Welcome to the Hard Hat Training Series!

Welcome to the Hard Hat Training Series. Today, we will be covering a few principles regarding combustible dust. We will discuss how combustible dust is produced, the dangers it presents, and how to protect yourself and other employees.

Dust has been the unsuspecting culprit of workplace tragedies for centuries. Although the dangers of this material have been noticed since the 1700s, many people today don't recognize just how dangerous it can be.

In 1785, Giacomelli's Bakery Warehouse exploded, injuring two workers. After inspection, it was determined that a small amount of flour fell into a mounted lamp and caused the entire mill to explode.

This is not uncommon. Dust, when not properly managed, causes health issues and explosions. More recently, a dust explosion at a sugar company killed 14 people and injured 38.

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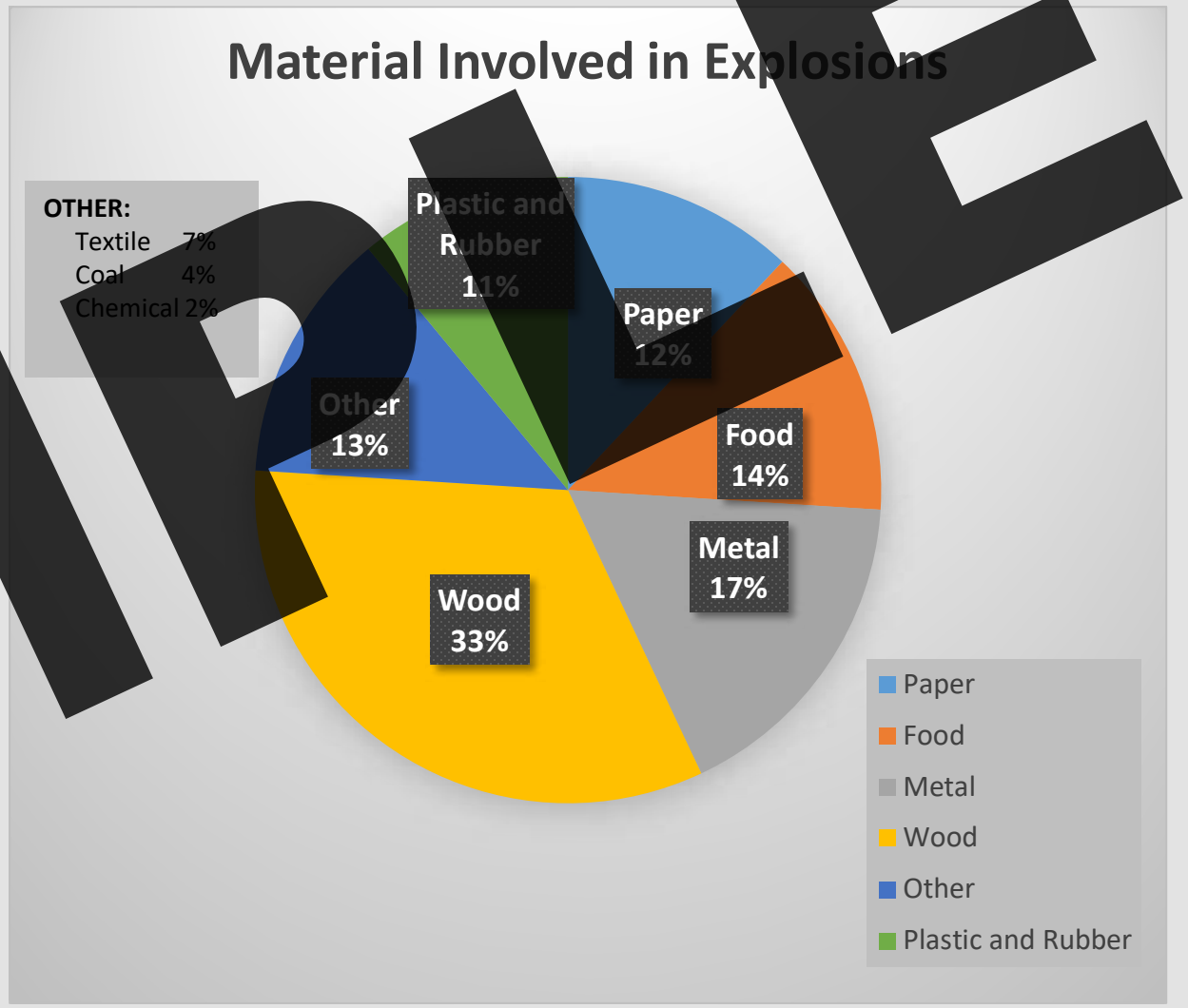
What is Combustible Dust?

Combustible dust is any particulate material that is flammable when suspended in the air or through any other oxidizing form. Many different substances can also become combustible dust under the right conditions.

During production, processing, and other procedures, fine particles are produced in the form of chips and dust. Though larger pieces of the material in question may not be flammable, the smaller byproduct can be.

Many metals (aluminum, iron, bronze, and titanium) and foods (tomatoes, carrots, and apples) are not typically considered combustion hazards. However, the dusts they produce during processing can become highly explosive.

There are also many flammable products that become even more volatile when processed down to a dust. This includes activated charcoal, sulfur, wood, starches, and plastics.



For grain handling, OSHA has released industry specific regulations for combustible dusts. However, for all other industries, OSHA has not released industry specific standards, but has developed the Combustible Dust National Emphasis Program, which was reissued in 2008.

OSHA's National Emphasis Programs (NEPs) highlights industries, practices, and materials that present occupational health risks. In the Combustible Dust NEP, we are instructed on the dangers of combustible dust, fines that may be allocated, and what standards should be used as guidelines in general industry.

OSHA® Occupational Safety and Health Administration

The standards suggested by OSHA for combustible dust come from the National Fire Protection Agency (NFPA). The adjacent graphic details the several standards issued by the NFPA as pertaining to combustible dust.

- 61 – Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities.
- 69 – Standard on Explosion Prevention Systems
- 120 – Standard for Fire Prevention and Control in Coal Mines
- 484 – Standard for Combustible Metals
- 499 – Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
- 654 – Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
- 655 – Standard for Prevention of Sulfur Fires and Explosions
- 664 – Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities

STANDARDS

- 1910.22 Housekeeping
- 1910.307 Hazardous Locations
- 1910.1200 Hazard Communication
- 1910.269 Electric Power Generation, Transmission and Distribution (coal handling)
- 1910.272 Grain Handling Facilities
- 1910.38 - Emergency Action Plans
- 1910.94 – Ventilation
- General Duty Clause, Section 5(a)(1) of the *Occupational Safety and Health Act*

The NFPA standards are Consensus Standards. Consensus Standards are not OSHA or Federal regulations. However, topics covered in Consensus Standards and National Emphasis Programs are regarded as "recognized hazards." Under OSHA's General Duty Clause, employers can be cited for these recognized hazards. Above are OSHA standards that also apply to combustible dust industries.

As we move through this presentation, we will discuss how to analyze combustible dust hazards that could be within the worksite. We will also discuss dust hazard analysis, and cover possible control measures and where they fall in the hierarchy of controls. Lastly, we will go over safe work practices and real-life situations in which combustible dust may prove to be hazardous.

Combustible dust is no laughing matter. If mishandled, it can cause damage to equipment, injury, and even death to employees just like you. Fortunately, at the conclusion of this presentation, you can go into your workplace armed with knowledge about safe work practices and cautionary behavior. Accidents can happen to you, so pay close attention and take these principles to heart!

General Information