

# Radon gas

## Explain dangers

Radon is a radioactive gas that you can't see, smell, or taste. It is produced by the decay of uranium, which is found in soils and rocks. This makes it a "naturally occurring radioactive material" or NORM.

Radon gas can move freely through the soil and escape into the air or seep into buildings—such as a home, office, or school.

Once outdoors, it becomes diluted. Indoors, however, it can build up to hazardous levels, especially in poorly ventilated areas or spaces below ground.

It is found most often in the following places:

- Basements and crawl spaces
- Underground mines and tunnels
- Water treatment plants
- Petroleum production plants
- Fertilizer manufacturing facilities
- Metal recycling facilities.

Radon can enter a building through cracks in the foundation floors and walls. It can also enter through gaps around construction joints, support posts, window casements, service pipes, drains, or sump pumps.

If radon gas enters the lungs, it can damage the cells that line the lungs. Long-term exposure to high levels of radon can cause lung cancer.

**Radon is the leading cause of lung cancer in non-smokers and the second-leading cause in smokers.\***

Health Canada estimates that radon exposure causes 3,200 lung cancer deaths each year in Canada. They recommend that radon in the air be less than 200 becquerels per cubic metre (Bq/m<sup>3</sup>).

An estimated 6.9% of Canadians are living in homes with radon levels above this number.†

\* "Risk factors for lung cancer", Canadian Cancer Society website, accessed Sep 2017.

† Health Canada, Cross-Canada Survey of Radon Concentrations in Homes: Final Report (2012) p. 9.

## Identify controls

All enclosed buildings should be tested for radon. Do-it-yourself kits are reasonably priced and can be purchased from the Radiation Safety Institute of Canada or the Ontario Lung Association.

Health Canada recommends long-term radon testing over a period of at least three months. It's best to test in the colder months because windows and doors are generally kept closed during that time.

If the radon level in a workplace is more than 200 Bq/m<sup>3</sup>, the employer should tell workers about the presence of radon and warn them about the health effects of exposure.

The employer should consult an expert who specializes in radon testing and remediation. Health Canada recognizes the Canadian National Radon Proficiency Program (C-NRPP) certification program.

If the radon level in the workplace is between 200 and 800 Bq/m<sup>3</sup>, the employer should carry out a "NORM Management" program. This involves:

- Changing work practices
- Keeping the public out or limiting access by workers to areas where radon levels are high
- Taking steps to reduce the level of radon to less than 200 Bq/m<sup>3</sup>.

If the radon level in the workplace is more than 800 Bq/m<sup>3</sup>, the employer should carry out a "Radiation Protection Management" program. This involves:

- Putting administrative controls in place such as the use of personal protective equipment
- Establishing a dose monitoring program to track the annual amount of exposure that workers receive
- Measuring workplace radon levels periodically
- Taking steps to reduce radon levels to less than 200 Bq/m<sup>3</sup>.

## Demonstrate

Explain to your crew the steps that the employer has taken or will take to protect them from exposure to radon gas.