

Agricultural Silo Firefighting

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- Fires in silos occur when silage heats up or as a result of an adjacent barn fire.
- **Suppression tactics are totally dependent of the type of silo: conventional, oxygen-limiting, modified.**
- Many firefighters have died during suppression activities.
- Pre-Planning key.
- Training Important.
- Always weigh the risk/benefit.

Conventional Silo Firefighting

- Historically no threat of explosion. However, prolong advanced burning and applying water can weaken concrete staves and cause them to crack and fall.
- Aggressive attack rarely needed.
- Confined space issues must be addressed.

Upon arrival to a Conventional silo fire:

- 1- Establish incident command & an accountability system.
- 2- Perform a 360-degree view, checking for exposure problems.
- 3- Confirm your pre-plan information on silo.
- 4- Have the farmer respond, if not there already.
- 5- Have the farmer move any livestock, machinery, etc., from the immediate area.
- 6- If not already done, raise the silo unloader to minimize the damage to it by the fire.
- 7- Disconnect and lock-out/tag-out electrical supply to silo and silo unloader.
- 8- If it can be done safely, a FF climbs the silo exterior ladder or exterior chute and assesses fire from above. Thermal imagery may be useful. Utilizing a ladder truck, if available, can be valuable. Use extreme caution when climbing as ladders and steel rungs can be slippery and/or damaged.
- 9- Once above the fire, FF's can direct water onto the hot spots. A fire in a conventional silo is typically located around the silo perimeter, the unloading doors, and the first few feet of silage. Fires burning for an extended time can create hollowed-out cavities.

- There is typically little value and high-risk to entering the silo.
- Penetrating nozzles may be useful.
- No proof that foam helps extinguish deep-seated fire.
- It is usually impossible to completely extinguish fire. Cool it enough for the silo unloader to be brought back in service.
- Even when it appears extinguished, it often re-ignites.
- The farmer must partially or totally empty the silo.
- Silage may flare up during unloading.
- This is an extended operation. Rotate personnel and/or lend the farmer a portable pump and hose is safe to do so.
- Value of using carbon dioxide is questionable. Some departments have had success.

Oxygen-Limiting Silo Firefighting

- Unlike conventional silo fires, fires in oxygen-limiting silos can cause an explosion.
- It is imperative that FF's be able to identify these silos.
- FF's are killed when they inject water or foam into the burning silo.
- Since these structures are designed to limit the air that enters – smoldering fires result.
- Produces combustible carbon monoxide.
- Allowing air into a carbon monoxide-rich atmosphere is dangerous.
- THEREFORE, DO NOTHING THAT WILL CAUSE MORE AIR TO BE DRAWN INTO THE SILO. Do not open hatches or spray water inside.
- Remember there are many different brands of oxygen-limiting silos.
- Some are metal, some poured concrete.
- Many firefighters have been injured and killed employing incorrect tactics.

Upon arrival to an Oxygen-limiting silo fire:

- 1- Establish incident command & accountability system.
- 2- Perform 360-degree view, checking for exposure problems.
- 3- Confirm Pre-Plan information on the silo involved.
- 4- Have the farmer respond , if not there already.
- 5- Have the farmer move any livestock, machinery, etc. from the immediate area.
- 6- Do nothing that will increase the amount of air inside the silo. Do not open any hatches or unloader doors and do not inject any water or foam. (continued)
- 7- If the silo is shaking, hot, noisy, smoking heavily, or has been opened up in the past few days, stay off it.
- 8- If the silo is quiet, motionless, and cool and smoking minimally, and has not been opened in the past few days, close any open hatches and doors. Do not re-open these once closed.
- 9- If barn walls are touching a hot metal silo, create a space between the two to keep fire threat lower.
- 10- If the silo is well-sealed, the fire may self-extinguish.

If the fire continues to burn after two weeks, carbon dioxide or nitrogen gas may be injected to extinguish the fire. Harvestore repair people are able to assist with this operation. The farmer will need to empty the silo. Hot silage leaving the silo will need to be dealt with.

Modified Silo Firefighting

- Less is known about firefighting in Modified Silos.
- One case in New York, a Harvestore that was modified into a “Conventional” Silo, with doors cut into the side of the silo, exploded once water was injected from above.
- Rescuers must be able to distinguish between silos in order to safely fight fire in them.

Summary

- Firefighters need to PrePlan farms.
- Distinguishing between silos is critical.
- Firefighters need to train in this area.
- The possibility of FF's causing an explosion is there.
- Securing qualified technical assistance critical as there is rarely a need to act hastily.