Managing Radon in Alberta Buildings

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Radon gas is a significant health concern in Canadian buildings, but can usually be easily managed.

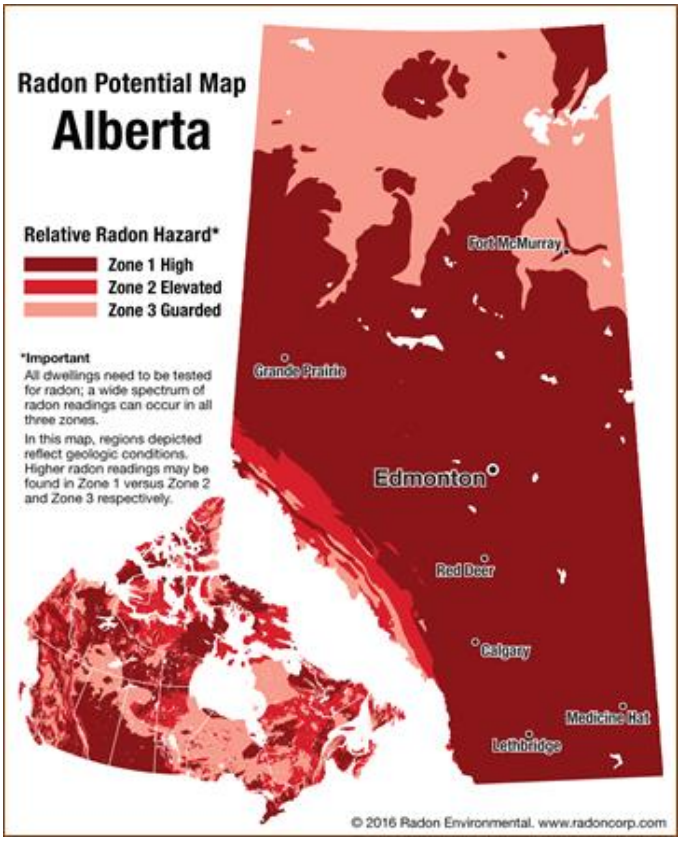
Background

By now, you've probably heard about the concerns of radon gas in Canadian buildings. However, since awareness of the health risks of radon gas risks is a relatively new development, you may be finding it difficult to get a handle on what you're supposed to do about it.

Here are the basics:

- Radon kills people by causing lung cancer. As of 2015, Health Canada estimated 3,200 Canadian deaths per year as a result of radon gas exposure.
- It's a naturally occurring radioactive gas that's both colourless and odourless.
- It seeps into buildings from belowground, where it can build up to dangerous concentrations.
- Children are at higher risk than adults (mostly due to having longer for the cancers to manifest).
- The only way to know if there's elevated radon in a building is to test for it.

Health Canada has recently developed new guidelines for testing radon in commercial and governmental buildings.



Radon Management Planning

Radon gas is a manageable risk – but the key word here is "manage". Because awareness of the problem is so new, there's a tendency for those who are trying to be proactive to focus on just getting testing done at a low cost.

However, especially if there are multiple facilities or large buildings, a complete management program is critical – as opposed to simply conducting a bunch of tests.

Elements of a management include factors such as: project management; risk management; communication and reporting; data integrity and preservation; quality assurance; and resource prioritization. Also of concern if using third parties:

issues such as potential conflicts of interest, prescriptive vs performance specifications, and data ownership.

Creating the Plan

Step 1: Build your team.

Your team should have, at the least, representation from building management, safety & risk management, staff, and consultants if you choose to use them. You may also want to include tenant representatives. Be sure to get executive level buy in.

Plan on having the team meet often at the beginning of the process, but less often (although at least annually) as the program matures over time.

Step 2: Create a written communications plan

The communications plan is probably the single most overlooked component when managing radon, and its lack the most likely to create problems.

Designate an official spokesperson (and alternate). Ensure contact information is included on any communications and train your staff to respond to any public or media queries by referring them to that spokesperson. Remember that to the media saying "no comment" is a newsworthy comment; whereas "you need to ask with [designated spokesperson] about that, let me get you their contact information is not.

Double check that communications go out to all stakeholders in advance of an actions taken.

Take an "Open Information" approach. You have nothing to hide, so make sure any and all information is available to anyone who wants it. In fact, promote it as loudly as you can. If practical, put all information online.

Step 3: Develop and Implement a Testing Strategy.

There are no current regulations in Alberta requiring you to test your buildings for radon (unless they contain daycare facilities). That means you can take a measured approach to getting testing done; you don't have to do all in the first year.

According to the Health Canada guidelines, tests need to run for at least 91 days - "ideally" during cooler months. If you're planning on using the radon results for BOMA BEST accreditation, you pretty much must do the testing between October and April.

Factors to consider in prioritizing testing might include: areas with the most likelihood of elevated radon levels; where younger children might be present; any areas with previously elevated test results; and of course, financial considerations such as geographic convenience.

Decide if you want to do your own testing or hire an external testing firm. Either approach can work, but be sure the people actual doing the testing are accredited through the Canadian National Radon Proficiency Testing Program (C-NRPP)[1] as measurement professionals. In general, look for experience working with large scale testing in other large buildings – proven project management

[1] https://www.c-nrpp.ca

experience with this sort of project is a much more difficult skill than the mechanics of the actual radon testing.

You can roughly estimate budget costs by estimating how many occupied rooms you have below grade (or at grade if there are no below grade occupied rooms). At least one sample per occupied room is required by the guidelines, and current prices for surveys tend to run from about $100 to $200 per sample location, depending on the size of the survey.

If you do decide to hire an external testing firm, be wary of potential conflicts of interest: the US EPA warns "Be aware that a potential conflict of interest exists if the same person or firm performs the testing and installs the mitigation system."[2] Many firms offering radon testing are counting on finding radon to acquire more profitable follow-on mitigation work. If you do choose to hire a mitigation contractor to do the testing, you may wish to advise them that any mitigation work will be done by a separate, unrelated contractor.

Make sure any reports are not only complete by the letter of the guidelines, but also follow best practices. Reports should be easily understandable, and include floorplans with sample locations, photographs, and specific recommendations. Ideally, they should be available online in an interactive format.[3]

Finally, ensure any results and data are 1) at least co-owned by your organization, and 2) will be kept available for several years.

Step 5: Develop a Mitigation Strategy

Depending on what's found in the surveys, you may need to mitigate the radon gas. Health Canada guidelines recommend mitigating within 2 years if results are found over 200 Bq/m^3, and within 1 year if results are found over 600 Bq/m^3. Be aware some organizations are mitigating where results approach 100 Bq/m^3 – that decision is up to you.

If you do find elevated levels, don't get stampeded into making immediate, expensive decisions. Radon mitigation is a relatively new field, and there's a lot of innovation going on within it. Be open to alternative proposals and technologies to reduce radon levels to acceptable levels.

Relatedly, be cautious regarding issuing prescriptive (telling the contractor exactly what to do) vs. performance based (telling the contractor what has to be achieved) RFPs. The latter will allow much more flexibility for innovative approaches, and may save a significant amount of money.

Remember too that radon mitigation contractors are highly incentivized to sell you mitigation systems - this is an area where having a knowledgeable radon consultant can be very useful.

Step 6: Monitor and Review

Once all your facilities have been tested and, if necessary, mitigated, you're done, right? Not so fast – radon levels can be significantly affected if you modify your HVAC systems or conduct major renovations.

[2]https://www.epa.gov/sites/production/files/2015-05/documents/hmbuygud.pdf

[3] Depending on your location, this may not be practical, as not many radon measurement firms can offer this as of yet.

You need to have a plan to monitor and re-test if either of these conditions occur. You may also want to conduct periodic re-testing just as a precautionary measure.

Make sure you have all the information easily available even when all the testing and mitigation has been completed. Recently, there were school districts in Ontario and Manitoba who had pretty bad publicity issues because they could not find or produce the testing documents from work done previously (i.e. – did not have a proper radon management program in place).

Final Thoughts

No one likes the idea that there may be a dangerous radioactive gas in their buildings, but always remember this is very much a manageable problem.

Having a properly implemented program for radon gas is going to make life safer and simpler for everyone.

Resources

Canadian National radon Proficiency Program (C-NRPP) - https://www.c-nrpp.ca

CARST – Canadian Association of Radon Scientists and Technologists - https://www.carst.ca/

Health Canada Guidelines for Radon in Public Buildings - https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radiation/guide-radon-measurements-public-buildings-schools-hospitals-care-facilities-detention-centres.html