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PRESS RELEASE

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FOR IMMEDIATE RELEASE

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An effective safety program doesn't just keep employees safe, it improves job performance and reduces potential for catastrophic injury and property damage. Possessing a well-planned emergency action plan gives emergency responders the ability to effectively act on the event in a shorter period of time with a calm and thorough response which may save lives and property.

Identifying grain and feed mill safety principles is one of the aims of Central States Center for Agricultural Safety and Health (CS-CASH). This University of Nebraska Medical Center group (https://www.unmc.edu/publichealth/feedyard/) is conducting two research projects (funded by National Institutes of Occupational Safety and Health) that are designed to make a positive impact on the sustainability of cattle feedyards through increased safety and health efforts.

Common emergency scenarios that demand immediate action in feed and grain mills include:

- Explosion
- Fire
- Entrapment
- Flammable liquid or gas leak
- Chemical release or spill
- Structural failure
- Power Failure
- Natural disaster

A comprehensive emergency plan requires involvement of employers, employees, and public agencies such as fire departments and rescue squads. In the process of developing the plan, the employer should invite agencies to the facility to acquaint appropriate entities with variables such as:

- Fire hydrants and water supplies.
- Facility entry and exit points.
- Gas and power lines.
- Stored chemicals, including what types of chemicals are stored and amounts of each product.
- Confined spaces, including a description of the space.

Among the plan elements are:

- Employee alarm systems.
- Response duties of each employee.
- Evacuation procedures.
- Designated safe areas outside the facility.
- Plan to communicate with the news media.

Emergency escape routes must be clearly shown on floor plans and workplace maps. Employers must verify that their employees are familiar with the emergency escape routes.

Two means of escape from bin decks must be available to employees. Anyone working in tunnels or grain or feed elevators must be provided with at least one means of emergency escape.

Depending on the tasks an employee performs, training time and frequency will vary. At a minimum training must be provided annually. Safety

meetings and drills should be conducted more frequently.

Elements of the training should not be limited to but include the following:

- Hazard recognition and prevention (fire, explosion, etc.)
- Proper use of fire extinguishers
- Emergency reporting procedures
- Personal protective equipment
- Preventive maintenance
- Hazardous spill response
- First aid

Drills and exercises enhance readiness and the effectiveness of an emergency response plan. These points should be addressed in drill activities:

- Audible emergency communications
- Fire response and control
- Spill control and cleanup
- Emergency shutoffs
- Emergency rescue
- Medical first aid response
- Management of off-site personnel
- Monitoring and evaluation

In the grain and mill industries, grain dust explosions are the number one cause of injury, death, and property damage. As the number of feed and grain mill facilities has increased, and the volume of grains handled in any given facility has increased, the number of dust explosions has also increased.

In a grain elevator or mill, these four key elements must be simultaneously present to trigger a dust explosion:

1. Grain dusts (primary fuel)
2. Oxygen
3. An ignition source
4. A confined space

When the first three elements are present in a confined space, the rapidly expanding heated gases

build until the pressures exceed the strength of the confined space. The conditions that contribute to these kinds of explosions include:

- A complex combination of dust particle sizes
- Concentration of dust particles in the air
- Energy of the ignition source
- Moisture content of the dust (or percent of relative humidity of the air)
- The actual composition of the dust

When these conditions are present and the concentration of suspended dust exceeds the lower explosive limits of that particular dust an explosion occurs.

When grain is moved, dust is produced. The more the grain is handled, the more dust is generated. The more dust that accumulates in a confined space, the greater the chance of exceeding the lower explosive limit of the dust. Various grains have different explosive properties. When dusts generated from grains are not properly handled, conditions for an explosion can develop.

When grain moves from input to input in an elevator, there are several points where the grain sis subjected to mechanical stress. Each of these points leads to production of grain dust. Without proper precautions, each major dust site will permit the formation of a dust cloud. Each cloud has the potential to reach explosive levels.

In grain mills, the grinding operation, movement of grains along pneumatic conveyors, and the transporting of materials by bucket conveyors produce the same problems found in grain elevators. Employees in grain mills need to follow the same safety precautions.

Dust cloud ignition sources with a high probability of igniting an explosion include:

- Hot bearings
- Welding and cutting
- Belt slippage and misalignment

- Foreign objects caught in machinery

Sources with a lower probability of explosion occurrence are:

- Electrical
- Static electricity
- Lightning
- Metal and stone sparks
- Spontaneous combustion

Training is one of the most important preventive activities a grain and feed mill employer can take. In compliance with Occupational Safety and Health Administration (OSHA) compliance, each employee must receive initial and at least annual training. The employer must also provide training when changes in job requirements expose the employee to new hazards. Training must address the following topics:

- Safety precautions associated with the facility
- Hazard recognition related to dust accumulation and common ignition sources
- Preventive measures related to dust accumulation and common ignition sources
- Specific safety procedures and practices appropriate to the employee's job, including, but not limited to, the following:
    - Cleaning procedures for grinding equipment
    - Clearing procedures for choked legs
    - Housekeeping procedures
    - Hot work procedures
    - Preventive maintenance procedures
    - Lockout/tagout procedures

All employees assigned to special tasks such as bin entry or handling of flammable substances must be provided training to perform these special tasks before being permitted to do so.

Employers must make contractors aware of hazards associated with their grain or feed mill facilities, especially in relation to the work the contractor performs. Careful coordination helps ensure that

work is being performed in a manner that doesn't endanger workers. Contractors should be informed of and able to participate in an emergency action plan for the overall facility.

By promoting a culture of safety and concern for worker welfare, employers and their employees will find a safe workplace that benefits everyone involved.

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