



# Solar Radiation

## Burden of Occupational Cancer Fact Sheet in Construction



### WHAT IS SOLAR RADIATION?

Solar radiation is the **main natural source of exposure to ultraviolet radiation**. Levels of exposure vary depending on geography, seasonality, time of day and meteorology, as well as time spent out of doors and the amount of skin exposed. Any construction work that takes place outdoors can result in exposure to solar radiation.

The International Agency for Research on Cancer classifies solar radiation as a **known carcinogen (IARC 1)**.

### WHAT ARE ITS HEALTH EFFECTS?

- Skin cancer
- Sunburns
- Heat stress/stroke
- Thick, scaly skin patches
- Cataracts
- Eye lesions and cancer

### THE BURDEN OF CANCER FROM WORKPLACE EXPOSURE TO SOLAR RADIATION 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.

**1,100**  
Skin cancers due to workplace sun exposure in construction

Approximately 4,600 non-melanoma skin cancers are due to occupational solar radiation each year, based on past exposures (1961-2001). Of these, approximately **1,100 non-melanoma skin cancers** are estimated to occur among workers in the construction industry.

### WHAT IS THE ECONOMIC IMPACT?

Work-related exposure to solar radiation in the construction industry resulted in approximately **\$7.89 million in costs for newly diagnosed non-melanoma skin cancer cases** in 2011.

- This includes approximately:
- 17% in health-related quality of life losses
  - 58% in direct costs including health care, out of pocket expenses, family caregiving, and workers' compensation administration
  - 25% in indirect costs including output and productivity losses

**\$7.89 million**  
Estimated yearly cost of skin cancer due to workplace sun exposure in construction

## CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO SOLAR RADIATION

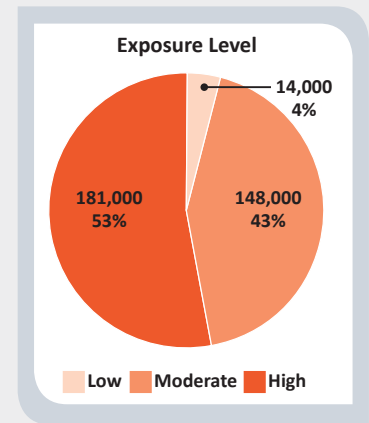
Exposure to solar radiation can occur via skin or eyes.

Approximately 343,000 Canadians are exposed to solar radiation in construction.

Occupations with the largest number of exposed workers in construction include:

- **Construction trades helpers and labourers** (100,000 people exposed)
- **Carpenters and cabinetmakers** (53,000 exposed)
- **Heavy equipment operators** (46,000 exposed)

Results show the majority of workers exposed to solar radiation in construction are in the high exposure level category, with a significant number at risk for moderate exposure (see pie chart on right). To learn more about how these exposure levels are defined, visit the [CAREX Canada website](#).



## HOW CAN EXPOSURE BE REDUCED?

Providing shade is the best way to protect workers from solar UV radiation. Other controls include modifying reflective surfaces, tinting windows on vehicles, and minimizing time spent in the sun during peak UV hours (11am – 3pm). Sun Safety at Work Canada provides resources on how workplaces can develop and implement sun safety programs. For more details, visit the [OCRC exposure controls webpage](#).

## CONSTRUCTION INDUSTRY IN CANADA

In 2016, the construction sector employed 1.4 million workers. The sector is comprised of establishments that construct, repair, and renovate buildings and engineering works, and subdivide and develop land.

## 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](http://www.occupationalcancer.ca) or CAREX Canada at [www.carexcanada.ca](http://www.carexcanada.ca).

This fact sheet was produced by CAREX Canada in partnership with OCRC. The Burden of Occupational Cancer Study was 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.

