

The background of the slide is a composite image. The top portion shows two workers in safety gear (hard hats and glasses) looking intently at something off-camera. The bottom portion is a high-angle, black and white photograph of a large industrial facility, possibly a refinery or chemical plant, showing complex piping, storage tanks, and structural elements. The overall color scheme is dominated by reds and oranges, suggesting a fire or industrial hazard.

Mark A. Griffon, Board Member
NFPA Dust Symposium

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Disclaimer

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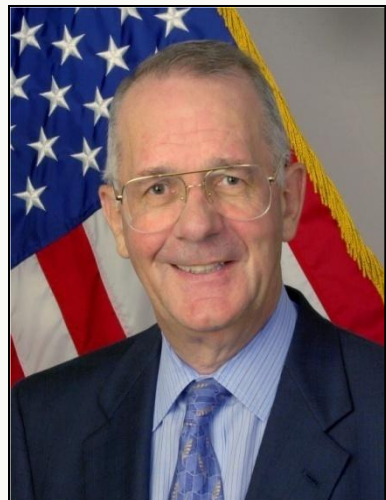


WHAT IS THE CSB?

- An **independent** U.S. federal agency
 - investigating chemical accidents
 - promoting prevention – public knowledge
- Authorized by Congress in 1990
- Modeled after NTSB
- Five Presidential appointed Board Members
- Professional investigation staff



CSB BOARD MEMBERS



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BRESLAND**



**William
WRIGHT**



**Rafael
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**William
WARK**



**Mark
GRIFFON**

WEST PHARMACEUTICAL SERVICES

**Kinston, NC
Jan 29, 2003**

**Polyethylene
Dust**

**6 Killed
Injured 38**



CTA ACOUSTICS

**Corbin, KY
Feb 20, 2003**

**Phenolic
Resin
Dust**

**7 Killed
Injured 37**





HAYES LEMMERZ INTERNATIONAL

**Huntington, IN
Oct 29, 2003**

**Aluminum
Dust**

**1 Killed
Injured 6**



Imperial Sugar Company

Port
Wentworth,
GA

Feb 7, 2008

- 14 Killed
- 38 Injured





CSB DUST STUDY (1980-2005)

- **281 fires and explosions**
 - ✓ **119 people died**
 - ✓ **718 people injured**
- **More Incidents since CSB study**
 - ✓ **Approximately 75 incidents since 2005 which resulted in fatalities or injuries**



COMMON FACTORS IDENTIFIED

- **Dust explosion hazard not recognized**
- **Engineering controls inadequate**
- **Dangerous dust accumulations**
- **Poor dust collector design/maintenance**



NFPAs Role

- **NFPA Codes and Standards in place since the 1920s**
- **7 codes and standards that deal directly with combustible dust**
 - **Control fugitive dust emissions**
 - **Design facilities to prevent dusts from migrating or accumulating**
 - **Housekeeping to remove dust build-up**



Recent Accidents

- **AL solutions, New Cumberland, WV**
- **Hoegenaes, Gallatin, TN**

AL Solutions

- **New Cumberland,
WV**
- **December 10, 2010**
- **Metal dust explosion**
- **3 killed ; 1 injured**
- **Facility processes
titanium and
zirconium scraps**





Process Description

- **AL Solutions receives titanium and zirconium scrap metal and creates purified compacts which are used as aluminum additives**
- **AL Solutions mills the scrap metal into small diameter particles and presses the metal particles into compacts**
- **The facility has had numerous fires and two fatalities in the past**



Incident Description

- The explosion occurred in the main production building, the fire propagated throughout the room, igniting several barrels of stored titanium and zirconium
 - All metal stored in the production building ignited during the incident
- The explosion blew desks and lockers into the parking lot and knocked off doors
- Fire burned for 9 hours



Hoegenaes

- **Gallatin, TN**
- **3 incidents:**
 - January 31, 2011
 - March 29, 2011
 - May 27, 2011
- **5 killed; 3 injured**
- **Hydrogen and Iron dust**





1st Incident





Third Incident





Issues being considered in Investigations

- **Relatively Weak Dust Explosion Hazards**
- **Use of FRCs**
- **OSHA rulemaking process**
- **Complacency**
 - **Many near misses reported**
 - **Some training conducted**
 - **Practices unaltered**



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