Radon Exposure Prevention & Compliance Game Plan



Although typically viewed as a residential danger, exposure to radon gas is also an occupational health hazard—not just in underground mines but also offices, schools, healthcare facilities, and other indoor workplaces. An estimated 603,000 Canadian workers are exposed to elevated levels of indoor radon at work. Radon exposure is also an Occupational Health and Safety (OHS) compliance challenge, especially for federally regulated companies subject to the annual average workplace radon concentration of 200 becquerels per cubic metre (200 Bq/m³) limit that took effect in February 2027. Here's a nine-step Game Plan you can use to prevent radon-related illnesses and OHS penalties at your company.

Step 1. Perform Site-Specific Radon Hazard Assessment

The first step in controlling radon hazards is to perform a hazard assessment to identify conditions that could allow radon to enter and accumulate at your indoor worksite. Because radon concentrations may vary between and even within buildings, you can't rely exclusively on general data like geographic radon maps or the building's location.

What To Do: Evaluate the building's physical characteristics and occupancy patterns focusing on:

- **Ground-contact areas** including basements, below-grade offices, ground-floor work areas, and rooms with concrete slab foundations.
- **Foundation entry points** such as cracks in concrete floors and walls, gaps around utility pipes, floor drains, sumps, and other openings that may permit soil gas to enter.
- **Ventilation conditions:** Be on the lookout for rooms with inadequate air circulation, poorly balanced HVAC systems, or ventilation arrangements that could create negative pressure and draw soil gas into the building.
- **High occupancy areas:** Identify areas of the facility that workers occupy for extended periods, including offices, meeting rooms, lunchrooms, workstations, and storage or maintenance areas that have been converted into regularly occupied spaces.
- **Building alterations:** Review renovations, foundation repairs, HVAC modifications, and changes in room use that could affect radon entry or accumulation.

Step 2. Perform Radon Testing

Don’t panic if your initial hazard assessment concludes that there’s a risk of radon gas getting into your indoor workplace. Potential exposure doesn’t necessarily mean that your workers are actually exposed to elevated radon levels. Conversely, don’t assume you’re in the clear just because your hazard assessment was clean. Keep in mind that apparently sound buildings with modern ventilation may still have radon problems.

What To Do: Create a radon testing plan that provides for actual measurements. Health Canada guidance for public buildings recommends long-term testing lasting at least three months, preferably during the heating season. This is important because radon concentrations may fluctuate substantially with weather, ventilation, building pressure,

and seasonal conditions. Accordingly, a short-term reading may identify a potential problem but shouldn’t ordinarily be used by itself to establish the average annual concentration or determine that a building is safe. Other pointers:

- Perform radon testing in areas where employees work and don’t assume that a measurement in one area represents the concentration in the whole building or any other part of it.
- Arrange testing through a qualified measurement provider, preferably one certified by the Canadian National Radon Proficiency Program (C-NRPP).
- Use suitable measurement devices and follow the provider’s instructions for placement and testing conditions.

Step 3. Implement Corrective Action If Radon Exposure Exceeds Safe Levels

The next step is to use the findings of the hazard assessment and test data to determine whether workers are exposed to hazardous levels of radon.

What To Do (≥ 200 Bq/m³): Implement corrective measures if average annual radon concentration in a normally occupied area of your building or facility exceeds permissible exposure level for radon under your jurisdiction’s OHS laws. For federally regulated employers, the exposure limit is 200 Bq/m³ (other than for nuclear energy workers); 200 Bq/m³ is also the benchmark for corrective action under Health Canada’s national radon guideline. The higher the concentration, the more urgent the need for action.

(< 200 Bq/m³): Keep in mind that while concentrations below 200 Bq/m³ present a lower risk, no level of radon exposure is

considered entirely risk-free. So, continue normal building maintenance, retain the test results, and consider retesting after major renovations, changes to ventilation, or other building modifications that could affect radon entry.

Step 4. Implement Engineering Controls to Prevent Radon Entry & Accumulation

Follow the hierarchy of controls to manage radon hazards you identify starting with the use of reasonably practicable engineering controls to eliminate or reduce exposure to 200 Bq/m^3 or province-specific permissible levels.

What To Do: Effective engineering controls for reducing elevated levels of indoor radon may include:

- Installation of sub-slab depressurization systems that use a pipe connected beneath the concrete foundation slab and a continuously operating fan to draw radon-laden soil gas from beneath the building and discharge it safely outdoors. By creating negative pressure beneath the slab relative to the occupied building, the system reduces the movement of radon into indoor space.
- Correcting ventilation and pressure imbalances. Have building engineers examine whether HVAC systems are creating negative pressure in ground-contact areas, such as poorly balanced exhaust systems that draw soil gas through foundation openings. Adjust ventilation rates, correct pressure relationships, and improve air distribution may help reduce concentrations.
- Sealing radon entry routes like foundation cracks, gaps around plumbing and electrical penetrations, floor-wall joints, and sump openings using appropriate materials. Note: Treat sealing as a supplement to rather than a replacement of an engineered radon mitigation system.

- Using radon-resistant construction practices for foundation work, additions, renovation, or new construction. Examples: gas-permeable layers beneath slabs, sealed membranes, and passive vent piping that can be converted to active depressurization if testing identifies a problem.

Step 5. Implement Work/Administrative Controls to Supplement Engineering Controls

Work/administrative controls may be necessary to supplement engineering controls or provide interim protection until those engineering solutions are fully completed and in place.

What To Do: Effective work controls for preventing radon exposure may include:

- Limiting access to high-exposure areas or rooms.
- Relocating workstations and other frequently used facilities or spaces from high- to low-exposure areas.
- Arranging work schedules so that workers spend the least time possible in high-risk areas.

Step 6: Require Radon-Exposed Workers to Use Respiratory Protection

Respiratory protective equipment and PPE should be used as a measure of last resort where it’s not reasonably practicable to use engineering and work controls to eliminate or reduce radon exposure to safe levels. Radon decay products, aka “radon progeny,” can attach to airborne particles and present additional inhalation hazards.

What To Do: If you determine that respiratory protection is necessary, implement an appropriate respiratory protection program that provides for equipment selection, fit testing, training, and maintenance. If possible, seek advice from a qualified radiation protection or industrial hygiene professional on which equipment to use.

Step 7. Provide Radon Safety Training to Exposed Workers

Ensure that workers exposed to hazardous levels of radon receive appropriate safety instruction and training.

What To Do: At a minimum, radon safety training should cover:

- What radon is emphasizing that it can't be seen or smelled.
- How it can enter and build up inside a building.
- The health hazards posed by long-term radon exposure.
- The ventilation and other measures in place to control radon.
- How to report damaged foundation seals, malfunctioning mitigation fans, or other potential radon dangers.
- The required respiratory equipment, how it works, how to use it, and the equipment's limitations.

Step 8. Monitor the Effectiveness of Your Radon Control Measures

Radon concentrations may change as buildings settle, foundations deteriorate, ventilation systems are modified, mitigation equipment breaks down, and other changes occur. Accordingly, you should treat radon control as an ongoing effort rather than a one-time project.

What To Do: Establish a radon monitoring program that provides

for:

- **Post-mitigation testing:** Perform follow-up tests and measurements after installing a mitigation system or completing major corrective work to determine whether those actions caused radon concentrations to fall.
- **Periodic retesting:** Continue testing at intervals appropriate for the building, its occupancy, and controls. Retesting is particularly important after major renovations, foundation repairs, changes to HVAC systems, or changes in room use that increase occupancy.
- **Inspection of mitigation equipment:** Designate one or more qualified persons to inspect fan operation, system alarms, pressure indicators, and piping.
- **Repair of mitigation equipment:** Establish a procedure for promptly reporting equipment failure and repairing the problem.

Step 9. Document Radon Control Measures

Compliance demands that OHS coordinators be able to demonstrate not only that radon was tested for, but also that the company evaluated the results, implemented appropriate controls, and verified their effectiveness.

What To Do: Maintain a central radon file for each affected building or facility that contains:

- Building and room locations included in the assessment, along with reasons for selecting testing locations.
- Testing dates, measurement durations, results, testing methods, and testing providers' qualifications.
- Records identifying areas where concentrations reached or exceeded 200 Bq/m³ (or other applicable exposure level) and the workers potentially affected.
- Engineering assessments, mitigation-system

specifications, installation reports, and post-mitigation test results.

- Records of radon area access restrictions, relocations, and other work controls implemented.
- Training materials, attendance records, and communications advising workers of elevated radon levels.
- Inspection and maintenance records for mitigation equipment.
- Reports of equipment failures and repairs.
- Records of corrective actions taken and verification of their effectiveness.
- Follow-up testing schedules, outstanding corrective actions, and the names or positions of those responsible for completing them.