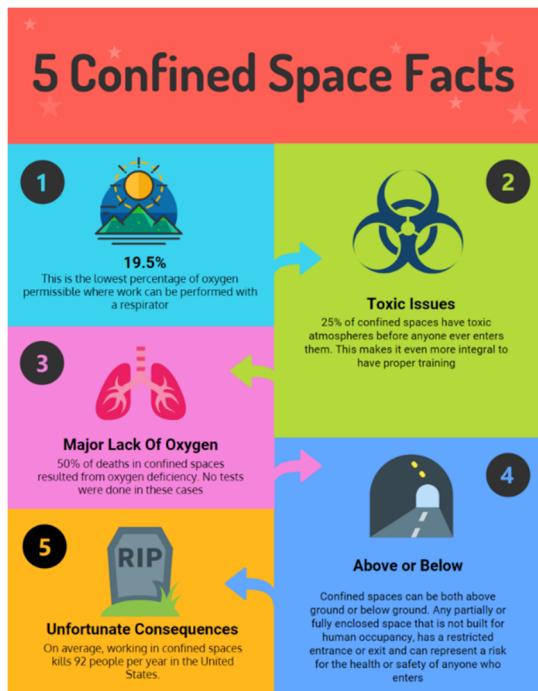


### WHAT IS A CONFINED SPACE?

A confined space is any enclosed space with restricted entry or exit that is not designed or intended for continuous human occupancy. The word 'confined' may suggest 'small', but not all confined spaces are. Some examples of confined spaces include tanks, access shafts, utility vaults, sewers, silos and storage bins. Ditches and trenches may also be a confined space when access or egress is limited. Some of the defining features of a confined space include:

- It is not primarily designed or intended for humans except for the purpose of work.
- It is enclosed or partially enclosed.
- It has a restricted means of entrance and exit by way of location, size or means.
- It has poor natural ventilation or hazardous atmosphere.
- It may become hazardous due to design, materials or substances inside, or the work/activities being carried out inside.

**WHAT ARE THE RISKS?** Many confined spaces contain hazardous substances or dangerous conditions. Hazards and threats could include:



### Sewer Manhole Asphyxiation

**Date:** April 1994

**Location:** Ohio

A municipal worker entered a sewer manhole to retrieve equipment. The atmosphere inside the manhole was oxygendeficient. There was no permit, no atmospheric testing, and no attendant. The worker collapsed shortly after entry and died.

This incident shows what happens when a worker does not stop to ask whether a space is a confined space before entry. The manhole met all criteria of a permit-required confined space, but it was treated as a routine task instead of a hazardous entry. When workers do not question the space, hazards are never identified, and no controls are put in place.

Before any part of your body crosses an opening, ask yourself:

- Is this space enclosed or partially enclosed?
- Does it have limited entry or exit?
- Is it not designed for continuous occupancy?

If the answer is yes to these questions, stop and get the space evaluated. Do not enter until the space has been reviewed and controlled.

If you don't ask the question, you can't get the protection. Every confined space incident starts with a missed pause.

- Poor Air Quality - Atmospheres with an oxygen content less than 19.5% (deficient) or more than 23% (enriched) are not safe.
- Toxic Gasses - Hydrogen sulfide, carbon dioxide, carbon monoxide, ammonia, chlorine, are all potentially deadly.
- Flammable Atmospheres - A highly explosive atmosphere can be created when finely ground combustible materials such as grain, carbon, cellulose, fibers, plastics or flammable liquids are present.
- Mechanical, Electrical or Physical Hazards - Examples include moving parts, structural hazards, noise, temperature and visibility.
- Loose Materials that may Engulf or Smother - Shifting or collapse of bulk material, barrier failures, etc.

## WHAT CAN WE DO TO PROTECT OURSELVES?



The dangers and risks associated with confined spaces are not always obvious.

All hazards must be identified and either eliminated prior to entry, or all precautions are taken for the safety of the person entering the confined space. Before entering any confined space:

- Do not enter permit-required confined spaces without being trained and without having a permit to enter.
- Review, understand and follow employer's procedures before entering permit-required confined spaces and know how and when to exit.
- Before entry, identify any physical hazards.
- Before and during entry, test and monitor for oxygen content, flammability, toxicity or explosive hazards as necessary.
- Use employer's fall protection, rescue, air-monitoring, ventilation, lighting and communication equipment according to entry procedures.
- Always maintain contact with a trained attendant either visually, via phone, or by two-way radio. This monitoring system enables the attendant and entry supervisor to order you to evacuate and to alert appropriately trained rescue personnel to rescue entrants when needed.

**Above all else, ensure that all personnel involved in the confined space process are competent to do the job safely. Many workers are injured and killed each year while working in confined spaces. An estimated 60% of the fatalities have been among the would-be rescuers. Unless you are trained in confined space hazards and how to control them, never enter a confined space.**

### CONFINED SPACE EXAMPLES



Tanks



Manholes



Boilers



Bins



Furnaces



Sewers



Silos



Tunnels



Hoppers



Vaults



Pipes



Ducts



Every confined space has unique hazards that need to be controlled before they can be entered.