

What is radon?

Radon is a radioactive gas that is formed naturally in the environment from the breakdown of uranium in soils and rocks. Radon is released from the ground, water, and some building materials that contain very small amounts of uranium. Radon cannot be detected by the senses, i.e., it is colourless, odourless, and tasteless; however, it can be detected with special instruments.

How can radon get into a home?

The air pressure inside a home is usually lower than in the soil surrounding the foundation. This difference in pressure draws air and other gases, including radon, from the soil into the home.

Radon can enter a home any place it finds an opening where the house contacts the soil: cracks in foundation walls and in floor slabs, construction joints, gaps around service pipes and support posts, floor drains and sumps, cavities inside walls, and the water supply.

The only way to find out if a home has a radon problem is to measure the radon concentration inside it.

What are the health risks associated with radon exposure?

The only known health risk associated with prolonged exposure to high levels of radon in indoor air is an increased lifetime risk of developing lung cancer. The effects depend on the levels of radon and how long a person is exposed to these levels.

The radon risk for a smoker is much greater than for a non-smoker. If you are a lifelong smoker but are not exposed to radon, your risk of getting lung cancer is one in eight. If you add exposure to a high level of radon, your risk becomes one in three. If you are a non-smoker your lifetime lung cancer risk at the same high radon level is only one in twenty.

Radon is the leading source of lung cancer after smoking. Other than lung cancer, there is no evidence that radon exposure causes other harmful health effects such as any other form of cancer, respiratory diseases such as asthma, or symptoms such as persistent coughing or headaches.

What is the Canadian guideline for radon in indoor air?

The Canadian guideline for radon in indoor air for dwellings is 200 becquerels per cubic metre (200 Bq/m³). A becquerel is a unit of radioactivity. One becquerel corresponds to one disintegration per second.

Remedial measures should be undertaken in a dwelling whenever the average annual radon concentration exceeds this level.

How do I know if my home is at risk?

The only way to determine the actual concentration of radon in a home is by a direct measurement. Radon testing is easily carried out using special detectors available from commercial businesses. These devices are simply placed in a home, exposed to indoor air for a specified period of time and then returned to a laboratory to be analyzed.

How much does a radon test kit cost?

The cost of a radon test kit, including laboratory analysis, can range from \$35-\$100. The cost for a radon testing company to provide an in-home testing service can be significantly more expensive.

Are the radon detectors themselves dangerous or do they contain toxic substances?

No. Radon detectors do not pose a health risk.

How can the amount of radon in a home be reduced?

Radon concentrations in a home can usually be lowered by: reducing the emission from the ground into the building (for example, sealing cracks in cement foundations), and increasing the ventilation in basements and other enclosed areas where radon accumulates. The booklet *Radon: A Guide for Canadian Homeowners*, a joint Health Canada-Canada Mortgage and Housing Corporation (CMHC) publication, provides information on how to measure and reduce radon levels in your home as well as dealing with a contractor. This booklet can be accessed through the CMHC Web site at www.cmhc.ca, or by calling 1-800-668-2642.

How much does it cost to mitigate a home?

The cost of reducing radon in a home depends on when it was built and the extent of the radon problem. Most homes can be fixed for about the same cost as other common home repairs. The average cost of radon remediation, typically performed by a contractor, can range from \$800-\$3,000.

If an elevated level of radon is detected in a home should residents move out until the problem is fixed?

No, it is not necessary for residents to leave their homes if an elevated level of radon is detected. The health risk associated with radon exposure is a chronic one that develops from years or decades of exposure. The Canadian Guideline recommends homes that have test results between 200 Bq/m³ and 600 Bq/m³ be remediated within two years, and those that test above 600Bq/m³ be remediated within 12 months.

Should people building new homes have the building site tested for radon?

Soil testing is not recommended for determining whether a house will have elevated levels of radon. Although soil testing can be done, it cannot rule out the possibility that radon could be a problem in the house being built. Even if soil testing reveals low levels of radon gas in the soil, the amount of radon that may enter the finished house cannot be accurately predicted because one cannot predict the impact that the site preparation will have on introducing new radon pathways or the extent to which a vacuum will be produced by the house causing radon to be drawn inside.

Do homes with no basements still need to be tested for radon?

All homes that have contact with the ground should be tested for radon. Radon can seep from soil anywhere around and under a home, regardless of whether the home has a basement, a crawl space or is built slab-on grade.

Is the age of a home a factor with radon?

The age of a home is not a factor when it comes to whether elevated levels of radon are present in the dwelling.

Will the need for radon mitigation affect the property value of people's homes?

Mitigation maintains property value. In the U.S., where a similarly stringent guideline for radon has been in place since 1986, radon remediation is often a condition of sale. Home sellers present test results indicating safe radon levels, or are required – after a price is agreed to – to test for and, if needed, remediate at their own expense.

It should be noted that the type of testing done as a condition of sale is usually short term and may or may not represent long term radon concentrations in the home. CMHC and Health Canada recommend making decisions on remediation based on a test duration of three months, preferably done during late fall through to early spring.

Does Saskatchewan have radon “hot spots”?

Radon concentrations differ greatly throughout Saskatchewan but are usually higher in areas where there is a high concentration of uranium in underlying rock and soil. Radon is found in almost every home, but concentration levels will vary from one house to another, even if they are similar and next door to each other. Indoor concentrations of radon also depend on the available routes into a home and the rate of exchange between indoor and outdoor air. The only way to know is to test.

How safe are multi-unit dwellings?

Based on past experience, multi-story apartment buildings are much less likely to have radon problems.

Are there any requirements for landlords to test for radon?

No, there is no legal requirement for a landlord to test a rental property, thus a renter will have to do the test themselves unless they can persuade the landlord to do the test.

If the radon reading is high in a rental unit, are landlords required to fix the problem?

No, there is no legal requirement for landlords to mitigate the radon level.

Are children more at risk from radon than adults?

Children have been reported to be at greater risk than adults for certain types of radiation exposure, but there is currently no conclusive data on whether children are at greater risk than adults from radon.

What about drinking water that contains radon?

Research has shown that drinking water that contains radon is far less harmful than breathing radon. However, when that water is agitated (e.g., showering, washing clothes or cooking), radon is released into the indoor air. The health risk is not one of radon ingestion but of radon inhalation.

How safe are public facilities (hospitals and schools)?

In 2007, the Radiation Safety Unit, in cooperation with the Ministry of Education, conducted a survey of Saskatchewan schools which indicated 97 per cent had radon concentrations below 200 Bq/m³. A 2008 survey of facilities in the Regina Qu'Appelle Health Region by the Radiation Safety Unit showed 98 per cent of dwellings had radon levels below 200 Bq/m³.

Will Saskatchewan provide funding to assist homeowners with radon testing and remediation?

Radon mitigation actions are reasonably priced and it is expected that this cost will decrease as industry moves to fill this niche. Radon remediation should be viewed as a part of regular home maintenance. There are several other situations where homeowners have similar responsibility, e.g., replacing lead pipes in homes to ensure safe drinking water, and removal of lead-based paint from homes to avoid poisoning.

Although the province is not providing funding, it will continue to provide information on remediation to assist decision-making. Radon test kits can be purchased through the Radiation Safety Unit of AEEL.

FOR MORE INFORMATION:

Health Canada – www.healthcanada.gc.ca/radon

Canada Mortgage and Housing Corporation (CMHC) – www.cmhc-schl.gc.ca/odpub/pdf/61945.pdf