

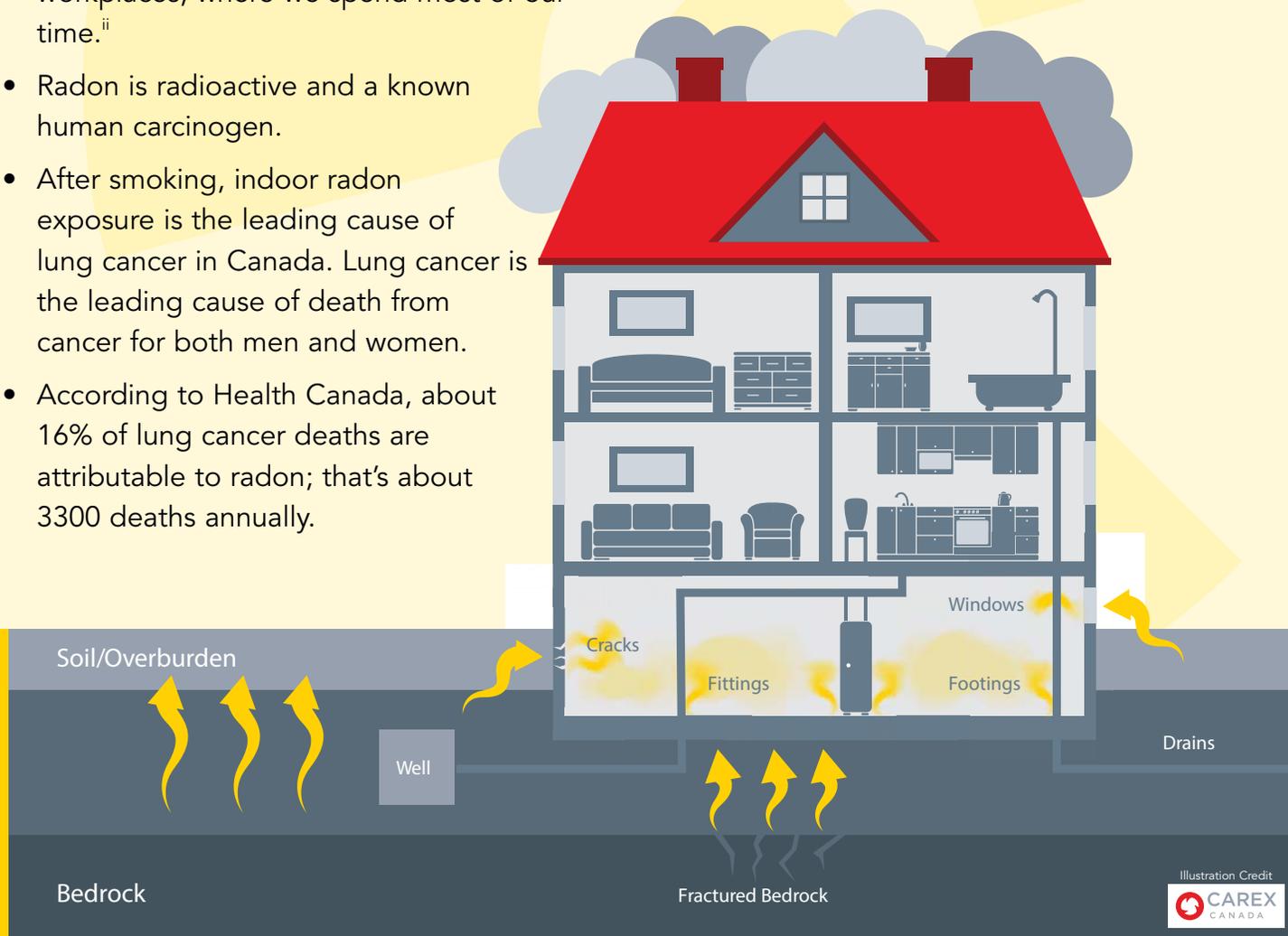
# A Radon Policy Challenge

## to Canada's Provincial Premiers and Health Ministers

Indoor radon exposure is a serious public health issue. As an important risk factor for lung cancer<sup>i</sup>, radon needs a coordinated policy response, especially at the Provincial/Territorial level.

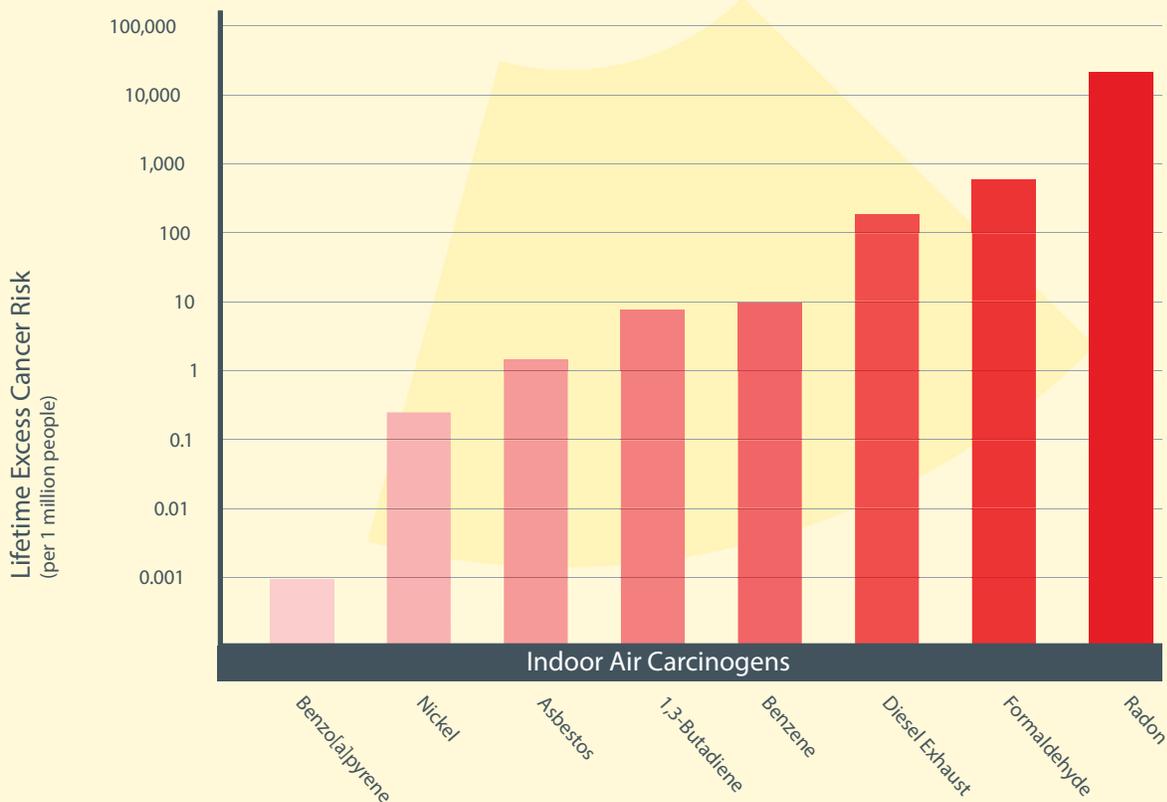
### Radon Facts

- Radon is a radioactive gas that comes from the natural breakdown of uranium in the ground.
- It is an odourless, colourless indoor pollutant and can enter our homes, schools, and workplaces, where we spend most of our time.<sup>ii</sup>
- Radon is radioactive and a known human carcinogen.
- After smoking, indoor radon exposure is the leading cause of lung cancer in Canada. Lung cancer is the leading cause of death from cancer for both men and women.
- According to Health Canada, about 16% of lung cancer deaths are attributable to radon; that's about 3300 deaths annually.
- Radon is identified as a top priority for action by CAREX Canada, a multi-institution research project that estimates the number of Canadians exposed to substances associated with cancer in workplace and community environments.



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.

- Health Canada randomly surveyed 14,000 homes across Canada. Tests found 7% of homes above the federal guideline. More targeted testing finds up to 50% of homes in specific regions above the federal guideline.<sup>iii</sup>
- Statistics Canada’s Household and Environment Survey found that only five percent of homes have been tested for radon (as a percentage of households that had heard about radon).<sup>iv</sup>
- Home energy retrofits tighten the building envelope and can increase indoor radon levels unless radon remediation measures are incorporated into retrofit activities.<sup>v</sup>
- As an environmental cancer agent radon is in a league of its own – among five carcinogens with the highest “lifetime excess cancer risk” in Canada, the cancer risk from radon is orders of magnitude greater than the next four including formaldehyde, diesel exhaust, and arsenic (see graph).<sup>vi</sup>
- Radon-induced lung cancer is preventable<sup>vii</sup> and such prevention can result in significant health care savings.<sup>viii</sup>
- The World Health Organization Handbook on Indoor Radon<sup>ix</sup> recommends a national reference level of 100 Becquerels per cubic metre (Bq/m<sup>3</sup>), a level that is half of Canada’s reference level.



CAREX Canada risk estimates for indoor air carcinogens show that radon gas is the highest priority exposure in Canadian settings.

Setton E, et al. "Risk-based indicators of Canadians' exposures to environmental carcinogens." *Environ Health* 2013;12(1):15.

## Provinces and Territories Need to Act

The opportunity for controlling radon exposure and ensuring public right-to-know exists mainly at the provincial-territorial level in Canada. According to the Canadian Environmental Law Association,<sup>x</sup> these opportunities arise in several areas, including:

- Building Codes
- Occupational Health and Safety Laws and the Naturally Occurring Radioactive Materials (NORM) Guidelines
- Data-sharing about radon testing and public Right-to-Know
- Government-, utility-, and NGO-sponsored energy efficiency programs
- Laws governing:
  - public health
  - residential tenancies
  - education
  - occupiers' liability
  - real estate transactions and home warranties

Provinces and Territories have made some progress. Some have updated Building Codes, generally applicable to new construction and large renovations. But, the existing housing stock is largely untouched by these changes.

**We call upon each of Canada's provincial and territorial Premiers and their respective Health Ministers to demonstrate leadership with a comprehensive and health-focused response to radon.**

**We Recommend that all Provinces and Territories:**

1. Update all radon protection and mitigation provisions in **Provincial and Territorial Building Codes** in accord with the **National Building Code**.
2. Ensure that the **NORM Guidelines** are clearly applied to all workplaces given the fact that radon can infiltrate any building regardless of what occupation may be occurring within.
3. Ensure legislation, supplementary guidance and resources (where appropriate) governing **public health, occupational health and safety, residential tenancies, education, and occupiers' liability** be amended to address radon, to place duties on school boards, licensed child care facilities, landlords, employers, and building owners to ensure mandatory radon testing, radon mitigation if necessary to achieve indoor radon levels below the federal Radon Guideline reference level, and mandatory public notification of test results and mitigating strategies.
4. Ensure that all government-, utility-, and NGO-sponsored programs advancing and/or delivering **energy efficiency retrofit programs** incorporate information about the need to test for radon and related information about radon remediation.

5. Enact **home warranty legislation** such that new homes are statutorily deemed to come with implied warranties of habitability that include specific reference to soil gas ingress and radon.
6. Add legislative language providing enforcement branches of **public health units and occupational health and safety offices** with the power to deploy a radon test upon inspection, and require remediation if radon test results are above federal Radon Guideline reference level.
7. Require that **property disclosure statements** be included as annexes to prescribed forms under real estate legislation/regulations providing that sellers will disclose whether there is a known presence of radon in their homes before signing an agreement to sell or transfer real property.
8. Encourage the federal government to **reduce the indoor radon reference level** to the World Health Organization recommended level of 100 Bq/m<sup>3</sup>.
9. Establish comprehensive **radon testing data-sharing** arrangements with other provinces/territories and the federal government and public registries to make **radon test results in public buildings, and related risk mapping, publicly available.**

## Signatory Organizations



- i. Hystad, Perry, Michael Brauer, Paul A. Demers, Kenneth C. Johnson, Eleanor Setton, Alejandro Cervantes-Larios, Karla Poplawski, Alana McFarlane, Alan Whitehead, and Anne-Marie Nicol. "Geographic Variation in Radon and Associated Lung Cancer Risk in Canada." *Can J Public Health* 105, no. 1 (2014): e4–10.
- ii. Canadian Cancer Society, *Lung Cancer Statistics, 2015 Estimates*. <http://www.cancer.ca/en/cancer-information/cancer-type/lung/statistics/?region=on>
- iii. Health Canada, "Cross-Canada Survey of Radon Concentrations in Homes, Final Report" ((March 2012) ISBN: 978-1-100-20115-3, online: [http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/pdf/radiation/radon/survey-sondage-eng.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/radiation/radon/survey-sondage-eng.pdf)
- iv. Statistics Canada, *Households and the Environment – 2011*. Table 17, Households tested for radon in Canada, by province. <http://www.statcan.gc.ca/pub/11-526-x/2013001/t050-eng.htm>
- v. A British study finding such increased radon levels noted that population - wide lung cancer risk would increase significantly unless radon-specific remediation was incorporated into energy efficiency efforts. See: Milner, J., C. Shrubsole, P. Das, B. Jones, I. Ridley, Z. Chalabi, I. Hamilton, B. Armstrong, M. Davies, and P. Wilkinson. "Home Energy Efficiency and Radon Related Risk of Lung Cancer: Modelling Study." *BMJ* 348, no. jan09 1 (January 10, 2014): f7493–f7493. doi:10.1136/bmj.f7493.
- vi. Setton, Eleanor, Perry Hystad, Karla Poplawski, Roslyn Cheasley, Alejandro Cervantes-Larios, C. Peter Keller, and Paul A. Demers. "Risk-Based Indicators of Canadians' Exposures to Environmental Carcinogens." *Environmental Health* 12, no. 1 (2013): 15.
- vii. Peterson, Emily, Amira Aker, JinHee Kim, Ye Li, Kevin Brand, and Ray Copes. "Lung Cancer Risk from Radon in Ontario, Canada: How Many Lung Cancers Can We Prevent?" *Cancer Causes & Control* 24, no. 11 (November 2013): 2013–20. doi:10.1007/s10552-013-0278-x.
- viii. The Green Budget Coalition (<http://greenbudget.ca/>) 2015 Recommendations estimate cost savings from prevented cancer deaths at over \$17 million annually based on data from: the Public Health Agency of Canada (2014) that total direct and indirect costs of lung cancer in 2011 were \$398M; Chen, Moir and Whyte (2012) that 16% of lung cancer deaths in Canada are attributable to radon; and Chen et al, 2012 statement that, at the current Canadian action level of 200 Bq/m<sup>3</sup>, the number of lives saved would be 927 (28%) out of a total of 3261 estimated radon-induced lung cancers. \$398Mx16%x28%=\$17.8M.
- ix. World Health Organization, ed. *WHO Handbook on Indoor Radon: A Public Health Perspective*. Geneva, Switzerland: World Health Organization, 2009.
- x. Dunn, Burgandy, and Kathleen Cooper. "Radon in Indoor Air: A Review of Policy and Law in Canada." *Canadian Environmental Law Association*, November 2014.