

Occupational Cancer: Take Action to Prevent Exposures

Every day millions of Canadians head out to work, maybe not fully aware that in their job or place of work, they are being exposed to cancer-causing substances. These carcinogens can be viruses, chemicals, naturally occurring minerals, or solar radiation.

Recent statistics from the World Health Organization show that cancer kills an estimated 9.6 million people globally each year. Approximately 3-6% of these cancers are caused by exposures to carcinogens in the workplace, according to research cited by the National Institute for Occupational Safety and Health (NIOSH).

These work-related cancers may be preventable if exposures to known or suspected carcinogens are reduced or eliminated.

There are some occupations where cancer has been linked with exposure to specific substances. Common occupational cancers include lung cancer (exposure to arsenic, asbestos, benzo[a]pyrene, and several other chemicals), mesothelioma (exposure to asbestos), and bladder cancer (exposure to aromatic amines, and other chemicals). For more examples, please see the CCOHS fact sheet on cancer sites associated with occupational exposures.

Three Common Workplace Cancer Issues

Asbestos

Historically used in construction materials because of its heat resistant properties, tensile strength and insulating characteristics, asbestos is a group of naturally occurring fibrous minerals. Asbestos has been banned in Canada since 2018 but may still be encountered during remediation projects.

In Canada, there are approximately 1,900 cases of lung cancer and 430 cases of mesothelioma from workplace exposure diagnosed each year. Because mesothelioma symptoms typically appear 20 to 50 years after exposure to asbestos there are still new cases being diagnosed every year.

CAREX Canada has identified that most asbestos-related cancers occur among workers in the manufacturing and construction sectors. Safely removing all existing asbestos from buildings and workplaces before the asbestos deteriorates (becomes airborne) is the most common way to reduce exposure.

Diesel Engine Exhaust

According to CAREX Canada, approximately 900,000 Canadians are exposed to diesel engine exhaust at work. Burning diesel fuel in engines produces diesel exhaust, a complex mixture of gases and particulates. This mixture can contain known and suspected carcinogens such as benzene, hydrocarbons, and metals.

Inhalation is the most common route of exposure and each year in Canada there are 560 lung cancers and 200 suspected bladder cancers associated with workplace diesel exhaust exposure. Sectors most affected are mining, oil and gas extraction, transportation and warehousing.

Strategies for reducing exposure include replacing old diesel engines with low-emission models, using diesel fuel alternatives, performing regular engine maintenance, implementing exhaust treatment systems, and using exhaust extraction systems in indoor work environments.

Night Shift Work

Night shift work is work scheduled consistently outside of the standard daytime work hours. Generally, when we are awake between the hours of 12am and 5am, night shift work disrupts circadian rhythms, or the internal biological 'clock' that generates the sleep-wake cycle in humans. As a result, it suppresses melatonin production, and disrupts sleep patterns and food digestion. The International Agency for Research on Cancer has classified night shift work as a probable carcinogen.

Approximately 844,000 women perform regular night or rotating shiftwork in Canada, based on 2006 labour data. Each year in Canada, there are up to 1,200 new cases of suspected female breast cancers due to shiftwork. CAREX Canada reports that the healthcare and social assistance sector accounts for 43% of new cases, and accommodation and food services 18%.

Completing work during standard, daylight hours is the best way to limit circadian rhythm disruption, however eliminating nights is not a practical option. Night work is necessary to maintain essential services such as healthcare and law enforcement. Shift changes should be made in such a way that the worker can adapt easily to them. 'Rotating forward' (morning - afternoon - night) has been proven to be easier to adapt to than rotating backwards or having irregular shift changes.

Long Latency Period

The long latency of cancer and the involvement of many factors in its development make it challenging to track and study occupational cancer. The time between the initial exposure to a carcinogen in the workplace and cancer diagnosis can be difficult to define. For example, mesothelioma rarely appears less than 10 years from the time of the first exposure and it may only appear after 40 years. Cancer risk is highest when you breathe in carcinogens or absorb them through your skin. The level of risk depends on how often and how long your body is exposed to the carcinogen, the strength of the carcinogen, whether you are exposed to other risk factors, and how prone you are to certain types of cancer.

Occupational Cancer is Preventable

The presence of a chemical agent or situation in the work environment does not automatically mean that workers are exposed to it. There is no risk of cancer unless an agent is incorporated into the body.

Eliminating the hazard is the most effective way to prevent exposure. This control is followed by substituting products with less hazardous materials. Other methods of controlling worker exposure include: engineering controls (isolation; enclosure; local exhaust ventilation and process or equipment modification); administrative controls (good housekeeping, work practices, and hygiene practices); and as a last resort, personal protective equipment.

Employee training and education is an essential component of hazard control programs. Workers need to be knowledgeable about control measures as well as the adverse effects associated with exposures at their workplace.

Resources:

- [The Human and Economic Burden of Occupational Cancer in Canada](https://www.occupationalcancer.ca/2011/burden-of-occupational-cancer/) (<https://www.occupationalcancer.ca/2011/burden-of-occupational-cancer/>), Occupational Cancer Research Centre
- [Occupational Cancer](https://www.cdc.gov/niosh/topics/cancer/default.html) (<https://www.cdc.gov/niosh/topics/cancer/default.html>), (<https://www.cdc.gov/niosh/topics/cancer/default.html>) National Institute for Occupational Safety and Health (NIOSH)
- [Occupational Cancer](https://www.ccohs.ca/oshanswers/diseases/occupational_cancer.html) (https://www.ccohs.ca/oshanswers/diseases/occupational_cancer.html) fact sheet, CCOHS
- [Cancer and the Workplace: An Overview for Workers and Employers](http://www.assembly.ab.ca/lao/library/egovdocs/2005/alpch/155097.pdf), (<http://www.assembly.ab.ca/lao/library/egovdocs/2005/alpch/155097.pdf>) Alberta Cancer Foundation
- [Cancer](https://www.who.int/news-room/fact-sheets/detail/cancer) (<https://www.who.int/news-room/fact-sheets/detail/cancer>), World Health Organization (WHO)
- [Cancer statistics at a glance](https://www.cancer.ca/en/cancer-information/cancer-101/cancer-statistics-at-a-glance/?region=on) (<https://www.cancer.ca/en/cancer-information/cancer-101/cancer-statistics-at-a-glance/?region=on>), Canadian Cancer Society
- [Controlling Occupational Exposure to Carcinogens](https://www.occupationalcancer.ca/2019/exposure-controls/) (<https://www.occupationalcancer.ca/2019/exposure-controls/>), Occupational Cancer Research Centre
- [Prevent Occupational Disease](https://www.preventoccdisease.ca/en/index.html) (<https://www.preventoccdisease.ca/en/index.html>), Occupational Health Clinics for Ontario Workers (OHCOW)
- [No Time to Lose](https://www.notimetolose.org.uk/) (<https://www.notimetolose.org.uk/>), Institution of Occupational Safety and Health (IOSH)
- [Number of prevalent cases and prevalence of primary cancer, by prevalence duration, cancer type, attained age group and sex](https://www150.statcan.gc.ca/t1/tb1/en/tv.action?pid=1310075101&pickMembers%5B0%5D=2.1&pickMembers%5B1%5D=3.1&pickMembers%5B2%5D=4.57&pickMem) (<https://www150.statcan.gc.ca/t1/tb1/en/tv.action?pid=1310075101&pickMembers%5B0%5D=2.1&pickMembers%5B1%5D=3.1&pickMembers%5B2%5D=4.57&pickMem>) Statistics Canada

The [Health and Safety Report](http://www.ccohs.ca/newsletters/hsreport/) (<http://www.ccohs.ca/newsletters/hsreport/>), a free monthly newsletter produced by the [Canadian Centre for Occupational Health and Safety](http://www.ccohs.ca) (<http://www.ccohs.ca>) (CCOHS), provides information, advice, and resources that help support a safe and healthy work environment and the total well being of workers.

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