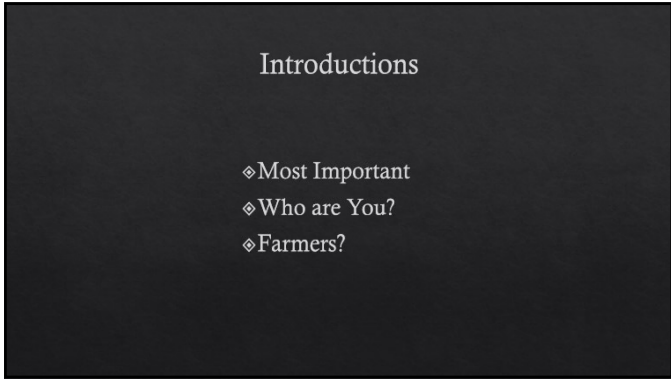




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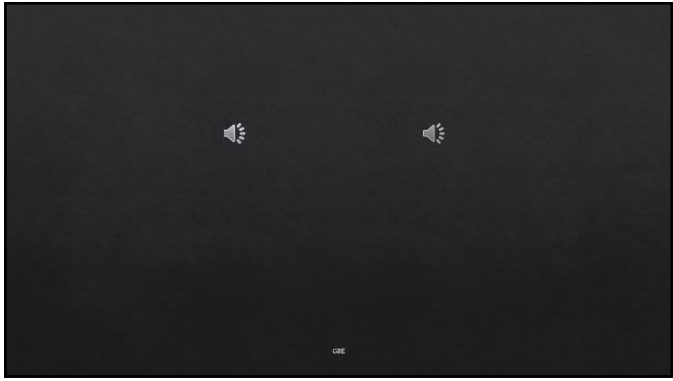
Standards

- ◊ Wisconsin SPS 332
- ◊ 29 CFR 1910.146
- ◊ NFPA 350 (Guide for Safe Confined Space Entry and Work)
- ◊ NFPA 1006 (Standard for Technical Rescue Personnel Professional Qualifications)
- ◊ NFPA 1670 (Standard for Operations and Training in Technical Search and Rescue Incidents)

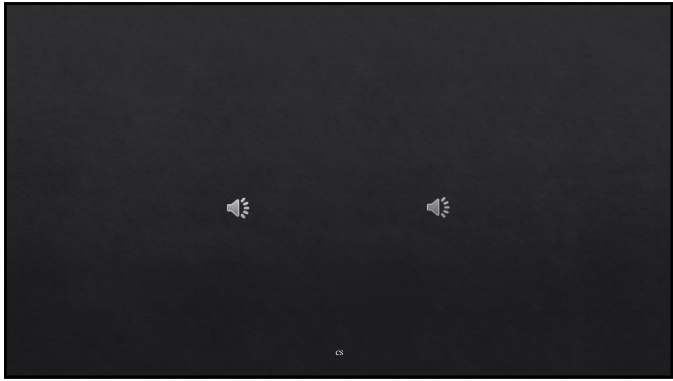
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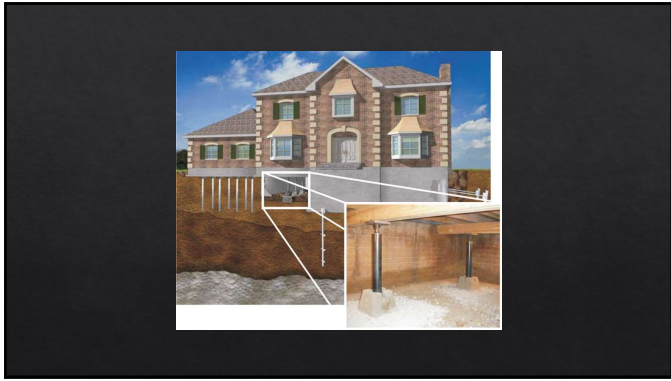
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10



11

Confined Spaces

- Definition of a confined space
 - (1) Is large enough and configured that an employee can enter and perform assigned work; and
 - (2) Has limited or restricted means for entry or exit; and
 - (3) Is not designed for continuous employee occupancy.

[Quoted from 29 CFR 1910.146(b)]

12

Confined Spaces

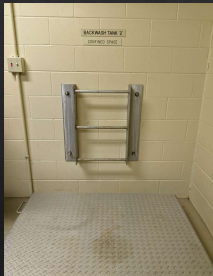
- ◆ Identification of confined spaces
 - ◆ Below ground
 - ◆ In Buildings
 - ◆ Semi/Road
 - ◆ Water



13

Confined Spaces

- ◆ Configurations of confined spaces
 - ◆ Storage tanks
 - ◆ Pump wells
 - ◆ Sewers
 - ◆ Silos
 - ◆ Grain Bins
 - ◆ Underground Pits



14

Grain Entrapments Down; Fatality Rate Still High

- ◆ The number of grain bin entrapments and other confined-space incidents was down in 2021, but more than one-third of cases still resulted in fatalities.
 - ◆ By Lisa Foust Prater Published on February 21, 2023
 - ◆ <https://www.agriculture.com/family/health-safety/grain-entrapments-down-fatality-rate-still-high>

15

Continued

◊ In 2021, the most recent year for which data is available,

◊ **59 cases** were documented:

- **29 grain entrapments,**
- **two falls** into or from grain storage structures,
- **seven asphyxiations,**
- **seven entanglements** with equipment such as in-floor and sweep augers,
- seven cases involving grain handling facility fires or explosions, and
- **seven** miscellaneous cases.

16

Permit Required Con-Space

◊ “means a confined space that has one or more of the following characteristics:”

(...continued)



17

Permit Required Con-Space

- “(1) Contains or has the potential to contain a hazardous atmosphere;
- “(2) Contains a material that has the potential for engulfing an entrant;
- “(3) An entrant ... trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a small cross-section; or
- “(4) Contains any other recognized serious safety or health hazard.”

[Quoted from 29 CFR 1910.146(b)]

18

**Non-Permit
Con-Space
Definition**

◆ "A confined space that **does not contain** *or*, with respect to atmospheric hazards, **have the potential to contain** any hazards capable of causing death or serious physical harm."

[Quoted from 29 CFR 1910.146(b)]


19

Man Rescued From Grain Bin In Barron County
DrydenWire.com
Tuesday, September 17, 2019 | Updated Sep 17, 2019 10:00 am CDT



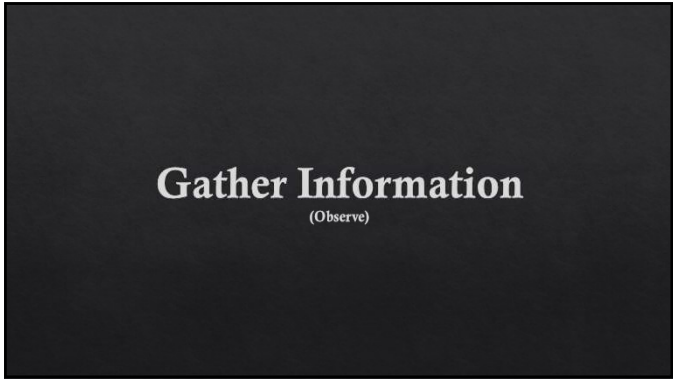
<https://drydenwire.com/news/grain-bin-rescue-in-barron-county/>

20



Confined Space Entry Permits
KEPT AT THE ENTRY LOCATION DURING ENTRY!

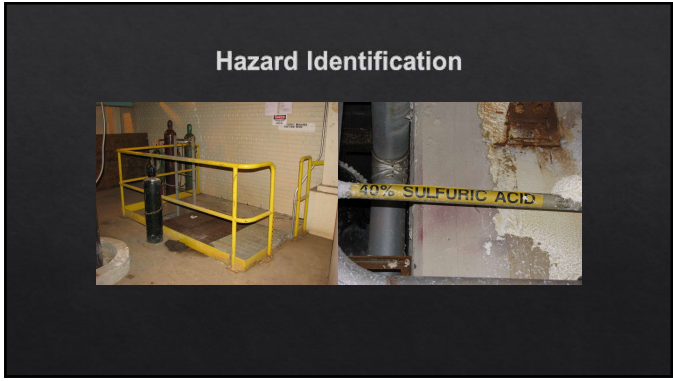
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22



23



24

Atmospheric Hazards

◆ “an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:

(... continued)

25

Example: Hydrogen Sulfide

(H₂S) (Swamp Gas, Sewer Gas)

- ◆ Colorless
- ◆ Rotten Egg Odor
- ◆ Asphyxiant
- ◆ Flammable
- ◆ Toxic
- ◆ Corrosive

26

Confined Space Fatality Recorded on a Camera



0:00 / 1:32

27

Mike Biadasz

“Mike Biadasz, a passionate young farmer from Amherst, WI, died on August 15, 2016 when he was overcome by hydrogen sulfide gas. Mike had been agitating manure in the open lagoon at his family’s cattle feeding operation. The gas also killed sixteen cattle near the lagoon.”

<https://tellingthestoryproject.org/tag/manure-handling/>

28

1910.146(d)(5)(i)

“Entry conditions shall be **continuously monitored** in the areas where authorized entrants are working.”

29

Physical Hazards

◊ All other hazards found or produced in a confined space by any means (other than atmospheric) known to endanger personnel upon entry to or during work performed within the space

30



31



32



33

Confined Space Emergencies

- ◆ Failure to recognize and evaluate hazards
- ◆ Lack of written entry procedures and training
- ◆ Untrained would-be rescuers attempting rescue
- ◆ Proper precautions not taken before entry and during work

34

Assess Information (Orient)

35

Risk/Benefit Analysis



- ◆ Training is key
- ◆ Rescue or recovery
- ◆ Risk to rescuer
- ◆ Benefit to situation
- ◆ Head vs. Heart

36

Incident Priorities

- 1 Life safety
- 2 Incident stabilization
- 3 Property conservation

37

Select a Plan of Action (Decide)

38

What is our IAP?

- ◆ Take Command
- ◆ Site Safety
- ◆ Deny Entry
- ◆ Communicate
- ◆ Self/ Assisted Rescue
- ◆ Medical
- ◆ Etc.



39

Implement the Plan
(Act)

40

Nine-Step Process
(Brown and Crist)

- ◊ Establish command and take control
- ◊ Identify the type of rescue problem
- ◊ Perform hazard and risk assessment
- ◊ Identify rescue objectives
- ◊ Identify resource needs
- ◊ Develop an action plan
- ◊ Implement the action plan
- ◊ Evaluate the effectiveness of the action plan
- ◊ Terminate the incident

41

Basic Rescue Progression

- ◊ What exactly are you called for?
- ◊ Begin gaining information
- ◊ Call for Resources
- ◊ Begin Metering/Monitoring
 - ◊ The rest follows this step.
- ◊ Three classes of rescue: 1) self, 2) align-non-entry, and 3) entry

42

Tactics

- ◊ Tactics are driven by Metering and the Space
- ◊ PPE
- ◊ LOTO
- ◊ Air Management
- ◊ Ventilation
- ◊ Speed of Action
- ◊ Rigging


43

2021 NFPA 1006 7.1.1

Initiate isolation procedures for a specific confined space incident

44

Denying Entry



45

2021 NFPA 1006 7.1.2

Initiate a search in areas immediately adjacent to the confined space

46



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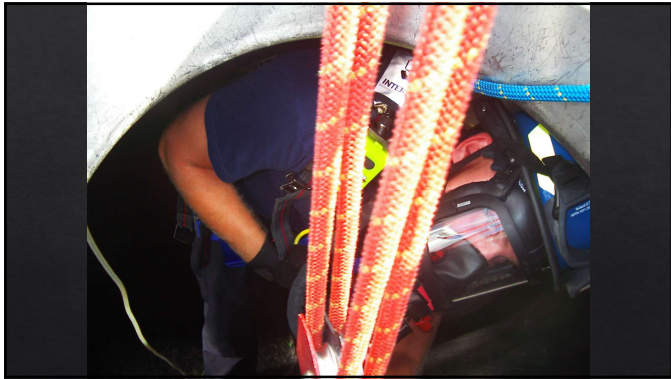


48

2021 NFPA 1006 7.1.3

Communicate with
victim(s)

49



50

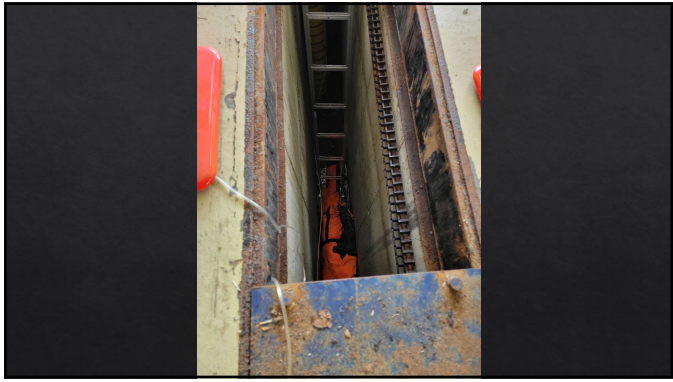
2021 NFPA 1006 7.1.4

Perform nonentry rescue

51



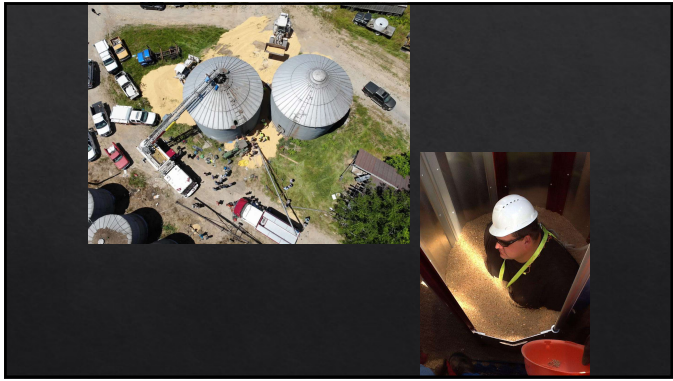
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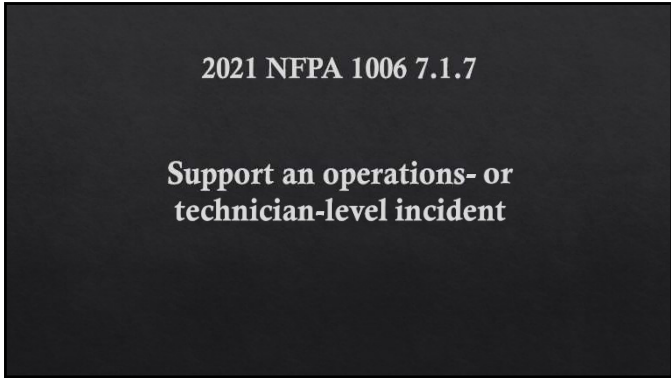
2021 NFPA 1006 7.1.6

Recognize the need for
technical rescue resources at
an operations- or
technician-level incident

56



57



58



59



60



61



62



63
