Construction Exposure Profiles:

Wood Dust

PROVINCIAL BUILDING & CONSTRUCTION TRADES COUNCIL OF ONTARIO

Wood is made of cellulose fibers, water, and naturally occurring chemicals. It can also contain wood preservatives and biological agents such as bacteria, moulds, and fungi. Wood composition also varies depending on the type of tree. Trees are classified into three types: hardwoods (like beech, maple, and oak), softwoods (like spruce, pine, and cedar), and tropical or exotic woods (like mahogany, obeche, and iroko).

Wood dusts are created during the processing of wood and wood products. Inhalation and skin contact with wood dust can lead to negative health effects.

CAREX Canada estimates that

55,000

Ontario construction workers are exposed to wood dust.

Health Effects

Wood dust from all tree species can cause health effects, but the types of health effects may vary. High levels of wood dust exposure, particularly from hardwoods and tropical species, can cause sinonasal and nasopharyngeal cancer. Research has identified some specific tree species, such as oak, beech, mahogany, teak, and walnut as having a higher risk of causing cancer.

Short-term symptoms of wood dust inhalation include dry or sore throat, runny nose, and eye irritation. Over time, skin irritation may occur and develop into allergic dermatitis. Inhalation of wood dust, particularly from allergenic tree species, including cedar, oak, and some tropical tree species, can cause occupational asthma. Hypersensitivity pneumonitis, particularly from mouldy wood dust, can develop within hours or days of exposure and result in breathlessness, nausea, and other flu symptoms.

Exposure Sources and Construction Trades

According to CAREX Canada, the top exposed group by occupation in Canada to wood dust are carpenters but many building trades may be exposed.

There are many tasks in the construction trades that can generate wood dust such as:

- Sawing
- Cutting
- Sanding
- Milling
- Routing

Workers can also be exposed when disturbing wood dust that has settled by using compressed air or sweeping. Some tasks, such as sanding and using compressed air can generate high levels of fine wood dust and are particularly hazardous.

Occupational Disease Risks

According to the Occupational Cancer Research Centre's burden of occupational cancer in Ontario report, about half of occupational exposure to wood dust is in the construction industry. Sinonasal and nasopharyngeal cancer are rare, and it is estimated that only 2-3 cases are caused by wood dust each year in construction. However, short-term effects, allergic dermatitis and asthma are more common. Carpenters had a 30% increased risk of sinonasal cancer compared to all other workers in the Occupational Disease Surveillance System.

PROVINCIAL BUILDING & CONSTRUCTION TRADES COUNCIL OF ONTARIO

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Prevention

The current occupational exposure limit in Ontario for hardwood dusts is 1mg/m^3 and 5 mg/m^3 for softwoods. However, the American Conference of Governmental Industrial Hygienists (ACGIH) recommends that all wood dust exposure be kept below 1 mg/m^3 and that dust from Western red cedar, the most allergenic Canadian tree species, be kept below 0.5 mg/m^3. A list of very allergenic tree species is below, but many more species may be allergenic to some individuals.

- African maple
- Ash
- Eastern white cedars
- Oak
- Obeche
- Ebony
- Iroko
- Jacaranda
- Mahogany
- Pine
- Ramin
- Redwood
- Walnut
- Western red cedar

Complete elimination of wood dusts may not be feasible but depending on the situation, it may be possible to substitute with another type of wood with fewer known health effects. Engineering controls like local ventilation exhaust and use of high-efficiency particulate filters can greatly reduce workers' exposure to wood dust. Wet or vacuum clean-up methods and appropriate education and training on safe work procedures are examples of administrative controls. Finally, personal protective equipment such as properly fitted respirators and protective clothing can help to reduce inhalation and skin exposure respectively.

Wood dusts are a hazard present in many work environments in the construction trades. Effective use of controls and prevention strategies are key to preventing future exposure and negative health effects in the construction industry.

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.

OCRC Occupational Cancer Research Centre

Resources

Canadian Centre for Occupational Health and Safety - Wood Dust - Health Effects:
https://www.ccohs.ca/oshanswers/chemicals/wood_dust.html

CAREX Canada - Wood Dust Profile:
https://www.carexcanada.ca/profile/wood_dust/

Work Safe Alberta - Workplace Health and Safety Bulletin - Health effects from Exposure to Wood Dust:
https://open.alberta.ca/dataset/05877598-3055-4740-82a1-1db7595f3a23/resource/1245a403-4b14-498a-8bab-ec4b896e373a/download/whs-pub-ch045.pdf

WorkSafeBC - Combustible Wood Dust Mitigation and Control Checklist:
https://www.worksafebc.com/en/resources/health-safety/checklist/combustible-wood-dust-mitigation-and-control-checklist?lang=en

Ontario Occupational Disease Statistics - Wood dust:
https://www.occdiseasestats.ca/#/exposure?id=4&locale=en

Occupational Cancer Research Centre - Burden of occupational cancer in Ontario:
https://www.cancercareontario.ca/sites/ccocancercare/files/assets/OCRCBurdenofOccupationalCancerReport.pdf

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