

Grain Dryer Service for Fire Prevention

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Grain Dryer Service Contract --Check List:

1. Inspect sparktrode/sparkplug/igniter. Adjust as needed.
2. Inspect flame switch/scanner/flame rod. Clean and adjust as needed.
3. Inspect burner. Minor cleaning will be supplied. **Major cleaning will be charge d labor and drill bits.**
4. Inspect air inspirators. Clean and adjust as needed.
5. Inspect and clean electrical cabinet.
6. Inspect and check tightness of all panel connections.
7. Inspect and clean panel components, including relays and starters.
8. Inspect and clean air switch and air switch tube.
9. Inspect indicator lamps, lens covers, and fuses.
10. Inspect belts and belt tension.
11. Lubricate bearings on fans and fan motors.

Grain Dryer Service Contract --Check List:

12. Check and record fan motor amps.
13. Check oil level in gear boxes, check for water at drain plug.
14. Inspect belt and hand crank assembly on metering drive.
15. Inspect grain column for blockages, cracks, rusted areas and plugged openings.
16. Inspect metering system including housing, bearings, flutes and clean out.
17. Inspect chains and sprockets. Adjust to proper tension.
18. Inspect chain and/or belt guards as to proper placement.
19. Inspect screw conveyor housings and flighting where possible.,
20. Inspect and clean bindicator.
21. Check control circuits for possible jumpered safety switches.
22. Inspect vaporizer and regulator on LP systems. **Servicing will be an additional charge.**
23. Test fire the dryer if possible.

NFPA61 CHAPTER 8

8.2.2.6

- ▶ In the case of fires, dryers shall be designed with means for unloading (emergency dumping) of the dryer contents to a safe outside location in which the location and the manner does not cause fire exposure to adjacent buildings, structures or equipment.

Emergency drop-out door at grain column bottom



Emergency Slide Door



Quick Dump Drain Ports



Up-Fired Low-Pressure Burners



Burners With Debris

Vertical Fired



Up-Fired



Burner Cover Should Never Become A Funnel ☺



Burner Not Covered

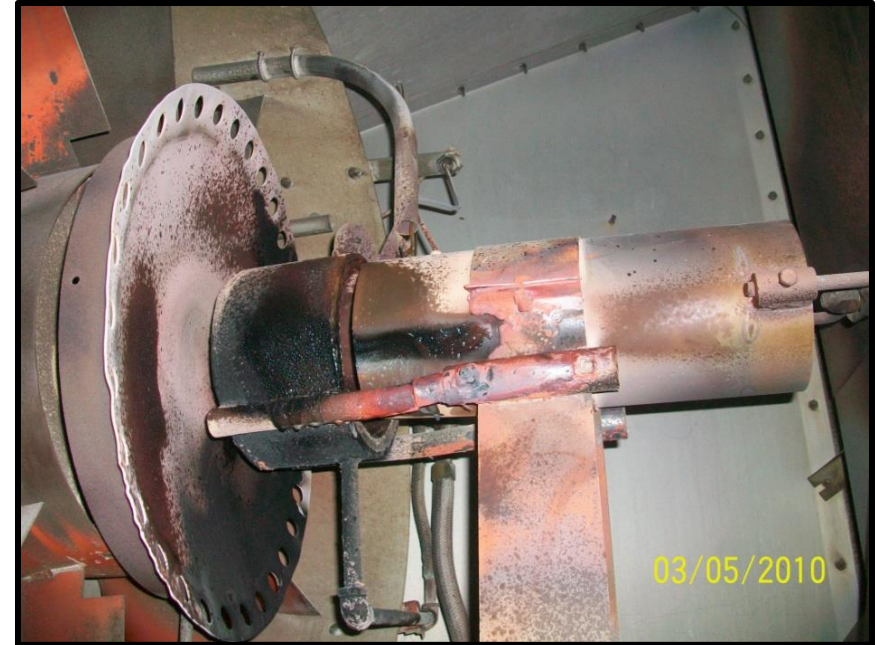
- ▶ Water by Expensive Controls



Water Running Out Of Fuel Manifold



Burners Needing Repair



Venturi Air Inlet

▶ Cleaned



▶ Plugged



Cracked Burner Causes Uneven Flame

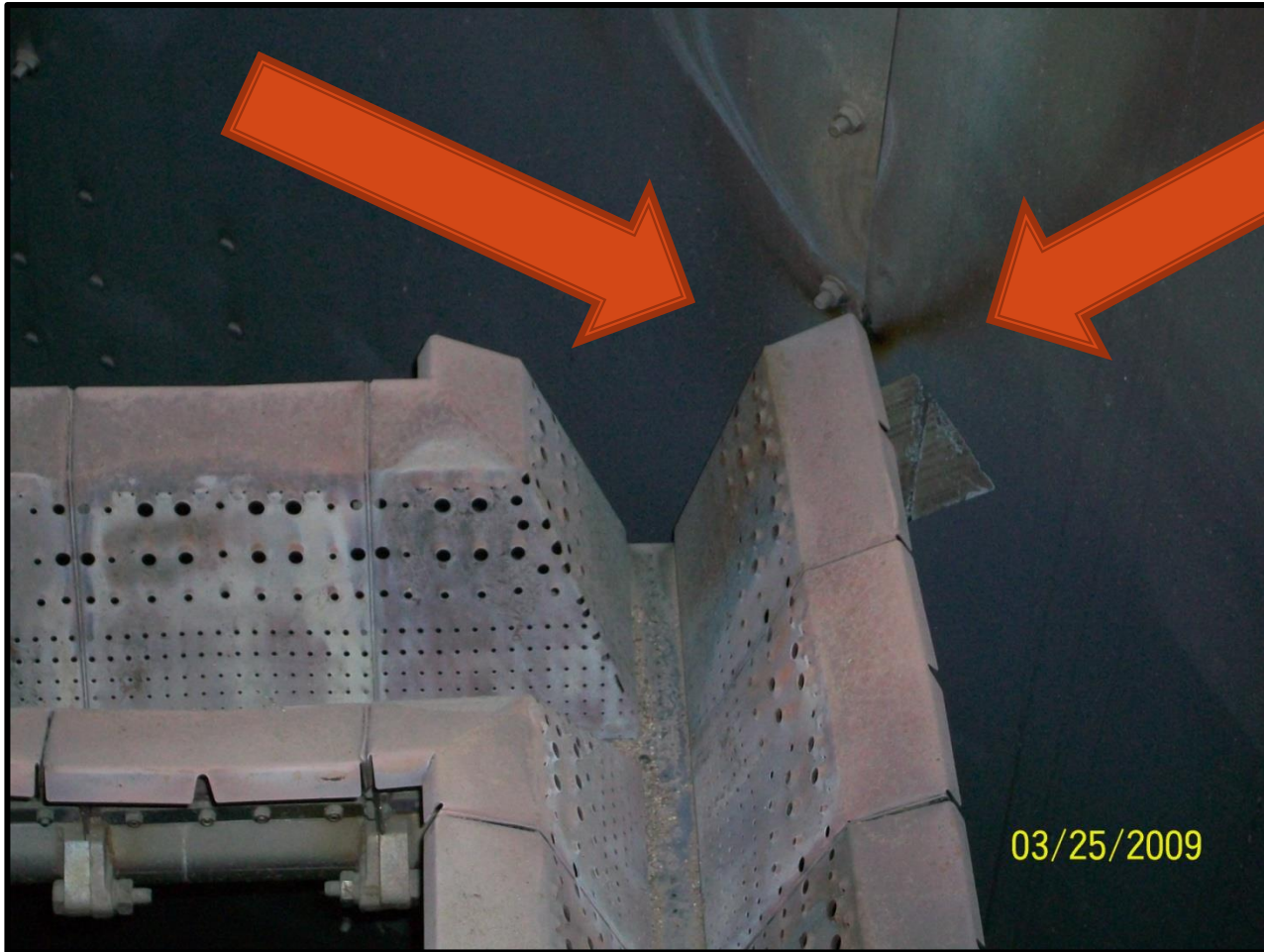


Bad Igniter On A Plugged Burner



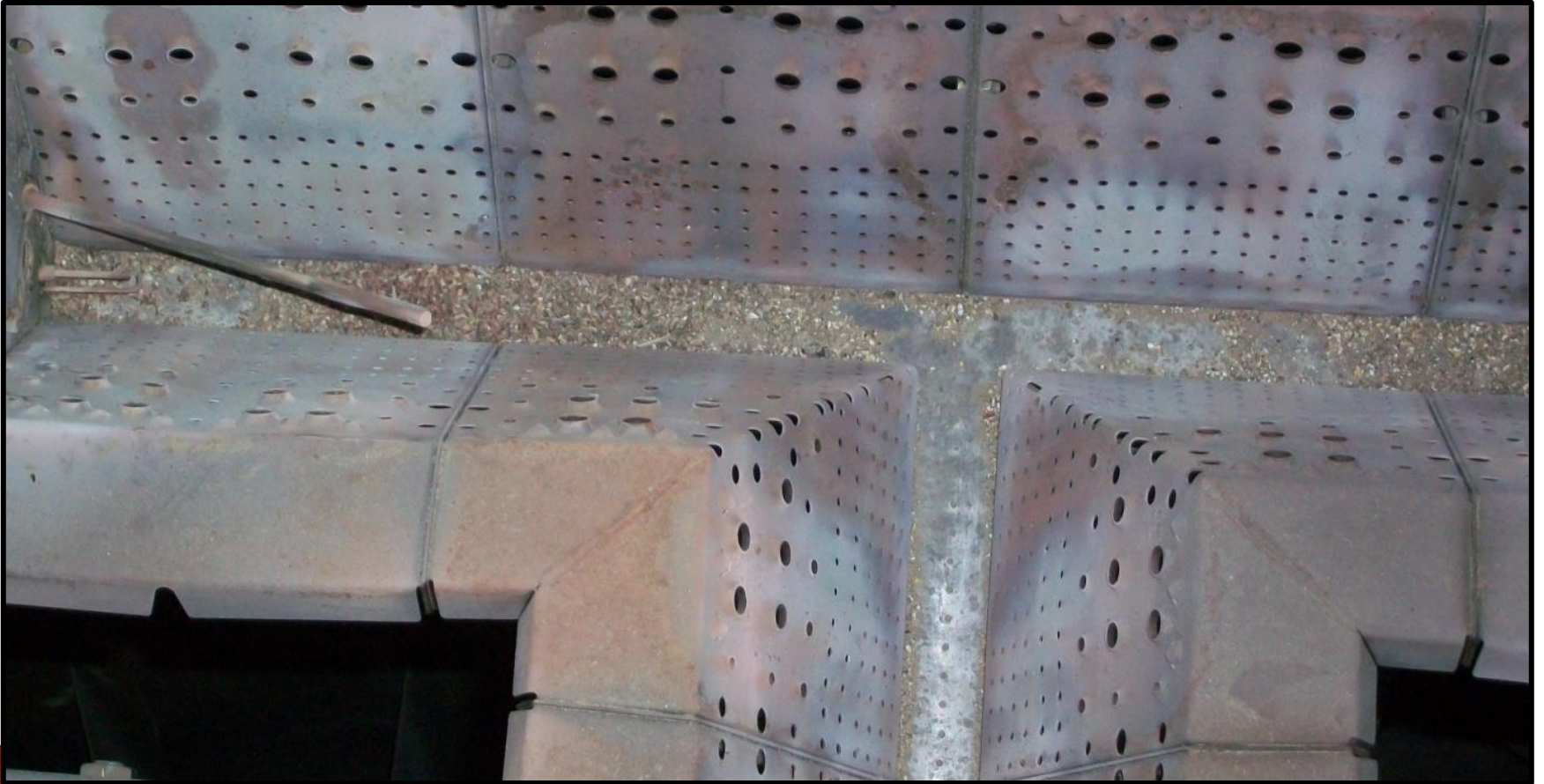
Not All Burner Parts Are In Place

- ▶ Evidence Of Tall Flame On Side



Burner Ports Plugged

- ▶ It Was Left Uncovered



NFPA 86

Standard For Ovens & Furnaces

- ▶ 8.7.2.3
- ▶ Means for testing all fuel gas safety shutoff valves for valve seat leakage shall be installed.

Air Flow & Burner Problems

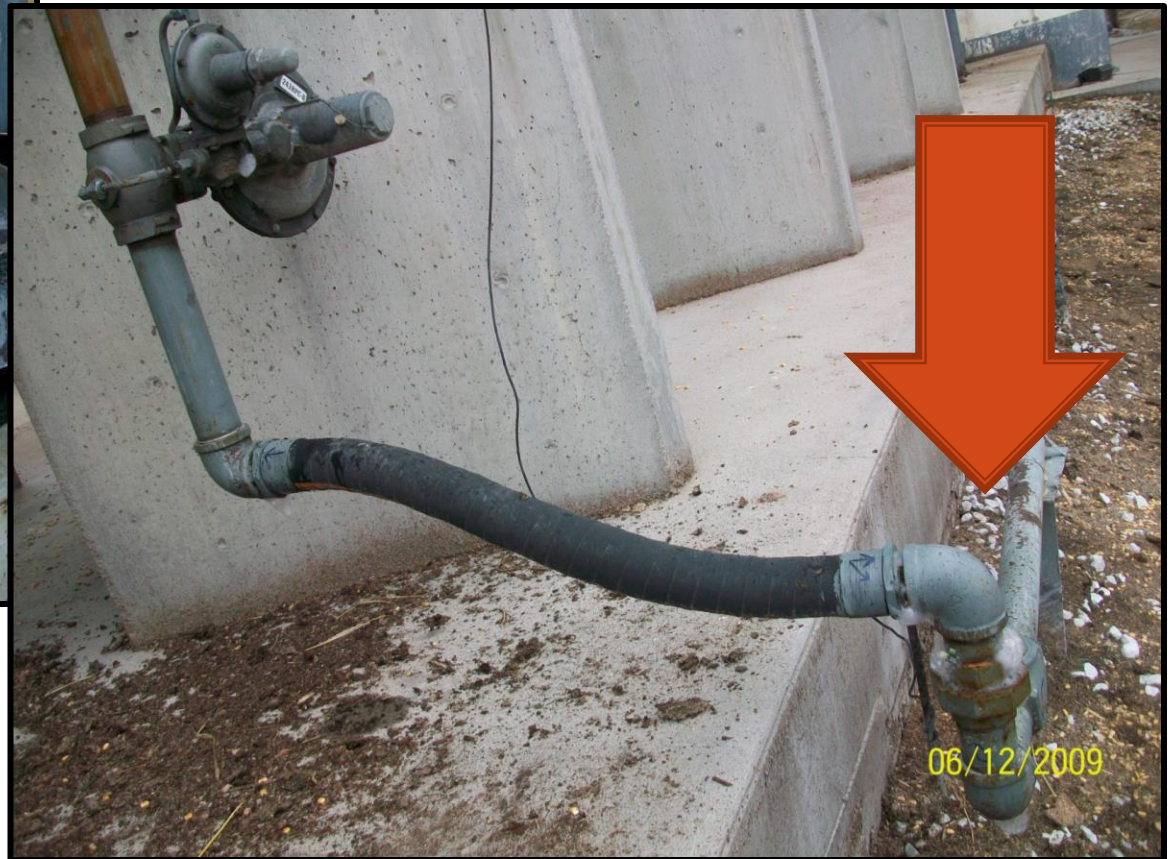
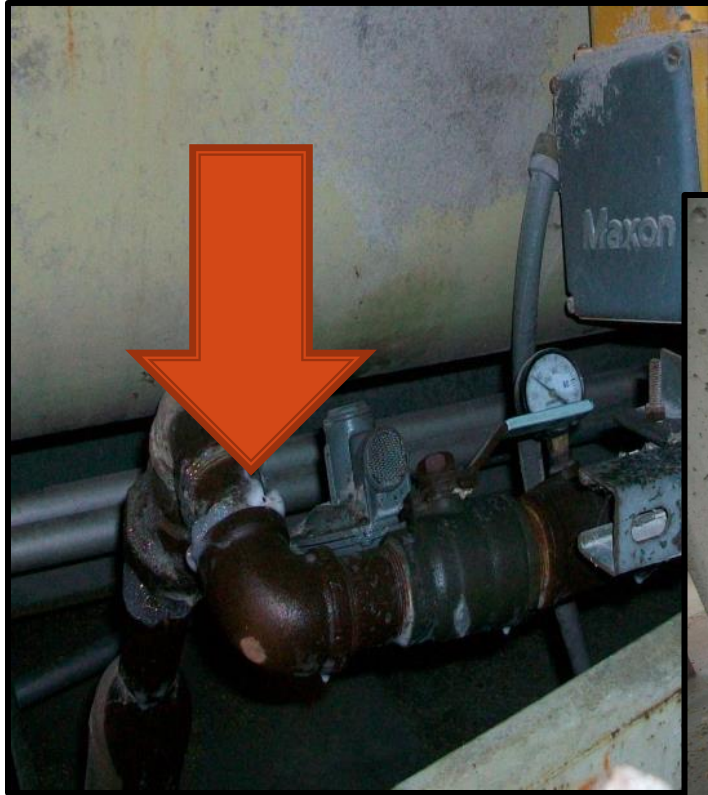
Loose Duct Sheet



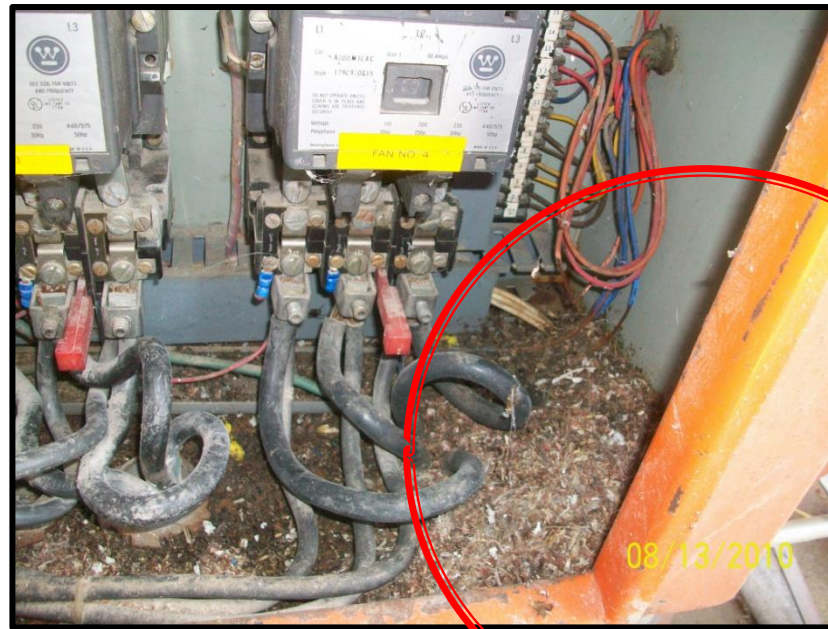
Moisture Covering Burner



If You Smell Gas, It Is Leaking!



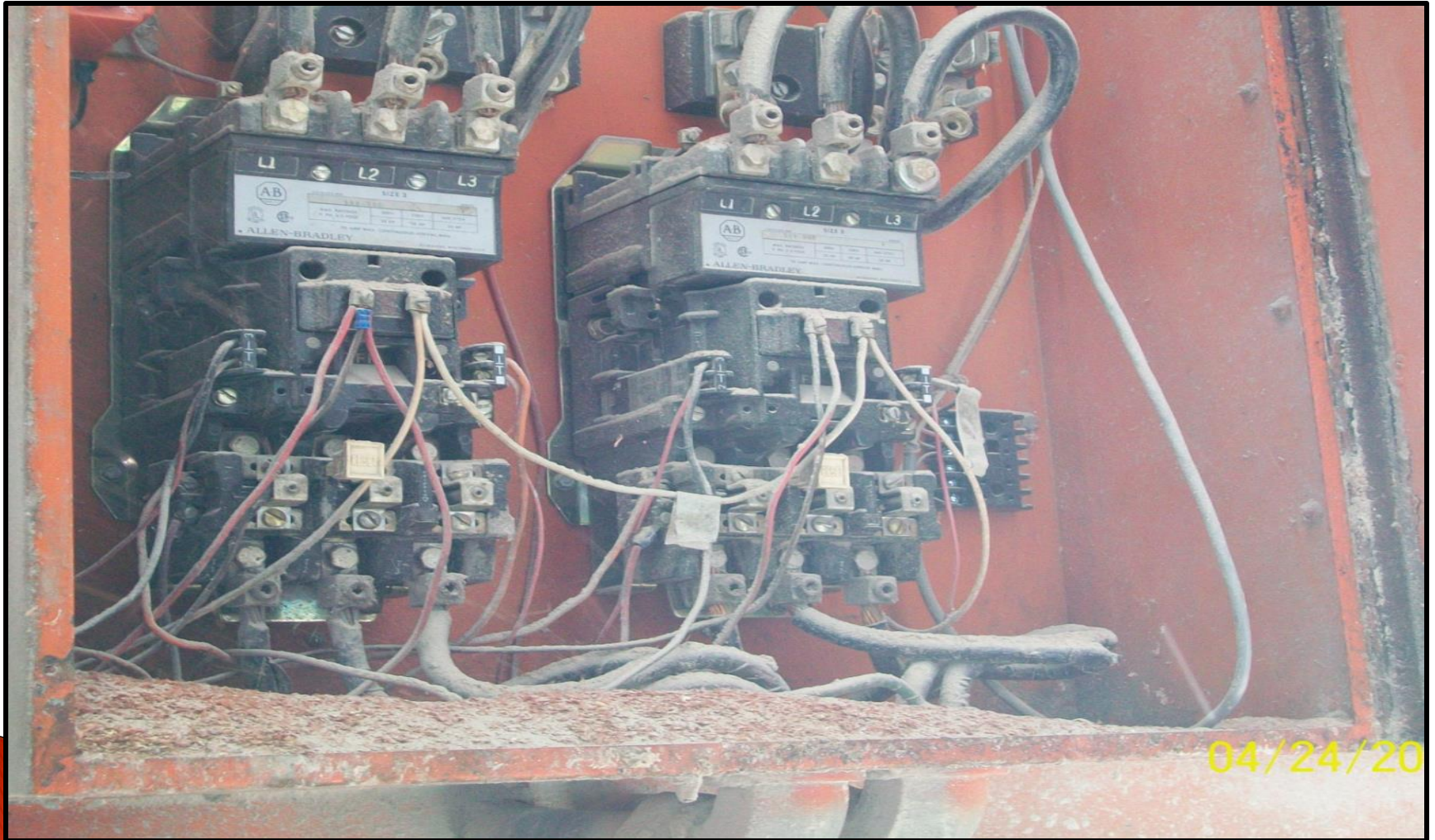
Rodent Nest And Damage In Control Panel



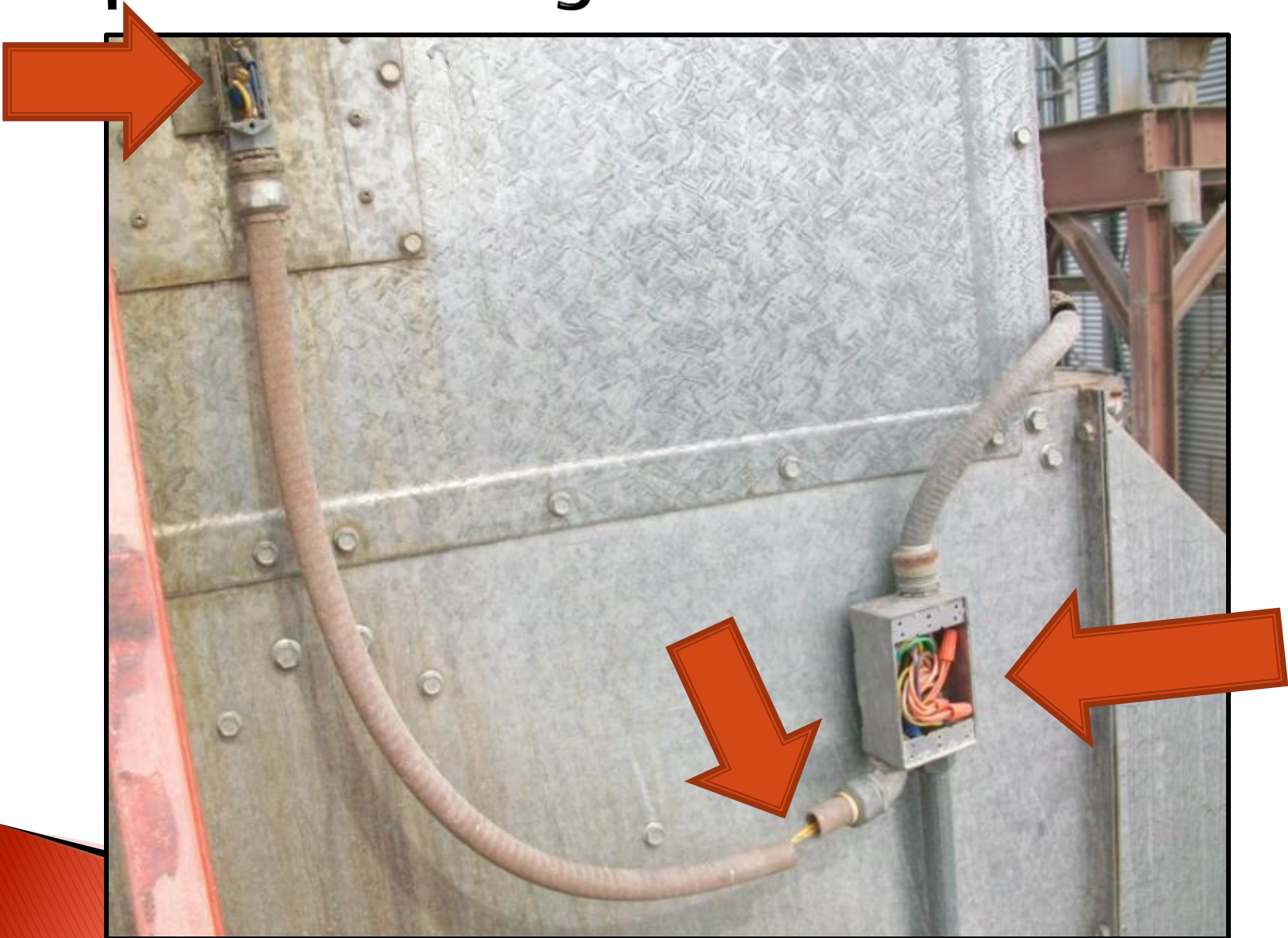
Rodent Access At Transformer Housing Across The Drive



Could Be Combustion In The Electrical Panel Soon

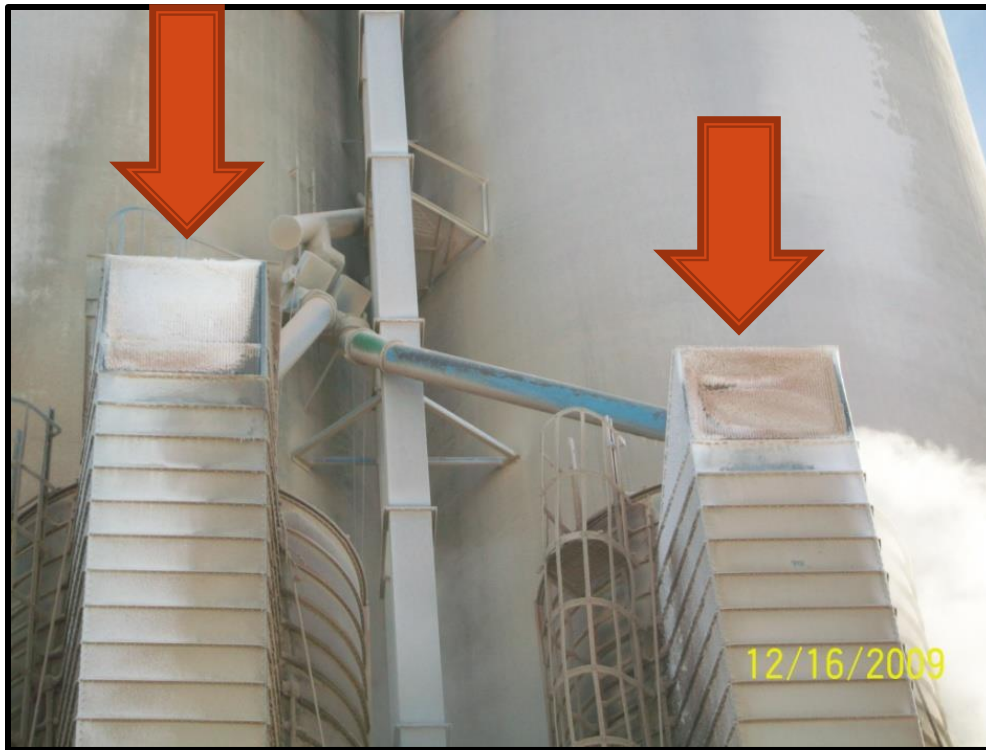


Exposed Wiring & Broken Conduit



Reduced Air Flow

- ▶ Frosted/Plugged Air Inlet



- ▶ Plugged Exhaust Screen



Signs Of Gear Oil Leak



Rusted Structural Leg



Structural Failure

Grain Column Now Wider

- ▶ Air Flow Has Changed



Fines Build-up

Fines Can Add To
Combustion



Grain In Air Space



Fines On Exhaust Screens Reduces Air Flow



Exhaust Screens Plugged Very Low Air Flow



Plugged Exhaust Screens



Plugged Exhaust

Reduced Air Flow



Gap At Fan Outlet

Reduced Airflow To Grain



Plugged Grain Turner

Reduced Grain Flow



Drying Air Escaping

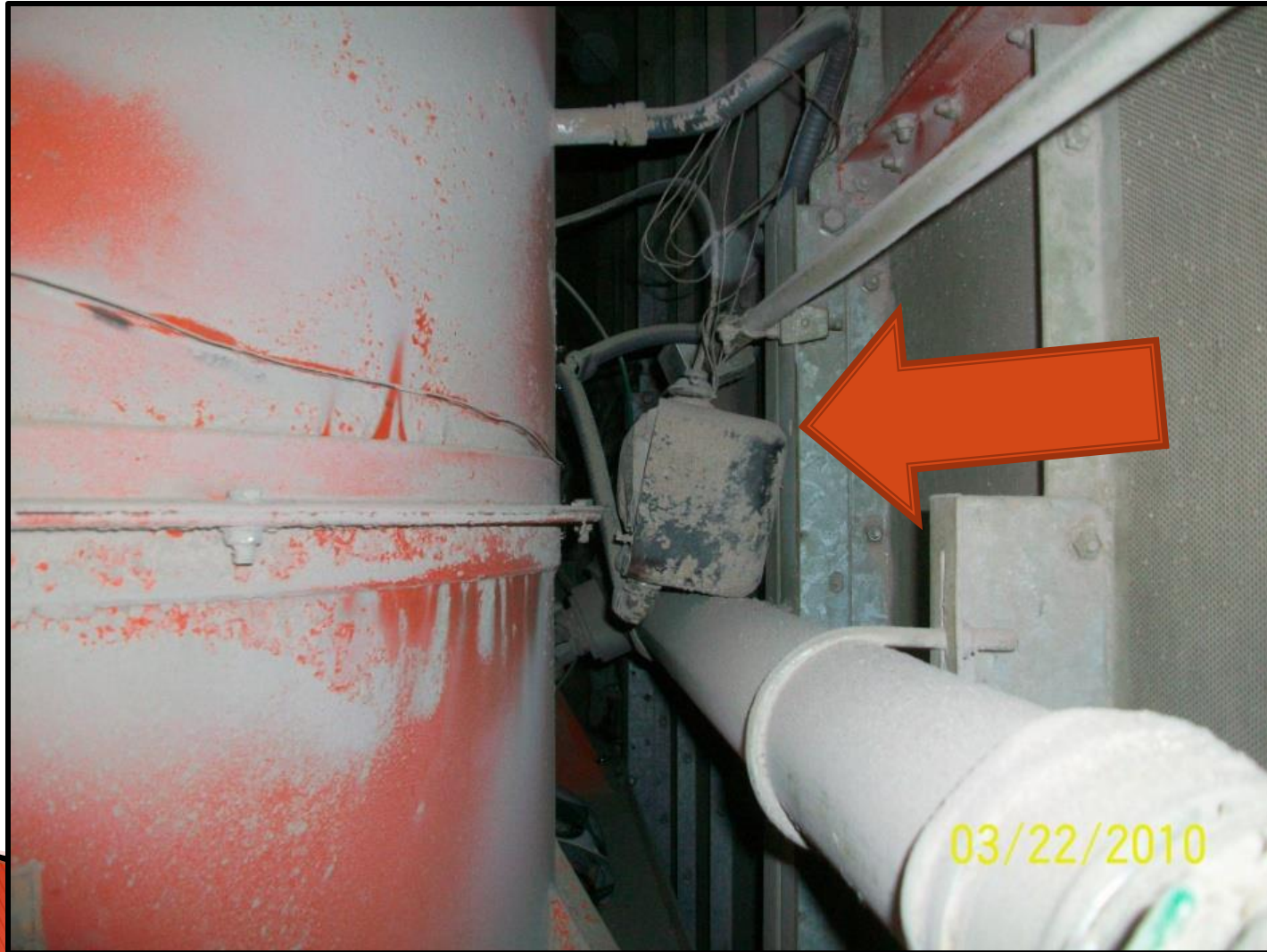
Or Can't Escape



Fines Caked In Fan Causes Vibration



Loose Ignition Transformer



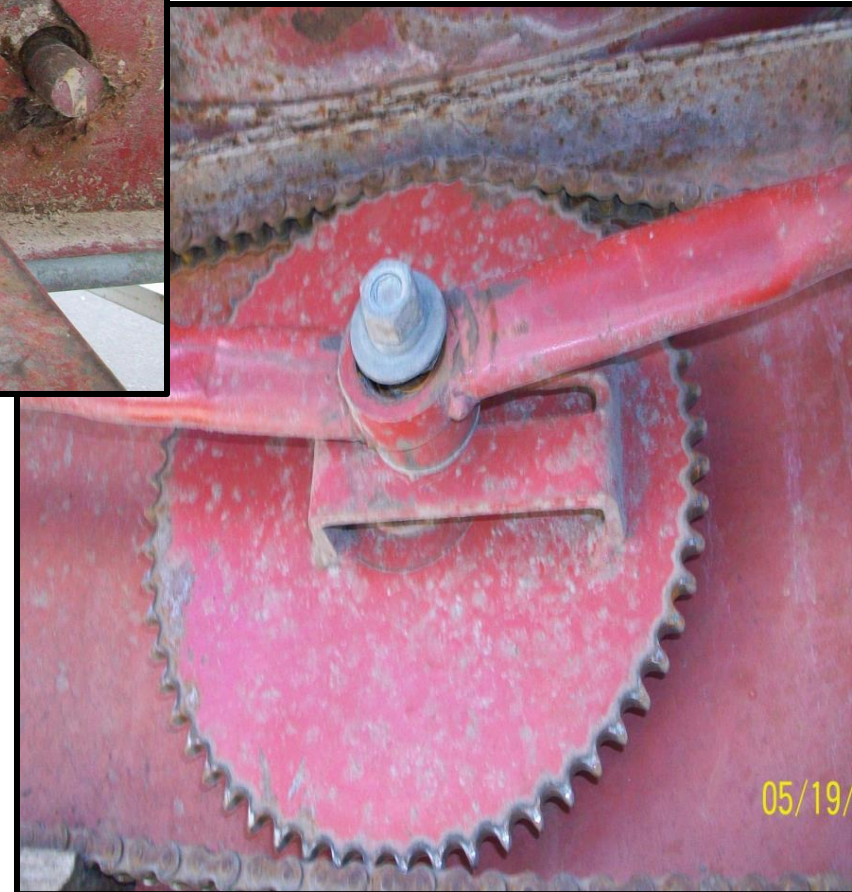
Worn Out Auger & Bearings



Worn Auger May Be Damaging Grain Quality



Bearings Worn Out



Caution: No Ladder Rung



Wet Grain At Dryer Top Never Gets Dry

Start Cleaning Here!



External LP Vaporizers

▶ Direct Fired

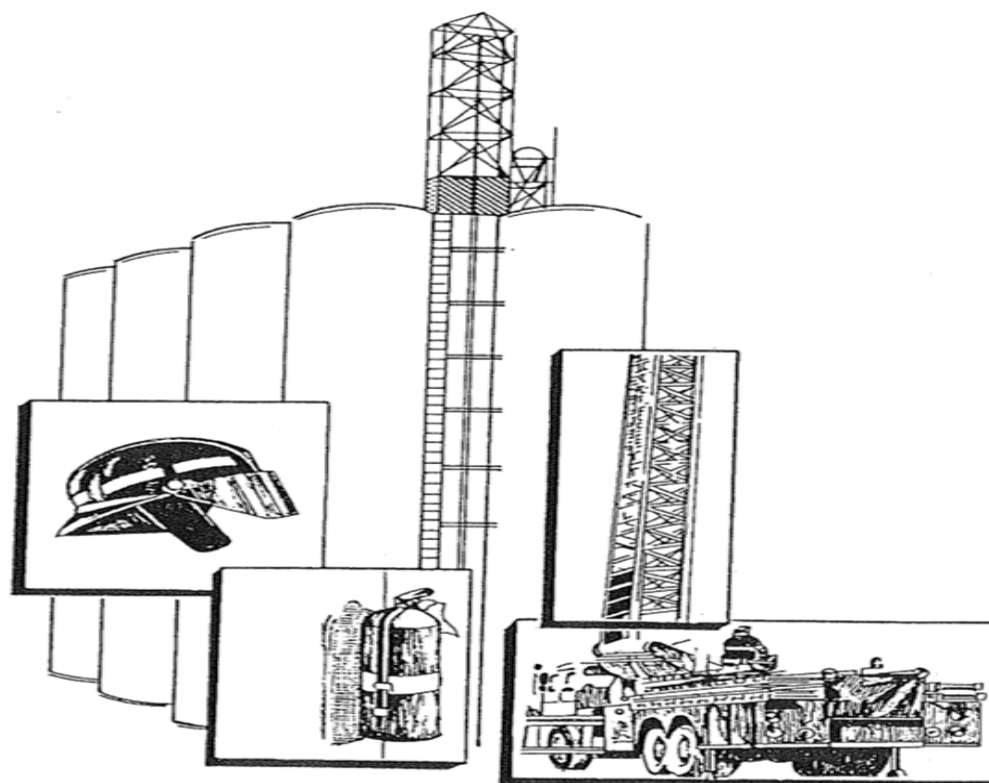


▶ Electric



Emergency Preplanning and Firefighting Manual

**A Guide for Grain Elevator Operators
and Fire Department Officials**

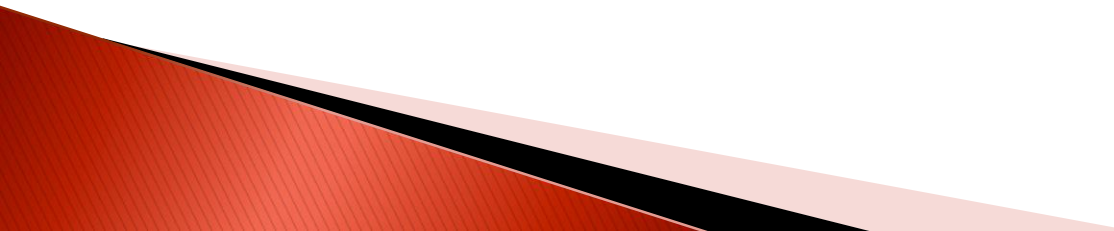


National Grain and Feed Association

Dryer Fires

- ▶ Most grain dryer fires are operational in nature and can be extinguished routinely by elevator personnel by following proper operating procedures as directed by the manufacturer. However, severe dryer fires require the assistance of professional firefighters. In a dryer fire, be alert to the potential spread of the fire into the elevator.
- ▶ Fires occur most often when a section of the dryer becomes plugged and the grain and related material overheats. For this reason, dryer usually are equipped with an automatic shutoff feature to prevent overheating. Dryers also may be equipped with a separate power source for the discharge rolls and emergency dump system so that power for these systems will not be lost if main dryer power is disconnected.
- ▶ Upper areas of dryers frequently have minimal clearance and often are difficult to reach.

Procedures for handling grain dryer fires are as follows:

- ▶ Shut off fuel to burners and shut down the dryer and associated equipment.
 - ▶ Shut down the flow of grain coming into the dryer.
 - ▶ Discontinue all grain flow into the facility.
 - ▶ If only a smoldering condition exists, or the fire is small, it may be possible to scoop up the smoldering material from the floor or ledges, and remove it from the dryer. A small bucket or jug of water also can be used to extinguish the fire.
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Procedures for handling grain dryer fires are as follows: Part 2

- ▶ If the burning material cannot be removed manually, activate the emergency dump and water deluge system, if the dryer is so equipped. Or run the grain out on the discharge rolls and extinguish smoldering material with hose lines.
- ▶ If the fire cannot be removed from the dryer, use hose streams on the dryer's exterior or gently apply water through screens, panels or holes cut in the sheet metal, being careful not to impair the structure's stability.
- ▶ Check all affected areas of the facility for hot material, including receiving bins, conveyors, etc.
- ▶ After the fire is extinguished, thoroughly empty and clean the dryer. **Do not convey hot grain into the facility.**

Occupational Safety & Health Administration

- ▶ 1910.272 contains the requirements for control of grain dust fires, etc. in grain handling facilities. 1910.272 (p) for Continuous-flow bulk raw grain dryers, lists rules about the dryers, including “Will stop the grain from being fed into the dryer if excessive temperature occurs in the exhaust of the drying section”.

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