

# Map Showing the Potential for Radon in Indoor Air in Nova Scotia

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Radon is a naturally occurring, colourless and odourless radioactive gas that is found in all rocks and soils. It can seep into buildings through cracks and openings in basement floors and walls and accumulate to dangerous levels. Exposure to radon in indoor air is the second leading cause of lung cancer after smoking. In Nova Scotia, it is estimated that 710 people die from lung cancer each year (Canadian Cancer Society, 2013), and Health Canada (2012) estimates that 16% of lung cancer deaths in Canada are caused by radon.

The Nova Scotia Department of Natural Resources' (NSDNR) *Map Showing the Potential for Radon in Indoor Air in Nova Scotia* (O'Reilly *et al.*, 2013a) was released in 2013 and is available for free as a downloadable PDF file or for purchase as a printed map. The digital data for the map may be downloaded for free (O'Reilly *et al.*, 2013b). There is also an interactive on-line version of the map (Fig. 1; Nova Scotia Department of Natural Resources, n.d.).

The map was developed using a GIS-based model that integrates three digital geoscience information layers: bedrock geology, surficial/soil geology and airborne gamma-ray spectrometry. The model combines these layers to predict radon-generation potential and the potential for radon to migrate in the subsurface toward a building foundation. Indoor air radon measurements from 524 homes were used to validate the model and to determine the probability of exceeding the radon guideline in high-, medium- and low-risk areas. The radon measurements were obtained from three datasets, two of which were provided by Health Canada (including a province-wide survey and a Halifax Regional Municipality survey) and one that was compiled from an NSDNR radon survey. Further details about how the map was derived are provided in O'Reilly *et al.* (2010).

Testing is the only way to determine the radon concentration in your home, so it is important to test no matter where you live. However, some areas

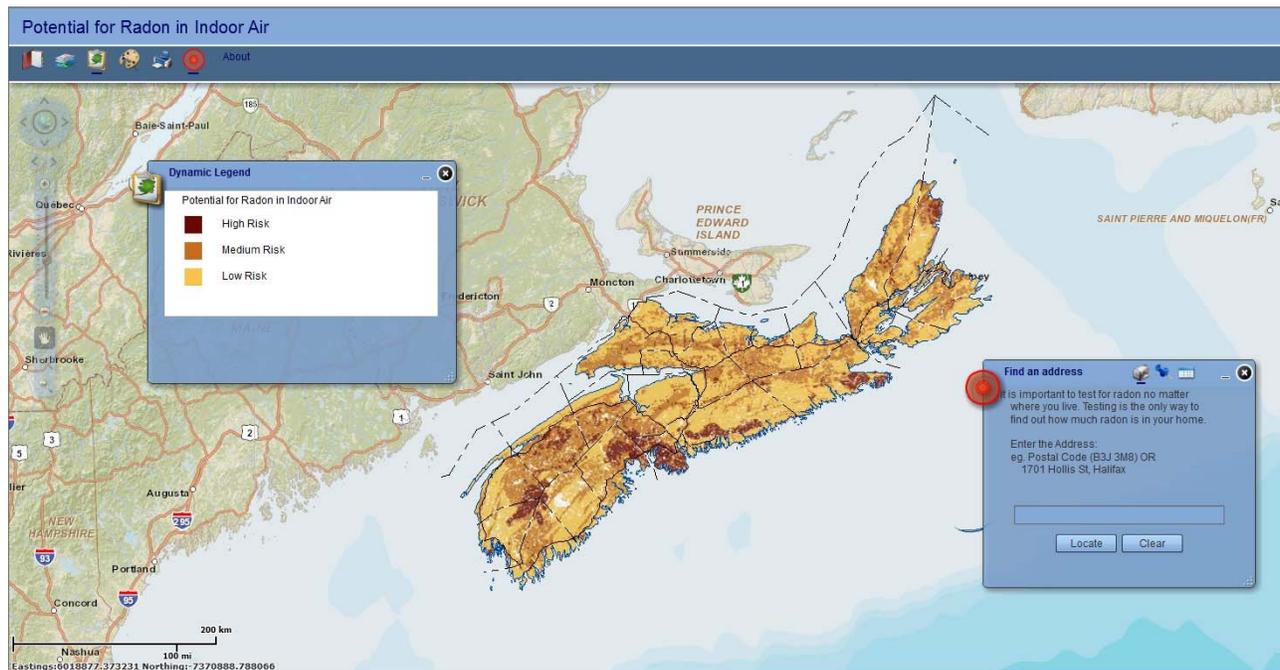


Figure 1. Interactive map showing the potential for radon in indoor air in Nova Scotia.

O'Reilly, G. A., Goodwin, T. A., McKinnon, J. S., Fisher, B. E., Cowper, S. L. and Drage, J. 2014: *in* Mineral Resources Branch, Report of Activities 2013; Nova Scotia Department of Natural Resources, Report ME 2014-001, p. 129-131.

of Nova Scotia have a higher radon risk because of the local geology. Therefore, the radon risk map is useful for determining priority areas for testing, assisting with municipal planning, and raising awareness about radon gas. As indicated in Figure 2, the radon test results used to validate the map show that 40% of buildings in the high-risk areas exceed the radon guideline. In the medium-risk areas, 14% of buildings exceed the guideline, and in the low-risk areas, 5% exceed the guideline. These results demonstrate that even homes in low-risk areas should be tested. Do-it-yourself radon testing kits can be ordered on-line from the Lung Association of Nova Scotia ([http://www.strategicprofitsinc.com/mastercard/Cart/product\\_details.php?mid=186118592785912025&product\\_id=962398921360865381](http://www.strategicprofitsinc.com/mastercard/Cart/product_details.php?mid=186118592785912025&product_id=962398921360865381)).

For further information on radon please visit <http://novascotia.ca/dhw/environmental/radon.asp>.

## References

Canadian Cancer Society 2013: Canadian Cancer Statistics 2013; Toronto, 114 p.

Health Canada 2012: Cross-Canada Survey of Radon Concentrations in Homes, Final Report; Ottawa, 29 p.

Nova Scotia Department of Natural Resources: n.d.: Potential for Radon in Indoor Air; <http://gis3.natr.gov.ns.ca/Radon/index.html>, accessed July 17, 2014.

O'Reilly, G. A., Goodwin, T. A. and Fisher, B. E. 2010: A GIS-based approach to producing a map showing the potential for radon in indoor air in Nova Scotia; in Mineral Resources Branch, Report of Activities 2009, eds. D. R. MacDonald and

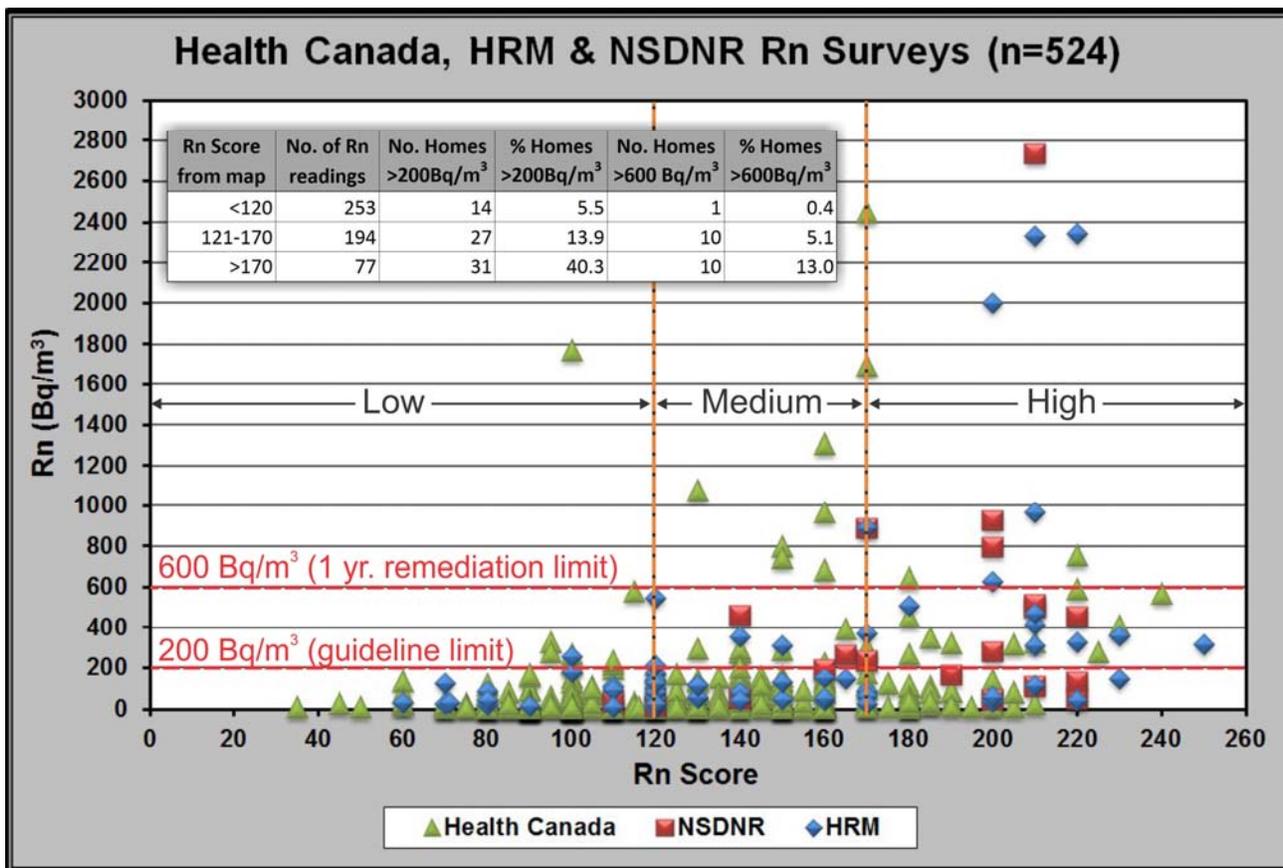


Figure 2. Radon survey results for high, medium and low risk areas, compared to the GIS model radon score.

K. A. Mills; Nova Scotia Department of Natural Resources, Report ME 2010-1, p. 95-97.

O'Reilly, G. A., Goodwin, T.A., McKinnon, J. S., and Fisher B. E. 2013a: Map showing the potential for radon in indoor air in Nova Scotia; Nova Scotia Department of Natural Resources, Mineral Resources Branch, Open File Map ME 2013-028, scale 1:750 000; [http://novascotia.ca/natr/meb/data/mg/ofm/pdf/ofm\\_2013-028\\_d486\\_dp.pdf](http://novascotia.ca/natr/meb/data/mg/ofm/pdf/ofm_2013-028_d486_dp.pdf).

O'Reilly, G. A., Goodwin, T. A., McKinnon, J. S., and Fisher B. E. 2013b: DP ME 486, version 1, 2013, digital data showing the potential for radon in indoor air in Nova Scotia; Nova Scotia Department of Natural Resources, Digital Product ME 486; <http://www.gov.ns.ca/natr/meb/download/dp486.asp>.