Radon
## What is Radon

- Radon is an invisible, odourless, tasteless, radioactive gas found everywhere.
- Radon decay products (progeny) contribute to the risk of lung cancer with release of alpha particle.

<table>
<thead>
<tr>
<th>Decay Product</th>
<th>Half Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranium 238</td>
<td>4.47 billion years</td>
</tr>
<tr>
<td>Radium 226</td>
<td>1620 years</td>
</tr>
<tr>
<td>Radon 222</td>
<td>3.8 days</td>
</tr>
<tr>
<td>Polonium 218</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Lead 214</td>
<td>27 minutes</td>
</tr>
<tr>
<td>Bismuth 214</td>
<td>19.7 minutes</td>
</tr>
<tr>
<td>Polonium 214</td>
<td>$1.6 \times 10^{-4}$ seconds</td>
</tr>
<tr>
<td>Lead 210</td>
<td>19.4 years</td>
</tr>
</tbody>
</table>
How Does Radon Enter Buildings

• Mainly from building/soil contact
  – Floor drains
  – Cracks in walls and floor

• Can also come through well water supply
Can Radon Levels Fluctuate?

Yes, levels can fluctuate hourly/daily

- High at night due to building heat loss
- High in winter as ground not frozen under slab
- Ventilation systems help manage/reduce levels

![Graph showing fluctuation of radon levels over a week](image-url)
How To Manage Radon Levels

By installing a sub-slab depressurisation system, we are able to manage the radon levels in buildings.

This redirects gases under the building to the atmosphere.
Radon Health Effect

Only currently known health effect is an increased risk of lung cancer.

Life Long Exposure Risk Related to Radon Smoker and Non-smoker

- Baseline exposure
- Exposure to 200 Bq/m³
- Exposure to 800 Bq/m³

Life Long Exposure = 24/7/365 x 70 years
Testing for Radon

• All schools built before 2016 have been tested
• New buildings are tested 3 to 4 years after construction once building has settled
• New buildings are tested as per Health Canada guidelines for public buildings:
  – Each occupied room on ground floor
  – Every third room on other floors
  – Duplicate test for every 10 detectors
  – One blank test for every 20 detectors
Testing for Radon

• Long term testing occurs during winter months, from 90 to 130 days
• Mitigated schools are tested yearly to assure acceptable levels are maintained
• Once mitigation work is complete, the building is re-tested to assure project success
• Continuous radon monitors can be used to evaluate hourly radon levels
Sources

Canadian Lung Association
https://www.lung.ca/lung-health/air-quality/indoor-air-quality/radon

Health Canada
https://www.canada.ca/en/health-canada/services/radon.html

Office of the Chief Medical Officer of Health
https://www2.gnb.ca/content/gnb/en/departments/ocmoh/healthy_environments/content/radon/faq.html