

New Canadian houses found to have much higher radon gas levels than those in Sweden

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A multi-disciplinary team of Canadian architects and cancer researchers has found average radon gas levels in new homes in Canada are 467 per cent higher than in Sweden. Credit: Riley Brandt / University of Calgary

A multi-disciplinary team of Canadian architects and cancer researchers has found average radon gas levels in new homes in Canada are 467 percent higher than in Sweden.

The researchers predict that without intervention by 2050, the average radon level of a new Canadian home will increase another 25 percent over current levels, which are already third highest in the world.

"It is important to acknowledge that prevalent, unsafe radon exposure is a relatively recent, human-made problem rooted in the design of our built environment," says Joshua Taron, the associate dean (research and innovation) and associate professor with the School of Architecture, Planning and Landscape at the University of Calgary. "Canadian [construction](#) and design practices in the last 40 years have

produced residential, commercial and industrial buildings that capture, contain and concentrate radon to unnatural and unsafe levels."

Radioactive radon gas inhalation is the leading cause of lung [cancer](#) in non-smokers and is responsible for about 88,000 cases of lung cancer in Canada since 2001. Lung cancer rates in Canada are currently 163 percent higher than in Sweden, despite smoking rates being essentially the same.

The researchers, part of the Evict Radon national study involving teams from across Canada, used artificial intelligence tools to analyze long-term radon tests and buildings from more than 25,000 Canadian and 38,000 Swedish residential properties constructed since World War II.

The researchers chose to compare Canada to Sweden because of the similar climate and available data dating back decades. While Swedish properties in the 1950s had higher radon versus those built in Canada, the situation has changed dramatically over the years. From the 1970s to 1980s, Canadian and Swedish properties had essentially the same radon risks.

However, since 1980, radon levels have consistently risen in Canada while falling in Sweden. The causes for this change are complex, with no single, decision or event responsible for reducing or increasing radon in either country.

According to Dr. Aaron Goodarzi, Ph.D., the Canada Research Chair for Radiation Exposure Disease and an associate professor in the Cumming School of Medicine at the University of Calgary, "Considering the 10-to-30-year latency period for lung cancer—the time between exposure and the detection of cancer—one plausible

explanation for the disparity between Canadian and Swedish lung cancer incidence is differences in [exposure](#) to residential radon."

Given the scale of the problem, and with the same trends found across every Canadian province and territory, the team calls for pro-active [radon](#) mitigation systems to be included in all new residential properties constructed using the 2025 Building Code.

Dr. Goodarzi says, "We can't afford to wait. The lives of tens of thousands of Canadians are on the line here, not to mention tremendous amounts of health-care dollars that we will never need to spend if we work towards prevention today."

More information: Selim M. Khan et al, Rising Canadian and falling Swedish radon gas exposure as a consequence of 20th to 21st century residential build practices, *Scientific Reports* (2021). [DOI: 10.1038/s41598-021-96928-x](https://doi.org/10.1038/s41598-021-96928-x)

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