

2.0 Radon

DESCRIPTION Radon is an invisible, odorless, tasteless gas that occurs naturally in the earth's crust. Radon is a product of the decay of uranium. The decay of uranium to lead is a 14-step process. Radon is formed at the sixth step. It is unique because it is the first decay product that is a gas, not a solid.

THE CONCERN The radon gas itself is not a problem but its decay products are. The radioactive decay products are particles that can attach themselves to lung tissue when radon gas is inhaled. It is primarily the alpha radiation that causes lung cancer. In the United States, it is estimated that over 20,000 deaths are caused every year by radon gas. As with cigarette smoking, the risk is higher with greater exposure. The effects are long term rather than immediate.

WHERE IT IS FOUND Uranium is present in many parts of the earth's crust. Areas subject to high radon gas levels have appreciable concentrations of uranium in the earth and cracks or porous soils through which the gas can migrate up to the surface.

HOW IT GETS INTO HOUSES Radon escaping into the air is not a problem, since it is diluted quickly. In buildings, however, radon gas can be trapped, particularly during winter months when doors and windows are kept closed and ventilation is at a minimum. It is difficult to predict which buildings will have a problem.

Radon enters the building through cracks in basement floors and walls, openings around pipes and electrical services into the basement, through water supplies, and through basement floor drains, for example. Even in areas with high concentrations in the earth, one building may have very high radon levels and a similar building across the street may have very low levels.

TESTING There are several types of detectors available for testing radon levels in buildings. A charcoal canister can be used to absorb radon from the air. There are etch detectors that use a sensitive plastic surface. The radon will leave tracks or etchings on the plastic, which can be measured. There are filtering systems where air is pumped through a filter. There are also grab-sample testers that allow for short term testing by simply taking an air sample. Some of the test procedures require laboratory analysis.

The identification of radon gas in a home is not part of a standard home inspection.

In the U.S., any radon levels above 4 picoCuries/liter bring a recommendation for remedial action. In Canada, the action level is 200 Bequerels per cubic meter (5.4 picoCuries per liter). Since radon levels in a building can vary at different times of the day and seasons of the year, longer testing times are better. Winter testing is generally considered more reliable than summer testing.

There are several techniques used to lower radon levels in houses. They include sealing holes to prevent radon gas getting into houses, pressurizing basements or crawl spaces to keep the gas out, and adding pipes below basement floors to carry radon away from the home. Guidance is available from the Environmental Protection Agency in the U.S. and from Health and Welfare Canada, Environmental Radiation Hazards Division, Canada.