Wood Dust and Work-related Asthma

california work-related asthma prevention program

CDPH California Department of PublicHealth

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WHAT'S INSIDE?

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WOOD DUST CAN BE HARMFUL

Wood dust is created by many types of work tasks and it can be breathed in if it gets into the air. For example, you may breathe in wood dust if you work in a furniture or cabinet-making shop, construction, logging, a sawmill, a paper mill, or a plant that makes plywood, particle board, or fiberboard. Wood shop teachers, artists who work with wood, and floor finishers are other types of workers who are exposed to wood dust.

Wood dust can cause many health and safety problems. Wood dust can irritate skin and eyes, and is also listed as a cancer-causing agent on California's Proposition 65 list. Wood dust may burn or even explode if exposed to heat or flames. Another serious health problem that exposure to wood dust can cause or trigger is work-related asthma. The rest of this booklet will focus on work-related asthma and how to prevent wood dust from worsening or causing it. Home woodworkers can also benefit from this information.

WHAT IS WORK-RELATED ASTHMA?

Asthma is a lung disease. People who have asthma can have:

- Chest tightness
- Trouble breathing
- Cough
- Wheezing

Asthma that is caused or made worse by conditions or substances at work is called "work-related asthma." Wood dust can trigger symptoms right away in people who already have asthma. Wood dust can also cause asthma in people who have never had asthma before. Sometimes symptoms can show up within a few months after you are exposed to wood dust, or they may not appear until you have been exposed for years. You may first notice symptoms after you leave work each day. Often the symptoms clear up before you return to work the next day. They usually get worse during the work week and get better or disappear during time off and vacations. Asthma can be disabling and, on rare occasions, fatal.

Photo: Worker using a power sander on wood.

People with work-related asthma may have severe symptoms if they come in contact with even a small amount of wood dust. See a doctor if you are wheezing, coughing, or have a tight chest or trouble breathing. If you think wood dust or other substances at work are causing your asthma or making it worse, tell your supervisor or union. You may be sent to see a doctor who treats work-related health problems. Tell the doctor what it is at work that causes or adds to your asthma symptoms.

It is important to avoid getting asthma because once you have it, you can have asthma for the rest of your life.

If you work with wood, the key is to keep your exposure to wood dust as low as possible. Finding out early if you have work-related asthma and preventing exposure can help prevent asthma or keep your asthma from getting worse.

DOES ALL WOOD DUST CAUSE ASTHMA?

Most types of wood dust can bother your lungs and cause other breathing problems. While irritants like wood dust can trigger asthma in people who already have this disease, some types of wood can cause asthma in people who have never had asthma before.

These are widely used types of wood that are known to cause asthma:

- Oak
- California Redwood
- Western Red Cedar
- Ash
- Chestnut
- Mahogany

Less common types of wood that are known to cause asthma:

- Abiruana
- African Cherry
- African Maple
- African Zebrawood
- Aningré (Tanganyika)
- Australian Blackwood
- Cabreuva
- Cedroarana (Brazilian Mahogany)
- Central American Walnut
- Chengal
- Eastern White Cedar
- Ebony
- Ipe (Brazilian Walnut)
- Iroko
- Kejaat
- Palisandar (Brazilian Rosewood)
- Pau Marfim
- Quillaja Bark
- Ramin

A WORKER'S STORY

CARPENTER GETS ASTHMA FROM BUILDING HOUSES

A carpenter worked building houses. He told his doctor that there was a lot of wood dust in the air at work and he often felt like he couldn't breathe. His breathing was worse when the forklift drove around, stirring up the dust on the floor and putting it into the air. He used a disposable mask but it was never properly fitted for him. He was told by his doctor that he had asthma. He said that of the 20 people at work who did a similar job, he knew five who had breathing problems like his. In this case, dust-capturing equipment on the saws and sanders and proper housekeeping to keep the dust from building up on the floor would have decreased the amount of dust he and other coworkers breathed in. This could have prevented him from getting asthma.

Other types of wood may also cause asthma but have not yet been studied.

There are various factors related to wood that can make a person's asthma worse. They include: the amount of wood dust that gets in the air, the size of the dust particles, the type of wood, the levels of asthma-causing substances in the wood, the additives in the wood, how long you are exposed to the dust, and your own body's resistance.

Unfortunately, there is very little information about how much exposure can make you sick. With many imported woods (such as those from Africa, South America, and Asia) there is even less information about health hazards. Therefore, protection from these wood dusts is especially important because we don't fully understand their ability to cause asthma.

WHICH TASKS EXPOSE WORKERS TO WOOD DUST?

You are at risk of breathing large amounts of wood dust whenever wood is being cut, worked, or finished. The dust particles released are so fine they can easily be inhaled. For example, dust can be a problem when:

- Sawing
- Routing
- Turning
- Planing
- Drilling
- Sanding
- Repairing machines

You can also be at risk when:

- Cleaning with compressed air
- Dry sweeping
- Disturbing dust on machines during maintenance work
- Stirring up from the floor with lift trucks and other vehicles

Photo: Worker wears a half-face respirator while sanding a board.

A WORKER'S STORY

MILL WORKER

A mill worker got asthma from his job after working with California redwood for five years. His tasks included using a planing machine and stacking the wood. Over time he began to wheeze and have shortness of breath. These symptoms went away during weekends and vacations, but came back during the work week. Not only was the mill worker exposed to dust when cutting wood, but his work area also had a lot of wood dust. Ventilation was poor. He was never trained about the health hazards of wood dust and how to protect himself. After he was diagnosed with asthma, he had medical treatment for seven months. However, he still was no longer able to work around wood dust. In this case, proper ventilation to capture dust from the planing machine would have decreased the dust he breathed in and could have prevented his asthma.

PREVENTING EXPOSURE IS BEST

The best protection from wood dust is to keep it out of the air in the first place. These are ways to reduce exposure:

- **WHEN POSSIBLE, USE WOODS THAT AREN'T KNOWN TO CAUSE ASTHMA**

- **ENCLOSE MACHINES**
  Run machines inside an enclosure to put less dust in the air.

- **USE LOCAL EXHAUST VENTILATION FOR MACHINES AND TOOLS**
  Equip woodworking machines and handheld power tools with vacuum or exhaust systems that capture the dust at the source, before it gets into the workplace air. Vacuum attachments with high efficiency particulate air (HEPA) filters are available for many tools.

Photo: Saw equipped with local exhaust ventilation.

- **VENTILATE THE ROOM**
  Install good room ventilation. To work well, ventilation systems must be designed and put in by trained professionals. Ventilation equipment such as filters and ducts must be checked often and well-maintained. If there is no ventilation system, working outdoors may be an option.

- **MAINTAIN TOOLS**
  Keep cutting tools sharp. As they become dull, they may put more dust particles into the air.

- **USE GOOD WORK PRACTICES**
  Be aware of how much dust is being made. You may need more protection when you are working with tools that operate at high speed or when cutting wood against the grain. For example, machine sanding causes more dust exposure than hand sanding because a larger area can be sanded in the same time. Cutting against the grain produces more dust than cutting with the grain.

- **PRACTICE GOOD HOUSEKEEPING**
  Keep surfaces and floors free of wood chips and dust. Use wet clean-up methods (for example, wipe surfaces with a wet rag). Or use a vacuum cleaner with a HEPA filter. Don't just brush off your clothing, skin, or surfaces or dry sweep floors. Never use compressed air either. This will put more dust into the air.

- **PRACTICE GOOD PERSONAL HYGIENE**
  Wash up thoroughly and clean clothing after exposure to wood dust. Vacuum dust from your body and clothing when washing facilities are not available.

- **DISPOSE OF WASTE PROPERLY**
  Bag and seal dust waste to keep it from getting in the air.

- **TRAIN STAFF**
  Train workers in safe work practices and the correct use and care of equipment.

You can use dust control devices with wood-working tools and equipment to capture wood dust at the source and keep it from getting into the air. Here are some examples:

Photos: This sander is connected to a vacuum and filtering system to capture wood dust.

Photo: This floor sander is connected to a vacuum and filtering system to keep wood dust from getting into the air.

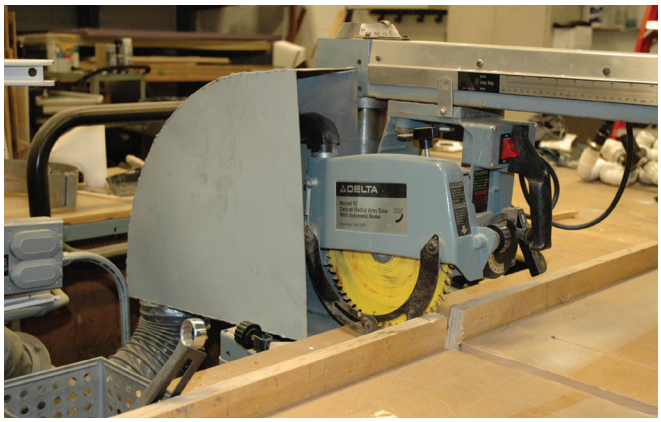

Photo: Radial arm saw equipped with local exhaust ventilation to capture dust.

Photo: Worker using radial arm saw equipped with local exhaust ventilation.

Photo: Worker using a sander connected to a vacuum and filtering system, to keep wood dust from getting into the air.

Photo: Sander connected to a vacuum and filtering system.

Photo: Band saw equipped with local exhaust ventilation to capture dust.

Photo: Floor sander equipped with a dust capturing system.

ABOUT RESPIRATORS

If you work in an area with high levels of wood dust, you may need a respirator. A respirator covers your nose and mouth and seals closely to your face. If your respirator fits well, is well maintained, and has the correct filters or cartridges, it can reduce the amount of dust or chemicals that you breathe.

Respirators that protect people from wood dust use filters to remove dust from the air you breathe. There are two main types: A half-face respirator covers the lower part of your face. A full-face respirator covers your whole face so it also protects your eyes.

It is your employer's responsibility to give you the right respirator and filter for the job. Use only respirators and filters that have been approved by the National Institute for Occupational Safety and Health (NIOSH). Non-approved paper dust masks often look like the approved half-face respirators. Always look on the respirator for the NIOSH label.

Some respirators are disposable, but with others you can just replace the filter cartridges. If you have trouble breathing through your respirator, it may be clogged. In this case, change the filters or the entire respirator right away.

You should wear a respirator only as a last resort if other safety measures, such as ventilation, don't give enough protection. If you are given a respirator to use, the law says you must also have:

- **A MEDICAL EVALUATION.** Respirators make your lungs and heart work harder. This can be unsafe for people with heart trouble, asthma, or other breathing problems. A medical evaluation is required to make sure you can wear a respirator safely.
- **A FIT TEST.** A trained person must make sure your respirator is the right size, fits tightly to your face, and doesn't leak.
- **TRAINING.** Your employer must explain what type of respirator you have been given, what it does, and how to put it on. You must be shown how to inspect, clean, and store your respirator.

Photo: Disposable half-face respirators with approval labels.

Photo: Worker wearing a half-face respirator with disposable filter cartridges.

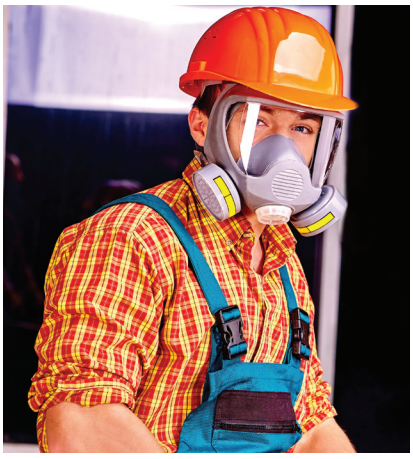

Photo: Worker wearing a full-face respirator with disposable filter cartridges.

YOUR RIGHT TO A SAFE AND HEALTHY WORKPLACE

California law says that every worker has the right to a safe and healthy workplace. The Division of Occupational Safety and Health, also called Cal/OSHA, is the state agency that enforces this law. It covers most workers in California, including those in private industry and those who work for state, county, and city governments.

Cal/OSHA enforces rules (also called standards) that require employers to:

- Provide needed personal protective equipment and training
- Limit workers' exposure to chemicals, noise, and other hazards
- Protect workers from injuries
- Set up an Injury and Illness Prevention Program (IIPP)
- Educate workers about hazardous substances they are exposed to ("Right to Know")

The law states that you have the right to know about any harmful substances on your job. All wood dust is considered hazardous and is covered by Cal/OSHA's Hazard Communication standard (Title 8, California Code of Regulations §5194). Information about this standard can be found at: http://www.dir.ca.gov/dosh/dosh_publications/hazcom.pdf.

Your employer must give you information and training about wood dust, how it affects your health, and how to protect yourself. Your employer may also have a Safety Data Sheet (SDS) for wood dust. The SDS gives information about the hazards of the dust. You have the right to see the SDS and to make a copy. Sometimes you can find SDSs on the internet. Unfortunately, SDSs may be hard to read and may have missing or wrong information. Some do not include information about asthma.

If you have any questions about wood dust, you can also ask your employer, your union, or your company health and safety representative.

WHAT IF I'M WORRIED MY WORKPLACE ISN'T SAFE?

If you think there is any type of health and safety hazard on your job, ask your employer about it first. You can also contact Cal/OSHA or your union (if you have one) to get information or make a complaint. Cal/OSHA will not tell your employer who made the complaint. The law says you can't be fired or punished for making a complaint.

Cal/OSHA may send an inspector to your workplace. If there are violations, your employer will be required to correct them and may have to pay a fine.

Employers with questions about wood dust or other workplace hazards can get advice from the Cal/OSHA Consultation Service.

- **Information about Worker Rights** Cal/OSHA's *Health & Safety Rights: Facts for California Workers* (http://www.dir.ca.gov/dosh/documents/health-and-safety-rights-for-workers.pdf)
- **Hazard Communication Information** Cal/OSHA's *Guide to the California Hazard Communication Regulation* (http://www.dir.ca.gov/dosh/dosh_publications/hazcom.pdf)
- **Complaints:** Check the Government section of your phone book or go to "File a Workplace Safety Complaint" on the Cal/OSHA website (http://www.dir.ca.gov/dosh/Complaint.htm)
- **Consultation (for employers):** (800) 963-9424

EXPOSURE LIMITS

Cal/OSHA sets limits on the amount of wood dust allowed in the air at work and recently revised the wood dust limits so they are more protective of worker health. Specifically, your exposure cannot exceed two milligrams of wood dust per cubic meter of air (2 mg/m^3). This is called the Permissible Exposure Limit (PEL). It refers to the average exposure over an eight-hour work day. There is a special PEL for Western red cedar (0.5 mg/m^3) because it is considered more toxic than many other types of wood.

There is also a Short Term Exposure Limit (STEL) for wood dust. The STEL for wood dust is 5 mg/m^3. This means that during any given 15-minute period, the amount of wood dust in the air is not allowed to go above 5 milligrams of wood dust per cubic meter of air.

See "Measuring the amount of wood dust in the air" below for more information. The American Conference of Governmental Industrial Hygienists (ACGIH®) is a private group of occupational health and safety professionals. They set voluntary exposure limits that are called Threshold Limit Values (TLVs®). ACGIH® has recommended TLVs®, averaged over an 8-hour work shift, of 0.5 mg/m^3 for Western Red Cedar dust and 1 mg/m^3 for all other species of wood dust. These limits are not required by law, but the lower 8-hour TLV would be safer for worker health than the Cal/OSHA PEL. Keeping exposure below the exposure limits will protect the health of most people, but not everyone. For example, it may be unsafe for you to be exposed to even very small amounts of wood dust if you already have asthma. Amounts below the PEL may also cause new asthma in people who have not had it before.

OTHER HAZARDOUS SUBSTANCES

You may be exposed to other hazardous substances while working with wood. These grow on wood or are used to treat or finish it. They include:

- Molds and fungi
- Glues
- Resin binders
- Waterproofing compounds
- Pesticides
- Paints, lacquers, and varnishes
- Paint stripper
- Sealants, dyes, and bonding agents

Some of these substances can cause skin, eye, and lung irritation, allergic reactions, and other health problems. Some can also cause work-related asthma. Your employer must train you about the health hazards of these substances and good work practices. Your employer must also give you the proper protective equipment such as safety goggles, gloves, and a respirator.

MEASURING THE AMOUNT OF WOOD DUST IN THE AIR

The only reliable way to know your exposure level is to measure the amount of dust in the air while you are working. This is called air monitoring. You can't tell what your exposure is just by looking at the amount of dust around. Some dust particles are very small and almost invisible. And you can't judge your exposure by how hard it is to breathe. You might have high exposure without noticing any immediate breathing trouble.

In many cases, your employer is required to measure the amount of wood dust in the air. The air monitoring must be done by a qualified person. Monitoring should be done to get the average over the whole shift and also over shorter periods where there might be high, short-term wood dust levels created during certain wood working tasks such as sawing. You have the legal right to see and copy the monitoring results.

ADDITIONAL HELP

The Work-Related Asthma Prevention Program (WRAPP)
WRAPP tracks information about California workers with asthma. The program helps workers avoid getting asthma from their jobs.

For more information call: 1-800-970-6680 (toll-free to California callers) California Relay Service: 711.

Or go to the WRAPP website (https://cdph.ca.gov/wrapp)

To get a copy of this booklet in another format, please call (510) 620-5757. Allow at least 10 days.

Proposition 65 List
Proposition 65 requires California to publish a list of chemicals known to cause cancer, birth defects, or other reproductive harm (https://oehha.ca.gov/proposition-65/proposition-65-list).