

## WOOD DUST QUESTIONS AND ANSWERS

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Q. What is meant by “wood dust”?

A. Wood dust is described as any wood particle arising from the processing or handling of wood, such as cutting, sanding, or milling. It does not include dust from pulp or processed cellulose fibers. It also does not include paper or “cellulose” dust, starches, or other types of dusts that may be at a facility. The term “wood dust” also does not apply to large pieces of wood such as wood chips or wood mulch. However, could be smaller wood dust particles that are likely to be mixed in with these larger wood items.

Q. What is the relevance of wood dust to me?

A. Wood dust is generated in a variety of grinding, sanding, cutting, milling, and debarking operations. Wood dust may be generated in production operations or in other areas, such as carpentry shops, where wood is cut. When handling wood waste and cleaning around operations such as those listed above, wood dust that has settled may become airborne.

Employees can breathe wood dust whenever it is generated. The nose filters out larger dust particles, but smaller wood particles may be breathed into your lungs. A respirator may be used to reduce the amount of dust particles that would be breathed in during dusty operations.

Q. Why do I need to know about the hazards of wood dust?

A. Under the hazard communication standard of the Occupational Safety and Health Administration (OSHA), Simpson Timber is required to inform employees of the hazards of all hazardous chemicals and materials on the work-site. By knowing the hazards of a product, employees are better able to protect themselves from these hazards and take precautionary steps necessary to work safely and preserve their health.

Q. What are the hazards of wood dust?

A. Contact dermatitis is associated with handling of some woods. Eye irritation may also occur. studies have also reported a variety of health effects of wood dust inhalation. Wood dust may cause nasal dryness, irritation and obstruction of the respiratory system, coughing, wheezing, and sneezing. Inhalation of hardwood dusts may decrease the ability of the nose to clear particles, causing any wood dust in the nose to remain longer in the nasal cavity. Both the type of wood what is being done to the wood to generate the wood dust have a big impact on the dust’s hazards. For instance, asthma cases have been reported for workers using western red cedar, and pneumonitis has been associated with redwood dust. Some effects associated with wood dust are thought to be due to molds, bacteria, or pesticides present on the wood or to other materials used during certain woodworking activities (e.g. formaldehyde).

Wood dust, particularly when generated in furniture manufacturing and cabinet making, has been associated with nasal cancer (adenocarcinoma of the nasal cavities and paranasal sinuses). This finding has been observed in studies conducted in a number of European countries including England and Denmark and has been primarily associated with hardwood dusts. The association between cancer and other types of wood is less clear because many of the available health studies do not identify the types of wood being handled. Most of the wood harvested in the Northwest U.S. is softwood.

In the United States and Canada, several studies have been conducted, including evaluations of specific worker groups exposed to wood dust (e.g., in furniture making, plywood manufacture, and wood model construction). Studies of individuals with nasal cancer have also been conducted to examine potential factors associated with cancer risk. The North American studies generally have found no cancer risks associated with wood dust or risk levels that are substantially lower than those observed in the European studies.

In one U.S. study which identified elevated risks associated with wood dust exposure, persons with nasal cancers in North Carolina and Virginia were identified and risk factors were evaluated. These researchers found increased cancer risks for furniture manufacturers, “lumber” employees,

and construction workers exposed to wood dust. A slight increased risk was observed for employees in the lumber industry. The strongest link was for furniture manufacturers. no correlation made between the types of woods used and the cancers.

Q. What is the cancer classification based on?

A. Based on several extensive reviews of available information, The International Agency for Research on Cancer (IARC) has and concluded that wood dust as a whole is carcinogenic. IARC has not limited this finding to any specific type of industry (e.g. furniture manufacturing) or wood dust source (hardwood vs. softwood). IARC's conclusions are based primarily on human carcinogenicity data from studies of various exposed worker populations. In 1981 and 1987, IARC reviewed available information to determine whether there was a link between cancer and inhalation of wood dust. In of those reviews, IARC found exposure studies of the lumber and sawmill industries and the pulp and paper manufacturing industries to be inadequate to support a link to cancer; however, IARC concluded that the furniture and cabinet making industries were associated with increased risk of cancer. In 1987, IARC also reported limited evidence of cancer associated with carpentry and joinery.

In 1994, IARC again that were presented in its decision for classification all wood dust as carcinogenic. Researchers were not able to clearly link specific types of wood dust with cancer, other than to agree that hardwoods used in furniture manufacturing are associated with an increased risk this finding was also observed to a lesser degree in other industries. Other scientists reviewing the same studies have concluded that the nasal cancers are associated with only the hardwoods in the furniture manufacturing/cabinet making industries. Currently, no study has been performed to evaluate the correlation between nasal cancer and the types of wood dust that the pulp and paper industry employees have been exposed to.

In 1998, IARC issued the results of its detailed analyses of the combined results from 17 studies of nasal cancers and wood dust exposures. These analyses supported IARC's earlier conclusions and led to the following findings:

- Excess sino-nasal cancers were seen primarily in studies of European furniture makers
- The degree of risk was increased in workers with the highest level and length of exposure
- Observed risk levels were lower in studies of U.S. populations, possibly due to differences in the types of exposures that had occurred (e.g., exposures to different types of wood).

Based on its analyses, IARC has concluded that wood dust may cause "adenocarcinomas of the nasal cavities and paranasal sinuses". This is a specific type of cancer in a specific region in the respiratory tract. IARC did not find sufficient evidence to associate wood dust exposure with other types of cancer of the nasal cavities (e.g., squamous cell carcinomas) or cancers in other parts of the body, such as the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum.

A recent review of data collected by the American Cancer Society reported that lung cancer might be associated with wood dust; however, these researchers noted several factors which raise questions about this finding. First, a slightly elevated risk of lung cancer was seen among workers who reported some exposure to wood dust, but was not seen among workers who specifically reported employment in a wood-related job (e.g., lumber workers or carpenters), who would be expected to have higher dust exposures. In addition, this risk was also associated with exposures to other known carcinogens, such as formaldehyde, asbestos, and cigarette smoking. Uncertainties also existed in this study regarding actual dust levels which workers may have been exposed. This data review noted that some studies have associated wood dust exposure with a lower risk of cancer at certain sites.

Another recent review concluded that softwood dust may be linked with cancer risk; however, in most of the studies reviewed, some exposure to hardwood dust may have also occurred. The risk associated with softwood dust appeared to be generally lower than that observed with hardwood dust; however, the researchers observed that insufficient information was available to definitively

identify or quantify the potential risk.

- Q. How common is this type of nasal cancer that is associated with wood dust exposure?
- A. Nasal adenocarcinoma is an extremely rare cancer worldwide, with reports of its occurrence going down. In the United States, less than one in 1 million cancer cases diagnosed is a nasal adenocarcinoma.
- Q. What level of wood dust is hazardous?
- A. OSHA has established “levels” of wood dust that employees should not breathe because these levels may injure employees. These levels are called “Permissible Exposure Limits” OSHA has set a PEL for employee exposure to wood dust to no more than 5 mg/m<sup>3</sup> averaged over an 8-hour exposure period (i.e., a time-weighted average). Because employees may be working with wood dust for shorter durations, OSHA also set a level that employees should not breathe in a short period of time, i.e., no employee should be exposed to a concentration greater than 10 mg/m<sup>3</sup> over a 15-minute exposure period. (Note: These exposure limits thrown out by the courts in 1993. Federal OSHA can officially enforce total wood dust exposure limits of 15 mg/m<sup>3</sup> when averaged over an 8-hour exposure period. For smaller size particles in the respirable size fraction, concentrations cannot exceed 5 mg/m<sup>3</sup> when averaged over an 8-hour exposure period.

There are also limits that other non-enforcement groups have set, based on health effects studied in various industries or in laboratories. The American Conference of Governmental Industrial Hygienists (ACGIH) is one such group. They have established a limit for exposure to softwood of 5 mg/m<sup>3</sup> as a time-weighted average over an 8-hour exposure limit. These exposure limits are intended to prevent irritation. They have also recommended that exposure to some hardwoods (such as beech, walnut, and oak) be kept to 1 mg/m<sup>3</sup> as an 8-hour time-weighted average. This hardwood limit was set because these woods may impair the body’s ability to clear this dust. This impairment may contribute to the development of nasal cancer.

- Q. What were the wood dust levels that employees were exposed to in the cancer studies?
- A. None of the cancer studies had any information on the actual concentrations of wood dust. The types of studies that were performed try to relate cancer that a person has today to exposures from much earlier in his life, as much as 50 years ago. Information simply concentrations of wood dust in the air that long ago. However, some researchers pointed out that dramatic increases in production were noted in the 1930s, followed by the introduction of improved hygiene measures in the 1940s. This trend may explain why some studies have found no nasal adenocarcinomas in employees who were first exposed after the early 1940s.
- Q. How long do I have to be exposed before I am at increased risk?
- A. We don’t know how much wood dust exposure may cause cancer, or how long someone has to breathe wood dust to be at risk. However, the risk of developing nasal adenocarcinomas appears to increase as the time since the first exposure to the wood dust increases. IARC suggested two possible explanations for this finding. First, this finding could indicate that this type of cancer takes a long time to develop. Alternatively, it could reflect the fact that past exposure levels were much higher than current exposure levels. As a result, cancer risk may be most elevated for those workers who were exposed at higher levels many decades ago.
- Q. Does smoking influence the potential cancer risks posed by wood dust exposure?
- A. No clear consensus has been reached regarding any influence that smoking may have on the relationship between wood dust exposure and cancer risk. Some studies have found no increased risk of nasal adenocarcinoma for individuals who are exposed to wood dust and who smoke. Some studies have found that smoking is linked to squamous cell carcinoma in the nasal cavities, but this is a different disease than the adenocarcinoma that is most strongly linked to wood dust. In addition, some researchers have noted that smoking may be less common in some woodworker groups because smoking in their workplaces is often prohibited to prevent fire hazards. As a result, some types of cancer associated with smoking may also be less common in these workers.

smoking affects the ability of the lung to clear contaminants out of it (e.g., it impedes the

mucocilliary pathway) wood dust will not clear out of the respiratory tract of a smoker as easily as it would for a non-smoker. impaired nasal clearance could contribute to the development of nasal adenocarcinomas; however, this association has not been demonstrated in any studies.