Radon

Environmental Health – Factsheet

What is radon?

Radon is a colourless, odourless radioactive gas found naturally in the environment. It comes from uranium as it breaks down in soil and rocks. Since radon is a gas, it can easily move through the soil and enter the air we breathe. When radon enters homes and buildings, it can reach levels that may pose a risk to health. Long-term exposure to high levels of radon in the home may increase the risk of developing lung cancer.

What are the Health Canada guideline levels for indoor radon?

Radon is measured in becquerels per cubic meter (Bq/m^3), which is a measure of radioactivity. Health Canada recommends that the average annual level of radon in the air in a normal living area should not be greater than 200 Bq/m^3. Radon levels can change from season to season and even day to day in the same room or space. The Health Canada guideline for indoor radon refers to the average level found over a year of monitoring. The guideline of 200 Bq/m^3 or less is meant for areas of the home where someone spends more than four hours per day on an ongoing basis.

How does radon enter a building?

Radon gas can enter a building through cracks or gaps in the walls and foundation. Generally, radon levels are highest in the basement. Occasionally higher levels can be found on other floors. Radon levels can vary from building to building, or even room to room.

If radon levels are above the Health Canada guideline, will people get cancer?

The risk from radon exposure is long term and is associated with the level of radon, how long a person is exposed and their smoking habits.

According to Health Canada, exposure to high levels of radon can increase your risk for lung cancer, especially in people who smoke. No other health effects have been shown to be associated with exposure to radon in indoor air.

Smoking contributes to the vast majority of lung cancer cases in Manitoba and poses a much greater risk than exposure to radon gas. Each year, over 600 deaths from lung cancer occur in the province. Manitoba's lung cancer rates are not greater than the national average.

As illustrated in the table below, Health Canada estimates that a smoker exposed to radon levels of 200 Bq/m^3 for 70 years has a 17 per cent lifetime chance of developing lung cancer, compared to two per cent for a non-smoker. The risk for a smoker exposed to radon levels of 800 Bq/m^3 over the same time period increases to 30 per cent, compared to five per cent for a non-smoker at 800 Bq/m^3.

	Radon Level	Lifetime Probability of Getting Lung Cancer
Smoker*	Base Level	12%
Smoker	200 Bq/m^3	17%
Smoker	800 Bq/m^3	30%
Non-Smoker	Base Level	1%
Non-Smoker	200 Bq/m^3	2%
Non-Smoker	800 Bq/m^3	5%

(Source: Health Canada. 2006. *Report of the Radon Working Group on a New Radon Guideline for Canada).*

* Base level is outdoor level or no exposure to radon

Anyone who has health concerns about radon exposure should contact their health care provider or call Health Links-Info Santé at 1-888-315-9257.

For information and resources for quitting smoking visit: www.hc-sc.gc.ca/hc-ps/tobac-tabac/quit-cesser/index-eng.php

What are the levels of radon in Manitoba?

In Manitoba, like other areas of Canada and the rest of the world, the natural radioactivity of the soil varies from region to region. Radon levels may also vary within one region.

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Historically, Manitoba has had higher radon values in buildings than national averages. Health Canada has estimated that about 7 per cent of Canadians and about 19 per cent of Manitobans are living in homes above the radon guideline of 200 Bq/m^3 (Source: Cross-Canada Survey of Radon Concentrations in Homes: Final Report. March 2012).

How can I find out the radon level in my home?

Health Canada recommends homes be tested for a minimum of three months, ideally during the winter (ex: October to April) when indoor radon levels are generally highest. Since radon levels inside a home vary over time, test measurements gathered over a longer period of time give a more accurate measure of the annual average radon concentration.

How do I test the radon levels in my home?

The test area should be on the lowest floor of the home where people usually spend more than four hours per day. For some, this may be a finished basement, for others it may be the ground floor of a home. Areas of the home where people spend less than four hours per day do not need to be tested.

There are businesses that sell radon detectors to homeowners so they can test for radon in their home. These devices test the air in the home for a specific period of time, and are then returned to the company for analysis. The cost of these devices generally ranges between $50 and $100 dollars. Other companies will charge to send a trained technician to a customer's home to do the testing, interpret the result and make further recommendations if indicated.

For more information on radon testing, visit www.healthcanada.gc.ca/radon or call (204) 983-5490.

How can I reduce the levels of radon in my home?

Radon that is rising from the ground into a home can be reduced by caulking and sealing cracks and holes in basement floors and walls as well as sealing around pipes and drains.

Other methods to reduce radon levels are:

- installing specially designed traps in floor drains to prevent radon from entering a basement;
- increasing mechanical ventilation via a heat recovery ventilator (HRV) to allow air exchanges; and
- ventilating the basement sub-floors through the installation of a small pump to draw the radon from below the concrete slab to the outside.

The Canada Mortgage and Housing Corporation has a document that addresses measuring and reducing radon levels available by calling 1-800-668-2642 or at http://www.cmhc-schl.gc.ca/odpub/pdf/61945.pdf?lang=en.

Where can I get more information?

Manitoba government website:
www.manitoba.ca/health/publichealth/environmentalhealth/radon.html

Health Canada website:
www.healthcanada.gc.ca/radon