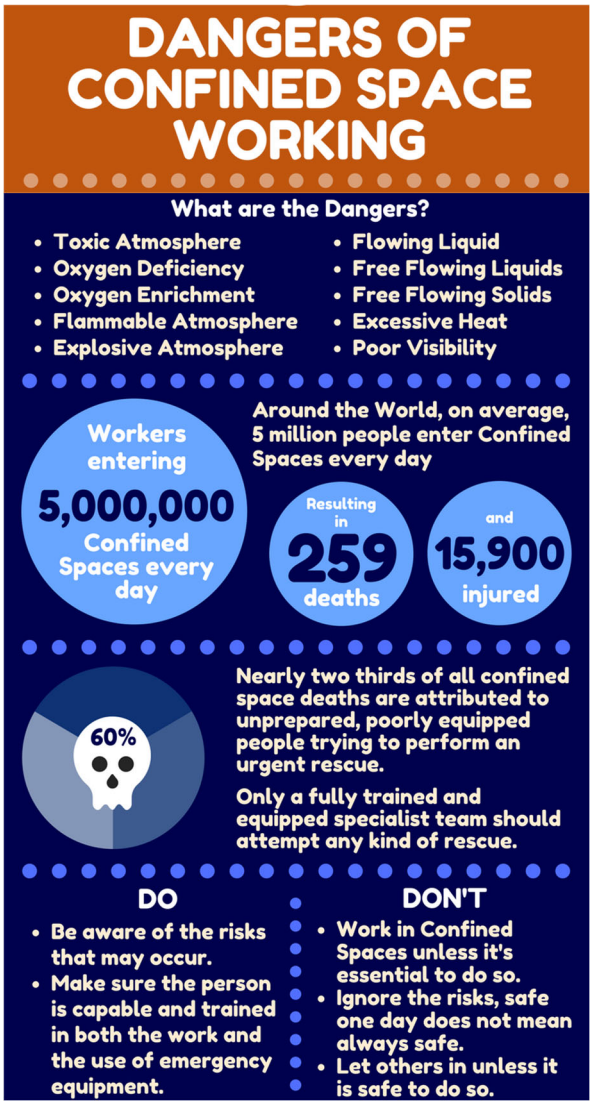
MONTHLY REFRESHER TRAINING
PERMIT REQUIRED CONFINED SPACES HAZARDS

February Week 3

CONFINED SPACES DANGEROUS AIR

Dangerous atmospheres have killed those working in confined spaces as well as those attempting rescue. Dangerous types of atmospheres include

- Flammable and explosive
- Toxic
- Oxygen-deficient
- Oxygen-enriched.



FLAMMABLE AND EXPLOSIVE ATMOSPHERS

- Natural gas from leaking gas lines or natural sources
- Methane from decaying sewage
- Propane gas or Oxygen from leaking cylinders or equipment
- Gasoline vapor from leaking tanks and spills
- Vapor from solvents used for painting, cleaning, etc.

TOXIC ATMOSPHERES

- Vapor from solvents
- Hydrogen sulfide from sewage or raw petroleum
- Carbon monoxide from engine exhaust.

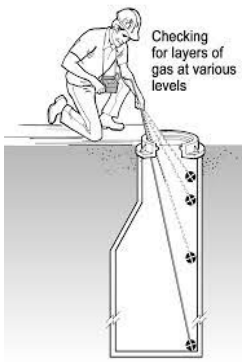
OXYGEN-DEFICIENT ATMOSPHERES

Contain less than 19.5% oxygen.

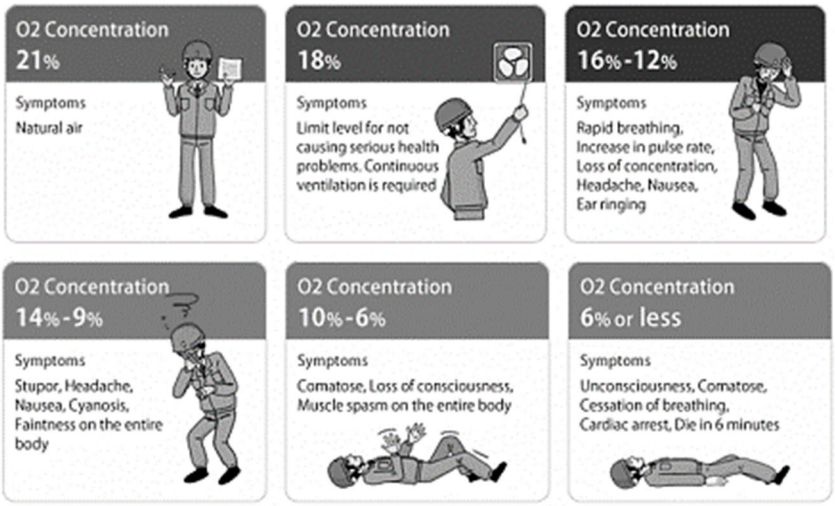
Breathing oxygen-deficient air can make you lose judgment, coordination, and consciousness. In a confined space, oxygen can be displaced by other gases or used up by rusting metal, combustion, or bacteria digesting sewage

CONTROLLING ATMOSPHERE HAZARDS

Check for atmospheric hazards before entering any confined space. Use properly calibrated gas detection equipment. Many dangerous atmospheres cannot be detected by smell or taste.



Make sure the equipment is able to detect what you suspect. Some detectors have sensors that check for oxygen content, explosive gases or vapors, and a range of toxic gases. Some have only one or two sensors and may not detect certain types of hazards. You may need a selection of detectors—one detector can't test for everything.



Check all levels of the space. Some contaminants are lighter than air and accumulate near the top of the space. Others are heavier than air and settle at the bottom.

If you leave the space for a break or lunch, test before you go back in. Dangerous atmospheres can develop without warning.

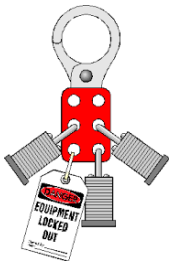
If tests indicate a dangerous atmosphere, you must NOT enter the space until it is thoroughly ventilated and subsequent tests indicate the air is safe to breathe. Ventilation and testing must be continued as long as you are in the space.

CONFINED SPACE PHYSICAL HAZARDS

In addition to dangerous atmospheres, confined spaces such as tanks, vats, vessels, hoppers, and bins can present physical hazards such as

- Poor entry and exit • Cramped working conditions
- Temperature extremes • Rotating or moving equipment
- Reactive or corrosive residues
- Electrical hazards
- Uncontrolled movement of liquids or solids.

Some of these hazards involve greater risk inside a confined space than outside. For example, fire in a confined space can be far more dangerous than fire in an open work area.



CONTROLLING AND ELIMINATING PHYSICAL HAZARDS

Physical hazards in Confined Spaces must be made safe.

- Isolate the space by disconnecting supply and drain lines. Lock out and tag the lines so they won't be reopened while you're working inside.
- Inspect the space for dangerous contents such as grain or sand that could slide, shift, and bury you inside.
- Lock out any electrical, hydraulic, or pneumatic equipment that could unexpectedly rotate, drop, roll, or snap shut in the space.
- Block and secure any equipment that could move because of gravity or stored momentum.
- Wear safety harnesses and lifelines to make rescue more efficient in case of an emergency.
- Use an entry permit system. This helps identify hazards and controls, and keeps track of who is inside.