

Ross' Radon Read

Radon is a fascinating element – it's a shame it happens to be the **number 1 cause of lung cancer in non-smokers**. Here is a list of interesting things about radon gas that you probably weren't aware of:

-The majority of lung cancer deaths are caused by smoking. Radon exposure is linked to approximately **16% of lung cancer** deaths in Canada and is the second leading cause of **lung** cancer for smokers. **If you smoke or have smoked and your home has high radon levels, your risk of lung cancer is especially high.**



– Your house definitely has radon in it. Although not every home has high levels of radon, **100% of homes have some radon**. This is because there is a small amount of radon present in outdoor air so there is no such thing as a radon-free house. The only question is how much radon you have.

– Although **radon gas is heavier than air** [approximately 7.5 times] it will not settle out in your basement. This is because our homes have so much air movement due to the HVAC system, leaks in the envelope and movement of people that the air gets mixed around in a house very readily. We typically see about 15% less radon every time you move up a floor in a home. Not a big difference.

-The Canadian Guideline of a maximum amount of 200 Becquerels per metre cubed (Bq/m³).
Pronounced beh-kr-uhlz [beckrls]

– The source of the radon gas is not far from the house. The movement of air through the ground is very slow and the half-life of radon is only 3.8 days so **most of the radon in your home had to come from within about 20m of the house**. In Alberta, the source is likely the glacial till which forms much of our surficial sediment.

– **Radon is being produced from the ground in an essentially continuous unending supply**. The rate of depletion of a radioactive source is governed by the element in the decay chain with the longest half-life. For radon this is Uranium 238 which has a half-life of about 4.5 billion years. Basically, the amount of radon being produced every second on your property is the same today as it has been for thousands of years.

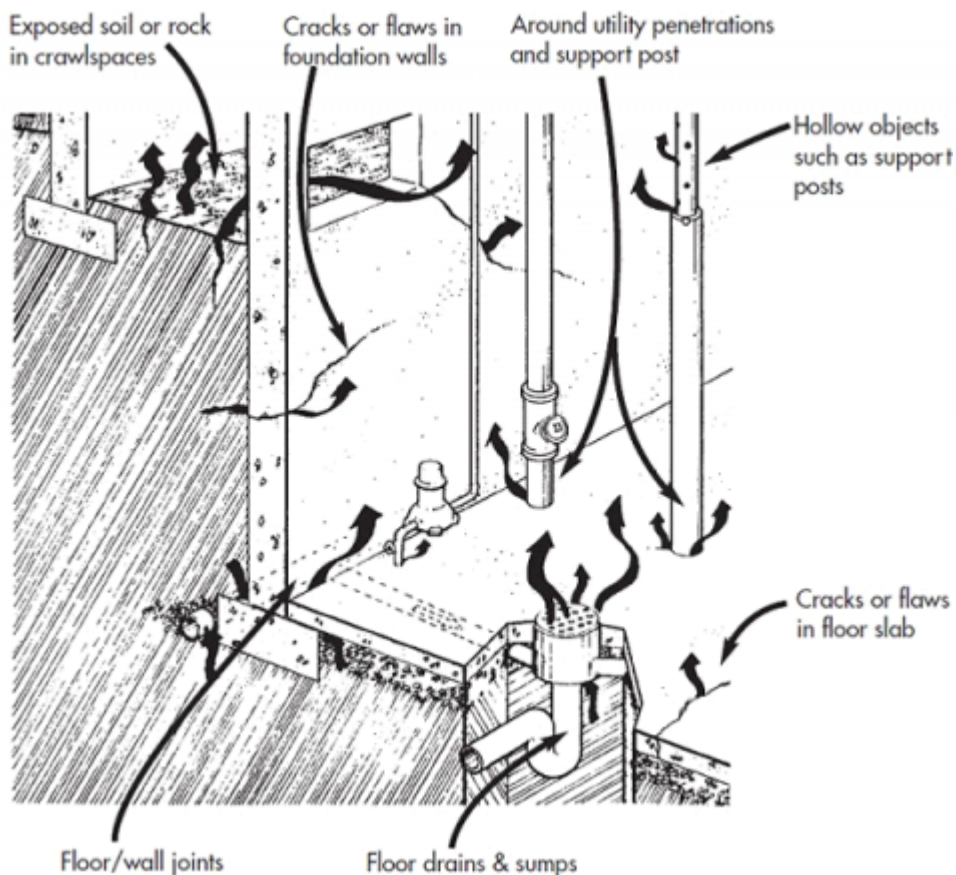
- Radon has only been known to be an issue in buildings for about 30 years. Although radon has been known about for a long time, nobody suspected that it could build up in homes. It wasn't until the mid 1980's when a worker on a nuclear power plant started setting off the radiation alarms at work was the source found to be high levels of radon from his home. In hindsight it seems obvious that homes would suck radon from the ground and concentrate it to high levels but it was a novel theory back in the 1980's.

-The use of exhaust fans, windows and fireplaces, for example, influences the **pressure difference between the house and the soil**. This pressure difference can draw radon indoors and influences the rate of exchange of outdoor and indoor air.

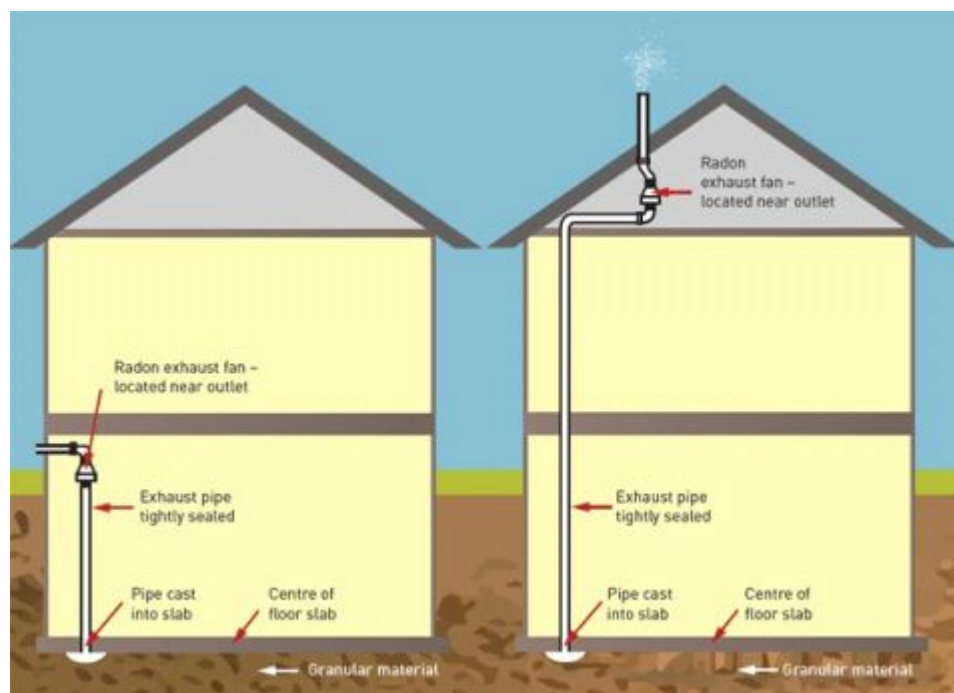
- Health Canada recommends that home owners do a long-term radon test, and that the detector is placed in the lowest level of the home **where homeowners spend a minimum of 4 hours per day**.

– **Every home can be fixed.** There is no such thing as a house that cannot have the radon levels reduced. The property is not contaminated and there is no reason to move. Fixes typically range from free to \$3000. For cheap/free you could try running the furnace fan 24/7, make sure the basement supply registers are open, seal major cracks etc.

- Potential entry routes for radon in homes with poured concrete foundations include cracks, areas with exposed soil or rocks, openings for utility fixtures or hollow objects such as support posts.



- Sub-slab depressurization (also called active soil depressurization) is the most effective and reliable radon reduction technique.



- Often, when a home with a basement has a sump pump to remove unwanted water, the sump can be capped and sealed so that it can continue to drain water and also serve as the location for a radon suction pipe.

- The soil in a crawlspace can be vented using a similar technique called active sub-membrane depressurization. It involves laying a thick plastic sheet (often a polyethylene membrane) over the soil, sealing the air-tight membrane to the foundation walls and placing a pipe with fan through it to draw the radon from under the plastic sheet and vent it to the outdoors. For this method to be effective, special attention is needed to seal around the pipe where it penetrates the plastic sheet.

Further Sources of Information:

British Columbia

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Telephone: 604-666-3351

Toll Free: 1-866-225-0709

Health Canada website - www.canada.ca/radon