



RADON: Architects and the Law

What Is Radon Gas?

Radon occurs naturally when uranium breaks down in rock and soil. It is an invisible, odourless and tasteless gas.

When radon leaves the ground it is usually diluted in air and is relatively harmless. However, radon can seep into peoples' home through small cracks and openings where the building contacts the soil. In some homes it can accumulate in higher concentrations, posing a health risk.

About 7% of homes in Canada have radon over the National Radon Guideline of 200 Bq/m³. In some communities in British Columbia more than half of homes have high radon.

Radon and Human Health

Radon is naturally occurring radiation and when breathed in can cause lung cancer. Radon gas is the #1 cause of lung cancer in non-smokers. Radon causes approximately 3,360 deaths per year in Canada. Health Canada research estimates that with lifetime exposure at 800 Bq/m³, the lifetime lung

**BRITISH COLUMBIA
LUNG ASSOCIATION**

cancer risk would be one in 20 for non-smokers, and one in three for smokers.

For radon test results between 200 and 600 Bq/m³, Health Canada recommends taking steps to reduce the radon level within two years. If results are greater than 600 Bq/m³, Health Canada recommends to reduce the level within one year.

Why Do Architects Need to Know About Radon?

Architectural plans are an important part of building construction. Developers, builders, municipalities and homeowners often rely on architects to ensure buildings are safe. Preventing elevated radon is an important part of safety. There are now radon provisions in the BC Building Code and good reason to think radon is covered by New Home Warranty. If architects overlook radon, they may face legal claims in contract or negligence by builders, contractors, or homeowners. Municipalities may also rely on Letters of Assurance from architects that say buildings comply with the Building Code. If municipalities are sued over high radon, they may in turn make claims against architects.

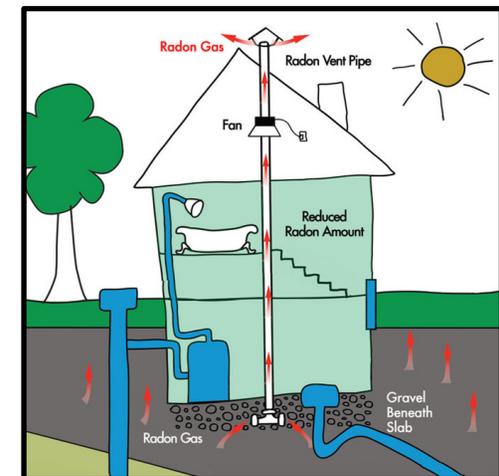
Testing for Radon

Radon levels can vary significantly from building to building. The only way to know radon levels in a building is to test. Best practice involves placing using long term 'alpha tracker' home testing kits in the lowest inhabited rooms for 91 days. These hockey-puck sized units cost \$20 to \$60 and are available at leading retailers or from the British Columbia Lung Association at our [website](#), by email: info@bc.lung.ca or by phone: 604.731.LUNG (5864).

Mitigating High Radon

Elevated radon can be avoided in new construction through putting in a radon mitigation system. The best systems use "sub-slab depressurization". A hole in the building foundation and a vent pipe ensures low pressure on the ground floor does not result in radon being sucked into the space. Best practices in radon mitigation are described in Canadian General Standards Board (CGSB) [Radon control options for new construction in low-rise residential buildings, CAN/CGSB-149.11-2019](#)

In older homes, if the radon reading turns out to be higher than 200 Bq/m³, professional radon mitigators can put a system in place in one or two days. The [Canadian National Radon Proficiency Program \(C-NRPP\)](#) has lists of certified radon mitigation professionals in your community. When retrofitting older homes it is particular important to test for radon after energy efficiency upgrades to make sure any improvements do not trap radon gas.



BC Building Code

The BC Building Code has provisions for radon prevention in select municipalities, mostly east of the Coast Mountains (s. 9.13.4). Prescriptive standards calls for the hole and vent pipe but not a complete system. To prevent high radon, it remains necessary to test the building, and if radon levels remain high, complete the subfloor depressurization system by adding a fan.

Architects need to ensure they understand the Building Code provisions. We also recommend that architects advise their clients to use C-NRPP- certified mitigators to ensure radon protection in new buildings.

Division B Appendix C Climatic and Seismic Information for Building Design in British Columbia. Table C-4 -Locations in British Columbia Requiring Radon Rough-Ins

100 Mile House Abbotsford Ashcroft Atlin Barriere Burns Lake Cache Creek Castlegar Carmi Chetwynd Clearwater Cranbrook Crescent Valley Dawson Creek Dease Lake Dog Creek Duncan Elko Fernie Fort Nelson Fort St. John Genelle Glacier Golden Grand Forks Greenwood Hope Invermere Kamloops Kaslo Kelowna Kimberley Lillooet Little Fort Lytton Mackenzie McBride McLeod Lake Merritt Montrose Nakusp Nelson Osoyoos Penticton Prince George Princeton Quesnel Revelstoke Rossland Salmon Arm Sechelt Smith River Smithers Stewart Taylor Terrace Trail Valemont Vaverby Vernon Whistler Williams Lake

section 1.1.3.3 (2) allows other towns to be added if they choose

New Home Warranty

New Home Warranty is an insurance policy that covers most new homes in BC. In our view, it is only a matter of time until homeowners make successful claims under the New Home Warranty for high radon.

Courts would most likely find high radon to be a defect in materials or structure. In Ontario, Tarion (the province's only home warranty

insurance provider) agrees that high radon is a defect.

Architects need to make sure buildings are tested to ensure there is no high radon, even if the Building Code is followed. Builders who face New Home Warranty claims may in turn make claims in contract against architects.

Architects' Duty of Care

Under the law of negligence, architects need to ensure the homes they design or build are safe. Architects owe a duty of care to the occupants of a building if it is foreseeable that failure to take reasonable care could lead to defects (like radon) that pose danger to the occupants' health and safety.

If architects don't take reasonable care, they may have to pay damages to the current or future occupants, including paying to repair high radon.

If a home is not designed to take radon into account, future residents may develop lung cancer, and then sue architects, even if their negligence was only part of the problem.

In our opinion it is not enough to simply follow the Building Code. Architects need to ensure buildings are designed and built to avoid high radon.

What Should Architects Do?

Architects should ensure radon mitigation systems are designed into buildings and advise their clients to use C-NRPP-certified mitigators to install radon systems. Architects should ensure that new occupants have help to test for radon. If high radon is found, it must be mitigated.

Professional Standards

The Architectural Institute of BC's (AIBC) *Code of Ethics and Professional Conduct* is also relevant in ensuring architects consider radon. Bylaw 30.1 restates the duty of care. Bylaw 33.4 states that an architect shall take into account all applicable federal, provincial and municipal building laws and regulations. Bylaw 34.5 states that an architect shall conduct the architect's affairs in a professional manner. If architects fail to address radon, members of the public can make complaints to the AIBC concerning architects. The AIBC will investigate and hold disciplinary hearings if necessary.

Further Information and Legal Opinion

This is an abridged version of a more detailed legal opinion, titled **RADON: Rights and Liabilities in Construction Law** which includes further information, resources, and legal analysis. To learn more please visit our website on [Radon: Rights and Duties](#) or contact. Us at healthyindoor@bc.lung.ca



Funding for this project is provided by

