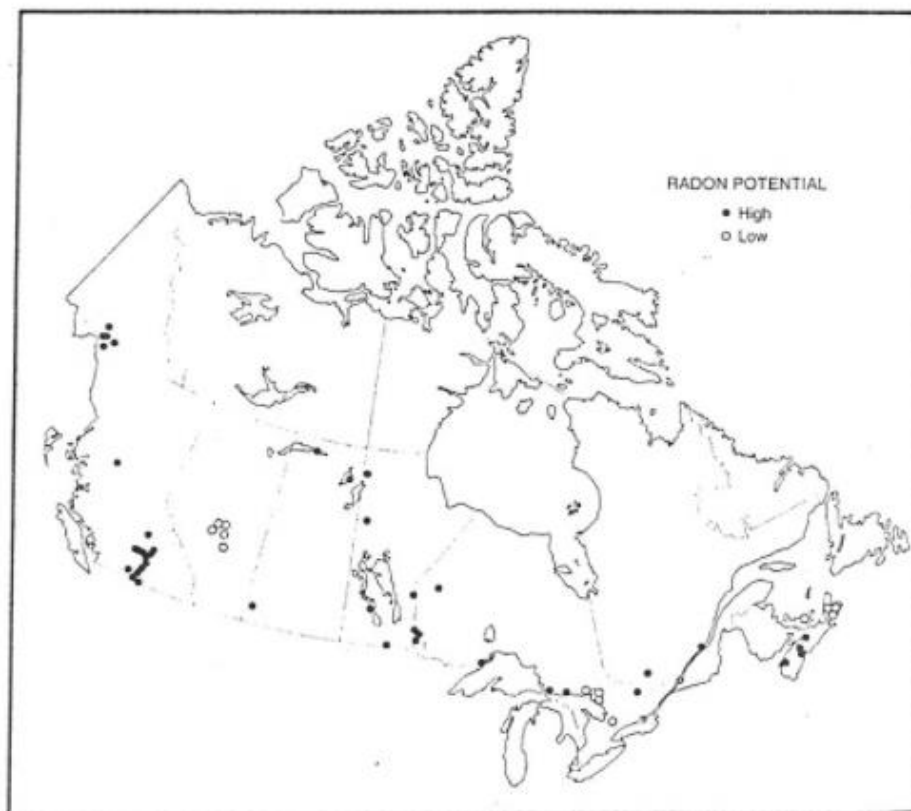


FIGURE 4. Map of Canada showing native communities of high and low radon potential where homes were measured.



# Results summary

- Overall, very few published studies
  - Mostly research focused
- Tested regions generally had higher than Canadian average number of homes above 200 bq/m<sup>3</sup>
- **Community engagement and partnerships** noted as key when details were available
- Most research generally **supported** by federal government initiatives
  - Multiple departments
- Not equally regionally distributed across country
- Technical variations, short term versus long term, use of radon potential

# Conclusions

- Why so few studies?
  - Radon is already well established health risk (IARC known)
- Little known about testing in FN communities
  - Leaves a vacuum for public health policy and practice
  - What is best practice?
- Can we use what has historically been done to guide future work?
- Collaboration and funding identified as key variables for success where info available
- Leadership in this area would be beneficial

# Other findings- resources



HOME ABOUT TELEINSPECTIONS DOCUMENTS NEWSLETTERS MEMBERSHIP LINKS CONTACT CCMC FRANÇAIS

## Indoor radon guidelines

Radon is a colourless, odourless radioactive gas found naturally in the environment. It is produced by the natural breakdown of uranium commonly found in soils and rocks. Because radon is a gas, it can easily move through small spaces in soils and other materials, allowing it to enter the air we breathe, both outdoors and inside buildings. In the outdoors, radon mixes with large volumes of fresh air and is diluted to low concentrations. However, if radon enters an enclosed or poorly ventilated space in a building, it can accumulate to levels that can pose a risk to health.

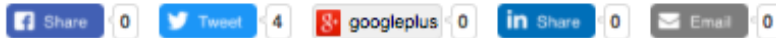
The screenshot shows the top navigation bar of the Government of Canada website. It includes the Canadian flag, the text 'Government of Canada' and 'Gouvernement du Canada', and a search bar with the text 'Search Canada.ca'. Below the navigation bar is a horizontal menu with buttons for 'Jobs', 'Immigration', 'Travel', 'Business', 'Benefits', 'Health', 'Taxes', and 'More services'. The 'Health' button is selected, and a breadcrumb trail reads 'Home → Health → Health system and services → Health care system funding'. The main content area features the title 'First Nations Environmental Contaminants Program: 2017-2018' in large bold text, followed by the sub-header 'From First Nations and Inuit Health Branch'. Below this is a paragraph: 'Learn about Health Canada's First Nations Environmental Contaminants Program (FNECP), who can apply for funding and how to apply.' To the right of this paragraph is a section titled 'Related programs' with a bullet point: 'Environmental Public Health Program'.

<https://www.canada.ca/en/indigenous-services-canada/services/first-nations-environmental-contaminants-program.html>



You are here : » Publications and Products » Topic Pages » Radon in the Home

## Radon in the Home



Topics: [Air, Contaminants and Hazards](#), [Indoor Air](#), [Radiation](#)

Radon is a colourless, odourless gas that is released from the degradation of uranium naturally present in rock and soil. Radon levels outdoors are generally low; however, radon can enter buildings and homes through cracks and openings in the foundation and levels can become much higher indoors, especially in basements and lower floors.

- Long term exposure to radon increases the risk of lung cancer. Health Canada estimates that over 3,200 Canadians die each year due to radon gas exposure ([Chen et al., 2012](#)).
- Exposure to radon is the leading cause of lung cancer for non-smokers. For smokers, radon exposure greatly increases the risk of developing lung cancer from 1 in 20 to 1 in 3 ([Health Canada, 2010](#)).
- Currently, Government of Canada guidelines state that dwellings and public spaces including schools, daycare and libraries, do not exceed 200 becquerels per meters cubed (Bq/m<sup>3</sup>) ([Government of Canada, 2009](#)). The World Health Organization recommends 100 Bq/m<sup>3</sup> ([WHO, 2016](#)).
- Radon levels in homes are influenced by such factors as geography (which determines the amount of uranium and radon in soil) and household construction methods, architectural design, ventilation systems and the specific materials used to build a home ([Branion-Calles et al., 2016](#); [Levesque et al., 1997](#); [Stanley et al., 2017](#)).
- It is impossible to predict levels of radon without measuring it. Health Canada recommends that all Canadians have their homes tested for radon ([Health Canada, 2013](#)).
- Radon mitigation methods are very effective at reducing radon levels, even when results far exceed the recommended guideline.
- Radon mitigation should be done by a certified professional. A list of certified professionals is available at the [Canadian National Radon Proficiency Program](#).

### NCCEH Resources

- [Radon and child care facilities](#) (2017)  
This was a *presentation* made at the Canadian Institute of Public Health Inspectors National Annual Education conference by NCCEH staff in conjunction with an environmental health officer from the British Columbia Interior Health Authority.
- [Call for action on radon in childcare settings](#) (2017)  
This *paper* in Environmental Health Review is co-authored by NCCEH staff and outlines the rationale for implementing regulations to govern the testing of radon in child-care settings across Canada.
- [Public health ethics: A case for environmental health](#) (2016)



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[www.ncceh.ca](http://www.ncceh.ca) || [www.ccnse.ca](http://www.ccnse.ca)

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