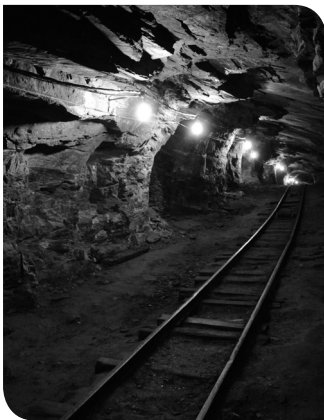


Radon

Burden of Occupational Cancer Fact Sheet



WHAT IS RADON?

Radon is a **naturally occurring radioactive gas** produced from the natural breakdown of uranium in soils and rocks and is colorless, tasteless, and odourless. Radon in groundwater, soil, or building materials may enter the home or work environment and then decay, emitting ionizing radiation. Levels of radon in confined spaces or underground are often significantly higher than outdoor air levels. The International Agency for Research on Cancer classifies radon as a **known carcinogen** (IARC 1).

WHAT ARE ITS HEALTH EFFECTS?

- Lung cancer

THE BURDEN OF LUNG CANCER FROM WORKPLACE EXPOSURE TO RADON IN CANADA

The term 'burden' refers to the human impact (deaths, illness, years of life lost) and the economic costs (health care, productivity) associated with a cause or group of causes of disease.

190
Lung cancers due to
workplace radon exposure

Results show that approximately **190 lung cancers** are due to occupational exposure to radon each year in Canada, based on past exposures (1961-2001). This amounts to **0.8% of all lung cancers** diagnosed annually.

WHAT IS THE ECONOMIC IMPACT?

Results show that work-related radon exposure resulted in approximately **\$185 million in costs for newly diagnosed lung cancer cases** in 2011.

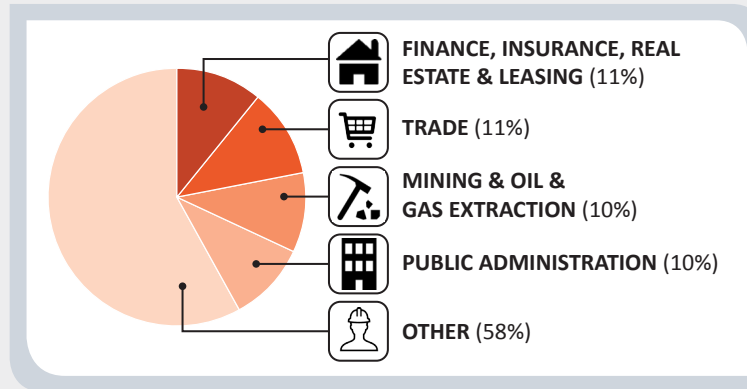
This includes approximately:

- 66% in health-related quality of life losses
- 7% in direct costs including health care, out of pocket expenses, family care giving, and workers' compensation administration
- 27% in indirect costs including output and productivity losses

\$185 million
Estimated yearly cost of lung
cancer due to workplace
radon exposure

WHAT WORKERS ARE MOST AFFECTED?

Radon exposure occurs very broadly across workers in many industries. The groups with the largest burden of radon-related cancers are **finance, insurance, real estate and leasing; trade; mining and oil and gas extraction; and public administration** (see pie chart on right). Some of the other sectors affected include manufacturing, educational services, and professional, scientific and technical services.



CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO RADON

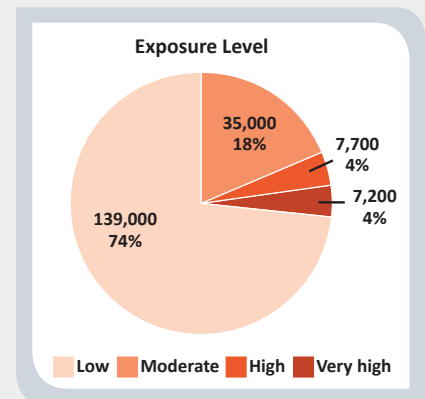
Inhalation is the most common route of occupational exposure to radon. Approximately 188,000 Canadians are exposed to radon at work.

Industries with the largest number of exposed workers in Canada include:

- **Elementary and secondary schools (16,000 people exposed)**
- **Provincial and territorial public administration (5,900 exposed)**
- **Depository credit intermediation (5,600 exposed)**

Occupations with the largest number of exposed workers include:

- **General office clerks (6,200 exposed)**
- **Elementary school and kindergarten teachers (6,000 exposed)**
- **Janitors, caretakers and building superintendents (5,000 exposed)**



Results show the majority of workers exposed to radon are in the low exposure level category (see pie chart above). The workers at risk of highest exposure to radon are those who work in underground mines. To learn more about how these exposure levels are defined, visit the [CAREX Canada website](#).

**Note: Modified CAREX Canada estimates of exposure were used to develop the burden of occupational cancer estimates for radon.*

HOW CAN EXPOSURE BE REDUCED?

Reducing radon in the workplace begins with a testing program. The Canadian NORM Guidelines recommend keeping occupational radon levels below 200 Bq/m³. If radon levels exceed this guideline, control measures include installing radon gas mitigation systems, changing ventilation patterns, and developing an exposure reduction program. For more details, visit the [OCRC exposure controls webpage](#).

ABOUT THE BURDEN OF OCCUPATIONAL CANCER STUDY

The Burden of Occupational Cancer Study quantified the number of cancers that are caused by exposure to carcinogens in the workplace in order to identify priority areas for prevention. It was a collaboration between researchers at OCRC, CAREX Canada, the Institute for Work & Health (who led the economic analyses), University of British Columbia, Université de Montréal, Institut de recherche Robert-Sauvé en santé et en sécurité du travail, and Imperial College London.



For more information, please visit OCRC at www.occupationalcancer.ca or CAREX Canada at www.carexcanada.ca.

This fact sheet was produced by CAREX Canada in partnership with OCRC. The Burden of Occupational Cancer Study is led by OCRC and is supported by the Canadian Cancer Society. CAREX Canada is hosted at Simon Fraser University and supported by the Canadian Partnership Against Cancer. Acknowledgments for photos: Leandro Neumann Ciuffo.