

Addressing Radon in BC Workplaces

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 buildings and accumulate in higher concentrations. Radon releases ionizing radiation that poses a risk to lung health.

Some workers have gotten used to thinking about radiation, such as miners, nuclear power workers, and X-ray technicians. However, our knowledge of radon gas has increased in the last decades and we now know that it can accumulate in any type of building, including homes, schools, daycares, offices and other workplaces.

Workers have the right to be protected from radon. Employers need to test their workplaces and reduce radon levels.



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Radon and Human Health

Radon is naturally occurring ionizing radiation. This means it emits radioactive particles. When breathed in it can cause lung cancer. Radon gas is the #1 cause of lung cancer in non-smokers. High radon causes approximately 3,360 deaths per year in Canada.

Radon is measured in becquerels per metre cubed (Bq/m³). 1 Bq/m³ represents one radioactive decay event each second in a cubic metre of air.

Canada's Radon Guideline is set at 200 Bq/m³ and applies to residential homes, public buildings, and workplaces, with an occupancy of more than 4 hours per day.

The *Workers Compensation Act (WCA)* already recognized radon induced lung cancer as an occupational disease. However, we need to do more to ensure BC workplaces are tested and radon levels reduced.

Testing and Mitigating for Radon

Testing is the only way to discover radon levels in a building.

Radon can be tested using inexpensive 'alpha tracker' monitors, available at leading retailers or from the British Columbia Lung Foundation [website](http://www.bclung.ca), by email: info@bclung.ca, or by phone: 604.731.LUNG (5864). Reusable digital monitors are also available.

We recommend workplaces be tested following [Health Canada's Guide for Radon Measurements in Public Buildings](#).

Elevated radon is more common in some parts of British Columbia than others. Many communities in BC's Interior, such as Prince

George, the Okanagan Valley and the Kootenays have a high number of buildings over Canada's Radon Guideline. The [BC Centre for Disease Control's Radon Map](#) can help you see which locations have higher radon.

We think all workplaces should be tested in geographic locations where test results suggest more than 10 percent of buildings are over Canada's Radon Guideline.

If high radon is found, professional mitigators can fix the problem. The [Canadian National Radon Proficiency Program \(C-NRPP\)](#) has lists of certified radon mitigation professionals by community.

Occupational Health and Safety

Employers in BC must comply with the *WCA* and the Occupational Health and Safety Regulation (OHSR). The OHSR has clear rules on ionizing radiation (s. 7.19 to 7.25). Workplace radiation should be kept as low as reasonably achievable (s. 7.19). If radiation levels exceed an effective dose of 1 millisievert (mSv) in a year, employers need to introduce control plans and explain them to workers.

Scientists have worked out how to calculate the effective radiation dose a person will receive if exposed to concentrations of radon in air. Conservative estimates are that exposure to air at 200 Bq/m³ in a full time job for a year will give slightly over 1 mSv effective dose. In almost all workplaces, employers should face few problems in ensuring radon levels are below 200 Bq/m³.

In the past, radon was at times overlooked because it was thought to be 'natural'

background radiation'. (The OHSR excludes employers for responsibility from natural background radiation, unless WorkSafeBC says otherwise, at s. 7.18(2)). However, outdoor background rates are typically quite low and average indoor background concentrations of radon are about 45 Bq/m³. Radon above Canada's Guideline is the result of poor building design and is no more natural than roofs with holes that let in the rain.

General Duty Clauses. All provinces and territories have general duty clauses that, in very general language, require employers to minimize hazards. The OHSR provides, at section 2.2. that: "Despite the absence of a specific requirement, all work must be carried out without undue risk of injury or occupational disease to any person" and at section 4.1: "A workplace must be planned, constructed, used and maintained to protect from danger any person working at the workplace." These broad measures are sufficient to cover radon. Ontario has set an example and [interprets the general duty clause](#) to mean employers should work to ensure radon levels below 200 Bq/m³.

Safety Programs and Inspections

Employers must ensure that workers are aware of health and safety hazards and given information, instruction, training and supervision (WCA, s. 21(2)(b) and (e)). The OHSR mandates that employers have an occupational health and safety program for workplaces with 20 or more workers if it is determined to create a moderate or high risk of injury, and otherwise if 50 or more workers (s. 3.1(1)). Smaller operations require a less formal program (s. 3.2) In either case, the

program must be designed to prevent injuries and occupational diseases (s. 3.3) Testing for radon should be an important component of this program.

Joint Occupational Health and Safety Committees

WCA has detailed provisions for joint occupational health and safety committees (JOHSC) (WCA, s. 31 to 46). JOHSC members should participate in health and safety inspections (s. 3.8). This provides a good way for employees to make sure that radon is tested.

JOHSC are required for workplaces with more than 20 workers. For workplaces between nine and 20 workers, a representative is to be appointed who has the same responsibilities as the committee. JOHSC bring representatives of the employer and the workers together to identify and help resolve health and safety issues in the workplace. For instance, the representatives make recommendations to improve the workers' occupational environment and recommendations about educational programs to promote workers' health and safety.

Employers must respond to JOHSC recommendations. If they reject the recommendations they need to give written reasons. Then the chair of the JOHSC committee can report the matter to WorkSafe BC which can lead to an investigation and potential order (WCA s. 38 and 39).

Working from Home

Workers who work from home still enjoy the protections of the WCA and OHSR.

Employers must identify any hazards and take steps to minimize risks for workers at home (OHSR s. 4.20.2). Employers should have policies for working at home including requiring workers to assess their workspace. At minimum, this policy should require employees to conduct an assessment of their workplace and report any hazards to their manager.

Employers need to ensure that employees' homes are tested— preferably by funding or giving test kits out to employers for testing their homes.

Further Information

This is an abridged version of a more detailed report, titled **Radon in BC: Employers' Duties, Worker Strategies, and WorkSafeBC Policies** which includes further information, resources, and legal analysis. To learn more please visit our website on [Radon in the Workplace](#) or contact us at healthyindoor@bcclung.ca

We think there is a lot more that WorkSafeBC can do improve knowledge of radon and to clarify policies. WorkSafeBC should require testing of workplaces in geographical locations where 10 percent or over of buildings have been found to have high radon. The OHSR should be changed to explicitly reference radon and incorporate Canada's Radon Guideline.

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