

Occupational Cancer Research Centre

Constructing a cancer-free workplace: Reducing exposure in the building trades

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Towards a cancer-free workplace





Canadian Société Cancer canadienn Society du cancer



What I'll Talk About Today



- The Burden of Occupational Cancer in Ontario Project
 - –Major Carcinogens in Ontario Construction
- The Occupational Disease Surveillance System

-Some results for construction and our new website

- Other OCRC Construction Projects
- Preventing Cancer in Construction and What Happens if We Don't

https://www.cancercareontario.ca/sites/ccocancercare/files/assets/OCRCBurdenofOccupationalCancerReport.pdf



Burden of Occupational Cancer in Ontario

Major Workplace Carcinogens and Prevention of Exposure

free workplace

Asbestos Exposure & Lung Cancer in Ontario

Cancers Currently Caused by Asbestos



People Currently Exposed (CAREX Canada)



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Crystalline Silica Exposure & Lung Cancer in Ontario

Cancers Currently Caused by Crystalline Silica



Cancers Currently Caused by Diesel Exhaust



Diesel Engine Exhaust Exposure Lung Cancer in Ontario

People Currently Exposed (CAREX Canada)



Gap: Limited DEE exposure data in construction

- Outside of mining and transportation, very little consideration of DEE exposure
- Lots of focus on the modernization (and electrification) of the onroad diesel fleet, less so for off-road
- In construction, a Lack of exposure data
 - \rightarrow Underestimation of exposure

 \rightarrow underestimation of impact of diesel exhaust



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Diesel Engine Exhaust Exposure in the Ontario Construction Industry (2020 report delivered to MLTSD)



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Solar UV Radiation and Skin Cancer

Cancers Currently Caused by Sun at Work



People Currently Exposed (CAREX Canada)



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https://www.odsp-ocrc.ca/



Led by the Occupational Cancer Research Centre (OCRC), the Occupational Disease Surveillance Program (ODSP) aims to develop systems to monitor patterns and trends in occupational disease in Ontario, Canada.

According to the World Health Organization, surveillance is "the ongoing, systematic collection, analysis, and interpretation of health-related data essential to planning, implementation, and evaluation of public health practice". Surveillance systems enable timely responses to public health issues. Some of their characteristic features include operating over long periods, using consistent methods to collect and analyze data, and capturing information in a comprehensive way. They have many applications such as studying and monitoring trends and changes in disease, detecting new risk factors or diseases, and evaluating the effectiveness of control programs and measures.

Construction Workers in the Occupational Disease Surveillance System (ODSS)

Disease	Construction Industry Cases (workers)	Construction Trades Occupations Cases (workers)
Lung Cancer	3,702 (211,623)	4,137 (216,068)
Mesothelioma	186 (211,623)	241 (216,068)
Asbestosis	157 (175,691)	239 (181,422)
Silicosis	19 (175,750)	22 (181,491)

• We are also able to look at many other cancers and other diseases.

ODSS Results – Mesothelioma & Asbestosis

Group	Mesothelioma	Asbestosis
Construction industry	1.9 (1.6-2.2)	2.4 (2.0-2.8)
General contractors	1.5 (1.2-2.0)	1.1 (0.8-1.5)
Special-trade contractors	2.0 (1.7-2.5)	3.0 (2.4-3.6)
Construction trades occupations	2.4 (2.0-2.8)	3.2 (2.7-3.7)
Construction electricians & repairmen	2.2 (1.5-3.3)	3.4 (2.4-4.8)
Foremen: other construction trades	3.5 (2.1-5.9)	3.4 (2.0-5.9)
Carpenters	1.8 (1.3-2.5)	2.1 (1.4-3.0)
Plasterers	2.5 (1.2-5.3)	5.5 (3.2-9.5)
Insulators	27.1 (16.0-46.1)	25.9 (14.2-47.0)
Pipefitting and plumbing	6.1 (4.7-8.0)	8.4 (6.5-10.9)

Abbreviations: Hazard Ratio (HR), confidence interval (CI)

ODSS Results – Lung Cancer

Industry Group	Cases (Workers)	HR (95% CI)
Construction industry	3,643 (211,512)	1.1 (1.1-1.1)
General contractors	1,447 (74,814)	1.2 (1.1-1.2)
Building construction	897 (49,452)	1.0 (1.0-1.1)
Highway, bridge, and street construction	308 (12,850)	1.6 (1.4-1.8)
Other construction	271 (13,997)	1.3 (1.2-1.5)
Special-trade contractors	2,363 (145,355)	1.1 (1.0-1.1)
Occupation Group	Cases (Workers)	HR (95% CI)
Construction trades occupations	4,068 (216,068)	1.1 (1.1-1.1)
Excavating Grading Paving and Related	536 (18,391)	1.5 (1.4-1.7)
Electrical Power Lighting and Wire Communications	554 (35,817)	0.9 (0.8-1.0)
Other Construction Trades Occupations	3,049 (165,405)	1.1 (1.0-1.1)
Carpenters and related	610 (30,104)	1.0 (0.9-1.0)
Brick and stone masons and tile setters	218 (8,455)	1.1 (0.9-1.2)
Plasterers and related occupations	121 (5,686)	1.3 (1.1-1.6)
Painters, paperhangers and related	214 (7,521)	1.4 (1.2-1.6)
Insulating occupations	43 (1,347)	2.4 (1.8-3.3)
Pipefitting, plumbing and related	368 (16,993)	1.1 (1.0-1.3)
Structural metal erectors	93 (3,330)	1.4 (1.1-1.7)
Glaziers	50 (2,845)	1.3 (1.0-1.8)

Abbreviations: Hazard Ratio (HR), confidence interval (CI)



Identify worker groups at risk from hazardous substances in the workplace

Explore the connection between workplace exposures and occupational disease in Ontario. Use our Data Tool to dive deeper into the risks among different sectors so we can make workplaces safer.





Occupational Disease Statistics

Sectors

Construction

Exposures

Coming in 2021.

Construction

Who is in this sector?

This sector includes general contractors and special trade contractors primarily engaged in construction work. Occupations include those concerned with constructing, renovating, and maintaining buildings and other works such as bridges, highways, railways, airports, electrical power and communication lines, towers, waterways, and utility services.

The construction sector makes up about 7.3% of the entire Ontario workforce.*

* Statistics Canada. Table 14-10-0023-01 Labour force characteristics by industry, annual (x 1,000)



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Some Key Occupational Exposures

Asbestos Diesel engine exhaust Silica dust

(more information coming in 2021)





Some Key Results

Occupations/industries with increased rates of disease compared to other workers in the ODSS





Construction Industry - Overall

Results are presented for relevant and sufficiently large groups in construction with more than 6 cases

Construction industry overall

Hover over a data point for more information









Paving, surfacing and related occupations

Occupations in labouring and other elemental work: excavating, grading and paving

This group includes occupations concerned with applying insulating materials to buildings, exposed surfaces of heating and cooling equipment and underground wires and cables to prevent or reduce the passage of heat, cold or sound. Activities include injecting or spraying foamed insulation on structures; covering exposed surfaces of equipment with asbestos, polyurethane and cork or other insulating materials; and fitting and fastening batts and foamed slabs in place.



Asbestos Workers Registry



- Contemporary exposure to asbestos primarily occurs during removal/remediation of Asbestos Containing Materials (ACM) or maintenance and renovation of ACM containing structures.
- In 1986, Ontario Asbestos Workers Register (AWR) was created to register people exposed to asbestos during Type 2 & 3 activities. It is a mandatory exposure registry that relies only on reported exposure information.

https://www.labour.gov.on.ca/english/hs/forms/index.php

- Linkage study: primary objective was to estimate the risk of cancer and nonmalignant respiratory disease among workers in the AWR.
 - -26,401 workers successfully linked to Ontario health records

Linkage of the Asbestos Worker Registry with Ontariocx Health Records report (delivered to MLTSD)

	Construction (n=15,933)		Manufacturing (n=4,680)			
	OBS	SIR*	95% CI	OBS	SIR*	95% CI
Lung Cancer	299	1.4	(1.3-1.6)	128	0.91	(0.8-1.1)
Mesothelioma	63	10.1	(7.8-13.0)	22	4.55	(2.9-6.9)
COPD	1310	3.1	(2.9-3.3)	505	1.78	(1.6-1.9)
Asbestosis	107	18.1	(14.8-21.9)	29	6.23	(4.2-9.0)
Pulmonary Fibrosis	102	11.6	(9.5-14.1)	53	17.5	(13.1-22.9)

* Standardized Incidence Ratio's adjusted for sex & 5-year age & calendar period.



What will the future burden be?

Can prevention measures reduce the future burden?

Key Steps in the Future Burden of Cancer in Construction Project



- 1. Estimate the number of future cancers caused by past and current exposures in the Ontario construction industry
- 2. Identify priority exposures and feasible prevention measures and expected reduction in exposure levels
- 3. Produce comparison estimates of future cancers assuming the adoption of each prevention measure to evaluate the cost-benefit of the prevention measures

Lung Cancers Due to Silica Dust, assuming no intervention





Possible Prevention Measures



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	Solar UV	Silica	Asbestos	Diesel	
Elimination/ Substitution	Prefab work	 Wood framed building Alternative materials for sandblasting 	• Asbestos Ban*	 Fleet replacement 	
Engineering	 Shade structures Tinted vehicle windows 	 Wet cutting Improved ventilation Improved tools (hollow drill bits) Containment 	 Ventilation Enclosures Wetting agents 	 Improved ventilation Aftertreatment systems Stack extenders 	
Administrative	 Shift scheduling 	 Site planning 	 Building Registry 	 Preventive maintenance Limiting idling 	
PPE	 Protective clothing Sunscreen 	Respirators	 Respirators Protective suits 	Respirators Towards a cance	

Impact of Increased Respirator Use on Silica Dust & Lung Cancer





2030 2032 2034 2036 2038 2040 2042 2044 2046 2048 2050 2052 2054 2056 2058 2060

Impact of Full Elimination of Silica Dust on Lung Cancer



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Results - Asbestos





SUN SAFETY AT WORK

Enhancing Sun Safety in Canadian Workplaces

Go to sunsafetyatwork.ca to learn more about how to protect your workers from solar ultraviolet radiation and heat from the sun.















Where do we stand now?



- Many building trades workers are exposed to carcinogens at work that increase risk of cancer.
- The most common carcinogens are asbestos, crystalline silica, diesel engine exhaust, and sun from outdoor work, but there are others, such as from painting or welding.

-They impact other disease as well as cancer

- We know haw to prevent cancer and occupational disease, but it is a long-term struggle
- We need to use the evidence we have to push for change

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