

Radon in Homes and Other Dwellings

What is radon?

Radon is a colourless, odourless radioactive gas that is released from the breakdown of uranium that is naturally present in rock, soil, and groundwater.

When released outdoors, radon gas becomes diluted with air and poses little risk. However, radon gas can build up inside homes and other buildings and pose a hazard to your health.

Radon primarily enters buildings through the soil underneath the building. It can move through cracks in the foundation, construction joints, as well as gaps around service pipes, floor drains and window casements.

How does radon affect my health?

Exposure to radon over the long-term can cause lung cancer. About 16 per cent of lung cancer deaths in Canada are due to indoor radon exposure. Radon is the leading cause of lung cancer for non-smokers and the second leading cause for smokers. You have a 1 in 3 chance of developing lung cancer in your lifetime if you are exposed to high levels of radon and you smoke or used to smoke. For non-smokers, the risk is 1 in 20.

Since lung cancer takes time to develop, radon exposure does not produce immediate symptoms. The only way to know your exposure is to test your home for radon. Remediation should be conducted if elevated levels are found. Remediation is the term used to describe the various processes used to reduce the amount of radon in homes and other buildings.

What increases my risk?

The risk of developing lung cancer depends on the concentration of radon in the air and the length of exposure. However, even low levels of radon are linked to lung cancer, so levels in a home and building should be reduced as much as possible through remediation.

How is radon measured?

Radon in air is measured in Becquerels per cubic meter (Bq/m³), a measure of radioactive decay per second. Indoors, radon can be measured using both long-term (3 months to a year) and short-term (2 to 7 days) tests.

Long-term testing is recommended to provide an accurate measurement of radon concentrations in a home and building. Long-term testing is easy to conduct and can be done using do-it-yourself radon test kits. These kits contain small wall-mounted radon detectors that are placed in the home for 3 months or longer (6 to 12 months is recommended). Other types of radon detectors can be used to conduct short-term tests, but because radon levels can vary greatly over a period of 24 hours, very short-term tests (2 to 7 days) are not recommended.

What are the guidelines levels for radon?

The current Health Canada guideline for radon is 200 becquerels per cubic meter (Bq/m³). If the average annual radon concentration of a dwelling exceeds 200 Bq/m³, then Health Canada recommends that remediation be conducted. A dwelling includes homes and other places where people spend 4 or more hours. It is recommended that higher concentrations be remediated sooner. For more information, visit Health Canada – Radon www.canada.ca/en/health-canada/services/environmental-workplace-health/radiation/radon.html.

Is there radon in B.C.?

Elevated levels of radon are typically found in the Interior and Northern parts of the province.

Sampling results from a recent Health Canada cross-country survey of radon concentrations found that the percentage of homes in the Northern and Interior health regions that reported radon levels greater than 200 Bq/m³ ranged from 6 to 30 per cent. Even though higher radon levels are generally found in the North and Interior, it is still possible that homes in other parts of the province could have high radon levels.

Should I get my home tested?

Everyone is encouraged to test their home for radon.

Radon levels vary widely from house to house, even in the same neighborhood. This is because concentrations in a building depend on several factors, including the geology of the area, housing construction, and characteristics like air exchange in the home. In general, radon concentrations tend to be highest in the lowest levels of a building, including basements.

The only way to be absolutely sure of the concentration of radon in your home is to test. Those living in Interior and Northern communities in B.C. are especially encouraged to test their homes for radon.

How do I get my home tested?

Radon testing is easy, relatively inexpensive, and can be done with do-it-yourself tests. A long-term radon detector is placed in the lowest level of your home that is occupied for more than 4 hours per day.

Specific instructions are provided with the detector. Once the test is completed (ideally over a period of 3 months to 1 year, including some winter months), the detector is mailed to a lab for analysis. The lab then provides the testing results, in the form of an average radon concentration over the test period. This level can then be compared to Health Canada's guideline of 200 Bq/m³. Because no level of radon is considered to be without harm, individuals are encouraged to consider remediation, even if levels are close to or below the guideline. The cost of a testing device and results is about \$30 to \$50.

Where can I get a radon testing device?

For a list of suppliers of radon testing devices visit the BC Centre for Disease Control www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/EH/RPS/Radon%20Testing%20in%20Cda.pdf (PDF 247 KB) or look under 'home inspection services' in your local phone listings.

Test kits are also available from:

- BC Lung Association RadonAware - 1-800-665-5864 or e-mail radonaware@bc.lung.ca.
- Northern Health Authority - Call 250-565-2150, toll-free 1-800-663-7867 or email radon@northernhealth.ca.
- Donna Schmidt Memorial Lung Cancer Prevention Society. Call 250-365-0344 ext 227 or email dschmidt@golder.com. Note: Kits are limited to locations in the Kootenays.

You can also hire a certified radon measurement professional to come and test your home. Health Canada recognizes the Canadian National Radon Proficiency Program. For more information see <http://c-nrpp.ca/>.

What can I do if tests show my home has elevated radon levels?

There are several things you can do to greatly reduce the levels of radon in your home:

- Ventilate the basement sub-flooring by installing a small air pump to draw the radon from below the concrete slab and vent it outside before it enters the home or building.
- Improve ventilation or air flow (natural or forced) of crawl spaces, basements and other areas on the lower levels of the home or building by opening windows or using ceiling fans.
- Seal cracks and openings in basement floors and walls, and around pipes and drains.

Certified radon mitigation professionals are available to provide advice and conduct remediation. To find a radon professional in your area, visit Canadian National Radon Proficiency Program (C-NRPP) at <http://c-nrpp.ca> or the Canadian Association of Radon Scientists and Technologists at www.carst.ca. After remediation is completed, another radon test should be done to ensure that levels have been reduced.

For More Information

For more information, please contact your local health authority environmental health officer by visiting www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/partners/health-authorities/regional-health-authorities.

For additional information, visit:

- BC Lung Association: RadonAware www.radonaware.ca
- BC Centre for Disease Control, Environmental Health Services www.bccdc.ca/health-info/health-your-environment
- National Collaborating Centre for Environmental Health (NCCEH) www.ncceh.ca



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