Radon in Saskatchewan

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Outline

- What is radon?
- Why do we care?
- Guidelines/regulations around radon
- Testing
- Prevention and mitigation
- OHS regulation review

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What is radon

- Radon is a colourless, odourless inert radioactive gas.
- Radon-222 is a decay product of uranium-238:
  - Uranium is unstable.
  - Undergoes 14 decays until it becomes stable lead.

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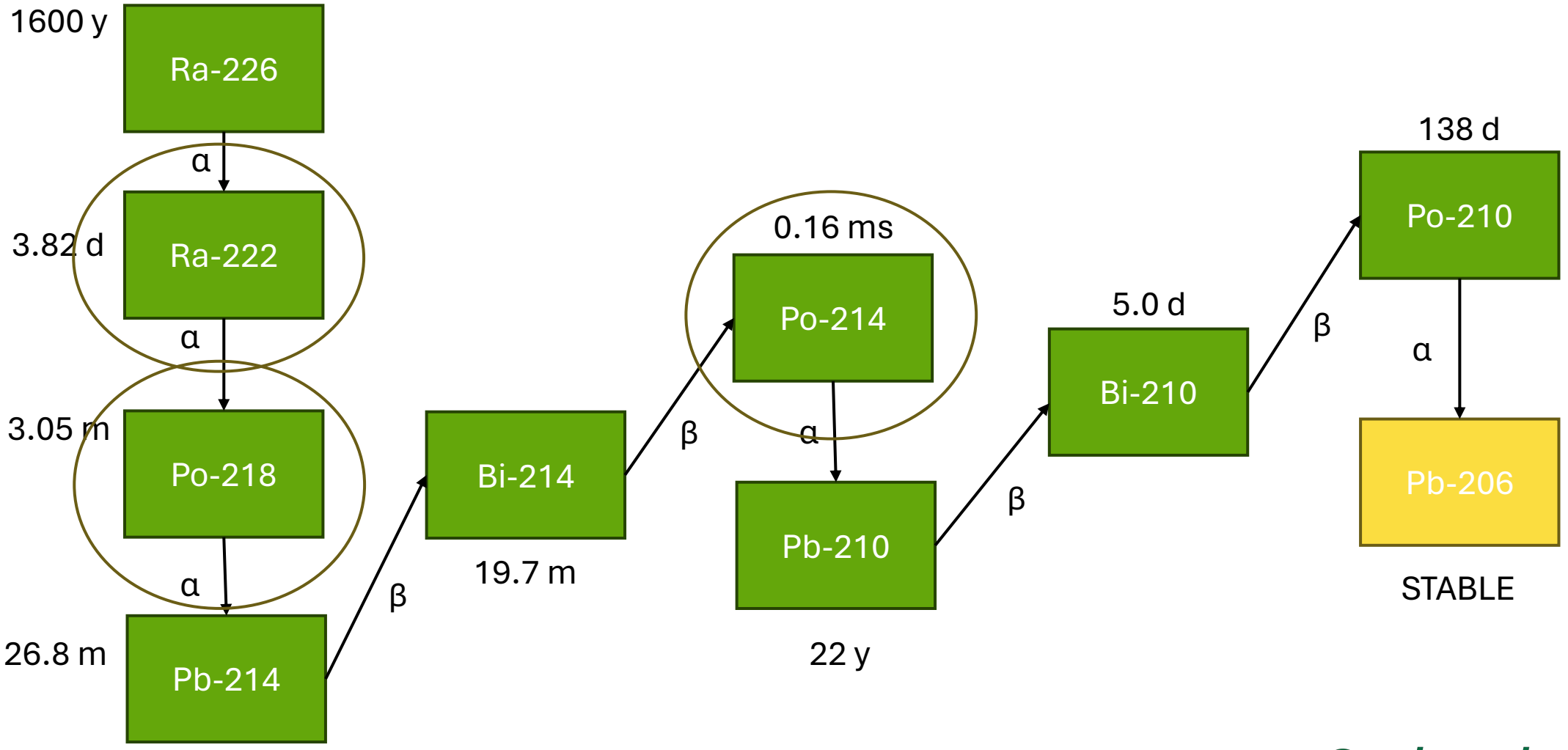
What is radon

What is radon



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What is radon

- Radon and its progeny are alpha emitters which means when you breath them in they emit alpha radiation that is damaging to the lungs and increases the risk of lung cancer.
- Radon gas is typically measured as a proxy for the radon daughters which are the true hazard.

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Why do we care?

- Radon progeny was a known carcinogen in industrial mining going back to at least the 1940s.
- Radon was not considered a residential risk until December 1984 and Stanley Watras.

Why do we care?

- Watras was a construction engineer working on the Limerick nuclear construction site in Pennsylvania.
- The nuclear site had gate monitors to ensure workers were not contaminated at the worksite.
- Watras started to set off the monitors on the way to work.

Why do we care?

- After about four hours he would no longer set off the monitors and was allowed to start his job.
- Puzzled, specialists were sent to his house to investigate.
- They found radon to be about 700 times what was considered a safe limit in his house (~99,000 Bq/m^3).

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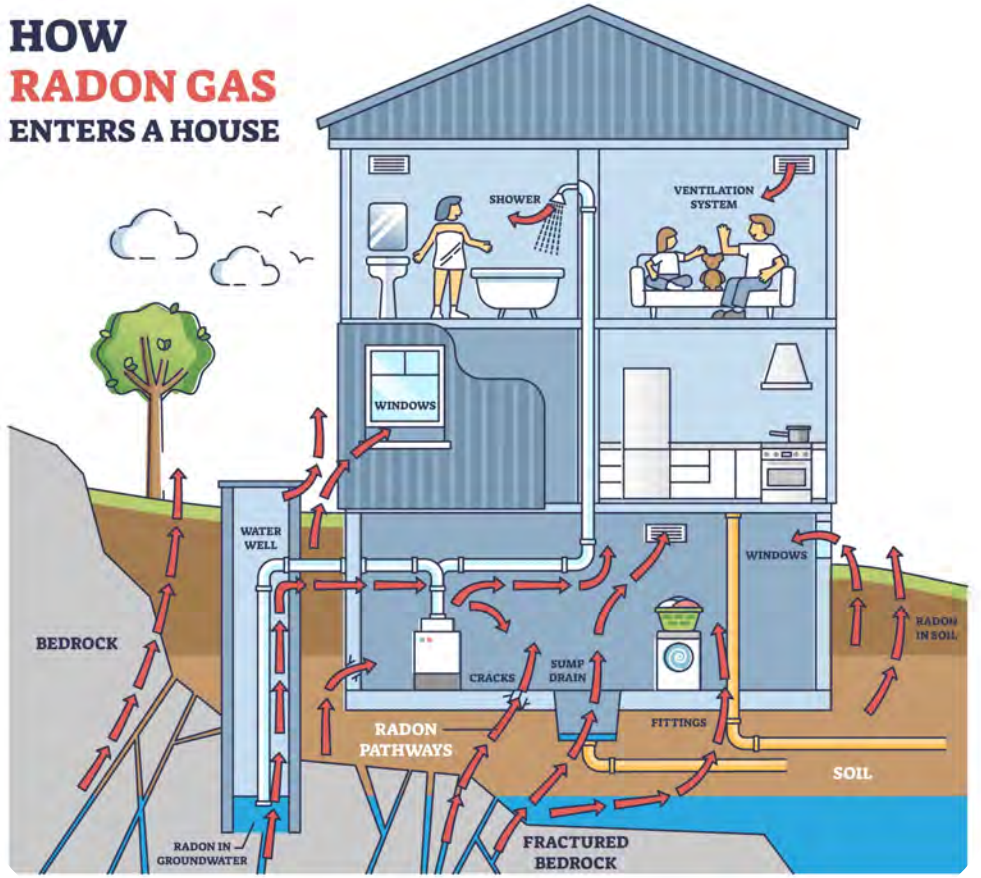
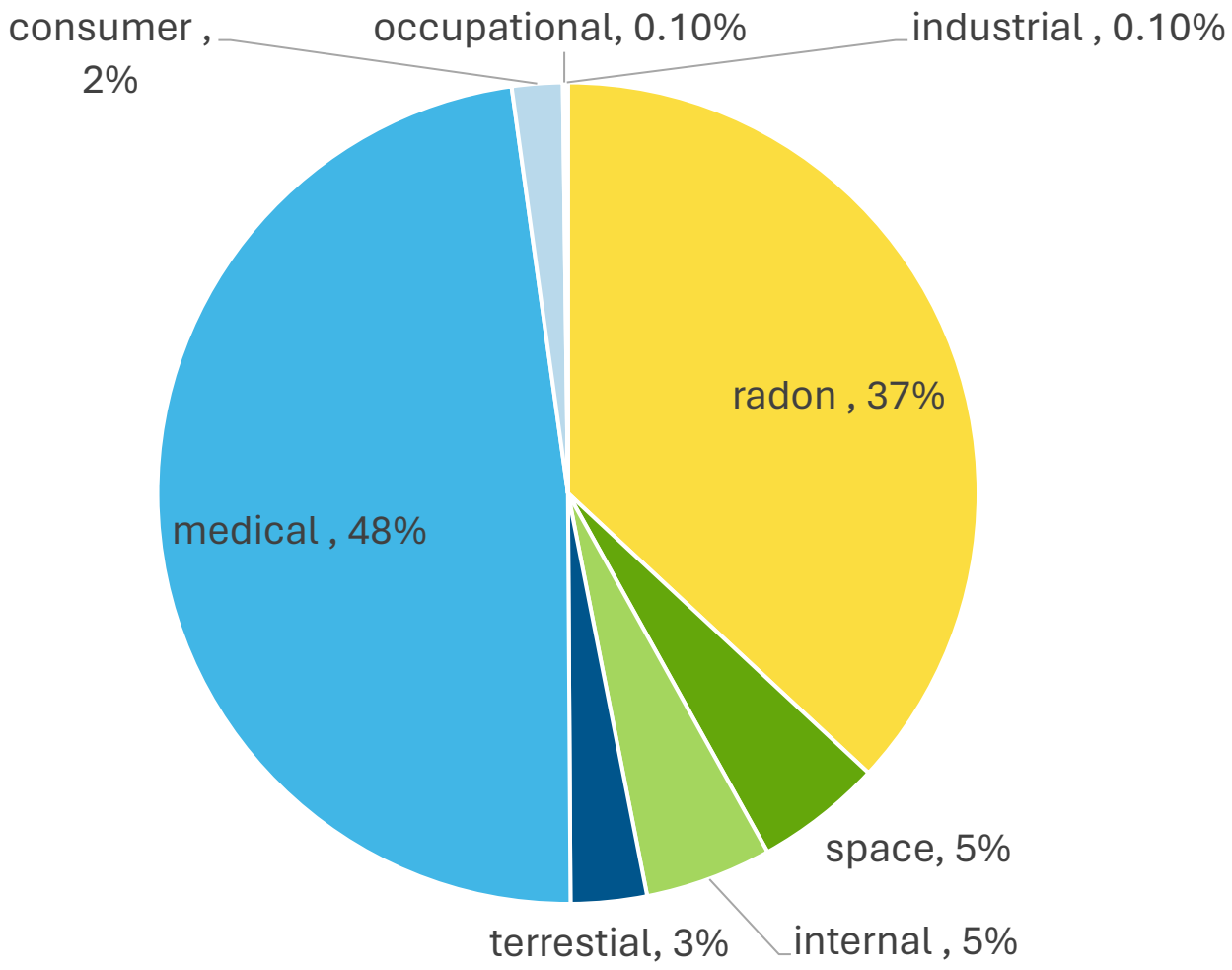
Why do we care?

- Radon can build up to high levels over time within buildings and become a health risk.
- Health Canada estimates radon exposure results in 16% of all lung cancers in Canada, resulting in more than 3,000 lung cancer deaths each year.
- Risk is synergistic with the risk of smoking.
- Risk is stochastic – the higher the level, the higher the risk.



Background radiation



Canadian guidelines

- In Canada, Health Canada sets the Canadian guideline for radon.
- Guideline applies to public buildings and workplaces with an occupancy of more than four hours a day and includes:
  - Schools.
  - Hospitals.
  - Long term care.
  - Other indoor workplace settings.

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Canadian guidelines

- Guidelines does not apply to NORM impacted industries such as:
  - Mining.
  - Fish hatcheries.
  - Oil and gas.
  - Water treatment facilities.

Canadian guidelines

- Health Canada has set the Canadian Guideline at 200 Bq/m^3.
  - While the health risk from radon exposure below the Canadian guideline is small, there is no level that is risk free.
  - Recommend action within a year if over 600 Bq/m^3 or within two years if between 200 and 600 Bq/m^3.

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Testing guidelines

- Health Canada recommends use of long-term radon devices that have passed the Canadian National Radon Proficiency Program (C-NRPP).
  - Includes both passive and active devices:
    - Alpha track.
    - Electet ion.
    - Professional-grade electronic radon monitor.

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Testing guidelines

- Health Canada recommends long term tests (>91 days) during the heating season.
- Tests should be in lowest lived in level of your home and excludes:
  - Unfinished basements.
  - Crawl spaces.
  - Areas infrequently accessed.

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Around the world

- The United States limit is lower, approximately 148 Bq/m^3 and testing is mostly tied to home sales.
- World Health Organization recommends a limit of 100 Bq/m^3 but not exceeding 300 Bq/m^3.
- Before 2007, Canada's limit was 800 Bq/m^3.

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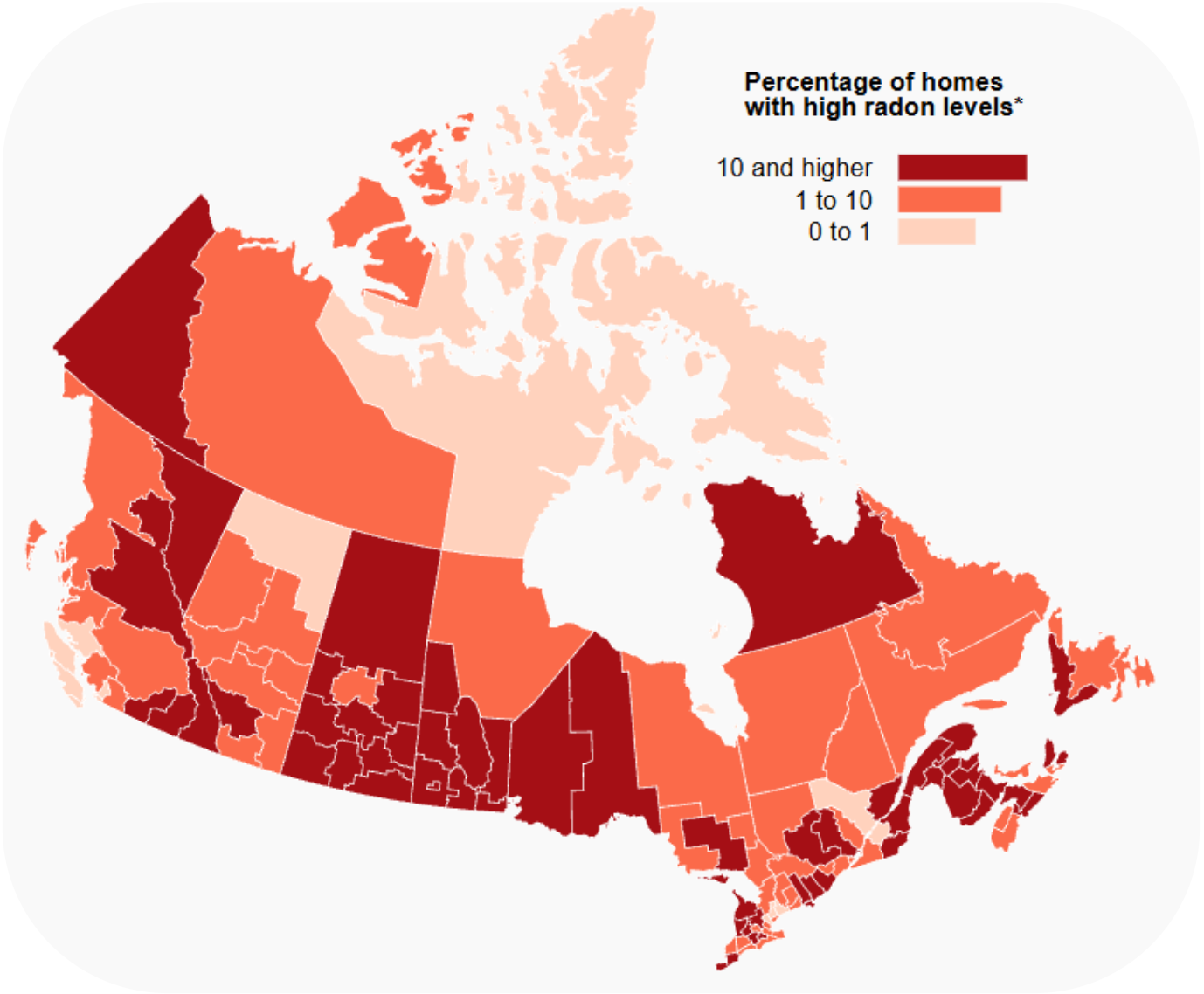

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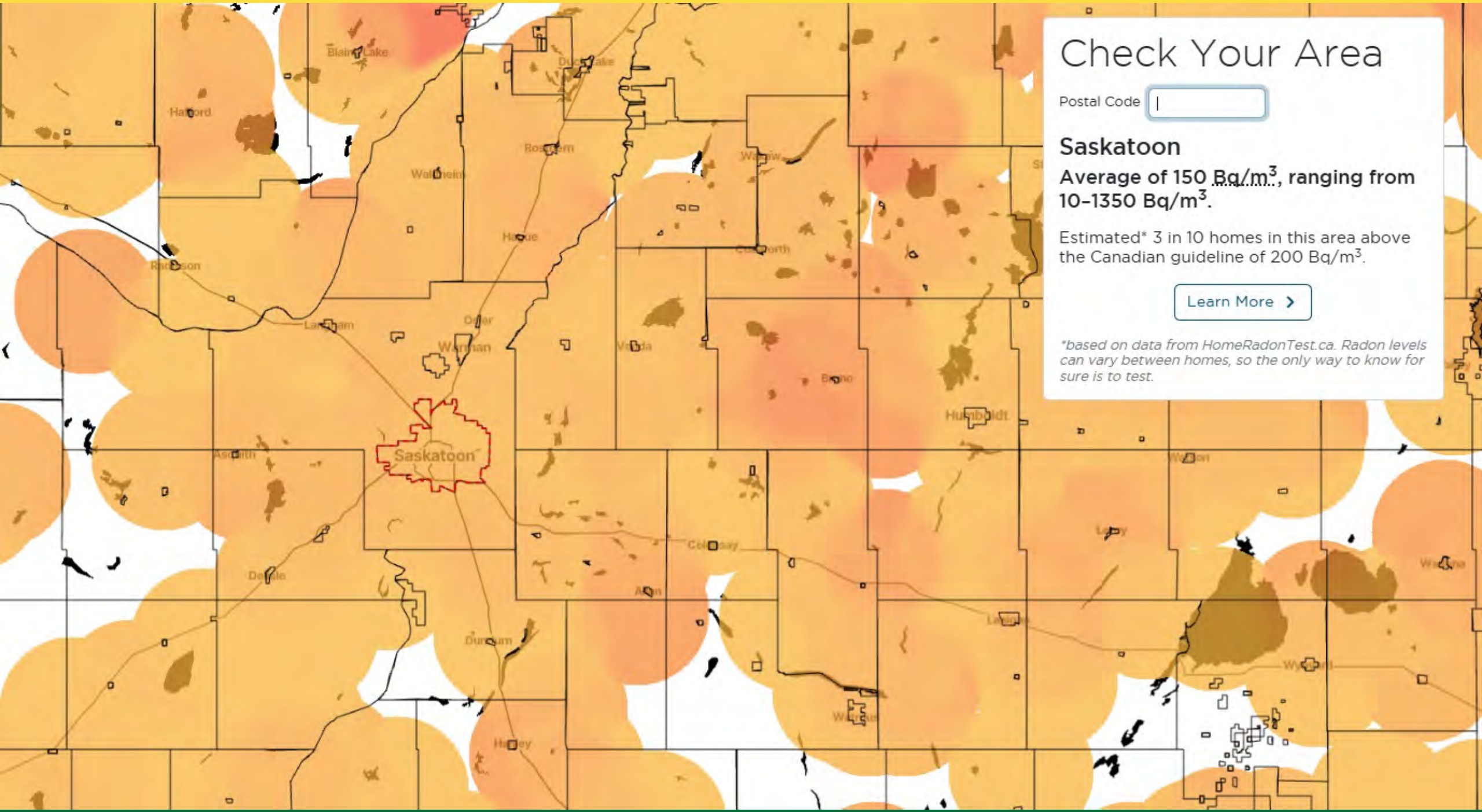
Check Your Area
Postal Code
Saskatoon
Average of 150 Bq/m³, ranging from 10–1350 Bq/m³.
Estimated* 3 in 10 homes in this area above the Canadian guideline of 200 Bq/m³.
Learn More
*based on data from HomeRadonTest.ca. Radon levels can vary between homes, so the only way to know for sure is to test.
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Saskatchewan requirements

- Radon exposure in non-uranium mines are classified as Naturally Occurring Radioactive Material and are therefore exposure in the workplace is provincially regulated.
- No specific occupational exposure limit listed in *The Occupational Health and Safety Regulations, 2020*.
- Radiation Health Officers would rely on recommendations made in *The Canadian NORM Guidelines:*
  - Under 200 Bq/m^3 no restrictions.
  - Additional dose-based requirements over this limit such as monitoring, time limitation, etc.

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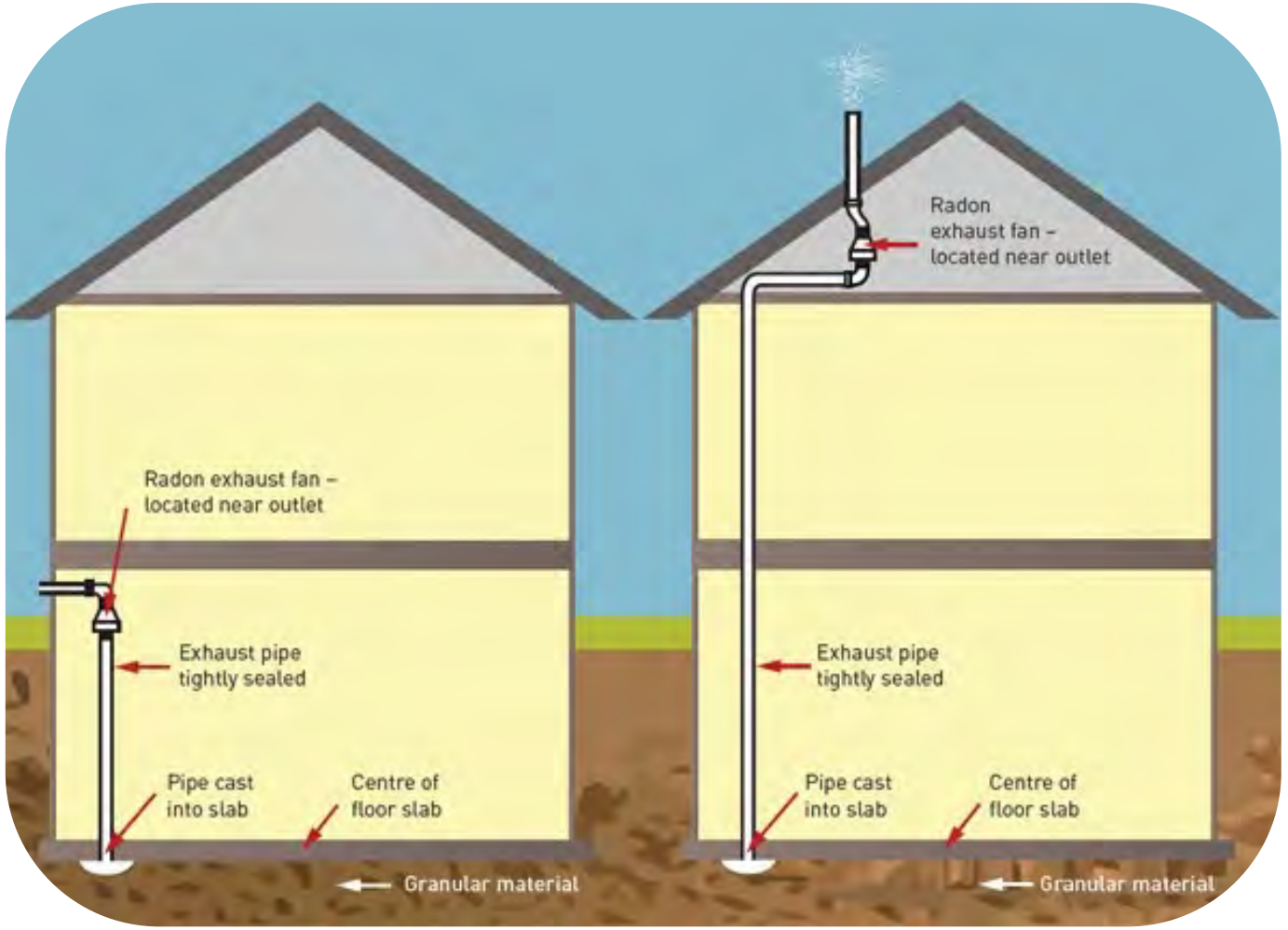
Radon mitigation

- If over the guideline, it is recommended to hire a certified C-NRPP radon professional to mitigate.
- Most effective and most common method is called sub-slab depressurization.

Radon mitigation – sub-slab depressurization



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Radon mitigation

- Other mitigation techniques can help but are not always as successful:
  - Active sump depressurization.
  - Sealing radon entry points.
    - Cracks in floor.
    - Open sumps.
    - One way floor drains.
    - Exposed soil (e.g. crawl spaces).
  - Increasing mechanical ventilation.

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Building code

- In 2010, Canada's building code added a number of radon mitigation requirements to new residential buildings which have been adopted by some provinces:
  - Rough in for sub slab depressurization.
  - Membrane between slab and ground below with granular material below slab.
- Work underway to include passive sub slab depressurization into building code.

Occupational Health and Safety regulations review

- The Ministry of Labour Relations and Workplace Safety is working on a review of *The Occupational Health and Safety Regulations, 2020*.
- This review **began October 2025** and will continue over the next few years in a three-phased approach.
- The goal of the review is to ensure the legislation remains relevant and meets the needs of employers and employees and reduces injuries and fatalities.

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Occupational Health and Safety Regulations review…con't

- **Phase I,** which included a review of **Parts 1-5,** of the OHS Regulations was open until November 30, 2025.
- Numerous stakeholders were consulted with, and they provided feedback with recommendations which is currently in review by the ministry.
- Currently, ministry staff are working on **Phase II**, which includes **Parts 6-11** of the OHS Regulations. Stakeholders will be contacted when this section is up for stakeholder review.
- **Parts 12-34**, including appendix will be review **in Phase III**, once **Phase II** is completed.

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Occupational Health and Safety Regulations review…con't

- Part 6 – General Health Requirements
- Part 7 – Personal Protective Equipment
- Part 8 – Noise Control and Hearing Conservation
- Part 9 – Safeguards, Storage, Warning Signs and Signals
- Part 10 – Machine Safety
- Part 11 – Powered Mobile Equipment

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How to get involved in the Occupational Health and Safety Regulations review

- We encourage individuals and organizations to participate in the review of *The Occupational Health and Safety Regulations, 2020* to help make our workplaces safer.
- Please visit **saskatchewan.ca/government/public-engagement** for more information.

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Questions?

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saskatchewan.ca