CONFINED SPACES

CONFINED SPACE INJURIES

What is a Confined Space?

For a space to be confining it must be large enough and configured such that an employee can bodily enter and perform work in the space; have limited (small or few) openings for entry and exit; and be not designed for continuous employee occupancy. “Permit required confined spaces” (PRCS) are confined spaces that have one or more of the following: an actual or potentially hazardous atmosphere; contains a material that has the potential for an engulfment hazard; has an internal configuration that can entrap workers; or contains any other recognized or serious safety or health hazard. All such spaces must be identified, documented and marked so workers will understand what level of protection is necessary, and a written permit issued to ensure the identified hazards have been eliminated or proper protection has been provided and used for hazards that cannot be eliminated.

Examples of confined spaces include:

- Small rooms, especially unventilated corners of rooms
- Process/reactor vessels, degreasers, vats
- Pits, tunnels, sewers, underground utility vaults
- Furnaces and boilers
- Storage tanks and pipelines
- Silos
- Compartments of ships
- Ventilation and exhaust ducts

By their nature, confined spaces concentrate or mask the presence of hazards.

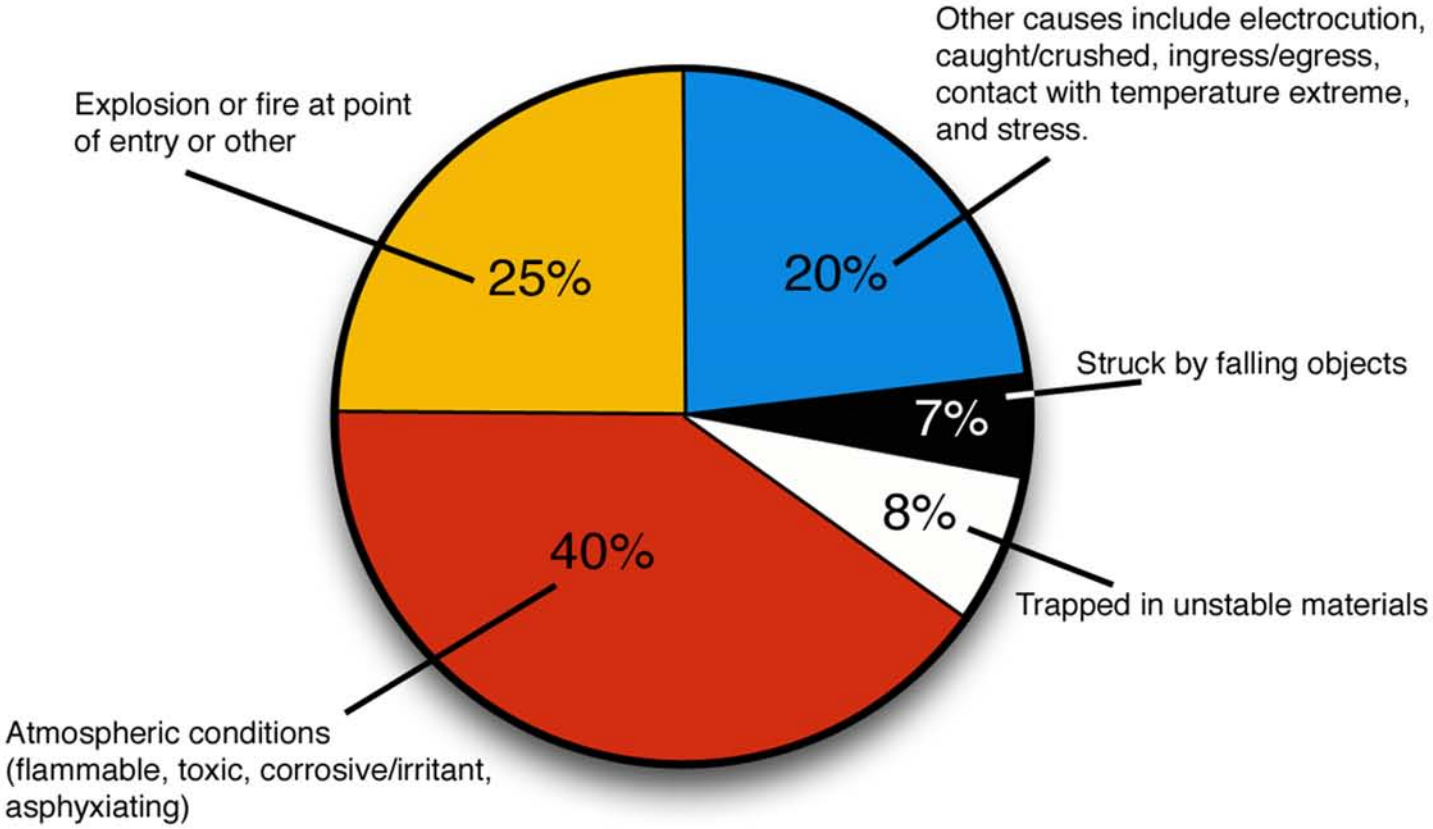
Types of Hazards

Confined spaces may give no apparent sign of danger such as the lack of breathable air, the accumulation of flammable or toxic atmospheres, the presence of arcing electrical equipment, continued mild shocks, flowing grain or sand, mechanical hazards or falling objects. Or they may have been entered improperly on prior occasions without incident, giving the false impression that entry is safe without proper precautions.

The same hazards not only affect workers inside confined spaces, but they also affect would-be rescuers of workers that succumb within these spaces. A high percentage of confined space fatalities involve would-be rescuers. Most of these incidents occur because workers are unaware of confined space hazards, proper safety procedures are not established, or established safety procedures are neglected.

"FATAL FOUR"
of Confined Spaces

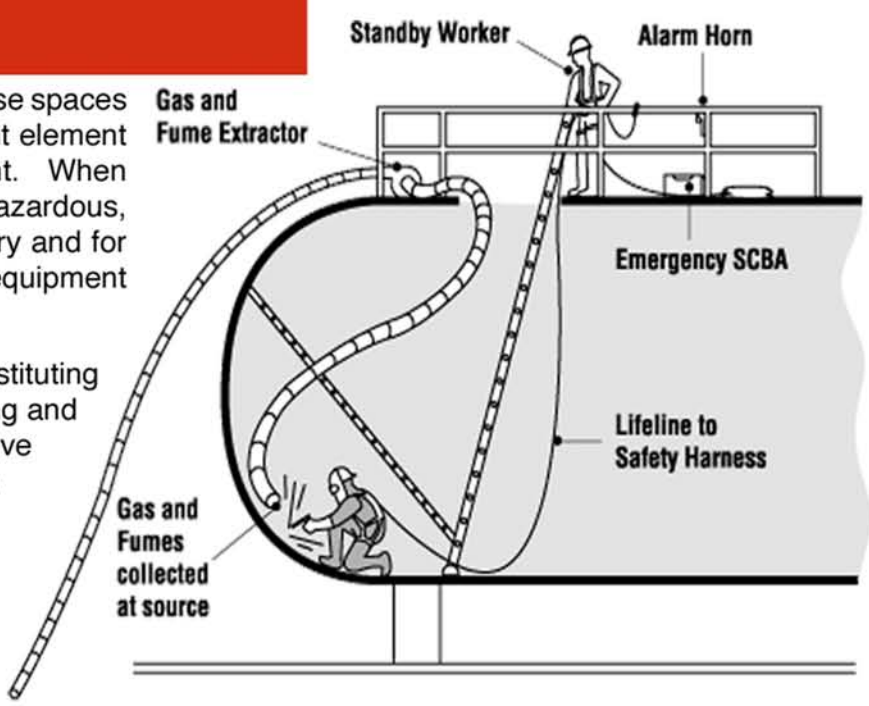
The historical cause of the majority of workplace fatalities in confined spaces include:



Hazard Control

Recognition of the inherent capacity of these spaces to harbor hazardous agents is a significant element of any workplace hazard assessment. When confined spaces are recognized to be hazardous, provisions for minimizing the need for entry and for use of appropriate work practices and equipment can be made.

Common control measures include substituting less hazardous materials; purging, cleaning and ventilation; proper use of personal protective equipment. Also important is the use of an entry permit system, and worker training in entry and rescue procedures.



Standards and Industry Resources

In the United States, confined spaces are subject to OSHA requirements and numerous consensus standards, some of which are listed below:

OSHA 29 CFR 1910.146, permit-required confined spaces in general industry
OSHA 29 CFR 1910.272, permit-required confined spaces in grain handling facilities
OSHA 29 CFR 1926.21(b)(6), training for confined or enclosed spaces in construction
OSHA 29 CFR 115, permit-required confined spaces in shipyard employment
ANSI/ASSE Z117.1, Safety Requirements for Confined Spaces
ANSI/API 2015, Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks
ANSI/API 2016, Guidelines and Procedures for Entering and cleaning Petroleum storage Tanks
NFPA 306, Standard on the Control of Gas Hazards on Vessels
NFPA 326, Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair
NFPA 1670, Standard on Operations and Training for Technical Search and Rescue Incidents

Presently, there are as many as 10 OSHA regulations, 13 ANSI standards, 7 API standards, 2 ASTM standards, 8 NFPA standards, and 6 international standards that pertain to confined spaces.

Featured Expert

Ronald D. Schaible, CIH, CSP
Workplace Safety & Environmental Expert
rschaible@robsonforensic.com | 800.813.6736

Ron is certified in the Comprehensive Practice of Industrial Hygiene (CIH), a Certified Safety Professional (CSP) and Certified Professional Ergonomist with diverse career experience. He has over 40 years of experience in commercial insurance loss control, private industry, and consulting. He has been responsible for global health and safety for a major electrical/ electronics industry manufacturer.

The scope of his professional experience includes all aspects of workplace safety such as machine guarding, suitability of personal protective equipment (PPE), ergonomic interventions, product stewardship (preparation of Material Safety Data Sheets (MSDS) and product labels and warnings), ergonomic & material handling hazards, evaluating exposures to hazardous chemicals and physical agents, safety training & instruction, OSHA and EPA regulations & related standards of care, workers compensation subrogation, and procedures for the proper handling and disposal of hazardous wastes.

Ron is a graduate of Drexel University, and West Chester University where he holds a M.S. in Environmental Health. He is a member of numerous professional organizations such as the American Industrial Hygiene Association (AIHA), American Society of Safety Engineers (ASSE), Human Factors and Ergonomics Society (HFES), and the American Conference of Governmental Industrial Hygienists (ACGIH).

Confined Space Investigations

The experts at Robson Forensic have investigated numerous confined space incidents. Our experts are “hands on” professionals, fully knowledgeable of proper procedures and potential hazards involved with confined space classification, hazard identification and evaluation, permit/entry/rescue procedures, and management of change issues.