Obliterating Dust Explosions



Safety Talk

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What's at Stake?

It only takes three basic requirements to create an explosion and poor housekeeping can supply all of them:

- Fuel – in the form of gas, vapor or dust
- An oxidizer – usually the oxygen in the air
- An ignition source

To form a potentially explosive atmosphere, the mixture of fuel and oxidizer must be within a particular concentration range, known as an explosive limit. Concentrations below the lower explosive limit (LEL) are too lean to burn, while those above the upper explosive limit (UEL) are too rich. Anything in-between might ignite or explode when an ignition source is present. The ignition needed to finish the equation can come from a variety of sources in the work area including static electricity, electrical sparks, chemical reactions and mechanical friction.

What Can Go Wrong

14 workers were killed in a series of dust explosions at a sugar plant. There were significant accumulations of combustible sugar dust throughout the facility that was not being cleaned up well. When too much sugar dust accumulated around an overheated bearing, it finally ignited. The advancing fireball created a chain reaction that swept through the building and devastated the facility.

How to Protect Yourself

Identifying potentially explosive situations and the degree of protection

required can be highly complex, but these precautions will help reduce the risk:

- Employees should be knowledgeable about the chemicals used at the worksite and be able to conduct a hazard assessment prior to beginning any task, especially one in which highly volatile materials or physical energies are present.
- Ensure your workshop is properly ventilated. Notify your supervisor if you have concerns about ventilation.
- Dust from grinding and other debris should be removed daily. If an accumulation of dust occurs in an unreachable area, notify your supervisor.
- When spills occur, procedures should be in place to minimize the impact of explosive vapors, mists, aerosols or dusts.
- Explosive atmospheres often exist in confined spaces. Proper training must take place in confined space entry, in the selection and usage of required respiratory protection and in emergency rescue procedures.

Final Word

Before you begin any task, consider potential flammable substances and watch for ignition sources. Don’t let your work blow up on you.