

Radon Testing Results: Sunshine Coast School District Report

Vancouver Coastal Health, in collaboration with the Sunshine Coast School District screened all district schools for radon this past winter. The test results have been analyzed and can be found below. Most of the schools in this district tested below the Canadian guideline of 200 Bq/m³ and below the World Health Organization recommended action level of 100 Bq/m³. No further action is required in these schools.

One school had a classroom that tested slightly above the World Health Organization recommended action level of 100 Bq/m³ but below the Canadian guideline of 200 Bq/m³. For this classroom, you may want to consider follow-up testing such as further short-term testing (5 day) using C-NRPP certified continuous radon monitoring to determine the average radon concentration during school hours. If the long-term average radon concentrations during school hours are above guideline levels then the district may want to explore remedial action. Ideally, we want radon levels to be as low as practical. Section 6.3 and 6.4 of the Health Canada Guide for Radon Measurements in Public Buildings provides information on follow-up measurements in schools to determine the basis for mitigation and assistance on calculating the long-term measurement results for schools.¹

Mitigation for radon often involves installing a venting system that will direct the radon gas from underneath the building to the outside air where it is quickly diluted to very low levels and is no longer a health concern. Other mitigation efforts may include modifications to the heating, ventilation and air-conditioning system. Using a radon professional certified through the Canadian National Radon Proficiency Program for mitigation is recommended. <http://c-nrpp.ca/>

Because a child's classroom exposure represents a small portion of their overall exposure over the year, and the radon concentrations found are not extremely high, the continued use of these classrooms while further testing and mitigation is being planned is not a health concern.

Over a calendar year, children spend approximately 15% of their time in their school, and 60-75% of their time in their home environment. As noted in our prior communication on this screening program, the risk of health impacts due to radon exposure is greatest from exposures in places where people spend the majority of their time and following exposure over many years. With this in mind, Vancouver Coastal Health continues to encourage community members to take this opportunity to test their homes for radon next winter, when the home is closed up and radon levels tend to be higher.

¹Health Canada. 2016. Guide for Radon Measurements in Public Buildings (Workplaces, Schools, Day Care, Hospitals, Care Facilities, Correctional Centres). https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/radiation/radon_building-edifices/27-15-1468-RadonMeasurements_PublicBuildings-EN13.pdf

Table 1. Radon school screening results for Sunshine Coast schools.

School	# of test devices (excluding blanks, duplicates and missing)	# (%) of results below 100 Bq/m ³	# (%) of results above or equal to 100 Bq/m ³ but below 200 Bq/m ³	# (%) of results above or equal to 200 Bq/m ³ but below 600 Bq/m ³	# (%) of results above or equal to 600 Bq/m ³
Cedar Grove Elementary	16	16 (100%)	0 (0%)	0 (0%)	0 (0%)
Chatelech Secondary School	40	40 (100%)	0 (0%)	0 (0%)	0 (0%)
Davis Bay Elementary	12	12 (100%)	0 (0%)	0 (0%)	0 (0%)
Elphinstone Secondary	27	27 (100%)	0 (0%)	0 (0%)	0 (0%)
Gibsons Elementary	12	12 (100%)	0 (0%)	0 (0%)	0 (0%)
Halfmoon Bay Elementary	15	15 (100%)	0 (0%)	0 (0%)	0 (0%)
Heritage Learning Centre	3	3 (100%)	0 (0%)	0 (0%)	0 (0%)
Kinnikinnick Elementary School	24	24 (100%)	0 (0%)	0 (0%)	0 (0%)
Langdale Elementary	9	9 (100%)	0 (0%)	0 (0%)	0 (0%)
Madeira Park Elementary	11	11 (100%)	0 (0%)	0 (0%)	0 (0%)
Pender Harbour Secondary School	12	12 (100%)	0 (0%)	0 (0%)	0 (0%)
Phoenix School Building	2	1 (50%)	1 (50%)	0 (0%)	0 (0%)
Roberts Creek Elementary	17	17 (100%)	0 (0%)	0 (0%)	0 (0%)
Sechelt Elementary	13	13 (100%)	0 (0%)	0 (0%)	0 (0%)
West Sechelt Elementary	15	15 (100%)	0 (0%)	0 (0%)	0 (0%)

Radon Screening in Schools Fact Sheet

What is radon?

Radon is a naturally occurring, colourless and odourless radioactive gas that is produced by the decay of uranium found in rock, soil or water. Radon gas enters buildings through cracks in the foundation, walls or floors and gaps around cables or pipes. Indoors, radon can accumulate to concentrations much higher than the outdoor air. Long-term exposures to radon have been linked to an increased risk of lung cancer. Radon can be found in any building including homes, workplaces and schools. Given that we spend the majority of our time at home and the health effects of radon are from long term exposures, Health Canada recommends that everyone test their home for radon. Testing is easy and effective mitigation measures exist.

What schools are being tested and why?

Radon concentrations across Vancouver Coastal Health have typically been low in comparison to the rest of the province. This school screening initiative is being undertaken to confirm this in schools and to encourage people to confirm levels are low in their own homes.

Public schools in North Vancouver, West Vancouver, Sea-to-Sky, Sunshine Coast, Powell River and Central Coast will be tested for radon. In a previous survey of radon concentrations in homes conducted by Health Canada, the homes within the Vancouver Coastal Health boundaries had low concentrations in comparison to the rest of the province. However, slightly more homes in the Coastal regions of Vancouver Coastal Health had concentrations above the Canadian guideline (about 3%). This percentage is still much lower than many other areas of BC or Canada; for comparison 8% of British Columbia homes tested above the Canadian guideline and 29% of homes in the Kootenay-Boundary area tested above this guideline.

Table 1. Data from the Cross-Canada Survey of Radon Concentrations in Homes for Vancouver Coastal Health, 2009-2011. Canadian guideline: 200Bq/m³. World Health Organization recommended guideline: 100Bq/m³. (Data provided by Health Canada)

Health Service Delivery Area	Number of participants	% Below 100 Bq/m ³	% Between 100 and 200 Bq/m ³	% Above 200 Bq/m ³
Vancouver	104	99%	0%	1%
Richmond	63	100%	0%	0%
Coastal	96	92%	5%	3%

Where will the detectors be placed in the schools?

Radon levels are often highest in basements or lower levels of buildings as they are closer to the source of radon; therefore, this testing will be conducted in classrooms that are in contact with the ground or directly above unoccupied areas of the basement.

How long will the testing take?

The detectors must remain in the classrooms for at least 91 days and are then sent off to the lab for analysis.

When will we get the results?

If all goes smoothly with the detector rollout, we expect to receive test results in May or June.

Will the detectors pose a risk to students or disrupt classroom activities?

No. The testing will be done using Alpha Track detectors that are about the size of a hockey puck. These detectors operate on the principle of diffusion and do not require a pump or other form of electricity. (see image)



What are the radon guidelines?

Canadian guideline for remedial action is 200Bq/m³.

As our knowledge of the health effects from radon increases, so does our understanding of the risk of exposure to lower concentrations. Ideally, we want radon levels to be as low as practical. Some jurisdictions, including the World Health Organization, recommend taking action if concentrations are above 100Bq/m³.

What happens if the radon levels are high?

Once the screening is completed, buildings with radon concentrations above the guideline levels will undergo necessary further testing to determine when and where levels are elevated. If mitigation is required, there are a number of extremely effective approaches to mitigating buildings with elevated radon concentrations. Mitigation for radon often involves installing a venting system that will direct the radon gas from underneath the building to the outside air where it is quickly diluted to low levels and is no longer a health concern. Other mitigation efforts may include modifications to the heating,

ventilation and air-conditioning system, such as increasing ventilation or modifying the times that the system is on.

When should action be taken?

Because we are concerned about long-term radon exposures, the goal is to remediate the building within a year or two of receiving the test results. Health Canada recommends taking remedial action within two years if concentrations are between 200Bq/m³ and 600Bq/m³ and within one year if concentrations are above 600Bq/m³. If concentrations are between 100Bq/m³ and 200Bq/m³ remedial action can be taken within two years of receiving the test results. If radon concentrations are found to be elevated in district schools, priority would first be given to schools with higher concentrations.

How do I test my own home for radon?

Vancouver Coastal Health recommends performing a long-term radon test for at least 91 days in the lowest level of your home that is occupied for more than four hours a day. Testing should be conducted in the winter months when windows in the home are closed.

A limited number of low-cost radon detection kits are available from a Citizen Science project underway at Simon Fraser University, to people who would like to test their homes for radon. Information on this project can be found at www.sfu.ca/radon. For any enquiries about this Citizen Science project, please contact sfucitizenscience@gmail.com. Otherwise, radon detection kits can be purchased online or at some hardware stores for \$30-50. When purchasing a detector, ensure that it is for a long-term test and that the cost of the lab analysis is included in the detector price.

Resources

- Health Canada: <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radiation/radon-reduction-guide-canadians-health-canada-2013.html>
- BC Lung Association: <http://www.radonaware.ca/>
- Take Action on Radon Public Resources: <https://www.takeactiononradon.ca/public-resources>
- SFU lead Citizen Science Project: www.sfu.ca/radon
- Canadian National Radon Proficiency Program: <http://c-nrpp.ca/>
- Cross-Canada Survey of Radon Concentrations in Homes: https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-sem/alt_formats/pdf/radiation/radon/survey-sondage-eng.pdf