RescueTechs

Heavy Rescue • Ag Rescue

 1

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Silo Fire and Emergency Awareness

 2 RescueTechs

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Course Goal

This program is designed to give emergency responders information on the planning for and the initial management of silo related emergencies.

 3 RESCUETECHS

3

Course Objectives

At the conclusion of this awareness level seminar, the student will be able to…

- Define what a silo is and what it is used for on the farm.
- Differentiate between silo and bins.
- Identify typical nonfarm silos and their uses.
- Discuss relevant OSHA and NFPA standards related to silos.
- Explain the importance of pre-incident planning relating to silo incidents.
- Identify the basic silo construction and unloader types.
- Explain the initial management actions that should be completed for various silo related emergencies.
- Identify additional resources to be considered at silo incidents.
- Identify additional training that can be obtained to assist in response to silo incidents.

 4 RESCUETECHS

4

5

So why does understanding silos matter to me and my department?

"We don't have any/many silos in our area."

"We have never responded to a silo call."

"We know how to put fires out."

 6 RESCUETECHS

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THE SENTINEL

Vol. LXV—No. 195 Established Oct. 10, 1903 LEWISTOWN, PA., MONDAY, JUNE 3, 1968 TWENTY PAGES 5¢

U. S. Weather Bureau Prediction
Fair and cool tonight, 35-40; Monday sunny, warm, high 75-80.

Temperatures For Today
7 a.m. 58
1 p.m. 65

Silo Explodes Killing Three

Young Firemen Plunge to Deaths

John Wilson wanted to be a state trooper; Jack Hopple talked of joining the Marines; Rick White envisioned a career in fire-fighting.

But on Saturday morning all three young men were deeply dedicated junior firemen.

Because of that dedication they light heartily answered an alarm in response to a fire in the Reedsville area. Once there they did as they were ordered—climbed to the top of a smoking silo and poured a combination of foam and water into its depth.

Minutes later, the 60-foot high hay silo exploded, throwing all three to premature deaths for the worst disaster in the history of the Lewistown Fire Department.

Jack Lee Hopple was the 19-year-old son of Mr. and Mrs. Otto R. Hopple of 56 Catherine St. He was a sophomore in the vocational department at GHS.

Richard White, 18, was the son of Mrs. Helen M. White of 128 Valley St. and the late Fern M. White. He would have graduated from L-GHS on Wednesday.

John Lawrence Wilson, the 17-year-old would-be state trooper, was the son of Mrs. Ellen Wilson of 104 E. 6th St. and the late Blair Wilson. He was a sophomore in Lewistown - Granville High School.

'Just Like a Coffee Pot Blowing Its Lid'

(Editor's Note: When the fire alarm was sounded shortly after 11 a.m. Saturday in response to a call from Dairyland, the editor was there. He was asked to accompany the firemen to the scene just in the event fire might break out. Together I was get a shot of firemen on top of the silo," he said as he left. He returned 30 minutes later visibly shaken by the tragic occurrence. Here is his eyewitness report:)

"…the air-tight type of silo was relatively new in 1968, so no one knew exactly how to fight the fire."

Quote from Sam Markley, Lewistown Fire Department in reference to the 1968 explosion.

 7 RESCUETECHS

7

Photo: NIOSH

Volunteer Assistant Fire Chief Dies at a Silo Fire/Explosion – New York

2010 14 Death in the line of duty… NIOSH Fire Fighter Fatality Investigation and Prevention Program

A summary of a NIOSH fire fighter fatality investigation May 25, 2011

Contributing Factors:

- Unrecognized hazards associated with a silo fire
- Closing and securing the hatches on top of the silo.

 8 RESCUETECHS

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NIOSH Key Recommendations

- Review, revise, and enforce standard operating guidelines (SOGs) for structural fire fighting that include oxygen-limiting silos.
- Train officers and fire fighters on the hazards associated with different types of silos and the appropriate fire fighting tactics.
- Ensure that pre-emergency planning is completed for all types of silos located within fire department jurisdictions.
- Consider requiring that placards with hazard warnings and appropriate fire fighting guidelines be placed on silos.
- Consider silos as confined spaces and recognize the dangers associated with confined spaces when responding to silo fires.
- Ensure that an Incident Safety Officer is deployed at technical or complex operations.

 9 RESCUETECHS

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Silo Incidents - Fires

 10 RESCUETECHS

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Silo Incidents - Rescue

 11 RESCUETECHS

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Silo Incidents - Collapse

 12 RESCUETECHS

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Occupational Safety and Health Administration

OSHA – 29 CFR 1910.146 Permit Required Confined Space

"Confined space" means a space that:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and

(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and

(3) Is not designed for continuous employee occupancy.

 13 RescueTechs

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Occupational Safety and Health Administration

OSHA – 29 CFR 1910.146 "Hazardous Atmosphere"

Means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
2. Airborne combustible dust at a concentration that meets or exceeds its LFL; NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;
5. Any other atmospheric condition that is immediately dangerous to life or health

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OSHA Ag Exemption

Enforcement Guidance for Small Farming Operations

The Appropriations Act exempts small farming operations from enforcement of all rules, regulations, standards or orders under the Occupational Safety and Health Act. A farming operation is **exempt** from **all** OSHA activities if it:

- Employs **10 or fewer employees** currently and at all times during the last 12 months; and
- Has not had an active temporary labor camp during the proceeding 12 months.

***Source**: OSHA Instruction CPL 02-00-051*

 15 RescueTechs

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Injury or Fatality

Does the exemption still hold true with injuries and a fatality? **YES**

- Small farms, however, are not actually exempt from OSHA regulations because:
  - ✓ Legally OSHA covers all farms, even though OSHA cannot inspect or cite farms with 10 or fewer employees.
- **One important reason for understanding that small farms still fall under OSHA is that, in a court of law, OSHA rules and regulations may be used to identify safe and unsafe conditions on the farm.**
- **State plan - state may be more stringent based on the state regulations.**

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Silos are included under the definition of a confined space.

Chapter 3.3.25 defines a “confined space” as “a space that is large enough and so configured that a person can enter and perform assigned work, that has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits), and that is not designed for continuous human occupancy.”

 17 RESCUETECHS

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When responding to silo fires, fire departments should consider silos to be confined spaces and recognize the dangers associated with confined spaces throughout the incident response.

Pre-incident planning and risk management analysis for silo operations should consider the dangers and hazards associated with confined spaces. Any operations that could lead to entering a silo should be done in accordance with NFPA 1670.

 18 RESCUETECHS

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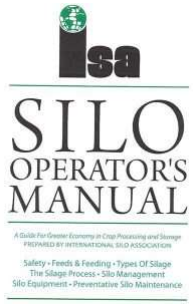

International Silo Association

 19 RESCUETECHS

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On-Farm Silos

- Used to store fermented forage and grains for livestock feed
- Conventional and oxygen limiting silos (explained later)
- Entry is made regularly in conventional silo which creates opportunity for rescue.
- Fermentation period creates IDLH atmosphere while material is fermenting.

 20 RESCUETECHS

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Types of materials stored in farm silos:

- Corn silage
  - Chopped corn stalks and cobs.
- Hay silage
  - Chopped grass, alfalfa, and similar forages
- Wheat or rye silage
- High-moisture grains
  - Commonly high-moisture shelled corn

 21 RESCUETECHS

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Typical Hazards Associated with Silos

- Silo gas
- Fire
- Silo collapse
- Material collapse causing entrapment,
- Entrapment in unloading equipment
- Falls
- Medical emergencies
- Etc.

 22 RESCUETECHS

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"Pre-Response" Activities *(aka: Pre-Planning)*

- ✓ Have you evaluated the silos in your district?
- ✓ How many?
- ✓ What is your department's potential for dealing with one?
- ✓ Could you respond in a mutual aid role?

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How big can they be?

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Types of Silos

- Conventional
- Oxygen Limiting / Atmosphere-Controlled

Determining the type of silo is NOT just a matter of looking at it.

 25 RESCUETECHS

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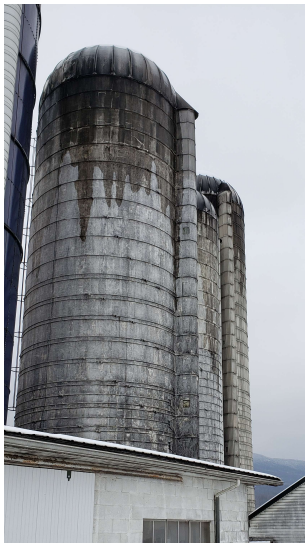
Silo Construction – Conventional

- Concrete stave
- Slip-form poured concrete



 26 RESCUETECHS

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Silo Construction – Conventional

- Block
- Steel
- Wood
- Other

 27 RESCUETECHS

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Conventional Silo Identification Points

- Unloading chute
- External ladder/platform
- Domed or no roof
- Fill pipe

 28 RESCUETECHS

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Conventional Silos

 29 RESCUETECHS

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Electric Top Unloader

 30 RESCUETECHS

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Top Unloader

Video courtesy of J&J Silo

 31 RESCUETECHS

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Hydraulic Top Unloader

Photos: J & J Silo Company

 32 RESCUETECHS

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Atmosphere-Controlled / Oxygen-Limiting Silo

Some commercial names: Harvestore, Cropstore, Weaverstore
(Hint: look for the term "store", "pack", or "pak" in the name…)

 33 RESCUETECHS

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Atmosphere-Controlled / Oxygen-Limiting Silo

 34 RESCUETECHS

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Atmosphere-Controlled / Oxygen-Limiting Silos

- Open and close top hatch for fill pipe
- No need to enter
  - Unless tool or object is dropped from top hatch
- Open and close bottom hatch for unloader
  - Occasionally must crawl in unloader space to service unloader

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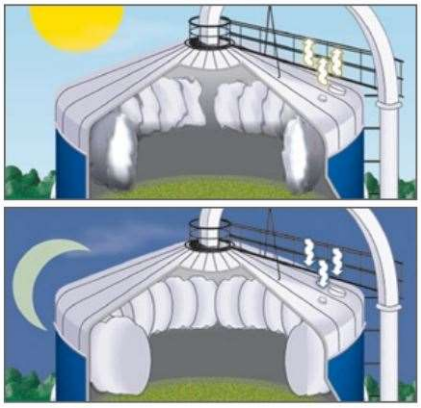
Atmosphere-Controlled / Oxygen-Limiting Silo

- Designed to keep air out - normal environment is ~4% oxygen.
- Accomplished using “breather bags”.
- Breather bag locations:
  - Top (Harvestore)
  - Bottom/base
  - External to the silo (barn rafters)



Graphic: CST Industries

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Atmosphere-Controlled / Oxygen Limiting Silo

Photo credit: Jason Sauder, West Hempfield Twp FD

 37 RESCUETECHS

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Atmosphere-Controlled / Oxygen Limiting Silo

- Filled with outside fill pipe-to center of roof
- Open and close top hatch for fill pipe
- No need to enter - unless tool or object is dropped from top hatch
- Open and close bottom hatch for unloader
- Occasionally must crawl in unloader space to service unloader

 38 RESCUETECHS

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Atmosphere-Controlled / Oxygen Limiting Silo(Bottom) Unloaders

 39 RESCUETECHS

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"Modified" Silos

- Common modifications:
  - Convert from bottom to top unloader.
  - Rebuild a used Harvestore.

Since there is no standard "modification", these silos require <u>an extensive assessment BEFORE</u> any operations begin!

 40 RESCUETECHS

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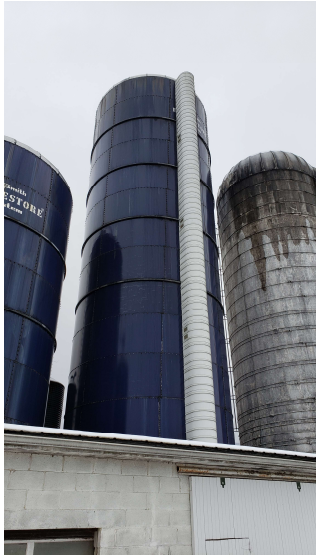
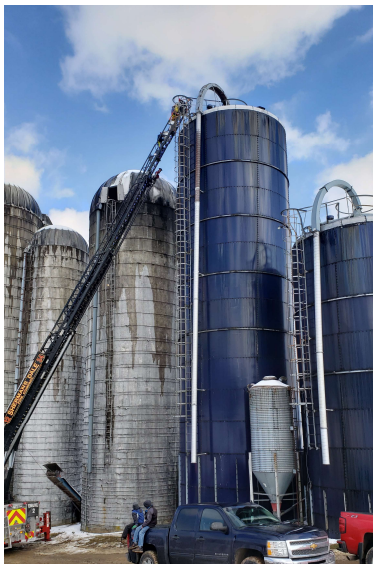
Modified Harvestores





 41 RESCUETECHS

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Other "Modifications"

 42 RESCUETECHS

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Silo Liners

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Silo Gas

 45 RESCUETECHS

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What is Silo Gas?

- “Silo gas” is a byproduct of the breakdown of organic matter that occurs during fermentation.
- Contains Nitrogen dioxide and usually also contains carbon dioxide.
- Yellow or reddish-brown color may resemble smoke.
- May have a bleach-like odor.
- Silo gas will have changing levels of gases during the process. This will change the vapor density and the toxicity of the gas.
- Carbon dioxide can be used as an aide to preservation of material.

 46 RESCUETECHS

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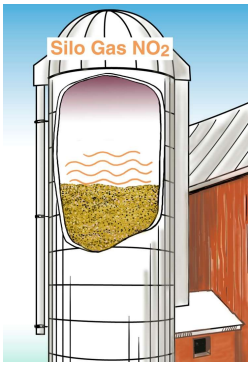
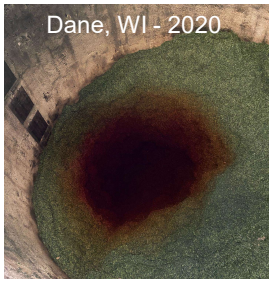
Silo Gas

- Nitrogen Dioxide targets the eyes, respiratory system and cardiovascular system.
- When mixed with water will create nitric acid.





Chester Co, PA - 2020
Less than 24 hours after silo was filled.

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Silo Gas Exposure

- Silo gas begins forming in a few hours and continue as long as 2 weeks after filling. Residual may remain even longer.
- Normally heavier than air. Will often sit on surface of silage but if pushed out may go down the chute into structure.
- Exposure normally happens after entering the silo for maintenance, leveling or unloading the product.
- Can also be exposed to gas that has leaked out of the silo into surrounding buildings.

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Effects of Various NO2 Levels

Levels in PPM	Effects on people
0.2-1.0	Detectable by pungent, acrid odor.
5.0	**Permissible Exposure Limit (ceiling) PEL**
5-10	Irritation of the nose and throat. Congestion.
20	Irritation of the eyes. Red, watery eyes.
50	Maximum exposure for a 30-minute period. Immediately Dangerous to Life and Health (IDLH)
100-200	Tightness in the chest, acute bronchitis, and death from prolonged exposure.

 49 RESCUETECHS

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Effects of Various CO2 Levels

Levels in PPM	Effects on people
300 (.03%)	Normal concentration in air.
3,000-5,000 (.3-.5%)	Increased respiration and headache.
5,000 (.5%)	**Permissible Exposure Limit (PEL)**
10,000 (1% by volume)	Feeling hot and clammy, lack of attention to detail, fatigue, anxiety, loss of energy, weakness in the knees (jelly legs).
20,000 (2% by volume)	Increased respiration (by 50%) and headache.
30,000 (3%)	**Short Term Exposure Limit (STEL)**

 50 RESCUETECHS

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Silo Gas Accident/Fatality – Montour County PA – May 16, 2020


WJAC NEWS WEATHER SPORTS FEATURES CHIME IN WATCH LIVE

AP: Man dies after being overcome by fumes in silo, son rescued

by The Associated Press | Sunday, May 17th 2020

Farm Silo (Photo by David Greedy/Getty Images)

TURBOTVILLE, Pa. (AP) — Authorities say a man died after he was overcome by fumes in a silo on a central Pennsylvania farm.

The Montour County coroner's office says 45-year-old Abraham Stoltzfus and his 16-year-old son entered the 60-foot grass silo Friday morning, but the youth's 18-year-old brother heard his younger brother calling for help.

…and what is wrong with the picture?

 51 RESCUETECHS

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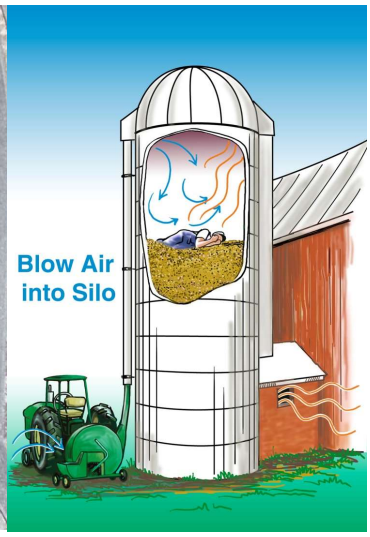

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Silo Incident Response - Initial Actions

 53 RESCUETECHS

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 54 RESCUETECHS

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Silo Manufacturers and Service Personnel

- Develop a resource list for your area.
- Check with the farmer to see who he uses for service, etc.
- Should be consulted VERY EARLY in the incident.
- Keep in mind, they may choose **NOT** to provide assistance depending on the scenario.

 55 RESCUETECHS

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Equipment for Dealing With Silo Incidents

Courtesy: Lehigh Co PA SpecOPS Team

- If you don't have it where are you getting it?
- Mutual aid capability?
- Specific equipment:
  - Aerial devices
    - Tower versus ladder
  - Long-line air
  - Rope rescue capabilities

 56 RESCUETECHS

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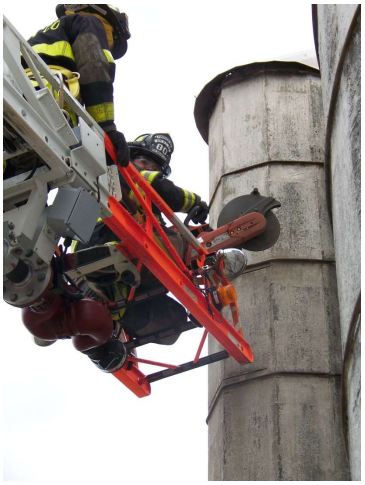
Training?

- ✓ What is your personal level of training and certification?
- ✓ What is your organization's level of training and certification?
- ✓ What type of *on-going* training does your agency conduct?
- ✓ What about the training of your mutual aid response agencies?



 57 RESCUETECHS

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Silo Incident Response

- Unless there is a major exposure concern (barn, animals, feed shed, etc.) or a serious life safety issue a silo incident requires a slow and methodical approach.
- If the first officer arrives and finds no exposure or life safety issues, consider a "non-emergent" response.

Photo: Fleetwood Fire Company

 58 RESCUETECHS

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Silo Incidents

- Silo incidents (especially fires) do NOT need every piece of fire apparatus from every department within a 50-mile radius.
- Call the appropriate quantity and type of resources…

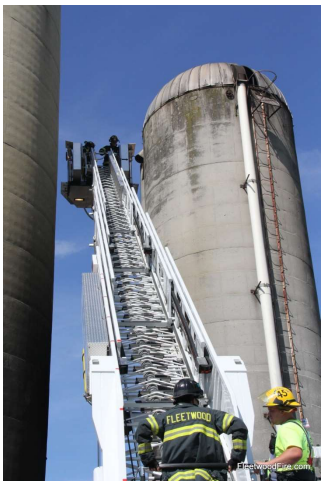

Photo: Fleetwood Fire Company

 59 RESCUETECHS

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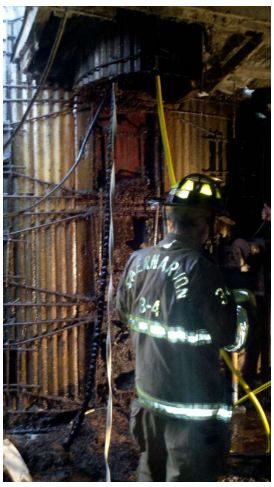
Silo Incidents

- The farm environment has many other hazards. Keeping fire fighters in one area will prevent other safety issues.
- Identify personnel who have an understanding of silos to use as potential resources. They can serve as SME's and can assist with assessment, lock out/tag out, etc.



 60 RESCUETECHS

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Initial Assessment and Management

Use a worksheet or checklist as a guide to your assessment.

SILO INITIAL ASSESSMENT WORKSHEET

TYPE OF INCIDENT:	FIRE?	RESCUE?	RECOVERY?	COLLAPSE?
FARM LOCATION:				
FARM OWNER/POC:			PHONE #	

CRITICAL INITIAL MANAGEMENT ITEMS:

____ 1. ESTABLISH INCIDENT MANAGEMENT SYSTEM, PERSONNEL ACCOUNTABILITY SYSTEM, AND DESIGNATE SAFETY OFFICER.
____ 2. ESTABLISH APPROPRIATE SAFETY ZONES. (CONSIDER MOVING ANIMALS DEPENDING ON SITUATION.)
____ 3. MEET WITH FARM OWNER/MANAGER – ESTABLISH LIAISON OFFICER.
____ 4. OVERALL SCENE ASSESSMENT.
____ 5. EVALUATE AND PRIORITIZE LIFE SAFETY ISSUES.
____ 6. EVALUATE EXPOSURE ISSUES (BUILDINGS, EQUIPMENT, FEED, LIVESTOCK, ETC.).
____ 7. LOCK-OUT / TAG-OUT OF EQUIPMENT COMPLETED?
____ 8. REQUEST APPROPRIATE RESOURCES.

SILO MANUFACTURER (& PHONE #)	CONTACTED?
SILO SERVICE COMPANY (& PHONE #)	CONTACTED?
WHAT AND WHEN WAS THE LAST SILO AND/OR UNLOADER MAINTENANCE/REPAIR?	

TYPE (AS ORIGINALLY CONSTRUCTED): ____ CONVENTIONAL ____ OXYGEN LIMITING

CONSTRUCTION:

____ STEEL ____ CONCRETE STAVE ____ POURED CONCRETE

____ OTHER (IDENTIFY): ____ ANY TYPE OF LINING OR BAG?

YEAR CONSTRUCTED:	**DIMENSIONS: DIAMETER:** _____	**HEIGHT:** _____

WAS THIS SILO MODIFIED IN ANY MANNER? ____**YES** ____**NO**

IF YES, HOW?

TYPE OF UNLOADING SYSTEM: ____ TOP UNLOADER ____ BOTTOM UNLOADER ____ NONE/MANUAL

POWER SUPPLY? ____ ELECTRIC ____ HYDRAULIC POWER SUPPLY SECURED? ____ YES ____ NO

DOES THIS SILO HAVE A "BIG JIM" OR "LITTLE DAVID" STYLE UNLOADING SYSTEM? ____ YES ____ NO

MATERIAL IN SILO:

____ CORN SILAGE ____ HAY/RYE CROP SILAGE ____ SORGHUM

____ HIGH MOISTURE GRAIN ____ OTHER (SPECIFY):_____

HOW FULL IS SILO?	ARE THERE 2 DIFFERENT MATERIALS IN THE SILO?	
DATE LAST FILLED?	WAS NEW MATERIAL PUT ON TOP OF OLD? ____YES ____NO	IF YES, HOW FULL WAS SILO PRIOR TO LAST FILLING?
IF FILLED WITHIN LAST 2 MONTHS – WHAT WAS THE MOISTURE PERCENTAGE AT TIME OF FILLING? _____%	WAS UNLOADER DRAWING HIGH AMPERAGE DURING NORMAL UNLOADING OPERATIONS? ____YES ____NO	
WAS ANY TYPE OF FUMIGATION, OTHER PESTICIDE, OR OTHER CHEMICAL CONTROL USED INSIDE? IF YES, WHAT & WHEN?		

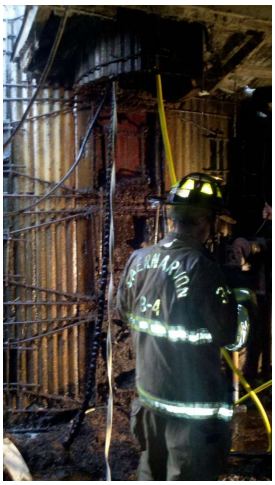
Initial Management Actions for ANY Incident

- ✓ Establish incident management system, personnel accountability system, and designate safety officer.
- ✓ Establish appropriate safety zones. (consider moving animals depending on situation.)
- ✓ Meet with farm owner/manager – establish liaison officer.
- ✓ Overall scene assessment.
- ✓ Evaluate and prioritize life safety issues.
- ✓ Evaluate exposure issues (buildings, equipment, feed, livestock, etc.).
- ✓ Lock-out / tag-out of equipment completed?
- ✓ Request appropriate resources.

Silo Incidents

What type of incident is it?

- Fire?
- Rescue? / Recovery?
- Collapse?



 63 RESCUETECHS

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Initial Management for ANY Incident

- Keep the farm owner/manager close at hand.
- He knows the particular silo involved better than anyone else.
- Listen to what he is telling you…

Courtesy Fleetwood Fire Company

 64 RESCUETECHS

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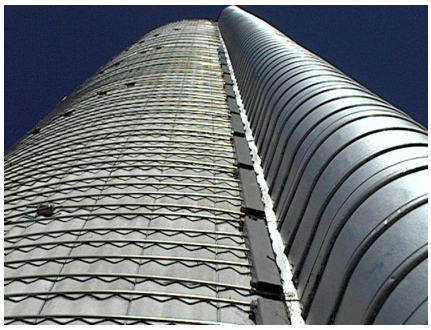
Identify the following specific information about the silo involved:



- Silo type?
  - Conventional?
  - Oxygen Limiting?
  - Modified?
- Silo dimensions?
- Unloading mechanism/system?

 65 RESCUETECHS

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Identify the following specific information about the silo involved:

- Contents?
  - What?
  - When? If recently filled, what percentage of moisture?
    - Is there a river running out of the silo?
  - How much?
    - New on top of old?

 66 RESCUETECHS

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Identify the following specific information about the silo involved:

- When/what/who maintenance has been performed to the silo.
- Look at the overall general condition.

 67 RESCUETECHS

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Work with the farmer…

- Remind/ask if there are provisions for feeding and/or moving animals (without the feed in the silos).
- Keep in mind that certain farm functions must continue during your operations (milking, etc).
- Has the farmer contacted his insurance company?

 68 RESCUETECHS

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Look, Listen, and Isolate

Look at what is going on. *This does not require immediate entry into a silo to determine…*

Courtesy: Belleville Fire Company

 69 RESCUETECHS

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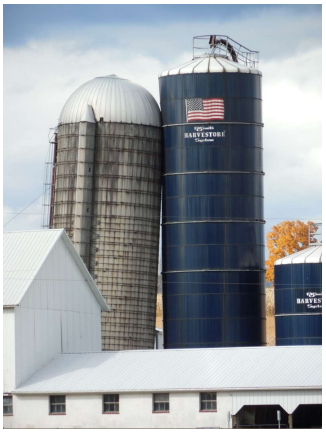
Look, Listen, and Isolate



 70 RESCUETECHS

70

Fire Incidents

 71 RESCUETECHS

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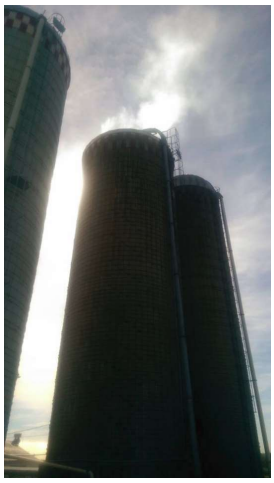
Make sure you know what you are looking at?

Is it smoke? **…or is it gas?**

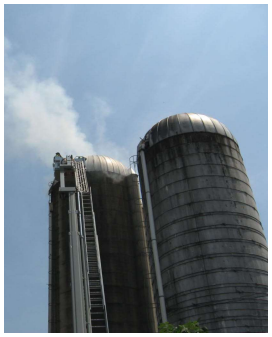


 72 RESCUETECHS

72

Common Silo Fire Causes

- Spontaneous combustion
  - Aerobic respiration consumes oxygen
  - Anaerobic fermentation produces heat & acids
  - Water conducts heat away from silage mass
  - If too dry, heat is not conducted away
- Electrical short or overheating motor
  - On dry material-may burn down
- Barn fire
- Lightening



 73 RescueTechs

73

Visible fire?

- Charring?
- Doors or portions of them falling down the unloading chute?

 74 RescueTechs

74

What is thermal imaging and heat gun telling you?

 75 RESCUETECHS

75

What are gas meters telling you?

- ✓ What **should** they be telling you???
- ✓ Are you metering for the **correct** things?
- ✓ Are you **interpreting** the readings correctly?
- ✓ Do you **regularly** practice with your meters?

 76 RESCUETECHS

76

What to meter for?

Oxygen
Carbon Monoxide
Carbon Dioxide
Nitrogen Dioxide

Not every department has the capability…

 77 RESCUETECHS

77

Organize your scene and crew!

- *Create working zones around the silo.*
- *Reinforce personnel staging and accountability.*
- *Move endangered people away from the scene.*
- *If safe to do so, move endangered livestock.*

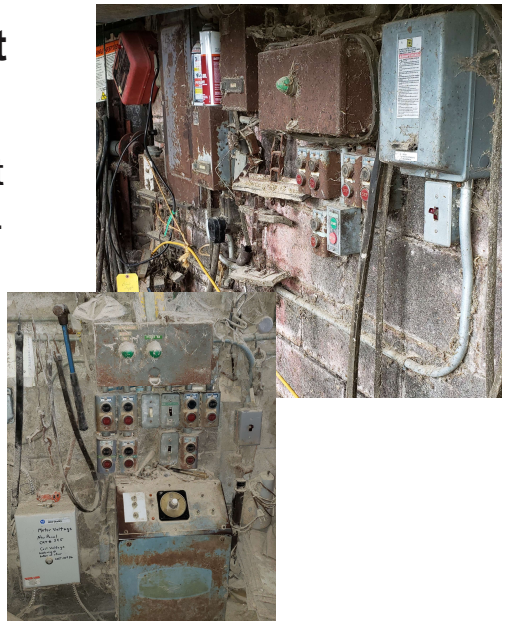
 78 RESCUETECHS

78

Lock Out / Tag Out

Initiate lock out/tag out by securing all utilities.

- Electric
- Hydraulic
- Other? (Computers?)



 79 RESCUETECHS

79

Specific Initial Management Fires

- Limit air movement into silo if possible.
- Move/protect exposures.
- Move/protect equipment. Raise the unloader if possible.
- If not sure what to do next, contact silo company or ag specialists to assist with further extinguishment decisions.

 80 RESCUETECHS

80

Specific Initial Management
Fires

DO NOT…

- Dump large amounts of water into the silo.
  - **You can blow them up!**
  - **You destroy good feed!**
- Attempt to immediately place any personnel into the silo by any means.
  - **There is no reason to!**
  - **Remember it's a confined space!**

 81 RESCUETECHS

81

Specific Initial Management
Rescue / Recovery

- Ventilate the silo, using the blower if possible.
- Attempt to contact the victim from outside the silo.
- Attempt to get atmospheric reading at level of patient.
- Contact additional technical rescue resources, as necessary.

 82 RESCUETECHS

82

Specific Initial Management
Rescue / Recovery

DO NOT…

- Attempt to immediately place any personnel into the silo by any means.
  - **There is no reason to!**
  - **Remember it's a confined space!**
- Create more victims!

StarTribune

Local Sports Business Opinion Variety Obituaries Classifieds Autos Housing Jobs

LOCAL

Joint funeral planned for 3 family members killed in western Minnesota silo accident

Alex Boesl, 11, died Friday, six days after he, his dad and uncle were exposed to toxic fumes.

By STAFF REPORTS | DECEMBER 29, 2019 — 6:30PM

PROVIDED PHOTOS

From left, Alex, Steven and Curt Boesl.

 83 RESCUETECHS

83

Specific Initial Management
[Potential] Collapse

- Establish collapse zone.
- Move people and animals to a safe area.
- Control utilities if possible.
- Contact silo companies and engineers for further action.

 84 RESCUETECHS

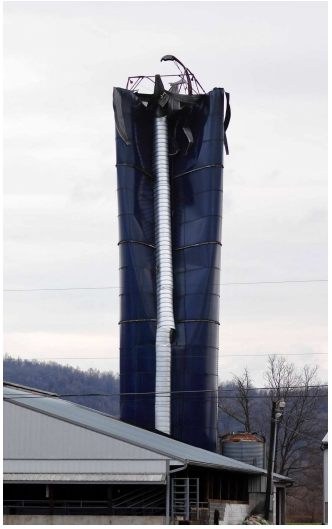
84

Alton, Wisconsin
August 2020
Credit: tdvidpro

 85 RESCUETECHS

85

Specific Initial Management [Potential] Collapse



DO NOT…

- Attempt to brace the silo.
  - **This requires trained silo people to deal with!**
  - **When/how/why/where they will fall is unpredictable!**
- Create more victims!

 86 RESCUETECHS

86

Specific Initial Management
Any Incident

- Remember a slow methodical approach is needed [required]!
- Personnel safety is paramount.
- Do not create additional problems.
- Do not create additional damage/loss.

 87 RESCUETECHS

87

Technical Assistance

- Get to know your local silo equipment dealers and suppliers. Develop a resource list.
- There is technical assistance for silos (and grain bins) available by contacting your local 9-1-1 Center or the PEMA State EOC.
- Don't be afraid to call!

 88 RESCUETECHS

88

So now what?

- Training in operational and technical level rescue.
  - Confined space.
  - Ropes & rigging.
  - Aerial apparatus operations.
- Training in silo fire fighting.
- On-going training and practice.

 89 RESCUETECHS

89

To review…

- Silo incidents require a measured and methodical response.
- The actions by responders in the first few minutes can make-or-break the entire incident.

 90 RESCUETECHS

90

Questions?

 91 RescueTechs

91

 92

92