Keep buildings and occupants safe

Tiny dust particles can cause huge hazards

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It's easy to underestimate the potential danger of dust. But the fact is that fine dust particulates of a number of different materials can wreak havoc. They accumulate on walls, pipes, ductwork, ceilings, and into exhaust systems, which creates a hazardous condition, called **combustible dust.**

Many common substances can form combustible dust including: metals, wood, grains, chemicals, coal, plastics, sugar, paper, and certain textiles. The build-up of particulates of such materials can trigger hazardous conditions when compounded with other elements, possibly leading to a fire.

How does this happen exactly? As with fire, the condition occurs when there is a combination of oxygen, heat and fuel (in this case dust). The dispersion of dust particles in sufficient quantity and concentration can cause rapid combustion, known as deflagration. If this condition is confined or enclosed in a building, room or equipment, the resulting pressure can cause an explosion.

The combustion process, or deflagration (a fireball), can occur when the dust becomes suspended in the air in sufficient concentration, along with an igniter or anything that can cause a spark. This can happen from simply dragging a piece of metal across a concrete floor.

There have been times our technicians at Service-Tech have **discovered very unsafe conditions in industrial and commercial facilities, as well as public buildings.** For example, we have discovered dangerous amounts of wood particulates in the pipes and dust collectors in the wood shops of several schools. Wood shops are vulnerable to combustible dust because saw dust gets sucked down the pipes onto the dust collectors and inside the ductwork. In one school's wood shop, we gathered 12, 55-gallon drums of dust and debris! We serviced other schools where a fire started in the dust collector system in one and in the underground duct system of another.

Fires and explosions triggered by combustible dusts have been so frequent that the U.S. Occupational Safety and Health Administration (OSHA) initiated its Combustible Dust National Emphasis Program (NEP)

in 2007. The NEP is charged with inspecting facilities that generate or handle potentially hazardous combustible dusts.

It is critically important for facility managers, maintenance, engineering and housekeeping staffs to schedule periodic cleaning of the different exhaust systems (wood and metal shops, lab fume hoods, paint booth, kitchen and laundry) and the surrounding areas where dust can collect and go unnoticed. Be sure to have your building/facility cleaned thoroughly and properly, according to OSHA regulations with specialized, explosion-proof equipment.

Cleaning and removal of grease and particulate build-up should be performed by certified and trained technicians using H.E.P.A. vacuuming and or mechanical Wet Wiping. This type of cleaning should be performed under containment to prevent any cross-contamination of other areas and equipment.

Ask vendors to provide a picture of before and after cleaning, as well as a certificate of cleaning which is required for insurance policies, as well as inspections by OSHA, the FDA and fire safety agencies.

Proper cleaning and removal of combustible dust not only reduces risks but improves the quality of indoor air. Combustible dust affects the health of a building's employees and other occupants. Statistics from injury and illness reports filed with OSHA show that **workplaces and buildings that establish safety and health management systems reduce their injury and illness costs by 20 to 40 percent.**

Additional preventative measures

In addition to properly cleaning your buildings and exhaust systems, other recommendations to prevent combustible dust include:

- Direct vents away from work areas
- Store combustible scrap, debris and waste materials (oily rags, etc.) in covered metal receptacles and remove them from the worksite as soon as possible
- Use approved containers and tanks for storing and handling flammable and combustible liquids and keep in closed containers when not in use
- Install explosion-proof lights and mechanical or gravity ventilation in storage rooms for flammable and combustible liquids
- Vacuum instead of blowing or sweeping combustible dust, using vacuum cleaners approved for dust collection
- Separate heated surfaces and heating systems from dusts
- Use proper fire extinguishers: (Class A for ordinary combustible dust materials; Class B for flammable liquid, gas or grease fires; Class C for energized –electrical equipment fires). Make sure fire extinguishers are free from obstruction and mounted within 75 feet (outside) and 10 feet (inside) of areas containing flammable liquids.

Here's the bottom line: Realize the importance of properly handling materials and regular cleaning and maintenance to avoid the accumulation of combustible dust. This goes a long way in keeping your buildings and occupants safe.

More information on combustible dust and preventative measures can be found on www.osha.gov.