National Collaborating Centre for Environmental Health

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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

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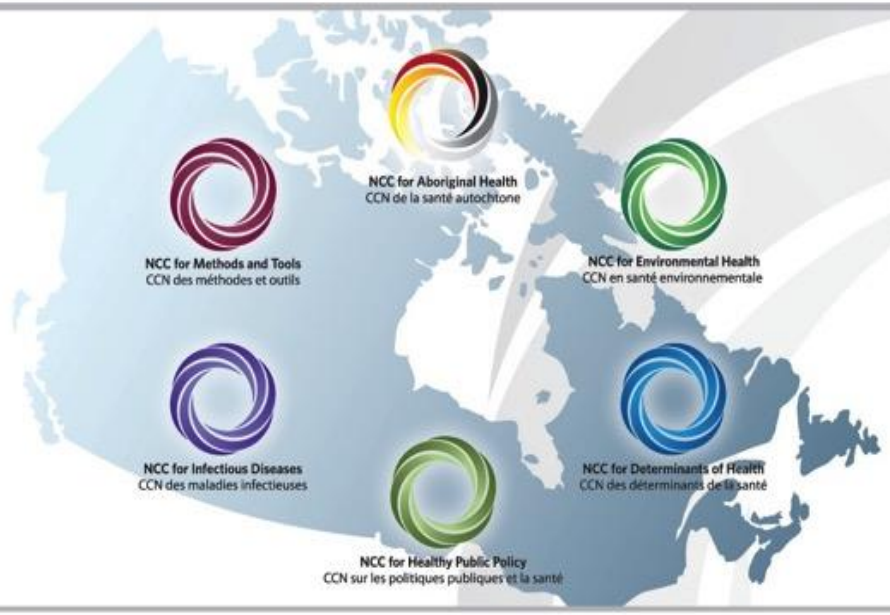

STRENGTHENING PUBLIC HEALTH ACROSS CANADA | APPUYER LA SANTÉ PUBLIQUE AU CANADA

Evidence-based knowledge synthesis and translation

Identify knowledge gaps

Foster networks, build capacity for Canada's pubic health system

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
2014	Brossard, M, Ottawa, CB, Falconer, R, Whyte, J	Radon mitigation in cold climates at Kitigan Zibi Anishinabeg (n=85)	Quebec
2012	Brossard, M, Brascoupe M, Ottawa, C, Falconer, 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 , https://pdfs.semanticscholar.org/dd6f/4c810fb0cc6b0c7f42586f9c10ff0bffd593.pdf- (n=350)	New Brunswick

Peer-Reviewed Literature

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 Association 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
  - Emphasized importance of funding and community engagement

Historical Radon potential and measured survey of FN communities 1993

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

Follow-up testing by Health and Welfare Canada

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

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^3
- **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

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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.

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First Nations Environmental Contaminants Program: 2017-2018

From First Nations and Inuit Health Branch

Learn about Health Canada's First Nations Environmental Contaminants Program (FNECP), who can apply for funding and how to apply.

Related programs

- Environmental Public Health Program

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

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Radon in the Home

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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/m3) (Government of Canada, 2009). The World Health Organization recommends 100 bq/m3 (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 Reivew 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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