

# OXYGEN LIMITING SILO FIRE

**Be sure to:** *Established Command - Assign a Safety Officer - Establish communications - Formulate a plan and a backup plan - Plan an exit or escape plan*

## DEFINITIONS

Typically farm silos are used to store high moisture forages (silage); or high or low moisture grains. Silo fires are more typical in silos that have forages stored in them, but any silo structure can have a fire. There are two basic types of upright (vertical) silos on farms: oxygen limiting and conventional. **IT IS MOST CRITICAL TO UNDERSTAND THE DIFFERENCE BEFORE ATTEMPTING TO MANAGE A FIRE IN A FARM SILO!**

### Oxygen Limiting Silo:

The primary identifying feature of oxygen-limiting silos is the absence of an unloading chute on the exterior of the silo. Another characteristic of oxygen limiting silos is a flatter roof. Oxygen limiting silos will typically unload from the bottom of the silo.

### Non farm silos:

Can be used to store grain material, or other products such as sawdust, wood chips or any other product can be involved in a fire. Many of the same strategies can be used as an initial approach to these structures. **Seek technical assistance with these structures.**

## GENERAL HAZARDS AND CONCERNS

- Understand that a fire in a silo is often not an imminent threat. Take your time to do a proper size up and seek technical help.
- Doing anything to add air to a fire in an oxygen limiting or oxygen deficient structure can cause an explosion.

### SEEK TECHNICAL ASSISTANCE BEFORE ACTING

## SUGGESTED OPERATIONAL STEPS

- A fire in an oxygen limiting silo will often result in a substantial buildup of combustible gases. Anything to introduce air inside the silo structure must be avoided. All fire fighting efforts must be toward reducing or eliminating oxygen source(s). Allowing an oxygen limiting silo to smother itself out by not opening the top or bottom hatches for two weeks has been shown to be effective in some cases.
  - Do not attempt to enter, breach, or otherwise attempt to extinguish fire in oxygen-limiting silos. There is nothing to gain and firefighters' lives are at considerable risk. Call the manufacturer's representative and protect exposures.
  - During fire fighting operations on oxygen-limiting silos, water or foam should not be directed onto the fire through the top hatches, since this may allow oxygen to enter the silo and could cause the suspension of explosive dust resulting in a backdraft type of situation.
  - If the roof hatches of oxygen-limiting silos are open, no attempt should be made to close them if there is heavy smoke or steam coming from the open hatches or if the silo is vibrating. The roof hatches should be safe to close if the silo is quiet and there has been no smoke or steam coming from the hatches for several hours. Do not secure the hatch. This will permit the relief of

any subsequent pressure that may build up. Once the silo hatches are closed, the farmer must not operate his silo unloader for two weeks. Unloading the silo will allow air to enter the silo and could create an explosive environment.

- Carbon dioxide or liquid nitrogen can be injected into the silo to extinguish the fire. This is normally performed by the silo dealer.
- Certain manufacturers have step-by-step instructions on how to extinguish fires in their silos. Contact the silo manufacturer to obtain these instructions.



Typical Oxygen Limiting silo.

## TECHNICAL ASSISTANCE

Davis Hill 814-404-5441

Eric Rickenbach 610-587-3843