

# Safe Working in A Confined Space

## WHAT IS A CONFINED SPACE? (ICOP CS 2010)

"confined space" means an enclosed or partially enclosed space that is at atmospheric pressure during occupancy and is not intended or designed primarily as a place of work, and –  
a) is liable at any time to –

- i. have an atmosphere which contains potentially harmful levels of contaminants;
  - ii. have an oxygen deficiency or excess; or
  - iii. cause engulfment; and
- b) could have restricted means for entry and exit. .  
Example Manhole, Silo, Tunnel, Pipeline, excavations, trenches

## TYPE OF PPE FOR ENTERING CONFINED SPACE

1. Head Protection
2. Foot Protection
3. Eye Protection
4. Hand Protection
5. Fall Arrest

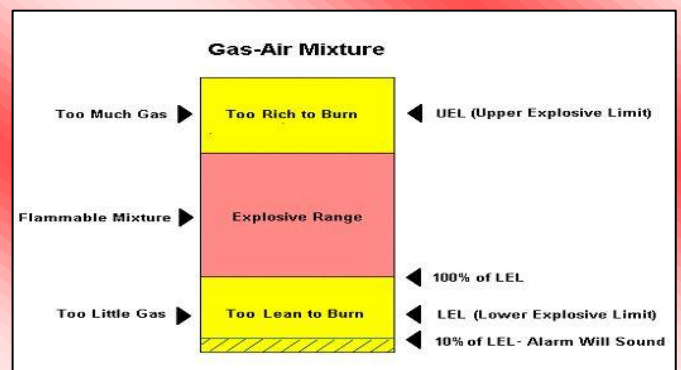


## COMPULSORY ENTRY PROCEDURES

- ❖ Step 1: Preparation for Permit to Work
- ❖ Step 2: Isolation
  - Isolation work area & confined space
- ❖ Step 3: Initial Cleaning
  - Draining/ Purging
- ❖ Step 4: Initial Ventilation
  - Removed unwanted gases, heat generated, dust, and smells from the space
  - Provide fresh air for the entrants
- ❖ Step 5: Pre-entry Testing
  - Test air at the top, middle and bottom, and in remote areas
- ❖ Step 6: Continuous Ventilation
  - Air from forced ventilation shall be from a clean source, free from contaminants
- ❖ Step 7: Preparation of PPE & Work Equipment
  - All authorized entrants must use the standard protection PPE;
- ❖ Step 8: Issuance of Permit to Work
  - Maximum duration of PTW is 8 hours, may be extended for a maximum of 4 hours (provided all the terms & conditions remain the same)
- ❖ Step 9: Entry and Work
  - Start work only after the permit is approved by ES & PI
- ❖ Step 10: Work Completed

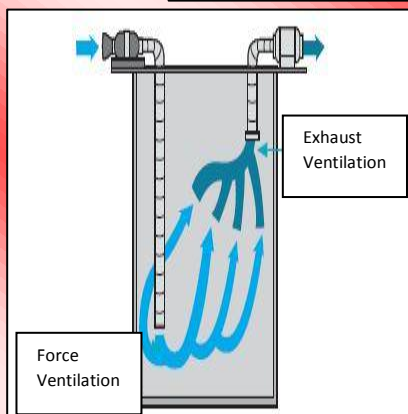
## HAZARD IN CONFINED SPACE

- i. Hazardous atmosphere
  - oxygen: <19.5 % or > 23.5 % by volume
- ii. Chemical hazards
  - accumulation of flammable or explosive gas > 10 % of its LEL; (eg: methane)
  - accumulation of toxic gas equal to or exceeding its permissible exposure limit (PEL). (eg: CO, H<sub>2</sub>S, NH<sub>3</sub>); or
  - any other atmospheric condition that is immediately dangerous to life or health (IDLH).
- iii. Physical Hazards Eg. Slip and Fall
- iv. Biological Hazards Eg. Virus or venom
- v. Psychosocial Hazards Eg. Claustrophobia
- vi. Ergonomic hazards Eg. Awkward position



## PERSONAL INVOLVED IN CONFINED SPACE

1. **Authorised Entrant (AE)**  
A person has attended a training course for AESP and passed the examination
2. **Authorised Gas Tester (AGT)**  
A competent person registered with DOSH
3. **Entry Supervisor (ES)**  
A competent person registered with DOSH
4. **Stand-by Person (SP)**  
A person has attended a training course for AESP and passed the examination
5. **Permit Issuer (PI)**  
A person has attended a training course for AGTES



**Figure 1: Push Pull Ventilation**

**CAUTION**

## Before Entering:

- Test for explosive atmosphere.
- Test for oxygen deficiency.
- Supply fresh air to work area.

Please refer to ICOP for Safe Working In A Confined Space 2010 for more details



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