



Weekly Safety Meeting

Your Safety Is Our Business®

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Combustible Dust Safety

Combustible dust is finely ground organic or metal material that can cause an explosion or fire when suspended in air and exposed to a sufficient source of ignition. Combustible dust is any finely divided solid material that is 420 microns or smaller in diameter and presents a fire or explosions hazard when dispersed and ignited in air. A material need not generally be combustible in its original form to become combustible dust when broken down into fine enough particles. Materials such as sugar, flour, animal feed, plastics, paper, wood, rubber, furniture, textiles, pesticides, pharmaceuticals, paints and resins, dyes, coal, and metals can all create combustible dust.

Safeguards need to be activated to control the chances of a dust explosion. These safeguards are prevention, housekeeping dust control, eliminating fugitive dust (dust leaking from other sources), keeping the environment clean, and eliminating as many hazards as possible.

To prevent fires from dust explosions, control the “dust explosion pentagon.” This includes the traditional fire triangle--fuel, heat, and oxygen--along with a dust cloud and enclosed space. Keep dust levels (fuel) in the workplace to a minimum with dust control and housekeeping. Control flame and ignition sources (heat) such as pilot lights, open flames, hot equipment, and static electricity. Never allow smoking in the worksite.

Explosion

A primary explosion takes place in a confined atmosphere such as a cyclone, storage silo, or enclosed part of the manufacturing plant. After detonation, the shock wave can damage and often rupture walls, allowing burning dust and gases from the explosion to be expelled into the surrounding area.

The primary explosion will disturb settled dust that may have accumulated. Once airborne, this dust can support a larger explosion. This is referred to as a secondary explosion. Secondary explosions can cause severe damage to surrounding plant buildings. All large-scale dust explosions result from chain reactions of this type. There may be a chain reaction of many explosions caused by the initial explosion.

Explosion Requirements:

- The dust cloud must be in the Minimum Explosive Concentration for that particular dust.
- There must be sufficient oxygen in the atmosphere to support and sustain combustion.
- The dust must be dry.
- The dust must be confined.
- There must be a source of ignition



Recognizing Dust Hazards:

- Conduct general facility-wide appraisals of dust explosion possibilities on a periodic basis.
- Conduct internal and external audits in order to identify potential explosion hazards.
- Encourage a preventative attitude among employees for eliminating dust explosions.
- Have employees and supervisors identify explosion hazards through job hazard analyses (JHAs).

Dust Control Methods:

- Implement a hazardous dust inspection, testing, housekeeping, and control program.
- Use proper dust collection systems and filters.
- Minimize the escape of dust from process equipment or ventilation systems.
- Use surfaces that minimize dust accumulation and facilitate cleaning.
- Provide access to all hidden areas to permit inspection.
- Inspect for dust residues in open and hidden areas at regular intervals.
- If ignition sources are present, use cleaning methods that do not generate dust clouds.
- Use only vacuum cleaners approved for dust collection.
- Locate relief valves away from dust deposits.

Before you begin cleaning, shut down all flame and ignition sources. Allow dust to settle out of the air. Permanent, grounded vacuum systems or wet methods are ideal for dust cleanup. Use caution with push brooms or brushes that can make dust airborne. Choose natural bristle brushes; some synthetic fiber brushes can build up static. **Using compressed air to blow and clean up dust is not recommended because of the potential to make a dust cloud.** If there is no other alternative to compressed air, extinguish all flame and ignition sources and ground the hose and nozzle before use.

To avoid a scene, keep your workplace clean!

