Spot the OSHA Violation: Is This What You'd Call a Safe Work Environment?



What's wrong with this picture?



Leaving aside the fact that it may be toxic to breathe, the dust fouling the air in this space may be combustible, i.e., apt to catch fire and explode. If it **is**, in fact, combustible, heat from the machinery and lighting fixtures might be the ignition source that causes it to go off.

The Moral: Certain dusts in the air and on the floors and surfaces of work areas can explode if they're exposed to heat, static electricity, friction or other ignition source. The 2 keys to preventing dust explosions:

- Don't let combustible dusts accumulate; and
- Keep combustible dusts away from ignition sources.

Whoever's responsible for the work space in the above photo did neither of these things.

DUST EXPLOSIONS ARE DEADLY

WHAT'S AT STAKE

Dust explosions aren't just some kind of mad scientist nightmare. They really happen. And when they do, workers get killed, burned and maimed. Just a few notable examples:

Body Count from Recent Dust Explosions

Date	What Happened	Workers Killed	Workers Maimed
Aug. 2014	Metal dust causes explosion at Chinese metal parts plant	68	187
April 2012	Saw dust causes explosion at Canadian sawmill	2	19
Dec. 2010	Titanium dust causes explosion at West Virginia chemical plant	3, including 2 brothers	11
Feb. 2008	Sugar dust causes explosion at Georgia refinery	14	36
Jan. 2003	Rubber dust causes explosion at North Carolina drug plant	6	36
May 2002	Rubber dust causes explosion at Mississippi recycling facility	6	5

In addition to tearing apart bodies and families, dust explosions destroy factories and jobs.

HOW DUST EXPLOSIONS HAPPEN

There are 5 elements that must be present for a dust explosion to occur.



1. **Combustible dust:** There must be dust that can catch fire and explode if it's ignited. Examples: Dusts from metals, wood, cotton, sugar, plastic and coal
2. **Ignition source:** There must be a source of heat, friction, electricity or something else that causes the dust to ignite
3. **Oxygen:** There must be oxygen in the area where the dust is present
4. **Dispersion:** There must be a dust cloud that's wide and dense enough to produce an explosion if ignited
5. **Confinement:** If the first 4 elements are present, ignition of the combustible dust will cause what's called "deflagration," or rapid combustion. And if deflagration takes place in an area that's enclosed, like a building, room or vessel, it may release pressure high enough to produce an explosion.

HOW TO KEEP DUST EXPLOSIONS FROM HAPPENING

A dust explosion can't happen if **any of these 5 elements** is missing.

Oxygen is all but unavoidable since it's part of the air.

Confinement is also almost impossible to prevent because combustible dusts are usually used in buildings, rooms and other enclosed work areas.

But you **can control** the other 3 elements.

Bottom Line: We all need to work together to make sure that dangerous dispersions of combustible dusts don't get together with ignition sources.

The company will do its part by providing you with the necessary technical equipment, safe work procedures and training. In turn, you need to help us prevent dust explosions at your workplace by:

1. Following good housekeeping practice in your work area to keep combustible dusts from building up to dangerous levels; and
2. Keeping ignition sources out of areas that contain combustible dusts.

8 THINGS YOU CAN DO TO PREVENT DUST EXPLOSIONS

1. Make sure you know which areas of your workplace contain or may contain combustible dusts
2. Regularly inspect the equipment, floor and surfaces in those work areas for dust accumulations
3. Recognize that a little dust can cause a big explosion; accumulations of as little as 1/16 inch –roughly the thickness of 2 dimes–can be dangerous
4. Notify your supervisor of any dangerous dust accumulations you spot

5. Use approved and safe methods to remove dusts
6. Keep in mind that vacuums can be an ignition source and don’t use them to remove combustible dusts unless the company has approved the vacuum for such use
7. Don’t smoke in work areas that contain or may contain combustible dusts
8. Don’t use tools that generate heat or sparks in combustible dust areas without express approval