

TOOLBOX TALK #4

COMBUSTIBLE DUST

Between 2006 and 2017, 111 combustible dust incidents resulted in 66 worker deaths and 337 injuries in the United States, according to data from the Chemical Safety Board. So, what is a combustible dust explosion? How do they happen and what can be done to prevent them?

The dangers

Five elements must be present for a combustible dust explosion to occur: fuel oxygen, an ignition source, dispersion and confinement. “Dust may accumulate on surfaces and lie undisturbed for years,” the agency states. “Then an initial fire or explosion, known as a primary event, shakes it loose and it ignites.” The resulting pressure then travels throughout a worksite and dislodges dust that has been lying dormant, serving as fuel for a secondary explosion. “Most of the fatalities and the devastating injuries have been caused by these secondary dust explosions,” CSB notes.



Safety measures

Good housekeeping is a critical first step toward mitigating dust explosion hazards. “Research has shown that worksites that are well-maintained experience fewer fires, explosions and other accidents, and are more profitable as well,” OSHA states. The agency offers additional tips on combustible dust safety:

- Implement a hazardous dust control program that includes dust inspection, testing and housekeeping.
- Equip your worksite with proper dust collection systems and filters.
- Regularly inspect both open and hidden areas for dust residue. If ignition sources are found, use cleaning methods that don’t generate dust clouds.
- Use vacuum cleaners specifically approved for dust collection.
- Ensure employees are trained on the hazards of combustible dust.

Using proper electrical equipment in hazardous locations is crucial to eliminating common ignition sources, OSHA states. Tips on controlling ignition sources include:

- Ensuring appropriate electrical equipment and wiring methods are used.
- Having an ignition control program, such as grounding and bonding and other methods for dissipating any electrostatic charge that could be generated while transporting dust through ductwork.
- Controlling the use of open flames and static electricity. Don’t allow smoking.
- Keeping heated systems and surfaces away from combustible dust.