

Construction Exposure Profiles: Solar Radiation

Sun exposure at work is a hazard for those in the building and construction trades. The sun emits ultra-violet radiation, which can harm the skin and eyes. Workers are exposed when performing job tasks outdoors during working hours. The intensity of this exposure can vary depending on factors like the season, geography, time of day, reflection from surfaces, cloud coverage, air pollution, and time spent under the sun.

CAREX Canada estimates that

141,000

Ontario construction workers are exposed to solar radiation.

Health Effects

Solar radiation causes skin cancer (both melanoma and non-melanoma) and may cause lip and eye cancer. A common and immediate effect of ultraviolet radiation is a sunburn. With repeated exposure over time, skin will age faster, losing elasticity and developing blemishes and wrinkles. Other health effects include heat stress, eye injury and cataracts.

Exposure Sources and Construction Trades

Any worker who spends time performing tasks outside is exposed to solar radiation. The highest risk is for workers who spend prolonged time outdoors under direct sunlight. Examples of tasks in construction with high levels of exposure include:

- Building or repairing outdoor structures
- Installing walls and roofs
- Repairing or replacing shingles
- Outdoor electrical work
- Excavating, grading, and paving
- Loading/unloading material
- Operating heavy equipment outdoors, if not in a covered cab

Occupational Disease Risks

OCRC's Burden of Occupational Cancer in Ontario report estimates workplace exposure to solar radiation causes 378 non-melanoma skin cancers each year among Ontario construction workers. Non-melanoma skin cancers include basal and squamous cell cancers that are less deadly than skin melanomas, but still require treatment and can kill if not treated. Without intervention, exposure to solar UV radiation will cause an estimated 27, 650 skin cancers from 2030-2060 in the Ontario construction industry.

The Occupational Disease Surveillance System (ODSS) looked at many cancers, including melanomas and lip cancers, in the Ontario construction trades compared to all other workers followed in the ODSS (skin cancers, other than melanomas, are not identified by the Ontario Cancer Registry due to under-reporting).

Electrical power, lighting and wire communications equipment erecting, installing and repairing occupations had 21% significant increased risk of melanomas and 28% increased risk for lip cancers. Excavating, grading, paving and related occupations had a 105% significant increased risk for lip cancer.



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Prevention

There are currently no occupational exposure limits for solar UV radiation in Canada, however they do exist for UV radiation from artificial sources (ex. Arc welding). These limits are easily exceeded in outdoor work so workplaces should build/update their workplace safety programs to reduce sun exposure.

It is hard to eliminate or substitute work that needs to be done under the sun. Engineering controls such as shade structures, cabs for heavy equipment, films on vehicle windows to reduce UV exposure, and covering reflective surfaces can all help protect workers from solar radiation. Administrative controls like scheduling work before 11am and after 3pm to avoid the sunniest times of the day can minimize UV exposure. Finally, if it is not possible to reduce sun exposure, hats, sunglasses, clothing made of fabrics with high UV protection factor, and broad-spectrum sunscreens are examples of personal protective equipment that can be provided to workers.

A study by the OCRC estimated that non-melanoma skin cancers in Ontario construction workers will double by 2060. PPE use and shade structures alone can reduce skin cancer cases by 6, 034 and 2, 945 respectively between 2030 to 2060.

Solar radiation can impact almost all the building and construction trades. Even with controls, it is difficult to avoid the sun, and this could put tens of thousands of workers at risk for skin cancers. Education and training are key to informing workers of their risk and encouraging them to report their work-related diagnoses to better understand the scope of the issue in Ontario.



This profile was prepared by the Occupational Cancer Research Centre in collaboration with the Ontario Building Trades Council with funding from the Ontario Ministry of Labour, Immigration, Training and Skills Development



Resources

Canadian Centre for Occupational Health and Safety - Skin Cancer and Sunlight:
https://www.ccohs.ca/oshanswers/diseases/skin_cancer.html

WorkSafeBC - Sun & UV radiation:
<https://www.worksafebc.com/en/health-safety/hazards-exposures/sun-uv-radiation>

Ontario Ministry of Labour, Immigration, Training and Skills Development - Ultraviolet Radiation in the Workplace - 2. Health Effects of UV Exposure:
https://www.labour.gov.on.ca/english/hs/pubs/uvradiation/gLuvrad_2.php

CAREX Canada - Solar UV Radiation Profile:
https://www.carexcanada.ca/profile/uv_radiation_solar/

Sun Safety at Work - Enhancing sun safety in Canadian workplaces:
<https://sunsafetyatwork.ca/>

Ontario Occupational Disease Statistics - UV radiation:
<https://www.occdiseasestats.ca/#/exposure?id=3&locale=en>

To access this fact sheet and other health and safety and prevention information please visit:
www.obtworkplaceresource.com/health-safety