Canadian Environmental Law Association
EQUITY. JUSTICE. HEALTH.

December 9, 2022

Building and Development Branch
Ministry of Municipal Affairs and Housing
College Park 12th Floor, 777 Bay St, Toronto, ON M7A 2J3

Submitted Online through Ontario's Regulatory Registry

Re: Proposed Building Code Changes to Support More Homes Built Faster – Next Edition of Ontario's Building Code / O. Reg. 332/12 Building Code Act, 1992
Proposal Number: 22-MMAH016

CELA appreciates the opportunity to comment on the above noted potential changes to Ontario's Building Code.

CELA is a specialty legal clinic within the Ontario-wide network of clinics funded by Legal Aid Ontario. We provide free legal services to people and groups across Ontario that qualify for legal aid.

We work to protect human health and our environment by seeking justice for those harmed by pollution and by working to change policies to prevent such problems in the first place. As a Legal Aid Clinic our top priority is to represent low-income individuals and communities and to speak out for those with less influence and who receive less of a say in decision-making.

Through landmark legal cases CELA has helped shape government and industry approaches to pollution and other environmental threats. Our Public Legal Education efforts help to explain the law and citizen environmental rights in Ontario.

CELA has undertaken extensive work over many years on environmental health issues including those pertinent to children, as well as specifically related to the risk of lung cancer from radon ingress to buildings, (nationally second only to smoking as a cause of this distressing health

impact). Extensive background materials are contained on CELA's website at our Radon landing page at https://cela.ca/radon/ .

We provide these non-technical comments to address three issues encompassed within the proposed changes:

- Radon ingress to buildings
- High wind resilience
- Hot water temperature control in childcare centres.

1. **Radon ingress to buildings:**

CELA requests that Ontario consult with Health Canada prior to proceeding further with the proposed changes related to prevention of radon ingress to buildings. In particular, CELA requests that Ontario specifically review the attached document issued by Health Canada in September, 2022, titled Clarification on Health Canada's Guidance for new building construction, in relation to the Ontario Building Code and changes necessary to properly implement Health Canada's guidance.

In particular, this guidance does not imply support for an exemption for buildings occupied for four hours or less per day. Secondly, this guidance clearly recommends passive or active soil depressurization for new building construction. A rough-in is NOT sufficient. This Health Canada guidance is intended to "reduce the public health burden from exposure to radioactive radon gas." (See page 3 of the attached Health Canada Guidance clarification and associated references.)

CELA has also had the benefit of reviewing the anticipated submission on this consultation by the Ontario Public Health Association, and we support their recommendation for a post-construction radon test for all new construction.

2. **High wind resilience:**

CELA supports strengthened provisions to improve building resilience in high winds and tornadoes, particularly with the increased incidence, strength, frequency, and level of damage observed in recent years as a result of climate change in Canada. With Canada already experiencing higher average temperature changes and increased frequency of severe events, and with these impacts predicted to increase even further over time with additional climate impacts, CELA recommends that this issue be revisited at least twice per decade in order to determine if the improvements to the building code for high wind resilience are sufficient.

The issue of building wind resistance, (as well as resistance to dampness), are particularly important for low income and vulnerable communities, including those living in rental tenure, since unfortunately there are often issues of adequacy of ongoing maintenance, as well as lack of

building insurance in many of these settings. Improved building code standards are one mechanism to reduce the impacts of climate change on these communities.

CELA also recommends review of sufficiency of building code requirements and potential for retrofit requirements, for commercial, industrial, and other facilities, particularly those encompassing hazardous activities such as Ontario's nuclear power plants, because of their particular vulnerability to high winds and that these events were not originally contemplated when the existing structures were designed and built.

3. **Hot water temperature control in child care settings:**

CELA supports the provisions requiring hot water temperature control in child care settings, in order to prevent hot water scalding injuries.

CELA hopes these comments and recommendations are helpful. We would be happy to answer any questions arising from this submission.

Yours very truly,
CANADIAN ENVIRONMENTAL LAW ASSOCCIATION

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Attachment: **Clarification on Health Canada's Guidance for new building construction, September 29, 2022**

Health Canada Santé Canada

Clarification on Health Canada's guidance for new building construction

September 29, 2022

Health Canada has prepared this clarification in response to questions received from the Task Group on Radon and Soil Gas Mitigation.

Health Risk

Health Canada clarifies that any level of radon carries a health risk. The body of scientific evidence published over the last 30 years supports the assumption that the risk of lung cancer increases proportionally with increasing radon exposure (i.e. linear dose-response relationship). There is consensus among international organizations regarding the risk of lung cancer from radon, including the World Health Organization[1], the United Nations Scientific Committee on the Effects of Atomic Radiation[2], the International Atomic Energy Agency[3], and the International Commission on Radiological Protection[4]. Therefore, any reduction in radon exposure to a population will reduce the expected incidence of associated cancers.

> While the health risk from radon exposure below the Canadian Guideline is small, there is no safe level of radon. It is the choice of each homeowner to decide what level of radon exposure they are willing to accept.
>
> Guide for Radon Measurements in Residential Dwellings (Homes)
> http://www.canada.ca/en/health-canada/services/publications/health-risks-safety/guide-radon-measurements-residential-dwellings.html

Radon Guideline

Health Canada's guideline for radon is 200 becquerels per cubic metre (Bq/m^3). This guideline was developed from North American and international health risk assessments in conjunction with the provinces and territories along with feedback from public consultation. Health Canada's Radon Guideline includes the following recommendations:

> 1) you take corrective action if the average annual radon level exceeds 200 Bq/m^3 in the normal occupancy area of a building
> 2) you take corrective action sooner, the higher the radon level is
> 3) the corrective action should reduce the radon concentration as much as is practicable
> 4) the construction of new buildings use techniques that minimize radon entry and will help remove radon after the construction is finished, if necessary
>
> Health Canada Radon Guideline
> https://www.canada.ca/en/health-canada/services/environmental-workplace-health/radiation/radon/government-canada-radon-guideline.html

The first 3 points are recommendations for intervention in existing buildings with high radon concentrations – this is why the term "corrective action" is used. From *(1)*, Health Canada is clear in its recommendation that any occupied building that exceeds 200 Bq/m³ should be mitigated. *(2)* reflects that an increase in exposure carries an increased health risk.

Health Canada's recommendations reflect the ALARA principle, in that any radon exposure should be *As Low As Reasonably Achievable*, also reflected in *(3)*. In establishing the 200 Bq/m³ guideline, Health Canada takes into consideration the associated costs of mitigating existing buildings and balances them with the health benefits to the occupants. This guideline, solely for occupied building, recognizes the socioeconomic implications for radon mitigation in existing buildings. However, while the trigger for remediation is 200 Bq/m^3, it is expected that remediation measures will reduce radon to levels that are ALARA. In other words, 200 Bq/m^3 is not a recommended stopping point for remediation if it's reasonable to go lower, social, economic, technological, and other factors being considered.

Additional Clarification – New Construction

For new construction, Health Canada's recommendation is explicitly stated in *(4)*, where new construction should both minimize radon entry **and** facilitate future radon mitigation measures. Health Canada recommends that these measures be enacted through building regulations and building codes, a stance that is consistent with international practice, for example:

> Implementing regulations or codes that require installation of radon prevention measures in all homes under construction is accepted as a cost-effective way of protecting the population (cf. Chapter 3 and 4). If implemented correctly, such measures will reduce, over time, the national average level of radon and decrease the number of new houses with radon concentrations above the reference level.
>
> World Health Organization Radon Handbook, Section 6.4
> https://www.who.int/publications/i/item/9789241547673

Health Canada's recommendation for new construction continues to follow the ALARA principle. As mentioned, the 200 Bq/m³ guideline is intended to guide decisions on corrective actions in existing buildings so it **does not apply** to new construction (pre-occupancy). The potential health risks for any given level of radon are the same for future occupants as they are for occupants of existing buildings. However, radon reduction options can be more easily installed at a lower cost at the time of construction. Cost-benefit analyses assess radon reduction and the associated reduction in radon-attributable lung cancer over the full range of radon exposures in homes. Recent analyses[5][6] demonstrate that many more lung cancer deaths can be prevented by intervening during new construction rather than in existing homes.

Rationale for National Building Code Update

Recent data suggest that existing radon control measures adopted in the 2010 National Building Code (a capped pipe stub through the slab into the gravel layer and a sealed radon gas barrier above the gravel layer and below the concrete slab) are **neither** reducing residential radon exposures **nor** decreasing the incidence of homes with high radon levels. A recent survey by Health Canada in the Halifax Regional Municipality comparing radon levels in homes before and after adoption of these measures shows increasing radon exposure in new construction[7], a trend that has also been seen in other recent Canadian studies[8][9][10]. These results support strengthening the National Building Code measures to accomplish the objective of reducing radon entry into homes.

The efficacy of the existing capped pipe stub is also falling short as a means of facilitating future radon mitigation (helping to remove radon after the construction, if necessary). While it is intended to enable the installation of radon control measures through less invasive construction methods at a lower cost, contractors have reported that these benefits cannot be realized in situations where the stub is poorly placed or installed incorrectly. In addition, evidence gathered by Health Canada for more than a decade indicate that most homeowners are unlikely to use it[11]. Despite the efforts of Health Canada and organizations like Take Action on Radon, residential testing levels across Canada remain stubbornly under 10% and mitigation rates are much lower[12][13]. The assumption that providing a rough-in will help to significantly reduce radon exposure for most Canadians appears to be flawed.

Recommendation

Health Canada therefore recommends increasing the level of radon control measures to be incorporated into building codes to effectively minimize radon entry across the foundations. This should coincide with increased education and awareness to authorities having jurisdiction on identifying and ensuring best practice installation of these measures. Three levels of radon control measures for new housing construction are described in the Health Canada Guide for Radon Measurements in Residential Dwellings[14], listed in order of increasing effectiveness at minimizing radon ingress that will reduce radon levels in homes post-occupancy. These include:

Level 1 – Radon gas barrier and rough-in (current National Building Code 2010 radon measures)

Level 2 – Full vertical passive radon stack;

Level 3 – Full active soil depressurization system

While the installation of an extended rough in (where the pipe stub is extended to terminate outside the home through a sidewall) facilitates future mitigation, it does not prevent any further radon entry into the home. As it does not accomplish Health Canada's directive for new construction to employ techniques that reduce radon entry, an extended rough in **is not recommended** as an option to replace either passive or active mitigation systems into future building codes. With the radon levels in homes remaining a substantial health risk to Canadians, Health Canada **recommends** that systems proven to reduce radon levels (passive[15] or active[16] soil depressurization) be instead included in the 2025 National Building Code to reduce the public health burden from exposure to radioactive radon gas.

References

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[13] Statistics Canada. Table 38-10-0281-01. Households and the environment survey, knowledge of radon and testing, by tenure and type of dwelling, Canada. https://doi.org/10.25318/3810028101-eng

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