

Managing radon in Alberta schools

By Curt LaMontagne, Principal, C5 PLUS LTD.

Background
By now, you've probably heard about the concerns of radon gas in Alberta schools. 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 school 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 school is to test for it.

Health Canada has recently

developed new guidelines for testing radon in schools and other public buildings.

As of November 2017, only three per cent of Alberta schools have tested for radon. Most other provinces and territories have (or are in the process of) testing significantly higher percentages of their schools.

RADON MANAGEMENT PLANNING

Radon gas is a manageable risk - but the key word here is manageable. 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 is using third parties: issues such

Radon Potential Map Alberta

Relative Radon Hazard*

- Zone 1 High
- Zone 2 Elevated
- Zone 3 Guarded

***Important**
All dwellings need to be tested for radon; a wide spectrum of radon readings can occur in all three zones.
In this map, regions depicted reflect geologic conditions. Higher radon readings may be found in Zone 1 versus Zone 2 and Zone 3 respectively.



as potential conflicts of interest, prescriptive versus performance specifications and data ownership.

CREATING THE PLAN

Step 1: Build your team.

Your team should have, at the least, representation from facility management, safety/risk management, teachers, staff and consultants if you choose to use them. You may also want to include representatives from parent groups. 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 lack thereof is 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 schools 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 90 days, “ideally” during cooler months. On the other hand, having the testing done during summer months may be more practical to provide access and avoid damage to the detectors. There's no one right choice, but these are important constraints to consider.

Factors to consider in prioritizing testing might include areas with the most likelihood of elevated radon levels; where younger children are 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) as measurement professionals.

In general, look for experience working with large-scale testing in schools or other large buildings – proven project management 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

Copeland	YORK INSTALL CONFIDENCE	Honeywell	ROADBLOCK LABORATORY
BOHN	Milwaukee	REF Plus	FLUKE
Calgary-North #3, 3401-19th Street, N.E. Calgary, AB T2E 6S8 P: 403-250-9866 F: 403-250-9877	Calgary-South 4616 Manhattan Road S.E. Calgary, AB T2G 4B4 P: 403-243-8191 F: 403-243-8670	Edmonton-North 11089 – 120th Street Edmonton, AB T5H 3R2 P: 780-455-7755 F: 780-455-7800	Edmonton-South 4735 Roper Road Edmonton, AB T6B 3S5 P: 780-485-2121 F: 780-485-2188

refrigerative supply Distributing Refrigeration, Air-Conditioning, and Heating Parts and Equipment to the HVAC and Refrigeration Trade.

Celebrating 50 Years in Business

<p>Commercial Industrial Healthcare Education Government Residential</p>	<p>Edmonton 780-436-6961 Calgary 403-243-5941 Fort McMurray 780-743-2998 www.TheFilterShop.com</p>
--	---

B.G.E. SERVICE & SUPPLY LTD.

AAF | Flanders **CLEAN AIR EVERYWHERE**

Manufacturing & Distribution of HVAC Filtration Products Across Western Canada

no below grade 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 (United States Environmental Protection Agency) warns, “Be aware that a potential conflict of interest exists if the same person or firm performs the testing and installs the mitigation system.” 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.

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

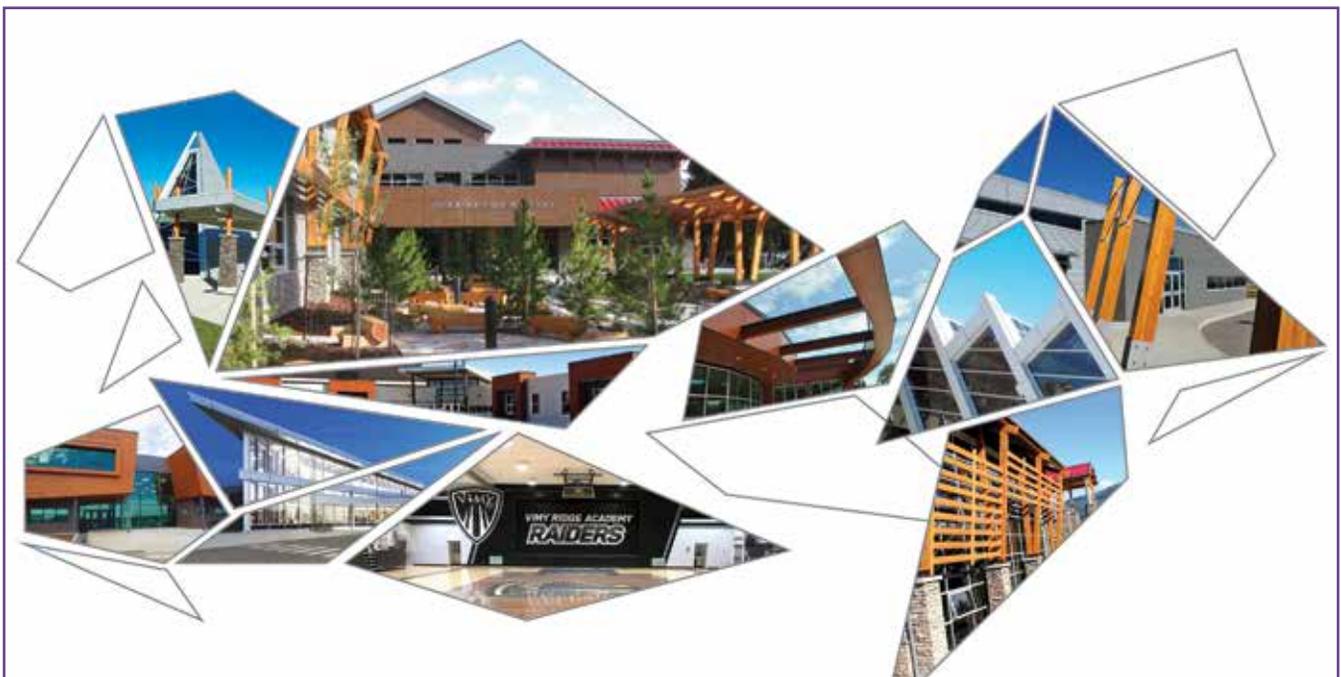
Step 4: Develop a mitigation strategy

Depending on what’s found in the surveys, you may need to mitigate the radon gas. Health

Canada guidelines recommend mitigating within two years if results are found over 200 Bq/m³, and within one year if results are found over 600 Bq/m³.

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) versus performance-based (telling the contractor what has to be achieved) RFPs. The latter will allow much more flexibility for innovative approaches, and



THE WORKUN GARRICK PARTNERSHIP
Architecture and Interior Design Inc

1200, 10117 Jasper Avenue, Edmonton, Alberta T5J 1W8
P: 780.428.1575 F: 780.428.0326 W: workungarrick.com

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 5: 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.

You need to have a plan to monitor and re-test if either of these conditions occurs. 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. Last year, 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 schools, 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 Schools - <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>. ■



VITOCROSSAL 300, CA3

Gas-fired, stainless steel commercial condensing boiler

Rated input: 2500 to 6000 MBH
Thermal efficiency: $\geq 96\%$

VIESSMANN

Our most powerful gas condensing boiler yet!

Peace-of-mind

- Multiple burners and heat exchangers provide built-in redundancy and ensure continued operation of the heating system
- Integrated automatic fault notification allows for a timely and proactive response

Cost savings

- Fully-assembled boiler and optimized footprint allow for easy installation, saving time and money
- High efficiency operation and precise matching of heat output to load requirements maximize fuel cost savings
- Durable construction using high-grade materials ensure reduced maintenance and service costs