Confined Space Rescue
NFPA 1670 Awareness Level

SAR
KANSAS

Kansas Search & Rescue Response System
General Training Requirement

NFPA 1670
Confined Space Rescue

- (1) Recognizing the need for confined space search and rescue
- (2) Initiating contact and establishing communications with victims where possible
- (3) Recognizing and identifying the hazards associated with non-entry confined space emergencies
- (4) Recognizing confined spaces

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Confined Space Rescue

- (5) Performing a non-entry retrieval
- (6) Implementing the emergency response system for confined space emergencies
- (7) Implementing site control and scene management

Applicable Standard

- CFR 29 1910.146 Permit-Required Confined Spaces

What is a Confined Space?

- A confined space is a space that
  - is large enough for a person to enter and work
  - has limited or restricted means of entry and exit
  - is not designed for continuous occupancy

Rescue Techniques

Non-entry – Rescue that is conducted without entry into the confined space. This can be conducted by such means as a rope or winch.

Rescue Techniques

Entry by others – some companies do not have trained personnel for emergency rescue. They depend on others to conduct emergency rescues such as the Fire Department, TRTs, etc.

Permit-Required Confined Space

- A permit-required confined space has at least one of the following characteristics
  - contains or has the potential to contain a hazardous atmosphere
  - contains a material that has the potential to engulf an entrant
  - has an internal configuration such that an entrant could be trapped or asphyxiated
  - contains any other recognized serious safety and health hazard

Rescue Equipment

- Confined Space Rescue can require a number of different types of equipment to effectively and safely perform a rescue.
- Let’s take a look at some of the equipment that can be used in confined space rescues.

Air Monitoring Equipment

Ropes

- Used for
  - Primary tool in technical rescue
- Vary in construction, material and size
- Most common in C.S.
  - ½ inch, strength 9,000 lbs.
  - Static kernmantle (low stretch)
  - Dynamic kernmantle (high stretch)

Harness

- Used for
  - Fall protection
  - Confined space rescue
- Most common in C.S.
  - Flat nylon webbing
  - Full body
  - Point of attachment in the center of the back at shoulder level

Tripods

- Used for
  - Access to <u>vertical</u> entry
- Most common in C.S.
  - 9-foot height or greater

Winches

- Used for
  - Assist with tripods
- Most common in C.S.
  - Retractable designated for non-entry rescue
  - Certified as a primary lowering device

Ventilation Systems

- Ventilate, eliminate, or control the space's atmospheric hazards

SCBA Units

- SCBA (Self-Contained Breathing Apparatus) – may be required to enter some confined spaces or to perform a rescue.
- There are special guidelines that must be followed prior to wearing an SCBA.

Lockout Tagout

- Means of securing electrical, mechanical, etc. so that they can't be accidentally turned back on

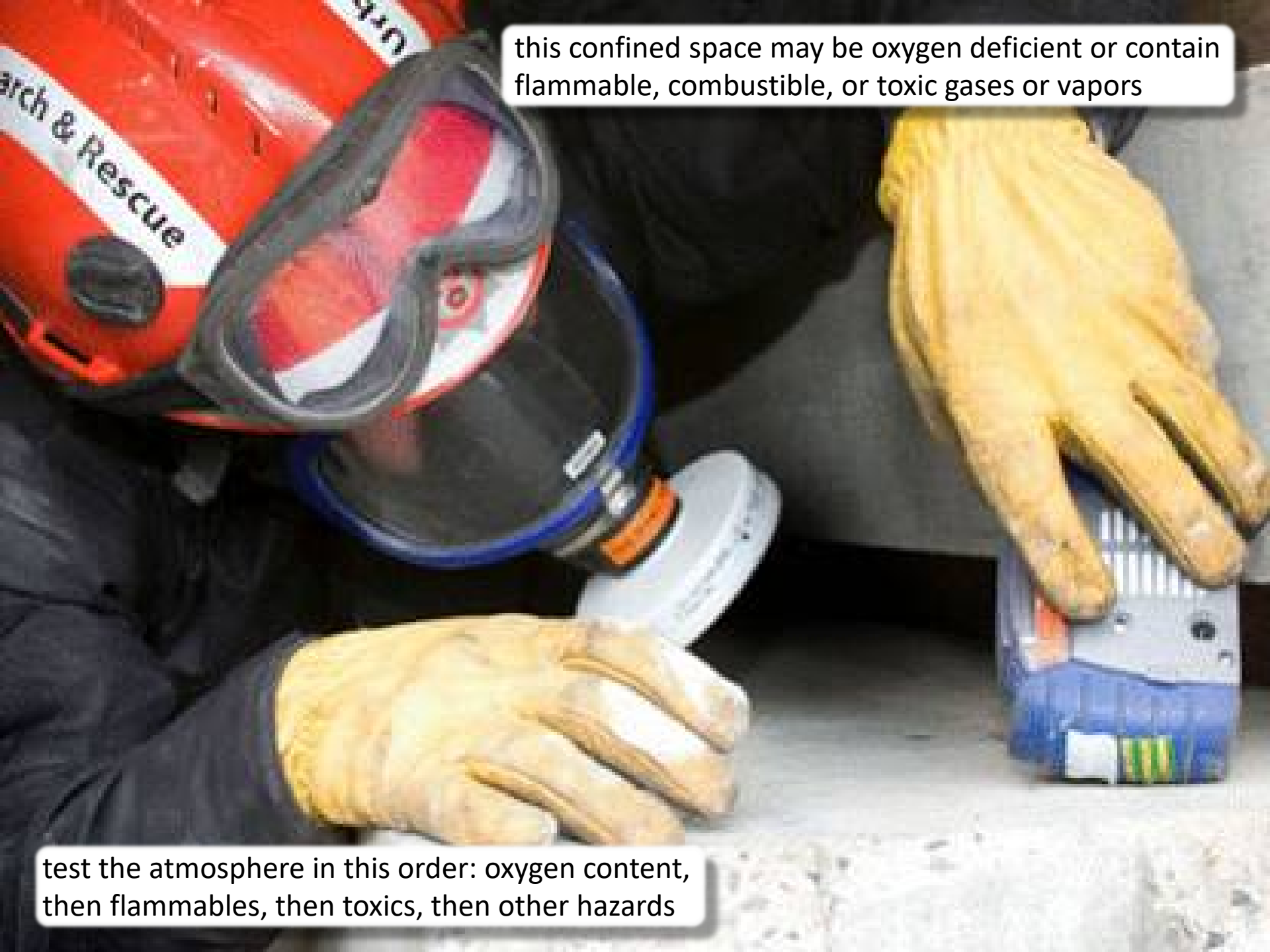
Confined Space Hazards

- Oxygen deficiency
- Flammable/combustible gases and vapors
- Toxic gases
- Engulfment in solid or liquid
- High noise levels
- Grinding, crushing, or mixing mechanisms
- Configuration
- Extreme temperatures
- Chemicals
- Lack of lighting

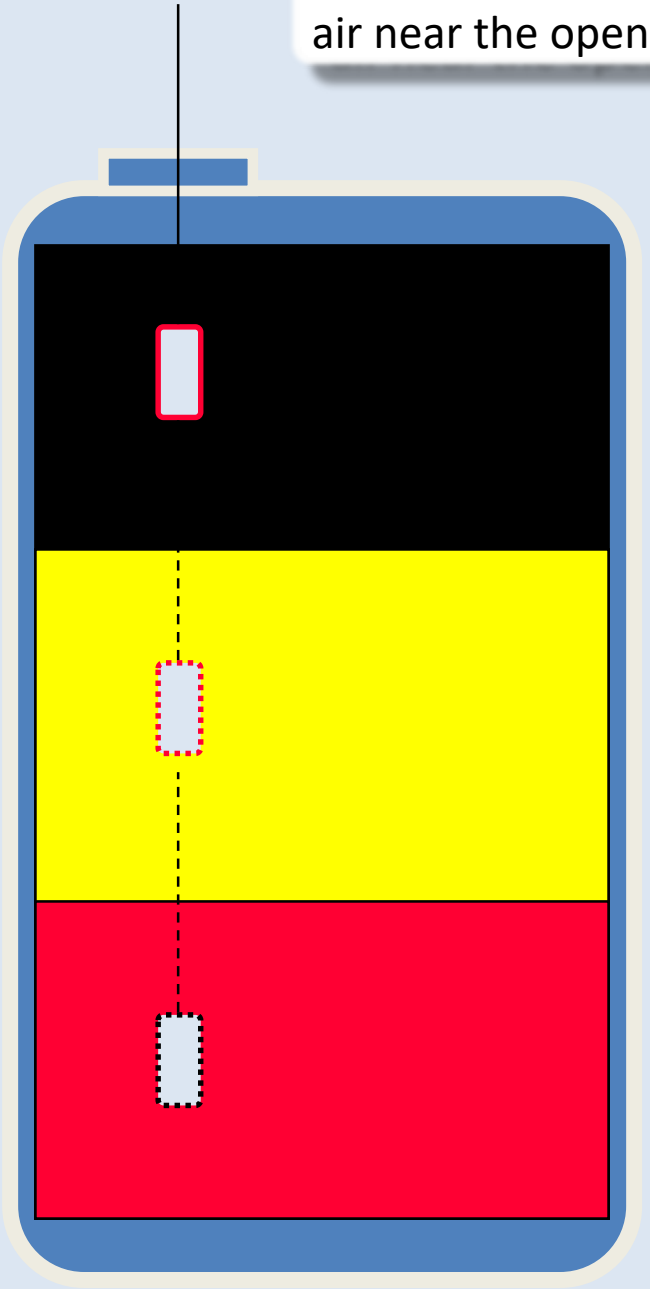
Additional Hazards

- Noise
  - amplified due to acoustics of the space
  - damages hearing and affects communication
- Slippery or wet surfaces
  - increased risk of falls and electrical shock
- Personal protective equipment
  - more common PPE such as hard hat, hard-toed boots, safety glasses, face shield, gloves, and overalls must be worn when needed but can increase body temperature


this is one example of a permit-required confined space
STOP
DANGER
FOLLOW CONFINED SPACE ENTRY PROCEDURES BEFORE ENTERING
PELIGRO
ANTES DE ENTRAR SIGA EL PROCEDIMIENTO DE ENTRADA A UN ESPACIO LIMITADO


this confined space may be oxygen deficient or contain flammable, combustible, or toxic gases or vapors
test the atmosphere in this order: oxygen content, then flammables, then toxics, then other hazards

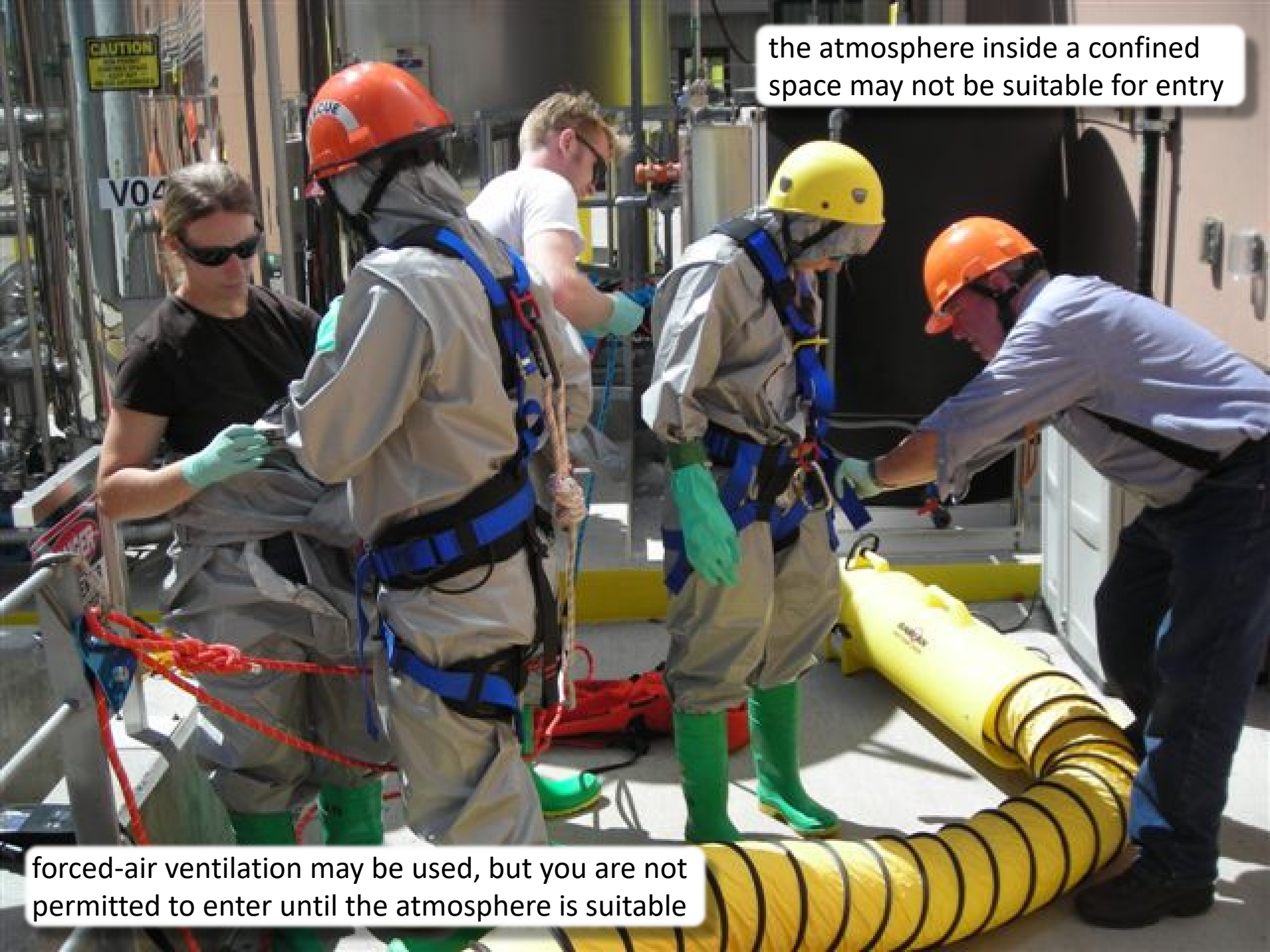
test the atmosphere at all levels of the confined space; good air near the opening doesn't mean good air at the bottom



Good Air

Poor Air

Deadly Air


the atmosphere inside a confined space may not be suitable for entry
forced-air ventilation may be used, but you are not permitted to enter until the atmosphere is suitable


atmospheric conditions may change while you are in the confined space
periodically monitor the atmosphere within the confined space

Get Out!

- If a hazardous atmosphere is detected while a worker is in the confined space
  - all activities should stop
  - the worker(s) should exit immediately
  - the hazard should be evaluated
  - protective measures should be taken


if a worker must wear a respirator, remember that an air-purifying respirator will do nothing in an oxygen deficient atmosphere
these workers are wearing air-supplying respirators due to a lack of oxygen


adequate illumination should be provided where lighting is limited
in some cases, explosion-proof lighting may be necessary


some confined spaces can contain mixing or crushing mechanisms or other hazards that can be turned on and injure a worker
use lockout/tagout on all hazardous items

Duties of Attendants

- Knows the hazards
- Maintains an accurate count of entrants
- Remains outside the confined space until relieved by another attendant
- Maintains regular communication with entrant (s)
- Monitors conditions inside and outside of the confined space

Duties of Attendants

- Summon rescue services when needed
- Ensures unauthorized personnel do not enter confined space or affect operations
- Performs non-entry rescues
- Performs no other duties that might interfere with primary duty to monitor and protect the entrant(s)


it is possible for a worker to be overcome by a sudden change in atmospheric conditions
ensure that a rescue procedure is in place in case an entrant needs to be removed from a confined space in an emergency

Duties of Entrants

- Knows the hazards
- Uses appropriate PPE
- Maintains regular communication with attendant (s)
- Monitors conditions inside the confined space

Duties of Entrants

- Alert the attendant immediately if a problem develops
- Leave the space immediately when:
  - Ordered by the attendant
  - Early warning signs of exposure are recognized
  - Hazardous conditions change or increase
  - An alarm is activated

Always Remember

- Test the atmosphere prior to entry and periodically
- Correct the hazards you are able to correct
- Report to your supervisor the hazards you are unable to correct
- Never enter a confined space if the atmospheric conditions are not suitable
- Ensure an attendant is outside the confined space at all times

F-A-I-L-U-R-E

- **F**ailure to understand the environment
- **A**dditional medical issues not considered
- **I**nadequate rescue skills
- **L**ack of teamwork or training and experience
- **U**nderestimating the logistics of the incident
- **R**escue verse recovery mode not considered
- **E**quipment not mastered

This completes the general training requirement for
NFPA 1670 Confined Space Rescue Awareness Level.

Click the box below to take a quiz
and
receive a Certificate of Completion.

FINAL QUIZ