

# NUCLEAR *facts*



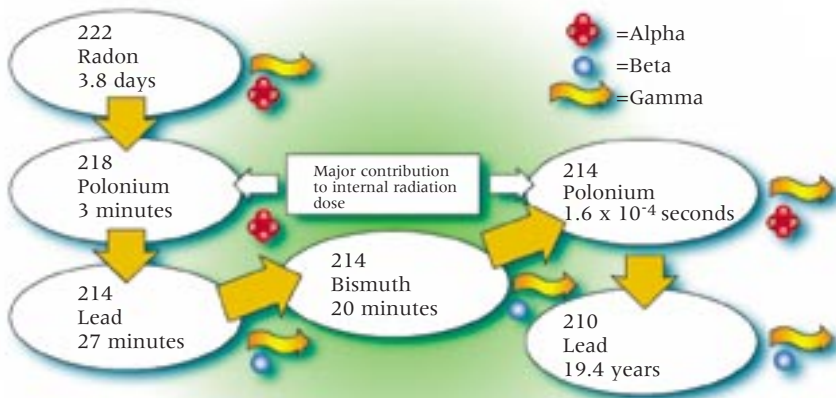
## What is radon?

RADON IS A COLOURLESS AND ODOURLESS GAS THAT RESULTS FROM THE RADIOACTIVE DECAY OF RADIUM.

It is the largest source of natural background radiation and contributes more than half of the total radiation dose received by most people.

Radium, in turn, is produced through the natural decay of uranium. As small amounts of uranium are found in all soils throughout the world, radon gas is constantly being produced and released from the ground. It is therefore always present in the air.

### Major Radon Decay Products



### Where is radon found?

Outdoors, where it is greatly diluted by the air, radon is present in relatively low concentrations. However, it can seep into buildings and homes from the earth surrounding the foundation or materials, such as stone, used in construction. Most homes in Canada contain a level of radon gas that is considerably higher than outdoor concentrations. Indoor levels of radon can vary greatly, depending on how the structure is sealed and ventilated.

In general, radon can enter a structure through a variety of routes: cracks, joints, or penetrations in the foundation or walls; dirt floors and crawl spaces; and areas around drainage pipes and sump pumps. In poorly ventilated buildings, with stagnant pockets of air, radon concentrations could build up rapidly if the gas has a means of seeping into the building.

### A harmless gas or a health hazard?

As a chemically inert gas, radon can be inhaled and exhaled without causing any significant damage. However, radon decays into radioactive products, called radon progeny, which are normally solids that emit alpha particles.

Outside the body, these alpha particles pose no problem since they are unable to penetrate the skin. However, the radon progeny can attach themselves to dust particles, which if inhaled can lodge in the bronchial and lung tissue, where the emitted alpha particles can potentially damage the bronchial and lung cells.

In recent years, many studies have been performed on the possible health effects of radon on both animals and humans. Despite these studies, uncertainty remains today regarding both safe exposure levels

and the extent of the health hazard of radon and its progeny. Nevertheless, the International Agency for Research on Cancer has designated radon and its decay products as human carcinogens.

Health Canada conducted a survey of 14,000 homes in 19 Canadian cities in the 1970s and found no correlation between radon levels in the home and lung cancer.

## Measuring radon

Due to the uncertainty regarding the magnitude of radon's effects, standards and guidelines for maximum exposure levels to the public vary from country to country. Health Canada and provincial health departments have published guidelines on what is considered to be an acceptable level of radon exposure. Based on these guidelines and measurements of radon levels in homes across the country, Health Canada estimates that less than one-tenth of 1% of all homes in Canada – fewer than 8,000 homes – have high enough levels of radon to warrant corrective action.

Radon gas can only be detected through sophisticated tests. Since levels can fluctuate from hour to hour, tests over several days are advisable to provide a more accurate measure of the average level of radon in the home.

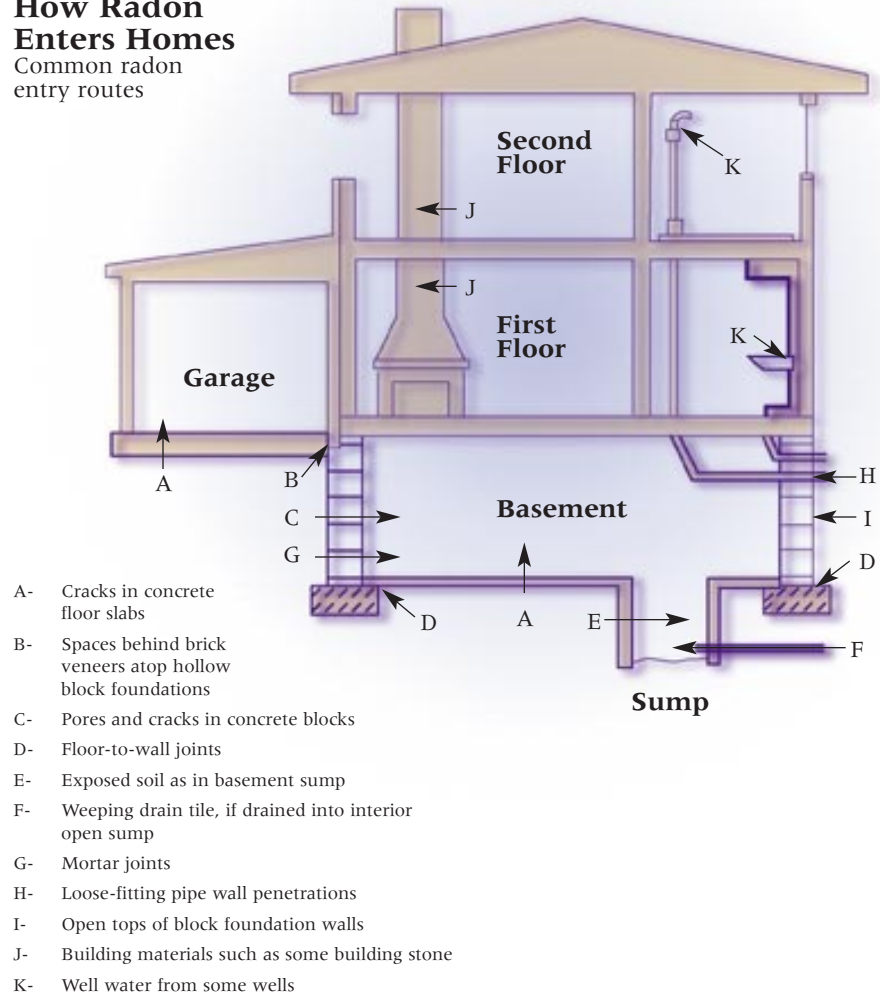
## Lowering the radon level

Radon levels can be lowered easily and, in most cases, relatively inexpensively. As radon concentrations are lowered when the gas is diluted in the air, the simplest way to reduce radon levels in the home immediately is to open one or more windows to improve circulation.

Other remedial steps include impeding the entry of radon into a home.

## How Radon Enters Homes

Common radon entry routes



Home-owners can seal cracks in the foundation, in walls, or around pipes; ensure that sump pumps are covered and vented to the outside; and ensure that water is present in the floor drain at all times.

While these steps can reduce the amount of radon that enters a home, they can't completely prevent such entry. To prevent entry further, a fan can be installed to pump outside air into the house, creating a slight pressure. Leakage will then be outward.

In Canada, radon detection, and steps to lower radon concentrations, when necessary, are a home-owner's own responsibility. Several private firms now provide measurement and level reduction services. To obtain information on such services contact your provincial Ministry of Health.

*See also the Web sites of the International Commission on Radiological Protection [www.icrp.org](http://www.icrp.org)*

*and the United Nations Scientific Committee on the Effects of Atomic Radiation [www.unscear.org](http://www.unscear.org)*

