

## Report to Governance & Services Committee



**Date:** June 30, 2021  
**To:** Governance and Services Committee  
**From:** Nancy Mora Castro, Regional Air Quality Program Coordinator  
**Subject:** Radon Test Kit Challenge- Community Reports 2020  
**Department:** Integrated Transportation Department, City of Kelowna

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### Recommendation:

THAT the Governance & Services Committee receives, for information the Radon Test Kit Challenge - Community Reports 2020.

AND THAT the Governance & Services Committee recommend that the Regional Board approve the continued collaboration with the BC Lung Association, Interior Health Authority and other stakeholders to support the implementation of recommended next steps to reduce radon exposure in the region.

### Purpose:

To present the Governance & Services Committee the Radon Test Kit Challenge-Community Reports 2020 by Take Action on Radon and provide information on the possible next steps for local governments as recommended by the BC Lung Association.

### Background:

As part of the Central Okanagan Strategies, more information and action on indoor pollutants was recommended. One pollutant of interest is radon. Radon is naturally occurring radioactive gas created when uranium decays. It is present in the ground throughout the world but in different concentrations. It travels upwards and can enter and accumulate inside buildings. Radon emits alpha particles that can break DNA bonds, when breathed in it can damage lung tissue.

It is the leading cause of lung cancer after smoking, killing over 3000 Canadians a year. There is no absolutely 'safe' level of radon exposure, and the risk of lung cancer increases by about 16% per 100 Bq/m<sup>3</sup>. International radiation guidance recommends action levels between 100 and 300 Bq/m<sup>3</sup>. The World Health Organization recommends residential buildings be under 100 Bq/m<sup>3</sup>. The Canada Radon Guideline was set by Health Canada in 2007 at 200 Bq/m<sup>3</sup> representing then current estimations of reductions that could reasonably achieved in the country. Most buildings can reduce the radon to levels well below the guideline at reasonable costs.

Radon levels vary across Canada, based on building construction methods, type, age, occupant's behaviour and underlying geography. Health Canada stresses that all buildings should be tested for radon. However, a sample

data-base is very important for public health planning, and to inform homeowners, real estate agents, employers, landlords and others who need to pay attention to the health risks in buildings. Health Canada's Cross-Canada Survey (2012) represents the largest Canadian study to date, with about 14,000 results.

For the Okanagan Health Service Delivery Area, 109 results were obtained with 17.4% recording over 200 Bq/m<sup>3</sup> -significantly higher than the national average of 6.9%. More recent Canadian studies with larger sample sizes, primarily focused on the Western Prairies, are finding radon levels to be much higher than the Cross- Canada Survey found. <sup>1</sup>

There have been some efforts to collect further data for the Okanagan region, including [Health Canada's Radon Map](#), and [Canadian National Radon Proficiency Program \(C-NRPP\) Radon Database and Map](#). However, sample test results for the Okanagan region remain very low, well below the rates of between 500 and 1000 which are common for community testing conducted by health authorities in other places. For instance, in Ontario, health authorities conducted samples of 500 to 1000 per community, see [Thunder Bay District Health Unit](#), [Kingston, Frontenac and Lennox & Addington Public Health](#), [Windsor-Essex Health Unit](#), [York Region Public Health](#).

In January 2020, the Air Quality Program applied to the [100 Radon Test Kit Challenge](#) and was awarded 400 free radon kits which were distributed in the Fall 2020. [Take Action on Radon](#) (TAOR) is a national initiative, funded by Health Canada, to bring together radon stakeholders and raise awareness on radon across Canada. [The Healthy Indoor Environments program](#) (HIE) at the [British Columbia Lung Association](#) works to advance education, awareness and law and policy reform to address radon. HIE runs a Community Testing Project which aims to ensure local communities in BC know their radon levels, backed up by studies with a good sample size. HIE collaborated with TAOR and contributed 1,000 additional test kits as part of ensuring residents of the Central Okanagan can know radon prevalence in their communities. Funding for this project has been made possible by the Vancouver Foundation.

With the support of Take Action on Radon, the BC Lung Association, Interior Health and all local governments and Westbank First Nation, 1200+ radon detectors were delivered for FREE to Central Okanagan residents in 2020.

### Radon and Lung Cancer

Radon Gas is known carcinogen and can cause lung cancer in the long term with consistent exposure. It is important to note that there are many causes of lung cancer, but exposure to radon gas is considered the second leading cause of the disease, after smoking and may contribute to as much as 10% of all lung cancers. Not everyone will develop cancer as a result of their exposure to radon, but no level of radon gas is considered safe. The risk of developing lung cancer from radon depends on the concentration in the air you breathe, the length of time you are exposed, and if you are a smoker or are exposed to environmental tobacco smoke.

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<sup>1</sup> Simms, J.A., Pearson, D.D., Cholowsky, N.L., Irvine, J.L., Nielsen, M.E., Jacques, W.R., Taron, J.M., Peters, C.E., Carlson, L.E. and Goodarzi, A.A., 2021. Younger North Americans are exposed to more radon gas due to occupancy biases within the residential built environment. *Scientific reports*, 11(1), pp.1-10.

Smoking and inhaling tobacco smoke amplifies the cancer-causing risk of radon gas exposure. Those exposed to tobacco smoke and who are also exposed to high radon are 20-25% more likely to develop lung cancer than non-smokers (Health Canada). Health Canada estimates that 3000 Canadians a year are dying of radon-related lung cancer.

### Lung Cancer and Smoking Rates

According to BC Cancer data sources, in 2021 an estimated 3845 British Columbians will be newly diagnosed with lung cancer. It is estimated that in BC 1 in 13 females and 1 in 14 males will develop lung cancer during their lifetime. In the Central Okanagan lung cancer accounted for 13% of all new cancer diagnoses between 2013-2017, with 82 new cases per 100,000 during that time period. Deaths in the Central Okanagan due to lung cancer accounted for 24% (594/2,467) of all cancer deaths in the same period. Almost 100% of those diagnosed with lung cancer will be over the age of 40 when they receive their diagnosis.<sup>2</sup>

The smoking rate in the Interior region of the province is higher than the provincial average, with 16% of the population identifying as regular smokers (14% provincially).



\*Source: BC CDC

### Health Equity Considerations

Because of the proximity to the ground, buildings will have higher concentrations of radon gas in their lower levels (basements, ground level main floors) and because radon levels accumulate in enclosed space, the health risks are amplified for people who live in basements. As such, radon risk has health equity considerations. Those with lower economic status and income levels may be over-represented as populations living in basement suites. As a result, these groups may be disproportionately exposed to radon gas and personal mitigation strategies may be more challenging due to financial barriers, and rented vs. Owned living space.

Radon gas is a manageable and preventable health risk. Lowering the concentration of radon in buildings, decreasing exposure over the lifetime and minimizing inhalation of tobacco smoke will decrease the harmful effects associated with this naturally occurring gas. Mitigation strategies should be prioritized to reduce negative community health outcomes. For more information please visit: [interiorhealth.ca/YourEnvironment/RadonGas](http://interiorhealth.ca/YourEnvironment/RadonGas)

<sup>2</sup> \*Source: BC Cancer Statistics Dashboard prepared by BC Cancer Registry & BC Cancer Agency ([http://www.bccancer.bc.ca/statistics-and-reports-site/Documents/Cancer\\_Type\\_Lung\\_2018\\_20210305.pdf](http://www.bccancer.bc.ca/statistics-and-reports-site/Documents/Cancer_Type_Lung_2018_20210305.pdf))

### Radon Kit Challenge Results 2020

More than 1080 residents to date (as of June 15 2021) have received their individual radon levels results along with a 1-page document providing some additional recommendations for reducing radon levels and where to find more information. There may be additional participants who will be receiving a report once they have mailed the detector in as we continue to provide participants who may not have completed the full testing process with information on their next steps.

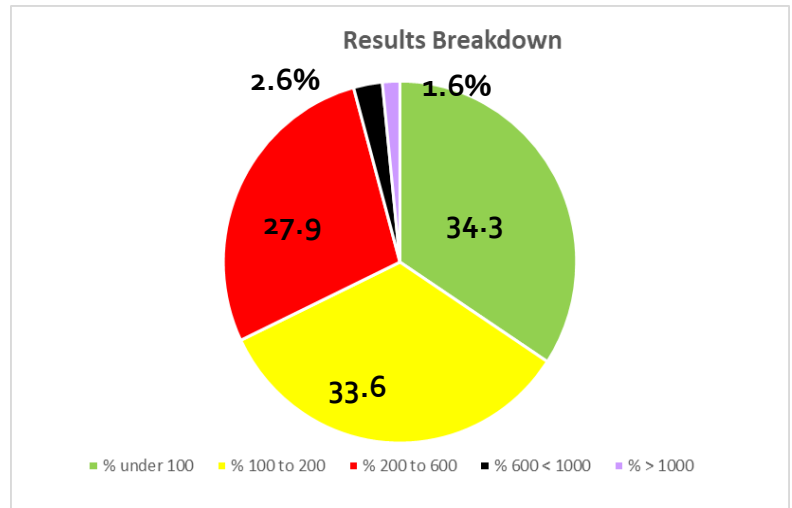


Figure 1. Radon detectors completed full process of testing- Central Okanagan RDCO

Take Action on Radon has produced community reports for each of the participant local governments and we will be providing a report to Westbank First Nation. These reports provide an overview of how many individuals completed the full process of testing; the percent of homes that tested above the Health Canada’s safety guideline of 200 Bq/m<sup>3</sup>; and additional general information including Health Canada recommendations for reducing radon levels and where to find more information.

The public release of the Community Reports will include emailing it to all participants, posting it on the Take Action on Radon website as well as the RDCO website and circulating a localized press release. The Community Reports included in Appendix 1 will be also sent to all local Councils.

Additional information was collected from participants including information on age of construction and building characteristics, as well as information on if the participants owned or rented their homes. As a result of the questions, information was provided that some participants were renters who had elevated radon levels and so additional supporting information on how to communicate with their landlords will be provided. The housing characteristics were evaluated as a community, but no specific concerns were found and continued messaging that all homes regardless of age and type need to be tested for radon. In addition, the data was mapped to identify if there were any specific regions in the area that stood out as concerns, however the map showed typical patterns of high and low levels of radon on the same street and areas and so it again, reinforced the issue that all homeowners/occupants regardless of area should be encouraged to test for radon.

### Possible next steps for local governments

There is a wide array of strategies available to municipalities and regional districts to build education, awareness and regulation to reduce radon levels through the built environment. Pro-active planning can show that government is taking action on an important health and safety issue, and help ensure the number of homes and workplaces with high radon in the RDCO are reduced.

Health Canada has prepared a Radon Action Guide for Municipalities. It includes a number of actions that municipalities have the option to take, which can include:

- Education and awareness campaigns and information portals
- Community testing and mapping
- Ensuring testing and mitigation in Government Operations and government owned Social Housing
- Enforcing Building Codes
- Standards of Maintenance/Housing Standards
- Creating Radon testing Requirements in Public Spaces (akin to anti-smoking bylaws)
- Subsidies and Incentives for Testing and Mitigation
- Ensuring radon in Energy Efficiency Retrofits
- Special rules for New Development Areas
- And radon action planning.

The guides are available in draft form from Take Action on Radon's website, [takeactionradon.ca](http://takeactionradon.ca). Health Canada has also prepared:

- [Appendix to the Guide for Municipalities](#) which provides model language for radon action policies and links to examples.
- [Justifying Radon Action](#): Supplemental document that sets out policy rationales for government action on radon. It will help situate radon action in other common health and environment initiatives.
- [Radon Action in Municipal Law: Understanding the Legal Powers of Cities and Towns in Canada](#): Supplemental material provides an overview of municipal law in Canada to show that municipalities have the legal power to address radon.

The Healthy Indoor Environments program at the BC Lung Association has funded programs through the Law Foundation of British Columbia to help develop [Radon Policies for Local Governments](#). HIE's staff have specialized knowledge on radon law and policy and municipal planning frameworks and can help governments use Health Canada's Guides and other sources to implement local radon policies. They would like to work with municipal government staff, councilors and others to explain radon and what can be done to address it. HIE promotes a stepped approach to action—ensuring action is matched to the needs of specific government and constituents. Some municipalities will be just learning about the issue while others will feel there is space to take more action. HIE's Director of Law and Policy, Dr. Noah Quastel, can be reached at 778 709 4496, or [nquastel@bc.lung.ca](mailto:nquastel@bc.lung.ca).

It is recommended that RCDO member municipalities engage with the HIE program at the BC Lung Association and dedicate staff time to developing radon action plans for their municipality.

#### *Radon Challenge 2021 and School Testing (2020-2022)*

A community Radon campaign, a webinar and a limited amount of radon detectors will be delivered for FREE in the Fall 2021 to continue the region-wide radon awareness. The BC Lung Association will partner once again with us to kindly provide 200 radon detectors this year. Through the Health Canada grant we will acquire 100 detectors, for a total available in 2021 of 300 detectors for Central Okanagan residents. Due the limited number

of detectors available, this year we may only need the collaboration of a few local governments to assist with the pick-up and drop-off, but this is still TBD.

In September 2020, the Air Quality program successfully applied and received \$20,200 in funding from Health Canada for a Radon Outreach Project. With the stakeholders support **55 elementary schools will be screened** for radon in 2020-2022. The project's goal is: Through initiating screening of radon levels on selected schools in the Central Okanagan, school operators will learn how easy it is to test for radon, get radon on their agenda, mitigate where necessary to lower radon exposure to children and staff, and through an online campaign raise radon awareness region-wide. This is another collaborative project with SD23, Interior Health, CARST and Health Canada.

Through this project, 31 public and independent schools were screened in 2020. The results will be soon be ready and shared in the RDCO website and with the public and independent schools. School radon screening will resume in December 2021 on the remaining participant schools.

Conclusion

Radon gas is a manageable and preventable health risk. Lowering the concentration of radon in buildings, decreasing exposure over the lifetime and minimizing inhalation of tobacco smoke will decrease the harmful effects associated with this naturally occurring gas. Mitigation strategies should be prioritized to reduce negative community health outcomes.

Next Steps

If directed, the Air Quality Coordinator and other local government staff could collaborate with the Healthy Indoor Environments program at the British Columbia Lung Association to develop draft radon policies for member municipalities and other actions or activities outlined in this report with an aim for these to be presented to Councils for their consideration.

**Financial/Budgetary Considerations**

None

**Communications comments:**

**Considerations not applicable to this report:**

*Legal/Statutory Authority:*

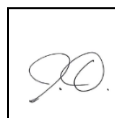
External Agency/Public Comments:

Legal/Statutory Procedural Requirements:

*External Agency/Public Comments:*

N. Mora Castro, Regional Air Quality Program Coordinator

**Approved for inclusion:**



J. D., Transit and Programs Manager