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Dust Explosions, Dryer Fires and Emergency Responders

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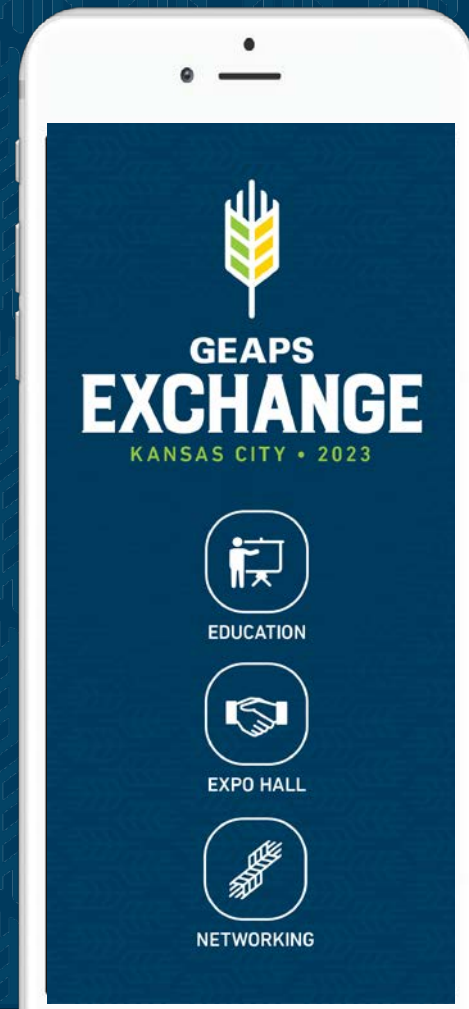
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Dust Explosions, Dryer Fires and Emergency Responders



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Dust Explosions, Dryer Fires, and Emergency Responders

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National Grain and Feed Association

February 23, 2023

Agenda

- Planning and Prevention Techniques for Dust Explosions
- Grain Dryer Fire Prevention
- Interaction with Emergency Responders

Learning Objectives

At the end of this session, participants will be able to:

- Explain mitigation techniques to reduce the potential for dust explosions.
- Describe measures for preventing grain dryer fires.
- Better interact with emergency responders and incident command.

Housekeeping

- Grain Handling Standard 1910.272(j) requires Housekeeping plan:

Plan Components:

- Written instructions
- Frequency of inspections
- Frequency of cleaning
- Methods of cleaning
- Spills and leaks
- Dust control equipment



Establishes frequency & methods



Best reduces accumulations of fugitive grain dust



For ledges, floors, equipment, other exposed surfaces

Preventive Maintenance Program

- Regular, scheduled inspections - mechanical & safety control equipment:
 - Grain Stream Processing Equipment
 - Filter Collectors
 - Bucket Elevators
 - Grain Drying Systems
- Lubrication & other appropriate maintenance
 - Manufacturers' recommendations OR
 - Necessary by prior operating records

Grain Dryers

- Help preserve grain quality during storage
 - Protect market value
 - Reduce engulfment/entrapment hazards
- Maintain - manufacturer's recommendation
 - More frequently as needed
- OSHA 29CFR1910.272(p)
 - Continuous flow-bulk raw grain dryers

Emergency Action Plan

- 1910.272(d)*Emergency action plan*. The employer shall develop and implement an emergency action plan meeting the requirements contained in 29 CFR 1910.38 general industry Emergency action plans.
- **BEST PRACTICES** for all workplaces.

Dust Explosions



2022

- 9 Grain dust explosions
- 0 fatalities, 18 injuries
- Explosions were in 1 ethanol, 2 feed mill, 2 grain elevators, 2 rice mills and 2 grain processing facilities
- Probable ignition sources; 3 case as fire, 1 as welding and 5 unknowns

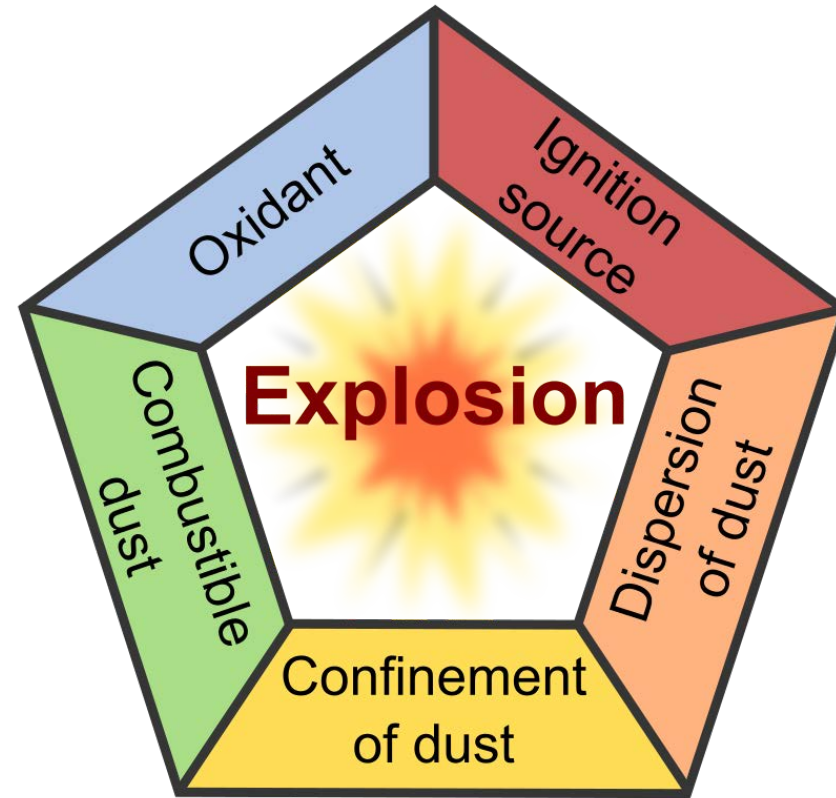
Our Influence on Explosions

There are only 2 explosion components we can influence & effectively control

- Ignition source



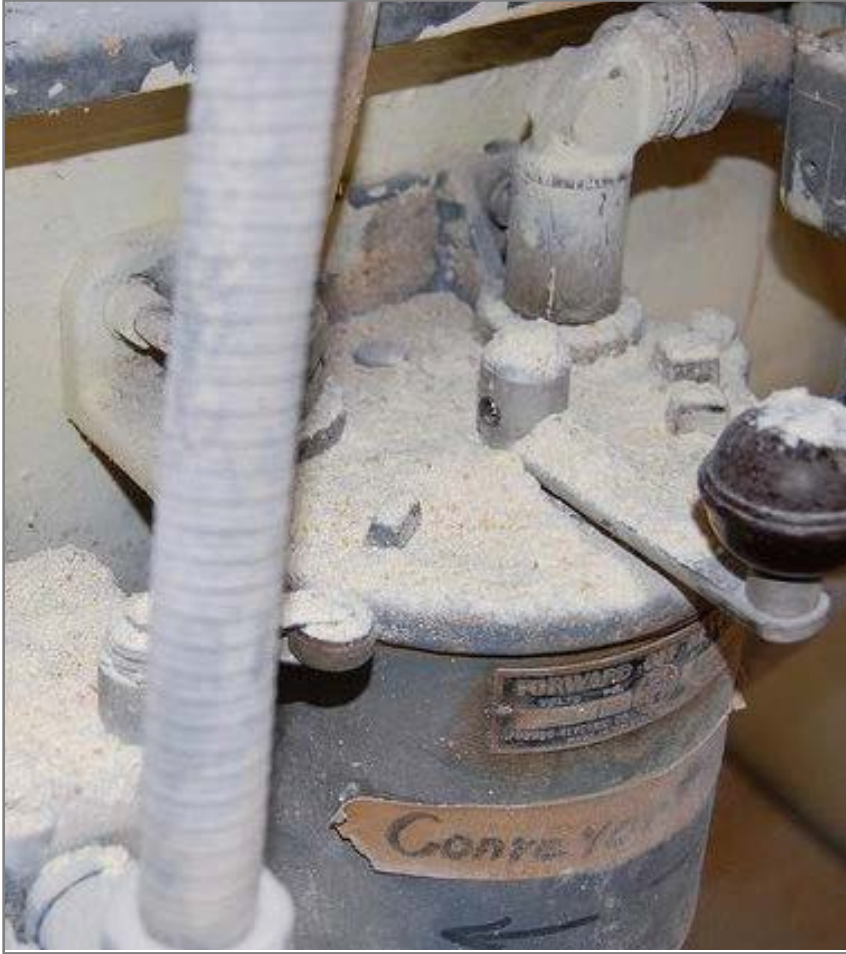
- Fuel/grain dust



Housekeeping - Address



Housekeeping - Identify



Housekeeping - Clean



Housekeeping - Report



Preventive Maintenance Program

- Correct dust collection systems
 - Malfunctioning
 - Operating below efficiency
- Correct or remove from service
 - Over heated bearings
 - Slipping or mis-aligned belts (bucket elevators)



Grain Dryer Fire Prevention



Preventing Dust Explosion

- Control Equipment/
Hazard Monitoring
 - Zero speed (motion)
 - Bearing temperature
 - Belt alignment
 - Chain breaks
 - Plug sensors
- Add - inspect control equipment to PM program



Common Causes of Dryer Fires



Plugging of grain flow



Mechanical failure



Inadequate operator training

Dryer Fire Prevention Tips

Dryer Maintenance – Start-Up

- Annual inspection
- Fuel line pressure test
- Inspect all grain handling equipment
- Check operating controls for function
- Hazard-monitoring systems
- Emergency discharge gates
- Remember the tarp



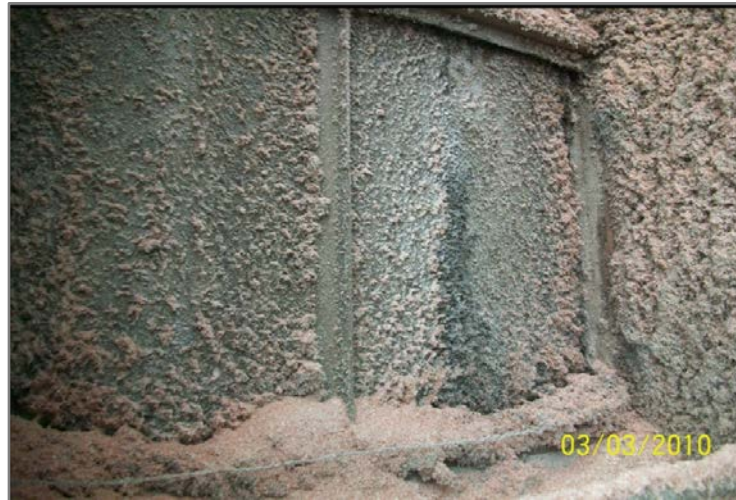
Dryer Fire Prevention Tips

Dryer Maintenance – For extended shut down

- Empty
- Inspect & clean
- Open drains
- Tarp
- Fire watch



Dryer Fire Prevention Tips



Dryer Maintenance

Proper cleaning
prevents dryer fires

- Cleaning Schedule
- Cool down time
- Tarping

Interaction with Emergency Responders

“Emergency Response Runs on Relationships.”

– Dwayne Caldwell, On Scene Coordinator Emergency Response for Indiana
Department of Environmental Management.



When You Need an EAP

- **OSHA requires written EAP for workplaces with 10 or more employees.**

10 employees or less = Oral communication of the plan

Written plans have specific requirements from OSHA.

- **A written plan is always BEST!**

Fire Control Operations

- During a fire emergency, the facility manager & fire official in charge work together to:
 - Bring the fire under control
 - Assure safety of employees, firefighters, media, spectators, etc.
 - Some state laws put fire official in charge of the scene for firefighting, rescue, & public safety.
- Establish roles of fire officials & facility management in preplanning meetings.

Fire Control Operations

- The fire command officer met upon his or her arrival.
- Employee head counts have been taken.
- Facility area and all entrances and exits have been secured.
- Contact has been initiated with relatives of missing employees.
- The status of power, water, and gas utility.
- Control of spectators.
- A company spokesperson is providing briefings to the media.
- Mutual aid arrangements and plans.

Emergency Responders



Our interactions with emergency responders should begin prior to an emergency.

Resources

- OSHA.gov
- National Grain & Feed Assn. ngfa.org
- Grain and Elevator Processing Society geaps.com

Resources

National Grain and Feed Association's Safety Health and Environment Quality Committee has updated the 35-year-old document to encompass industry changes and new technology.

**NGFA Firefighting Manual
... A Guide for Operators of Grain
Handling Facilities and Fire
Department Officials...**



Wrap Up



There is no substitute for an effective housekeeping plan



Create a dryer service/inspection plan based off your manufacturer's recommendations

Adjust inspection frequency by operational need



Exercise your facilities EAP

Become familiar with your first responders

Conduct joint training & facility familiarization

Liaison with Outside Agencies

- OSHA (federal/state)
- News media
- Social service groups
- Local disaster or civil defense agency
- Coast Guard & port officials
- Law enforcement
- Insurance officials



Thank You

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- \$200 Visa Gift card and free registration to Leadership Conference
- Raffle will be drawn at Closing Celebration, Tue 2/28