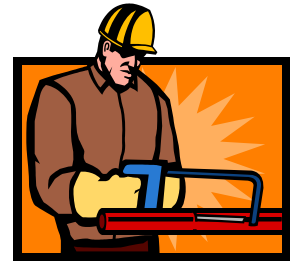




Safety Toolbox Talks – Woodworking

Hazard Communication: Combustible Wood Dusts



The US Chemical Safety Board (CSB) studied 280 combustible dust fires and explosions. 19% of those were in wood and lumber or furniture manufacturing industries. 24% of the total fires and explosions were the result of wood dust.

All fires, need three things that make up the fire triangle: Fuel, Heat & Oxygen.

The critical difference in cases of combustible dust fires is the added hazard of a dangerous fuel. Combustible dusts are dangerous because they may be unseen, cause a small fire to become an explosion, or even start a chain reaction of explosions, one after another.

When wood dust becomes airborne in certain concentrations in the air it is possible for it to catch fire or explode. This can, in essence, “Set the Air on Fire.” Wood particles are combustible when spaced in the air properly. All they need is a source of ignition to start a fire or explosion! If more wood dust has built up on floors, equipment, rafters, etc., an explosion could cause that dust to be thrown up into the air. Once that wood dust is also in the air at the proper concentration it can cause another fire or explosion, like a chain reaction.



In the case of a historic furniture manufacturer in Salt Lake City, Utah in 2004, a fire caused 3 million dollars worth of damages, temporary loss of jobs, and power outages throughout the area. Dust was building up in an area not often visited by employees or management. It is thought that the fire started above a drop ceiling in the factory. A dust collection system had a hole in a section above the drop ceiling. Dust spilled out of that hole and became airborne. When it settled, it was covering the rafters and the drop ceiling. Once a fire started in a dust collector, the fire was fueled by combustible dust in the closed system. Safety devices in the collection system were bypassed and the fire followed the fuel out of the hole above the drop ceiling. It exploded in the open area above the drop ceiling. The built-up saw dust that had settled in this area became airborne, creating additional explosions. It was reported that 80-foot flames engulfed the building. Within a matter of two minutes, the whole roof was on fire. Luckily, all the employees escaped. Undoubtedly, safe and quick evacuation reflected the effectiveness of the Emergency Evacuation Plan.

Since 1995 eight catastrophic fires have occurred in the U.S. from the result of a combustible dust fire or explosion. A catastrophic fire is a fire with three or more deaths. Since 1980, in a study with limited data, 119 deaths and 718 injuries have occurred from combustible dusts. This is an average of five deaths and 29 injuries a year.

Be Aware of Two Factors to Reduce the Potential of Combustible Dust Fires

Dust Control

The CSB report mentioned above found that 40% of dust fires take place in the dust collection system. It is the job of those who manage the dust system to maintain it, but every employee can do their part to report any notable changes in the system. If you identify a malfunction or break in the system you could help prevent a possible fire.

If you notice dust build-up on horizontal surfaces, such as equipment or counter space, report it to management. This could highlight a problem in the dust collection system or the need for further housekeeping.

Take extra care to clean up dust and now that you know airborne dust can pose a threat, use methods that limit the dust in the air. Be careful when using compressed air to clean, as it could create an explosive atmosphere.

Ignition Control

Without heat at a level that will ignite dust, there can be no fire. Take note to do everything possible to contain ignition sources and eliminate them in areas where dust is airborne. If you can identify an ignition source that does not have safety precautions notify management.

Do not smoke in the workplace!

If you are doing “hot work” such as welding or electrical work, make sure the area does not have dust suspended in the air.

Check all electrical cords for exposed wires. If you find any exposed wires, disconnect the equipment immediately and get it fixed or take it out of service.

Any metal containers that require bonding and grounding shall be bonded and grounded properly to prevent static electricity sparks.