LSLA Safety Campaign 2024

Raising Awareness to Hazards in the Lumber Industry

February Focus - *Combustible Dust*

Combustible dusts are fine particles that present an explosion hazard when suspended in air under certain conditions. Many dusts are combustible, which means they can catch fire and burn. When fine dust particles catch fire while they're suspended in the air, known as deflagration, fire can spread rapidly and sometimes leads to an explosion.

Many operations in the Lumber Industry generate combustible dust. Wood products made up 25% of all combustible dust incidents in 2022, which included fires, explosions, injuries, and fatalities. It's important for businesses to recognize and control these risks in order to prevent incidents related to employee and facility catastrophe.

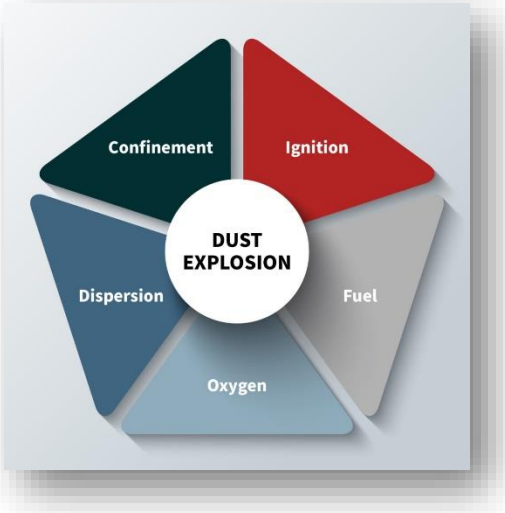
How are Workers Exposed?

Employees in almost every industry involved in product manufacturing will be exposed to dust, and most of the time the dust they are exposed to will be combustible. More specifically those who transport, handle, process, polish, ground, or shape a variety of workplace materials can be exposed to combustible dust. Workers can also release combustible dust when they take part in abrasive blasting, cutting, sanding, crushing, mixing, sifting, or screening dry materials.

What are the Risks of Combustible Dust?

Dust can ignite when exposed to enough heat or even a spark. When airborne dust is near a fire, it often results in an explosion. Poor work procedures can stir dust into the air, and something as simple as heat from equipment, or a spark from hot work is all it takes to trigger an explosion.

For an explosion to occur, the following five factors need to be present: heat (ignition source), fuel (combustible dust), oxygen (may be an oxidizer chemical), dispersion (making the dust airborne), and confinement (dust in closed or limited space).



An explosion can occur when all five elements are present. When a combustible dust explosion occurs, it is often followed by one or more subsequent explosions. The first explosion stirs up dust that has settled on surrounding surfaces and forms a dust cloud. The dust cloud can fuel a second explosion, which typically starts almost immediately after the first. The explosion can cause death, injury, and destruction of entire building.

Immediate Response to Combustible Dust Fires

Unless you have been properly trained, do not attempt to fight a combustible dust fire. Instead, alert designated personnel and follow evacuation procedures. Improper firefighting techniques can make the situation worse, by disturbing accumulated combustible dust. This could trigger an explosion or a fireball.

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INSURANCE

How do you Reduce the Risks?	
Follow the Hierarchy of Controls	
1	**Elimination or Substitution** Eliminate the hazard by removing the process all together, or substituting a safer process or material where possible, which is the most effective control. • Can you use a different material that does not produce combustible dust? • Can you use a different process that does not generate any dust?
2	**Engineering Controls** "Engineer" out the hazard by making modifications to facilities, equipment, and processes to reduce exposure. • Has your dust collection system been properly designed by an engineer and/or installation followed recommendations from the manufacturer? • Is your dust being captured at the source? • Is your dust collector located outdoors? • Does your dust collector have appropriate explosion venting? • Are you able to minimize ignition sources and contain sparks or flames? • Are dust and product conveyance and handling systems designed to minimize dust from spreading? • Can you use misting to keep dust from dispersing? • Are maintenance or 3rd party PM's established and being followed for all systems where dust can accumulate?
3	**Administrative Controls** Establish work practices and policies and provide awareness tools and training to limit the risk of combustible dust. • Have employees received suitable training, know the hazards of combustible dust and how to prevent exposures and other potential risks? • Have risk assessments been completed in all work areas where combustible dust is produced or may accumulate, all potential ignition sources, and all means of dust dispersion? • Do you properly inspect, measure, and monitor dust accumulations? • Do you have effective manual clean-up and housekeeping programs? • Do you have an emergency preparedness and response plan? • Have you developed and implemented safe work procedures to minimize fire and explosion risks? • Is signage posted to identify hazardous areas?
4	**Personal Protective Equipment** Personal protective equipment should not be the first choice but can be impactful with general exposures. Consider assessing other hazards where dust is produced. • Have PPE assessments been completed for all job tasks? • Has personal protective equipment been tested to make sure it is working properly? • Do workers have the proper respirators, eyewear, and protective clothing? • If respirators are used, do you have a respirator program?

Additional Resources

For any additional information on combustible dust and any other workplace hazards and control measures, reach out to R&R Insurance or an LSLA Representative.

Materials for this specific topic were and are also available through OSHA and Work Safe BC.
https://www.worksafebc.com/
https://www.osha.gov