













ENTRY

- The act by which a person intentionally passes through an opening into a confined space.
- Any part of the body passing through the opening is considered entry.



Potential Hazards in Confined Spaces

- Oxygen Deficient <19.5% oxygen
- Oxygen Enriched
 - >23.5% oxygen
- Flammable
- > Toxic Materials
- Electricity

- **Mechanical Hazards**
- Temperature Extremes
- Engulfment Hazards
- Noise
- > Falling Objects
- Slick/Wet Surfaces



IDLH

No person shall:

Enter – Work – or Remain

in an IDLH condition until such time that the condition has been eliminated or controlled.

Source: CDC/NIOSH

Confined Space - Hazards

O2

All living creatures require oxygen to live. One of the primary hazards of entering confined spaces is oxygen deficiency. When oxygen is present in concentrations less than 19.5% the atmosphere is said to be oxygen deficient.

O2





Flammable Atmospheres

Factors Needed:

- Sufficient oxygen content
- Flammable gas or vapor present
- Proper air/gas mixture to cause fire or explosion

Typical Ignition Sources:

- Sparking or electric tools
- Static Electricity
- Welding/Cutting Operations
- Smoking
- Ignition source from outside





- > Odorless, Colorless Gas.
- Is a Combustion By-Product.
- People can quickly collapse at high concentrations

PPM	Effect
50	OSHA Permissible Exposure Level
200	Slight headache, discomfort
600	Headache, discomfort
1000 - 2000	Confusion, nausea, headache Tendency to stagger Slight heart palpitation
2000 - 2500	Unconsciousness (potentially fatal)

































Grain Bin Safety Webinar



Speaker:

• Dan Neenan, Director,

National Education Center for Agricultural Safety



General Requirements For Grain Structures

The employer shall issue a permit for entering bins, silos, or tanks, unless the employer or the employers representative is present during the entire operation.

The permit shall be kept on file until completion of the entry operations.



General Requirements

The atmosphere within a bin, silo or tank shall be tested for the presence of combustible gases, vapors and toxic agents when the employer has reason to believe they may be present.

Additionally the atmosphere within a bin, silo or tank shall be tested for oxygen content unless there is continuous natural air movement or continuous forced air ventilation before and during the period employees are inside.

General Requirements

An observer, equipped to provide assistance, shall be stationed outside the bin, silo or tank being entered by an employee. Communications (visual, voice, or signal line) shall be maintained between the observer and employee entering the bin, silo or tank.

General Requirements

The employee acting as an observer shall be trained in rescue procedures, including notification methods for obtaining additional assistance.

General Requirements

Employees shall not enter bins, silo, or tanks underneath a bridging condition, or where buildup of grain products on the sides could fall and bury them.

Training and Education

Employees assigned special tasks, such as bin entry and handling of flammable or toxic substances, shall be provided training to perform these tasks safely.

Note: training for an employee who enters grain storage structures includes training about engulfment and mechanical hazards and how to avoid them.

When Must Training Be Conducted?

New employees prior to starting work.

New and current employees, the employer shall provide training at least annually and when changes to job assignment will expose them to new hazards.

Lockout/Tagout

OSHA Regulation 29 CFR 1910.147

- "Lockout" To physically insure that all mechanical or electrical systems, that can be energized or started up, or release stored energy, are secured, isolated, disabled, or rendered inoperative.
- "<u>Tagout</u>" The placement of a device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Ventilate the Space

- Use mechanical ventilation
 - Fans
- Ventilate at the rate of at least four (4) volumes per hour
 - Larger spaces require more ventilation
- Make sure air supply is not contaminated
 - Ventilation air supply must be from fresh air uncontaminated with flammables, toxins, etc.
 - Gas powered fans can be Dangerous

Test the Atmosphere

In this order:

- Check for Oxygen Content:
 - At least 19.5% and less than 23.5%
- Check for Combustibles:
 - Less than 10% of the LEL
- Check for Toxic Gases:
 - Most commonly carbon monoxide (PEL 50 ppm)
 - or any other hazardous materials as determined by the use of the space.

Atmosphere Testing Shall Be Performed:

- Prior to every entry when the space is vacant;
- At least hourly for permit-required confined spaces.
- More frequently, if conditions or suspicions warrant.

Personal Protective Equipment

Once all the hazards are identified, the space has been ventilated and the atmosphere checked, determine what personal protective equipment will be necessary. Hard Hats
Eye Protection
Hearing Protection
Respirator
Protective Coveralls
Gloves
Footwear
Safety Harness

Personal Protective Equipment

Each entrant shall use a chest or full body harness or a boatswain's chair, with a retrieval line attached to assist in removal.

Exception — Where the employer can demonstrate that the protection required is not feasible or creates a greater hazard, the employer shall provide an alternative means of protection which is demonstrated to prevent the employee from sinking further than waist-deep in the grain.

Enter the Space and Proceed with work:

- An attendant shall be posted near the entrance for the duration of the work. He shall be in constant communication with the entrants while the job is in progress.
- All entrants shall sign a sign-in-log when entering the space and sign out when exiting.
- The attendant shall maintain the permit and sign in log for the duration of the work.

HOUSEKEEPING

- Employer required to develop and implement a written housekeeping program
 - Determines the best process to reduce fugitive grain dust on all exposed surfaces
 - Establish housekeeping priority areas
 - Floor area within 35ft of bucket elevators
 - Enclosed grinding equipment
 - Interior enclosed grain drying areas

