
OSHA®
Occupational Safety
and Health Administration

Confined Spaces in Construction – What's Different? 29 CFR 1926 Subpart AA

Protection of life, health, safety and welfare of Arizona's most valuable assets.

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Serving Arizona's Workforce

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Subpart AA

- 1926.1201 - Scope.
- 1926.1202 - Definitions.
- 1926.1203 - General requirements.
- 1926.1204 - Permit-required confined space program.
- 1926.1205 - Permitting process.
- 1926.1206 - Entry permit.
- 1926.1207 - Training.

Subpart AA *cont'd*

- 1926.1208 - Duties of authorized entrants.
- 1926.1209 - Duties of attendants.
- 1926.1210 - Duties of entry supervisors.
- 1926.1211 - Rescue and emergency services.
- 1926.1212 - Employee participation.
- 1926.1213 - Provision of documents to Secretary

Why?

- ABOUT **60%** OF THE FATALITIES THAT HAVE TAKEN PLACE IN CONFINED SPACES IN THE PAST WERE FROM WOULD-BE RESCUERS

- OSHA ESTIMATED THAT 80 - 90 % OF CONFINED SPACE ACCIDENTS COULD BE AVOIDED AND THAT **54** FATALITIES, **5,041** LOST WORKDAYS CASES, AND **5,908** NON-LOST WORKDAY CASES WOULD BE PREVENTED ANNUALLY

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Construction Double Fatality in a Confined Space

Wastewater Treatment Project

Incident Description

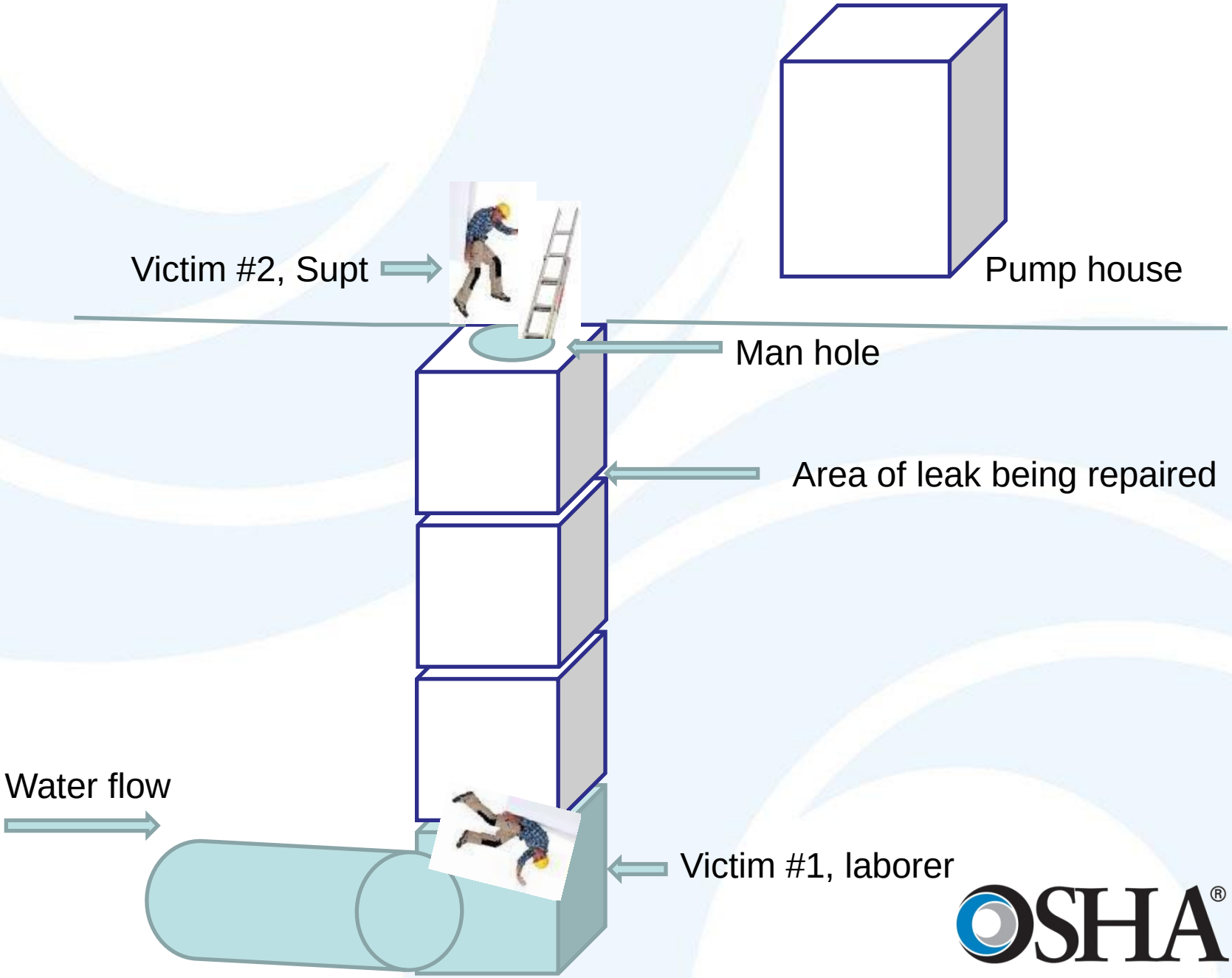
- Victim #1 entered a manhole at a construction site to apply aerosol sealant to a juncture approximately 5-7 feet down from the top of the space. This was his second entry to perform this task that day.
- He was overcome by vapors and fell face first into 3 feet of water at the bottom.

Incident Description, *cont'd*

- The site superintendent entered the manhole to attempt rescue. He became unconscious and fell on top of victim #1.
- Third employee left the site in order to call emergency services. His cell phone was inoperable to call 911. He returned with a volunteer who had his own SCBA.

Incident Description, *cont'd*

- The volunteer attempted rescue, but a crack in the SCBA mask forced him to stop.
- EMTs arrived and extracted the victims 45 minutes after victim #1's initial loss of consciousness.


Victim #2, Supt
Pump house
Man hole
Area of leak being repaired
Water flow
Victim #1, laborer

Weather conditions: Weather was clear and sunny; approximately 70 degrees F and no humidity

Type of operation: Construction of wastewater treatment lagoon and water piping system

Size of work crew: Three employees of General Contractor. No Sub-contractors were on site due to the upcoming holiday weekend.

Worksite inspection conducted: Superintendent had a verbal discussion with the city inspector (per OSHAs recorded interview with him) about the hazards of using Flex Seal™ in a confined space. No written records or documentation were available at the scene.

Competent safety monitoring on site: None

Safety and Health program in effect: Formal, written safety programs for confined space entry were not effective.

Training and education for workers: No confined space training specific to entry into the manhole or with the use of Flex Seal™. Entry and rescue equipment was not readily available. In a job trailer approx. one mile away.

Occupations of deceased workers: Laborer (#1) and Superintendent (#2)

Age/Sex of deceased worker: Both victims were male; Caucasian

- Victim #1 – 19 years old, laborer (nephew of the Superintendent)
- Victim #2 – 44 years old, Superintendent (Father of the Witness and Uncle of Victim #1)
- Witness -- 18 years old, truck driver (son of the Superintendent)

Time on job:

- Victim #1 – Approximately 12 months and
- Victim #2 – Approximately 24 years

Time at task: Less than five minutes

Time employed/classification (FT/PT/Temporary):

•Both victims were full-time employees

Language spoken: Both spoke English

Union/Non-Union: None

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Subpart AA Does NOT Cover

- Excavations: subpart P still covers work in excavations
  - If there is a confined space within an excavation, such as a sewer pipe, and a worker enters the pipe to perform work, that is covered by Subpart AA

Subpart AA Does NOT Cover

- Underground Construction: subpart S still covers underground construction
  - Work done in an underground space that does not involve altering the *structure* of the space is covered by Subpart AA (such as equipment installs)

Basics

- What is a confined space?
  - Is large enough and so configured that an employee can bodily enter it;
  - Has limited or restricted means for entry and exit; and
  - Is not designed for continuous employee occupancy.
- Where are confined spaces usually found?
  - Sewers, pits, tanks, crawl spaces, attics, boilers, utility rooms/closets, etc

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What is a Permit Space?

- Permit-Required Confined Space (Permit Space)
  - A confined space WITH
    - Hazardous or potentially hazardous atmosphere;
    - Engulfment hazard;
    - Physical Hazard;
    - Other serious safety or health hazard

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Confined Space Basics, *cont'd*

- **What are the hazards?**
  - **Atmospheric (respirable) hazards**, such as hydrogen sulfide, carbon monoxide, low oxygen, excessive oxygen, and other toxic gases and particulates
  - **Explosive hazards**, including flammable gases in concentrations above 10% of the lower explosive limit (LEL), combustible dusts, and other explosive/flammable materials
  - **Physical hazards**, including tripping hazards, fall hazards, struck-by hazards, and electrical hazards, Heat (ambient temperature)

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Confined Space Basics, *cont'd*

- What hazards ***aren't*** addressed by this rule?
  - The confined spaces rules address hazards that could make it difficult or impossible for a worker inside the space to exit. In other words, hazards that have an immediate or near-immediate impact on the entrant
  - Other rules address long-term exposure hazards, like the standards addressing lead and asbestos exposure

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What's in a Program?

- Site evaluation for confined spaces and permit-required confined spaces (permit spaces).
- Posting of all permit spaces.
- Steps taken to prevent unauthorized entry of permit spaces.
- Training of all workers exposed to permit space hazards, including hazards of unauthorized rescue.

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What's in a Program? (cont'd)

- Plans for elimination or isolation of physical hazards.
- Plans for air testing and monitoring.
- Plans for ventilation.
- Plans for engulfment hazard monitoring, if necessary.
- Plans for rescue (non-entry if possible).
- Plans and training for entrants, attendants, and entry supervisors.

1926.1207
EMPLOYEE TRAINING

- **Initial training**
- **Refresher training as needed**

– Participants
  - Attendant
  - Entrant
  - Entry Supervisor
  - Rescue personnel (ANNUAL)

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Training for Affected Employees

- Provided at no cost
- Understanding, Knowledge and Skills
- Hazards and Controls
- Dangers associated with Rescue
- Before assigned duties or changes
- Establish employee proficiency
- Training records maintained

What's in a Program?

- Personal protective equipment, if necessary.
- Plans for working around and with other contractors.
- Plans for summoning emergency services.
- Plans for regular review (at least annually) of permits and identification of areas in need of improvement.

Proper Prior Planning…

- Awareness of hazards
- Addressing hazards BEFORE entering
- Preparation for rescue in the event of an emergency/unanticipated condition.
- With planning and forethought, many construction employers will be able to avoid the need for a permit space program.

Who does what?

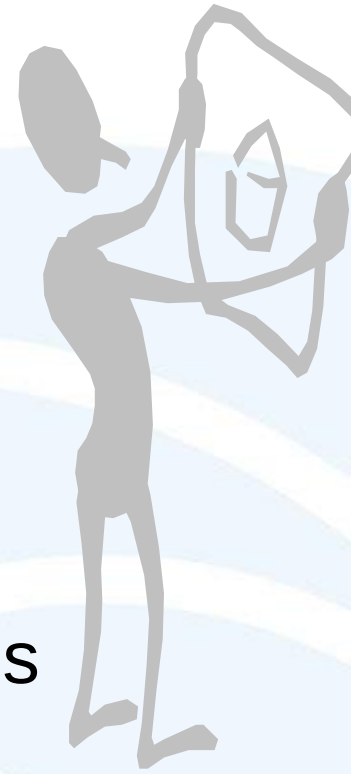
- Site evaluation:
  - Any employer whose employee may enter a confined space needs to ensure that the site is evaluated and spaces are posted, but the evaluation and posting may be coordinated through a single employer.

Who does what?

- Permit issuance:
  - Entry employers (employers who direct workers to perform work in a space) must develop and post permits.
    - Permits list required entry conditions, equipment that must be used, and track who is inside the space.

Permit Entry Systems

- The written permit signed by entry supervisor:
  - Verifies pre-entry precautions have been taken and the space is safe to enter
  - Must be posted at entry to confined space
  - Specifies apparent hazards and corrective actions taken prior to entry
  - Requires termination of permit when task is completed or when new conditions exist



Entry Permit Requirements

- Date, location, and name of confined space
- Purpose of entry
- Known hazards
- Duration of entry permit time
- Names of authorized entrants, attendants, supervisors
- Air testing results - signature of tester

Entry Permit Requirements

- Required equipment and procedures, such as personal protective and rescue equipment
- Name and phone numbers of rescue and emergency services
- Communication procedures
- The permit must remain posted during entry and canceled once it expires or any circumstance requires evacuation
- Permit must be maintained on file for **one year**

Construction Standard-1926.1208 ENTRANT RESPONSIBILITIES

The employer must ensure:

- Familiar with potential hazards
- Properly uses required equipment
- Maintains communication with attendant
- Evacuates at order of attendant
- Notifies attendant of self-evacuation

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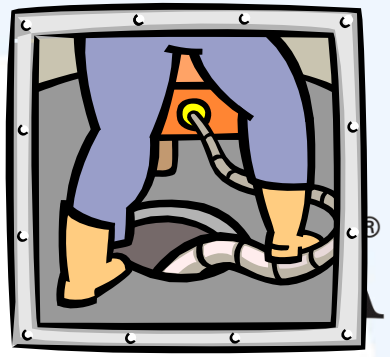
Construction Standard 1926.1209
ATTENDANT RESPONSIBILITIES

The employer must ensure:

- Familiar with potential hazards and behavioral effects
- Maintains accurate count of entrants and identifying factors
- Stationed and outside of the PRCS at all times
- Monitors entrants and maintains communication
- Does not enter unless replaced by another attendant



Construction Standard-
Attendant Responsibilities (cont)

- Continually assess status and activities
- Terminates entry at any time if conditions become unsafe
- Summons rescue and emergency services
- Warns away unauthorized entrants
- Performs non-entry rescue

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Construction Standard - 1926.1210

Entry Supervisor Responsibilities

The employer must ensure:

- Familiar with potential hazards and behavioral effects, signs and symptoms of exposure
- Determines if conditions are safe for entry
- Authorizes entry
  - Signs permit
  - Cancels, Transfers, suspends permit
- Oversees entry procedures
- Terminates entry
- Verifies Rescue Services

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Rescue and Emergency Services 1926.1211

The employer must ensure:

- Designated rescuer is able to respond in a timely manner
- Evaluate rescue service's proficiency
- Select rescue services that:
  - Can reach victim with in an appropriate time
  - Equipped and prepared
  - Agrees to notify ER if service becomes unavailable

Rescue and Emergency In House 1926.1211(b)

The employer must ensure:

- Designated employees trained and equipped at no cost to EE
- Train to perform rescue duties and establish proficiency
- Train each affected EE in basic first aid and CPR. (1 current certification)
- Practice drills at least every 12 months

Non-Entry Rescue

Non-entry rescue required unless…

- ER must ensure that retrieval systems are used in PRCS
- Must confirm prior to entry that emergency assistance is available.
- Retrieval systems meet standards

What's Different?

- General Industry Plus
  - Mostly the same requirements as 1910.146, with some additions

    - Continuous monitoring of atmospheric and engulfment hazards
    - Specific information exchange requirements for multi-employer work sites.

Alternate Procedures

- (Alternate Procedures for Certain Permit Spaces-Section 1203(e))
- Atmospheric hazards = No reclassification to non-permit space

- However..

Alternate Procedures Cont. Entry and Exit

- Any conditions making it unsafe to remove an entrance cover must be eliminated before the cover is removed.
- Entrance covers removal, ER must be immediately guard by- a railing, temporary cover, or prevent an accidental fall through the opening and protect each employee working in the space from foreign objects.

Alternate Procedures Cont.

- Before a worker enters the space, the internal atmosphere must be tested, with calibrated direct-reading instruments.
- Oxygen content, flammable gases and vapors, and for potential toxic air contaminants, **in that order**.
- The testing must demonstrate that the atmosphere in the space is not hazardous.

Alternate Procedures Cont.

- Any worker who enters the space, or that worker's authorized representative, must be provided an opportunity to observe the pre-entry testing.
- The employer must verify that the space is safe for entry and that the pre-entry measures discussed above have been taken, through a **written certification** that contains the date, the location of the space, and the signature of the person providing the certification.
- The certification must be made **before** entry and must be made **available** to each worker entering the space or authorized representative.
- The employer must provide workers with a safe method of entering and exiting the space. Any hoisting system that is used must either
  - (1) be designed and manufactured for personnel hoisting;
  - (2) be approved for personnel hoisting by a registered professional engineer prior to use.

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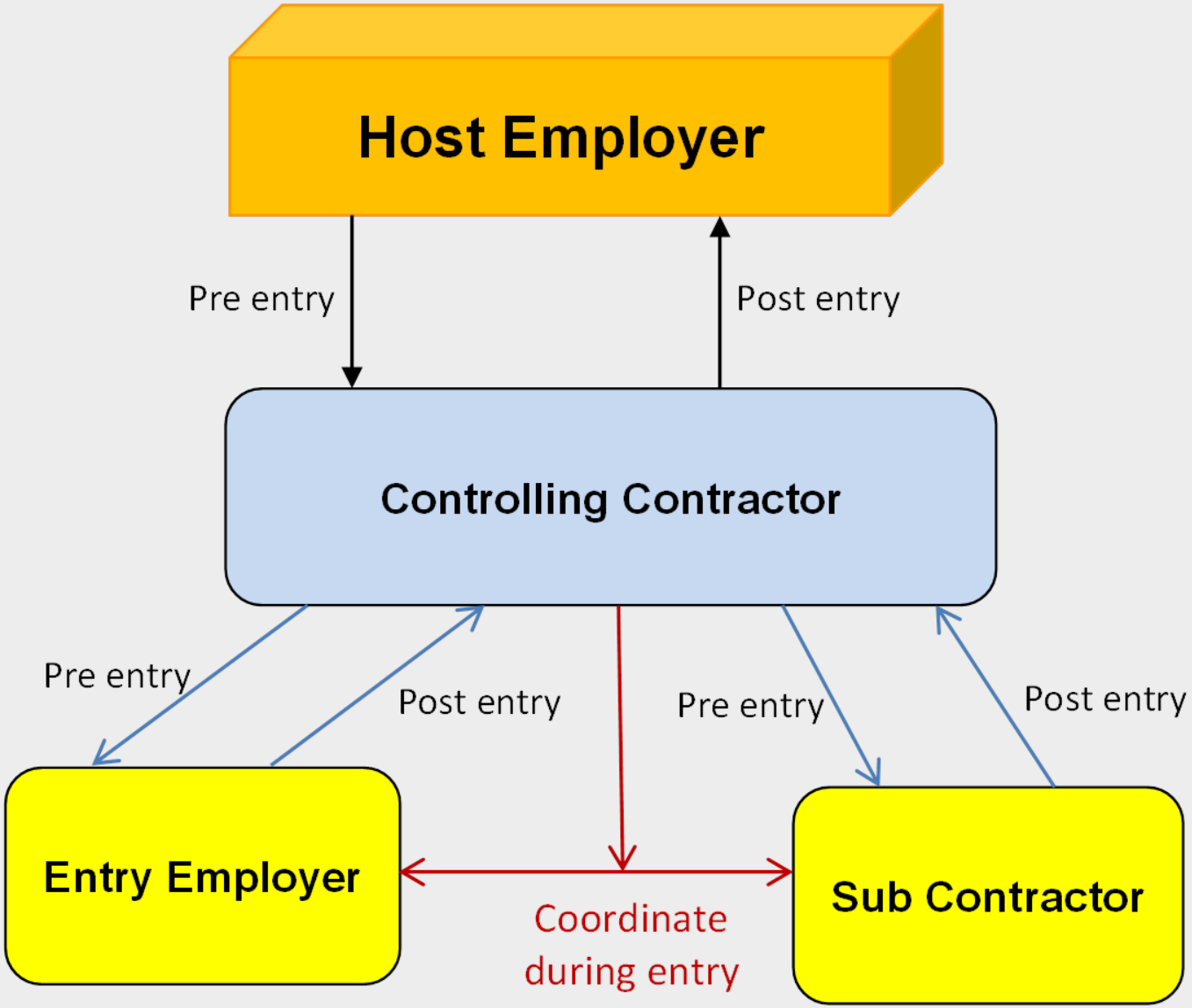
Alternate Procedures Cont.

- **Ventilation Requirements**
  - Continuous forced air ventilation must be used
  - If the forced air ventilation stops for any reason, the entrant(s) must immediately leave the space.
  - The forced air ventilation must be in immediate areas where each entrant is.
  - The air supply must be from a clean source

Alternate Procedures Cont.

- **During Entry**
- Monitoring must be conducted continuously
- If a hazard is detected during entry:
  - (A) Employers must make sure each worker leaves the space immediately;
  - (B) The space must be evaluated to determine how the hazard developed;
  - (C) The employer must implement measures to protect workers from the hazard before any subsequent entry takes place.

Information Exchange



What's Different?

- Relying on 911 or local emergency responders for entry rescue
  - The construction rule explicitly states that the emergency responders must agree to notify the employer in the event that the rescue service becomes unavailable.
- A competent person must conduct worksite evaluation.

What's Different?

- Subpart AA(cont'd)
  - Employers using "alternate procedures" for permit space entry may prevent physical hazard exposures through isolation methods, such as by placing a solid barrier to prevent a physical hazard from contacting an employee, not just elimination.
  - Permits may be suspended instead of cancelled, in response to temporary changes like a one-time loss of power from a blown fuse, provided the space is returned to permit conditions prior to re-entry.

What's Different?

- General Industry Plus – Clarifications
  - Incorporation of general OSHA policies directly into the regulatory text.
  - Additional terms included, such as "entry employer" and "entry rescue".

General Industry vs. Construction

- What if an employer does construction AND maintenance work in the same space at the same time?
  - Employers with workers engaged in both types of work will be in compliance with both standards if they follow 1926 Subpart AA.

Compliance Assistance Resources

- Confined Space in Construction:
  - http://www.osha.gov/confinedspaces/index.html#
    - Frequently Asked Questions - FAQs.
    - Confined Spaces in Construction: Pits
    - Confined Spaces in Construction: Sewer Systems

Questions?

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