

Radon levels defy measure

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Chris Colbourne/Yukon News

FRONT-LINE DEFENCE... A radon monitor, which is available from the government, can be an effective early warning system for high or rising levels of radon in a home.

This spring, the Yukon Housing Corporation has seen a dramatic rise in requests for its free in-home radon testing services.

And with Health Canada set to announce a major change in radon policy, officials expect demand to go through the roof.

“We don’t want to create a sense of panic,” said Al Lyon, director of community and industry development.

“We’ve lived with this forever. Just because somebody back East changed the policy does not change the rest of our lives,” he added.

Even without the delayed announcement, Health Canada’s Radon Working Group’s 2006 report, with its

stern health warnings for lifetime radon exposure, has already resurrected radon awareness throughout the country.

“We’ve always had people coming in on a fairly regular basis asking for radon test equipment,” explained Lyon.

“Beginning last fall it started to get a little bit busier for whatever reason.”

Radon is a naturally occurring gas — a byproduct of the radioactive decay of uranium-238 in the ground.

Diluted outdoor concentrations of radon tend to hover around 10 becquerels per cubic metre.

Health Canada is considering setting the maximum recommended indoor level at 200 Bq/m³, a fourfold reduction from the 800 Bq/m³ level set in 1988.

Radon poses a serious lung cancer risk, especially for those who already smoke.

With newer data from the past three years, Health Canada was able to estimate that 10 per cent of all lung cancer cases are radon-related.

Using data from 1997, Health Canada put the blame on radon for close to 1,600 of that year’s lung cancer deaths.

“The whole health focus on radon really emerged from observations that people who had been uranium miners over the years had higher rates of lung cancer,” explained Yukon’s medical health officer, Dr. Bryce Larke.

“It wasn’t until much more recently that a couple of studies — one done in North America one done in Europe — showed that Joe Citizen, if he has high levels of radon and he’s exposed to it over a long period of time — it’s a lifetime exposure we’re looking at here — does have perceptible increases in risk of lung cancer,” Larke added.

Though the Geological Survey of Canada has been using existing data to better locate at-risk neighbourhoods across Canada, only spotty data exists for the Yukon.

However, it’s well known Yukon has radon.

“You can find it in pockets all over Whitehorse,” announced local radon mitigation specialist Wayne Wilkinson.

Wilkinson specializes in ventilation, air quality and energy efficiency installations and retrofits with his family-run venture Frostbusters Energy Consulting.

He said that he recalls having one radon mitigation contract almost 15 years ago. This spring he signed up for five.

The Yukon Housing Corporation confirmed the existence of trouble spots in Wolf Creek, Pineridge and Porter Creek.

Wilkinson echoed the housing corporations’ findings, adding he hasn’t yet heard of trouble in Copper Ridge

or Granger. However, he has found high radon levels in an unlikely neighbourhood.

“Riverdale. It’s really surprising because the river flows right under Riverdale. You go down a few feet and you hit water, but even in Riverdale I found high levels in some houses,” he said.

Winter is the best time to test your home for radon.

Because radon gas is heavier than air, it sinks and tends to accumulate in basements and first floors.

In cold weather, icy ground forms an exterior cap around a house and warmer air in the home helps to suck radon out of the ground.

Energy-proofed windows and doors may keep energy costs down, but also limit ventilation and trap the radon inside the house.

Wilkinson has discovered that dirt crawlspaces, even those with sealed polyethylene barriers, let radon through.

He’s also found that open floor drains — a common basement feature in Whitehorse, where ground drainage is good — are a good entryway into the home for soil gases.

Health Canada and the Canadian Mortgage and Housing Corporation teamed up to produce Radon: A Guide For Canadian Homeowners, which details various entry points for radon and suggests, with diagrams, ways to radon-proof your home.

Uranium-rich soil is unfortunately a virtually inexhaustible well for radon gas.

One of the most technically-advanced radon mitigation measures is called a sub-slab reduction system.

“It is basically a pipe that goes underneath the bottom floor of the building and sucks from under the floor with a fan outside,” said Wilkinson.

A sub-slab system costs in the range of \$1,500, he said, though the guide for homeowners budgets from \$800 to \$3,000.

“If you can find leakages that you can just seal off, then that’s quite a bit cheaper,” Wilkinson added.

The Yukon Housing Corporation presently has 20 ion-chamber radon detectors — small black canisters that look like high-end ant traps — that Yukon residents can borrow.

Yukon community and industry development technician Carmon Whynot runs the radon testing program part-time through Yukon Housing.

A homeowner — not a renter — is assigned two detectors for a three-day test.

Whynot records the initial voltage of the electret discs in the bottom of the detection unit, and tells the homeowner how and where to place the two canisters.

After three days, the homeowner brings the detectors back and leaves them with the receptionist.

Whynot measure the new voltage on the electret disc.

The presence of radon gas ionizes the detector, stripping some of the voltage away.

Whynot plugs the voltage difference into a computerized formula and comes up with a measure in pico-curies per litre, which can easily be converted into the Canadian standard of becquerels per cubic metre by multiplying by 37.

For now, the test is free.

The Yukon Housing Corporation cautions homeowners that radon testing is not a straightforward science.

There is as aspect of trial and error in tracking down radon leaks.

Radon levels differ from room to room, from home to home, and depend on construction styles, foundation defects, and soil differences. Radon levels also vary with the season and a home's ventilation.

"Even a three day test isn't necessarily going to give you a good answer. You may have gotten the best three days or the worst three days of the year," said Wilkinson.

With that in mind, the Yukon Housing Corporation has been working with the Yukon Geological Survey to generate a map of radon hotspots in Whitehorse.

The data consists of measurements gathered from Yukon Housing's voluntary testing program.

So far, the trends are proving difficult to chart.

"For some places we have multiples readings. Some very high, some very low," said Yukon Housing manager Juergen Korn.

"They've taken them in different locations in the house or it was a different time of year. The data is kind of all over the place, even for a given location."

Grant Abbott is involved with the mapping project as the director of the Yukon Geological Survey. As a homeowner, he measured one of the highest home radon levels — 240 pC/L, or almost 9,000 Bq/m³ — in his home of six years in Wolf Creek.

"And I'm still alive," he joked.

Abbott took on radon renovation job himself, with advice from a local contractor.

He sealed the joints between the walls and the floor in the basement, and then used an existing drain opening to insert and seal-in a PVC pipe that would run up the house to the outside, drawing air out with a fan.

"It just sucks air out from under the house. It creates a negative pressure underneath the house. And it fixed it! It's really quiet," he said.

It cost less than \$1,000, he added, but the price came a few years later, in 1999, when he tried to sell his home.

He had difficulty at first convincing the buyers that radon-mitigation was a value-added aspect to the house.

“That’s the big issue, real estate.” said Abbott.

“Real-estate agents don’t want to hear about this. People selling their houses don’t want to hear about it, and buyers don’t want to hear about it.”

Though people are willing to talk about radon, its health risks, and whether it’s blooming in their communities; they’re not keen to share their own personal test results.

Several homeowners reportedly turned down Yukon Housing’s request to speak to the media about their battles with radon. Having gone through it, Abbott knows why.

“There’s a stigma attached to it.”

Next: How Ottawa and the Workers’ Compensation Health and Safety Board plan to address radon in public buildings and workplaces. Also, will new radon measures make it difficult to sell your home?