Dust Explosions Stats and Facts

FACTS

1. A dust explosion can occur when suspended, solid, combustible particles are ignited, potentially releasing enormous amounts of energy. Increasing the surface area of a combustible solid enhances the ease of ignition, resulting in the dust burning more rapidly than the corresponding bulk solid.
2. Secondary dust explosions may occur when the blast wave from a primary explosion entrains dust layers already present, creating a large dust and air combustible mixture that is ignited by the first explosion.
3. Incident commanders should be aware that dust can collect in structures and on surfaces such as rafters, roofs, suspended ceilings, ducts, crevices, dust collectors and other equipment. Fire and rescue service activities such as using jets and tactical ventilation can create or disturb fine dusts or powders that may be present in a range of situations.
4. Bad housekeeping in any industry that uses flammable materials can go far beyond creating an image of a sloppily run, unprofessional operation. Bad housekeeping in any industry that uses flammable materials can go far beyond creating an image of a sloppily run, unprofessional operation.
5. A wide variety of materials that can be explosible in dust form exist in many industries. Examples of these materials include food (e.g., candy, sugar, spice, starch, flour, feed), grain, tobacco, plastics, wood, paper, pulp, rubber, pesticides, pharmaceuticals, dyes, coal, metals (e.g., aluminum, chromium, iron, magnesium, and zinc).

STATS

- In 2019, 87% of the fatalities recorded occurred due to dust explosions.
- The U.S. Chemical Safety and Hazard Investigation Board (CSB) identified 281 combustible dust incidents that led to the deaths of 119 workers, injured 718, and extensively damaged numerous industrial facilities.
- A sugar dust explosion and subsequent fire at a sugar refinery in Port Wentworth, Georgia, caused 14 deaths and left many other workers seriously injured with severe burns.
- The CSB reviewed Material Safety Data Sheets (MSDS) of 140 known substances that produce combustible dusts and found poor or inadequate transmittal of information regarding potential dust hazards; 41% of the MSDSs reviewed by the CSB did not warn users about potential explosion hazards.
- In 2017, five people were killed in grain dust-related explosions and 12 were injured, according to report information. In 2018, one person died and four were injured.
- Throughout 2018, there were 12grain dust explosions in the US, based on the information gathered so far, according to the report. There were seven reported in 2017 and the 10-year average for incidents is 8.4 per year.