

Consequences of Mulch Production on Public Health

A mulch production facility propels a huge amount of wood dust into the air far much more than multiple sawmills combined furthermore, currently there are mulch facilities operating in minority neighbourhoods in total disregard to community health



[Carcinogenicity Comparison-The National Toxicology Program lists wood dust as a human carcinogen](#)

Substance	IARC Classification
Wood Dust	Group 1 - Carcinogenic to humans
Asbestos	Group 1 - Carcinogenic to humans
Tobacco Smoke	Group 1 - Carcinogenic to humans

IARC Carcinogenicity Classification

Group	Description	Number of Agents
Group 1	Carcinogenic to humans	127 agents
Group 2A	Probably carcinogenic to humans	95 agents
Group 2B	Possibly carcinogenic to humans	323 agents
Group 3	Not classifiable as to its carcinogenicity to humans	500 agents

(American Conference of Governmental Industrial Hygienists)

Carcinogenicity Comparison

Substance	ACGIH Classification	TLV (Threshold Limit Value)
Wood Dust	A1 - Confirmed Human Carcinogen	1 mg/m ³ (8-hour TWA)
Asbestos	A1 - Confirmed Human Carcinogen	0.1 f/cc (8-hour TWA)
Tobacco Smoke	A4 - Not Classifiable as a Human Carcinogen	Not assigned

"5.2 Human carcinogenicity data

The risk for cancer, and particularly cancer of the nasal cavities and paranasal sinuses, among woodworkers has been investigated in many epidemiological studies. Some of the studies provided specific information on cancer risk associated with exposure to wood dust, and those studies were given greatest weight in the evaluation. Most of the available cohort and case-control studies of cancer of the nasal cavities and paranasal sinuses have shown increased risks associated with exposure to wood dust. These findings are supported by numerous case reports. Very high relative risks for adenocarcinoma at this site, associated with exposure to wood dust, have been observed in many countries, particularly in Europe. The lower risks observed in the studies in the United States may be due to differences in concentration or type of wood dust, but in one of these studies the more heavily exposed groups had

significantly increased risks. A pooled analysis of 12 case-control studies revealed a clearly increasing risk with increasing estimated levels of exposure to wood dust, overall and in most individual studies. The excess appears to be attributable to wood dust per se, rather than to other exposures in the workplace, since the excess was observed in various countries during different periods and among different occupational groups, and because direct exposures to other chemicals do not produce relative risks of the magnitude associated with exposure to wood dust.

Adenocarcinoma of the nasal cavities and paranasal sinuses is clearly associated with exposure to hardwood dust; in several series of cases of adenocarcinoma from different countries, a high proportion of cases had been exposed to hardwood, and these findings were confirmed in several case-control studies as well. There were too few studies of any type to evaluate cancer risks attributable to exposure to softwood alone. In the few studies in which exposure was primarily to softwood, the risk for cancer of the nasal cavities and paranasal sinuses was elevated but considerably lower than that in studies of exposure to hardwood or to mixed wood types; furthermore, in the studies of exposure to softwood, exposure to hardwood could not clearly be ruled out. It is more difficult to attribute excess risk to any particular species of wood. The concentration of wood dust and the duration of exposure may also contribute to differences in the risks of workers exposed to different types of wood. These studies consistently indicate that occupational exposure to wood dust is causally related to adenocarcinoma of the nasal cavities and paranasal

sinuses. In studies of squamous-cell carcinoma of the nasal cavities and paranasal sinuses, smaller excesses were generally reported than for adenocarcinomas, and a pooled analysis of 12 case-control studies found no association with exposure to wood dust.

A number of case-control studies on nasopharyngeal cancer have reported an association with employment in wood-related occupations; however, confounding was not ruled out from these studies, and the largest study, from Denmark, in which exposure to wood dust was estimated, did not confirm the association. Case-control studies of laryngeal cancer consistently showed an association with exposure to wood dust or woodworking; however, cohort studies of woodworkers gave consistently negative results. Overall, these studies provide suggestive but inconclusive evidence for a causal role of occupational exposure to wood dust in cancers of the nasopharynx. Studies of the association between exposure to wood dust and cancers of the oropharynx, hypopharynx, lung, lymphatic and haematopoietic systems, stomach, colon or rectum individually gave null or low risk estimates, gave inconsistent results across studies, and did not analyze exposure-response relationships. The evidence for an association between exposure to wood dust and Hodgkin's disease was somewhat more suggestive, in that some case-control studies showed moderately high risks, but these results were not substantiated by the results of cohort studies or some of the well-designed case-control studies. In view of the overall lack of consistent findings, there is no indication that occupational exposure to wood dust has a causal role in

cancers of the oropharynx, hypopharynx, lung, lymphatic and haematopoietic systems, stomach, colon or rectum.

5.4 Other relevant data

General knowledge of particle size indicates that wood dust can be deposited in human upper and lower airways, the deposition pattern depending partly on particle size. Heavy exposure to wood dust may result in decreased mucociliar clearance and, sometimes, in muco- stais. No data were available on clearance of wood dust from the lower airways.

Exposure to wood dust may cause cellular changes in the nasal epithelium. Increased frequencies of cuboidal metaplasia and dysplasia were found in some studies of workers exposed to dust from both hardwood and softwood. These changes can potentially progress to nasal carcinoma.

Impaired respiratory function and increased prevalences of pulmonary symptoms and asthma occur in workers exposed to wood dust, especially that from western red cedar. There is little reliable information on the effects of wood dusts on the respiratory tract of rodents. One study in vitro showed that various wood dusts are cytotoxic and can induce drug metabolizing enzymes. Constituents of beech that can be extracted with polar organic solvents are genotoxic, as demonstrated by the induction of point mutations in bacteria, DNA single-strand breaks in rat hepatocytes in vitro and micronuclei in rodent tissues in vivo. Extracts of oak wood showed similar activity, but fewer data were available. Extracts of spruce, the only softwood tested, gave consistently negative results."

— — IARC, ([*IARC monographs on the evaluation of carcinogenic risks to humans- Wood Dust and Formaldehyde; 62*](#))

Sources of Mulch Air Pollution

Mulch air pollution primarily stems from the grinding up of wood for massive production of mulch. These activities release huge amounts of pollutants into the air, contributing to environmental and health concerns.

Wood Dust Pollution During Mulch Production: Risks to the Community



Wood dust pollution is a significant concern during mulch production, posing potential risks to the surrounding community. As the demand for mulch continues to rise, it is crucial to address the environmental impact associated with its manufacturing process.

Introduction

Wood mulch is a popular landscaping material known for its aesthetic appeal and functional benefits, such as moisture retention and weed suppression. However, the process of mulch production, specifically the generation of wood dust, raises environmental and health concerns that warrant attention.

Wood Dust Pollution

During mulch production, wood materials are processed, chipped, and ground to create the desired mulching product. This mechanical processing results in the release of wood dust into the air. The fine particles of wood dust can travel over significant distances, affecting the air quality in nearby communities.

Health Risks

Exposure to wood dust has been linked to various respiratory and health issues. Inhalation of these airborne particles can lead to respiratory conditions such as asthma, bronchitis, and in severe cases, chronic obstructive pulmonary disease (COPD). Individuals with pre-existing respiratory conditions are particularly vulnerable to the adverse effects of wood dust.

Environmental Impact

Beyond its impact on human health, wood dust pollution also raises environmental concerns. The deposition of wood dust on surrounding vegetation and soil can alter ecosystems and affect plant and animal life. Additionally, excessive wood dust in the air may contribute to overall air pollution, further compromising environmental quality.

Mitigation Strategies

Addressing wood dust pollution during mulch production requires the implementation of effective mitigation strategies. These may include the use of advanced dust collection systems in mulch manufacturing facilities, the proper maintenance and upgrading of equipment, and the establishment of regulatory measures to limit emissions.

Conclusion

As communities strive for sustainable and eco-friendly practices, it is imperative to evaluate the environmental impact of various industries, including mulch production. By understanding the risks associated with wood dust pollution and implementing mitigation strategies, we can work towards promoting a healthier environment for everyone.

Remember, being informed is the first step towards positive change. Stay tuned for more insights into environmental issues and sustainable practices in our future posts.

Further Reading:

- [Health Hazards of Industrial Wood Waste \(Johns Hopkins University\)](#)
- [National Toxicology Program, Final Report on Carcinogens, Background Document for Wood Dust](#)
- [Wood Dust Known to be a human carcinogen, Report on Carcinogens](#)

[Fourteenth Edition](#)

- [A case-control study on occupational risk factors for sino-nasal cancer](#)
- [Occupational exposure to wood dust and risk of nasal and nasopharyngeal cancer](#)
- [Workers exposed to wood dust have an increased micronucleus frequency in nasal and buccal cells](#)
- [The relationship between occupational wood dust exposure and nasal cancer](#)
- [Wood dust and nasal cancer risk. A review of the evidence from North America](#)
- [Paranasal sinus cancer](#)
- [Wood dust and sino-nasal cancer](#)
- [Adenocarcinomas of the inner nose after exposure to wood dust](#)
- [Fulminant mulch pneumonitis](#)
- [Fulminant mulch pneumonitis in a previously healthy child](#)
- [Fulminant mulch pneumonitis in undiagnosed chronic granulomatous disease](#)
- [Pulmonary responses after wood chip mulch exposure](#)
- [IARC MONOGRAPHS](#)
- [HEALTH EFFECTS OF EXPOSURE TO WOOD DUST](#)



E-mail: contact@mulchcancer.com

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