

Pre Knowledge Survey

1. Which of the following is not an element needed for a grain dust explosion:
 - a. Oxygen
 - b. Saturation
 - c. Ignition Source
 - d. Dispersion
 - e. Confinement
2. T/F Pressures from an explosion with corn dust can be greater than 100 psig.
3. Good housekeeping includes:
 - a. Vacuuming with proper equipment
 - b. Paying attention to "hidden areas"
 - c. Training all employees
 - d. Maintaining dust aspiration systems
 - e. All of the above
4. T/F Deflagration isolation is an option for dust explosion protection.
5. Which of the following are ways to reduce grain dust during unloading:
 - a. Use cyclones, fabric filters, baffles, and deadboxes
 - b. There is no good way to reduce dust during unloading
 - c. A closed receiving area so the wind can't disturb the dust
 - d. Unload the grain slowly
6. T/F The recommended minimum spout slope for free flowing ingredients is 30 degrees.
7. Safety precautions for bucket elevators include:
 - a. Locating the bucket elevator inside the main structure
 - b. Dust tight with no venting to prohibit escape of dust
 - c. Belt speed, alignment and bearing temperature sensors
 - d. Explosion venting secured tightly to the leg
8. Suppression systems have to be inspected at minimum every:
 - a. Month
 - b. 2 months
 - c. 3 months
 - d. 12 months
9. T/F Chemical isolation systems do not trigger with pressure.
10. Explosion Suppression systems can suppress an explosion within:
 - a. 20 milliseconds
 - b. 40 milliseconds
 - c. 80 milliseconds
 - d. 120 milliseconds

Pre Knowledge Survey Key

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Post Knowledge Survey – 4 Hour

1. T/F The five elements of the explosion pentagon are confinement, saturation, oxygen, dust, and ignition.
2. Good housekeeping practices include all but the following:
 - a. Auditing of employee behavior
 - b. Addressing hidden areas
 - c. Taking appropriate measures to control dust
 - d. Training employees on the importance of mitigating dust
3. T/F: Dust serves as the ignition source in an explosion.
4. Which types of equipment can reduce grain dust during unloading?
 - a. Cyclones, dead boxes, and fabric filters
 - b. A slope of more than 30 degrees for free flowing grain
 - c. Closed receiving areas so the wind cannot disturb the dust
 - d. A narrow diameter to increase speed
5. Avoid grain turbulence at grain transfer points by:
 - a. Unloading grain very slowly
 - b. Using a baffle or other strategy to direct the grain flow
 - c. Unloading grain inside a closed building
 - d. Turning off any dust collection system to not lose any material
6. T/F: Bucket elevators should be placed as close to outside walls as possible.
7. Effective dust collection systems include which of the following:
 - a. Low suction system pressures
 - b. Limited maintenance
 - c. Extensive duct work
 - d. Dust aspiration or ventilation systems at grain transfer points
8. T/F: Controlling ignition is the only way to avoid dust explosions.
9. T/F: Sweeping dust is one way to prevent dust accumulation.
10. T/F: Dust control systems can run indefinitely with little maintenance needed.

Post Knowledge Survey

1. **T/F** The five elements of the explosion pentagon are confinement, saturation, oxygen, dust, and ignition.
2. Pressures from an explosion with corn dust can be greater than _____ psig:
 - a. 25 psi
 - b. 6 psi
 - c. 100 psi**
 - d. 35 psi
3. **T/F** Good housekeeping practices include maintaining dust aspiration systems.
4. Well-designed spouts include:
 - a. Openings to vent dust
 - b. A slope of 30 degrees for free flowing grain
 - c. Replaceable liner material**
 - d. A narrow diameter to increase speed
5. Avoid grain turbulence at grain transfer points by:
 - a. Unloading grain very slowly
 - b. Using a baffle or other strategy to direct the grain flow**
 - c. Unloading grain inside a closed building
 - d. Turning off any dust collection system to not lose any material
6. **T/F** Bucket elevators must have explosion relief panels on outside legs.
7. Dust explosion protection options include:
 - a. Containment
 - b. Deflagration Venting
 - c. Suppression
 - d. Deflagration isolation
 - e. All of the above**
8. **T/F** Explosion Suppression systems can suppress an explosion within 80 seconds
9. **T/F** Mechanical isolation systems use fast acting valves to contain the flames
10. **T/F** Suppression systems have to be inspected every 3 months