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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10. Explosion Suppression systems can suppress an explosion within:
    a. 20 seconds
    b. 40 seconds
    c. 80 seconds
    d. 120 seconds
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.

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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