



Green renovation by Roy Nandram

RADON: Beware the invisible danger

We Canadians spend 90 per cent of our time indoors, so the quality of the air we breathe in our homes, schools and offices has to be healthy. To be healthy, it has to have low levels of radon.

What is Radon?

Radon is a radioactive gas that has no colour, odour or taste. It forms as uranium in the environment breaks down. Naturally-occurring uranium is found everywhere – in soils, rocks, and water supplies such as groundwater and wells. Gases containing radon can enter homes through any opening where the home makes contact with soil.

What is at risk?

Radon ranks second, after smoking, as the leading cause of lung cancer; it ranks first for non-smokers. Radon exposure combined with smoking significantly increases the risk of lung cancer. At least 16 per cent of lung cancer deaths are attributed to radon exposure over a prolonged period. This translates to 3,200 deaths in Canada each year.

A recent study by Health Canada showed that eight per cent of Canadian homes have radon levels that are considered a health risk to its occupants. This unsafe level is 200 becquerels per cubic meter of air (Bq/m³). Becquerel is the unit used to measure radioactivity, with one becquerel described as one atom decaying per second.

How does Radon get into the home?

During much of the year, air pressure inside the home is lower than the soil surrounding the basement floors and foundation. This difference in pressure causes soil gases, including radon, to enter the home.

There are many entry points for these gases, including cracks, exposed soil or rock in crawl spaces, vertical penetration (e.g. pipes, columns) in floor slabs, sump pits, and floor drains.

As a result, the highest concentration of radon gas is usually in the basement, but it can readily diffuse throughout the home. As well, radon gases found in water sources can be released into the home through such ordinary household activities as showering or dishwashing.

How is radon tested?

Radon gas levels in a home can vary from day to day. This is due to factors such as weather, how often windows and doors are open or closed, and other features including the type of HVAC system in the home.

The test for radon gas involves a program of monitoring levels in the home over a period of time to reach an average level. A short-term test takes from four days to just under three months, with a long-term test ranging from three to twelve months.

Short-term tests may be used in exceptional circumstances (for instance, real estate transactions). The long-term test, however, provides the most accurate way to find the average exposure of radon levels over a period of time. It is considered the most reliable basis for remediation of a home with unsafe levels of radon. For the testing, Health Canada recommends that you hire a professional certified under the Canadian National Radon Proficiency Program (C-NRPP).

Remediation

If a radon test result is above 200 Bq/m³, the most common remediation method is to install a depressurisation sub-slab system to vacuum air out from below the basement floor.

This system is called an “active radon remediation system”. One or more of the following steps can also be used along with this system to reduce radon to acceptable levels:

Increase ventilation by using a heat recovery ventilator to increase whole house ventilation

Seal all possible cracks and openings

Seal basement floors (paint)

Re-test for radon levels

To ensure that the work is done properly, homeowners should hire a contractor who is experienced in this type of work and who uses an independent C-NRPP certified radon measurement specialist to ensure radon values have been reduced to safe levels.

Radon prevention in new homes

The potential for high radon levels can be difficult to evaluate before construction, and radon problems may only become apparent once the home is completed and occupied. The implications for homeowners and builders in Ottawa are clear, however.

Tarion (Ontario’s new home warranty program) states that if significant levels of radon are found in a newly built home, remediation will be covered by the home warranty.

Preventive measures for radon in the home vary across the country, but the latest version of the National Building Code includes a number of ways to reduce radon. An inexpensive and simple process for builders is to rough in a possible future subfloor depressurisation system. New home purchasers should discuss with the builders what building practices were used to reduce radon entering the home.

Please don’t ignore it! Radon is a serious health risk. Have your home tested.

It could save your life.

For more information, please see:

www.healthcanada.gc.ca/radon

www.tarion.ca

www.terrapetratox.ca

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