ComDust—A Pro’s Approach

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This technician cleans combustible dust with explosion-proof vacuum equipment.

Combustible dust cleaning is a preventive housekeeping and maintenance program that minimizes hazards, potential flash fires and catastrophic dust explosions, while maintaining indoor air quality. Combustible dust is fine particulate that is generated from products like wood, metals, grains, chemicals, plastics, paper and carbonaceous products. When production equipment pulverizes, mills, grinds, crushes, macerates or cuts bulk product, dust generates and accumulates on all equipment and structure surfaces.

Fine powder dust, which is also suspended on higher, unnoticeable and inaccessible surfaces, is problematic. The most hazardous event, however, takes place when a primary upset or explosion generates a sonic pressure wave that suspends these particles into the path of a flame (reaction) front, which causes a devastating secondary dust explosion.

In addition to the fire and explosion hazards, the industrial hygiene aspect of fine particles can impact and affect the facility’s environment, and therefore worker health, leading to both illnesses and injuries. The Bureau of Labor Statistics reports that “6.1 percent of private-sector employees suffered 5.7 million workplace injuries and illnesses in 2000. 46 percent of those injury cases required days away from work for recuperation or restricted work activity.”

J. Paul Leigh of the Stanford Medical Center notes that businesses spend $170.9 billion a year on costs associated with occupational injuries and illnesses—expenditures that come straight out of company profits. Injuries and

illnesses increase workers' compensation and retraining costs, absenteeism, and production faults, while decreasing productivity, morale, and ultimately, profits.

Fortunately, statistics from injury and illness reports filed with the Occupational Safety & Health Administration (OSHA) indicate that workplaces that establish safety and health management systems reduce their injury and illness costs by 20 to 40 percent. "In today's competitive business environment," says OSHA Administrator John L. Henshaw, "black-and-blue of workplace injuries can be the difference between operating in the black and running in the red."

High ceiling and surface, air conveyance, dust collector, conveyor belt, silo tank and fume hood cleaning, and dust control vacuuming, are some services that may be required to clean combustible dust. They not only help prevent airborne dust and particulates from accumulating, but also promote equipment longevity, decrease utility costs for operating equipment, increase lighting brightness, stabilize insurance rates and maximize equipment returns on investment.

Leaving It to a Pro

A certified and trained company should perform the combustible dust cleaning. (Training should be similar to the National Air Duct Cleaners Association, Indoor Air Quality Association, OSHA, or Institute of Inspection, Cleaning and Restoration Certification standards.) Moreover, the contractor should have the proper equipment. Most important is an explosion-proof, dust-collecting high-efficiency particulate air (HEPA) industrial vacuum.

The cleaning and removal of dust and particulate buildup consists of a few techniques: a HEPA vacuum to clean and remove grease and particulate, as well as mechanical wet wiping, which removes dust and particulate from any surface. As a forewarning, mechanical wet wiping should be done under containment to prevent cross-contamination of other areas and equipment.

Broom sweeping and compressed air are no longer viable means of cleaning dust according to the National Fire Protection Association (NFPA) 654 Combustible Dust Standard. In fact, both techniques stir dust up into the air, which may affect sensitive equipment with ignition sources, and thus, instigate the potential of a dust explosion.

Combustible dust cleaning depends upon several important precautionary measures—preventing static electricity, sparking and electrical charges is the first step. The simple act of dragging a piece of metal across a concrete floor can create a spark, which can, in turn, lead to an explosion. Next, information on the ignition sensitivity and explosion severity of the product must be collected from material safety data sheets. If information concerning fire and explosion hazards is not available, then testing and sampling of the powder and bulk dust particulate is required.

Proper grounding of in-house electrical systems, forklifts, high-reach equipment, vacuums, extension cords lighting and more is also mandatory by the NFPA 654

Standard. Proper lock-out/tag-out documentation, slip and fall prevention, high-reach and harness protection and confined space awareness are other safety concerns contained within OSHA regulations.

Not all cleaning vendors are alike: Be aware of vendors who only clean using dirty rags, brooms, compressed air, dustpans or otherwise potentially contaminated equipment. Ask for liability insurance and workers' compensation certificates, as well as before-and-after cleaning pictures of the cleaning, to build a solid business relationship. A clean and safe facility is important for countless things, just some of which are employee safety, worker morale, labor productivity and liability protection. Make an effort to preserve yours.

For more information, please call Barrett at 267.886.7903, e-mail him via jon@imc.cc [1], or visit www.imc.cc [2].

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