

SAFETY CIRCULAR ON ACCIDENTS INVOLVING CONFINED SPACES



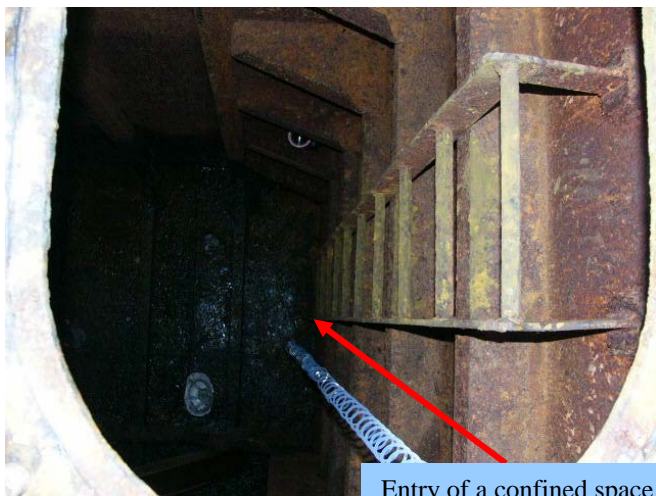
By Occupational Safety Department
Occupational Safety & Health Division
Ministry of Manpower

INTRODUCTION

In August 2004, a total of five workers were involved in two separate confined space accidents in shipyards.

The two accidents, which occurred within a span of six days, have raised a concern. Both accidents occurred in a similar manner. It all started with a worker entering a confined space which had not been certified safe for entry

All the other injured workers who attempted to rescue the victim who had lost consciousness were affected as they were not equipped with the necessary protective equipment, such as breathing apparatus.



Entry of a confined space

HAZARDS OF CONFINED SPACES

Common hazards associated with confined spaces on board ships are oxygen deficiency and the presence of dangerous fumes. Any person entering such tank or confined spaces faces the risk of asphyxiation or being overcome by dangerous fumes.

SAFETY MEASURES FOR ENTRY INTO CONFINED SPACES

Arising from the accidents, the Ministry would like to remind shipyards to observe the following:

- ❖ All entry into the tank or a confined space (no matter how short the duration the person is required to remain in the confined space) requires the application of a Confined Space Entry Permit.
- ❖ The atmosphere of the confined space must be tested and certified by a competent person prior to the approval of the Confined Space Entry Permit. A flowchart depicting the procedure for certification of a confined space is at Annex for your reference.
- ❖ The confined space can only be certified safe for entry if:
 - the Oxygen level is within the 19.5% to 23.5%;
 - The flammable gas level is less than 10% of Lower Explosive Limit;
 - The toxic level does not exceed the permissible exposure level; and
 - Steps have been taken to prevent ingress of dangerous substance
- ❖ To ensure that testing of the atmosphere is done at intervals not exceeding 8 hours when work is being carried in confined spaces. For Hot-work in fuel oil or cargo oil tanks, shipyards are encouraged to perform the atmospheric test at intervals not exceeding 6 hours.
- ❖ Shipyards should ensure that at least one of the workers in the confined space is equipped with a suitable gas monitoring device.
- ❖ Adequate ventilation of the confined space must be provided at all times when persons are inside the confined space.

Date of issue	Classification	Circular No	CIF/A40.4
August 2004	Accident Cases	OSD/SY/08/04	Page 1 of 2

For copies of this Circular please check our website at <http://www.mom.gov.sg>

- ❖ Confined Space Entry Permit after approval shall be displayed conspicuously at the entrance of the confined space
- ❖ The name or number tag must be displayed at entrance before a person enter the confined space
- ❖ All workers and supervisors must be trained and briefed on hazards associated with the confined spaces and precautionary measures. They must also be briefed on the procedural requirements of Confined Space Entry Permit and how to respond in an emergency while they are in the confined space.

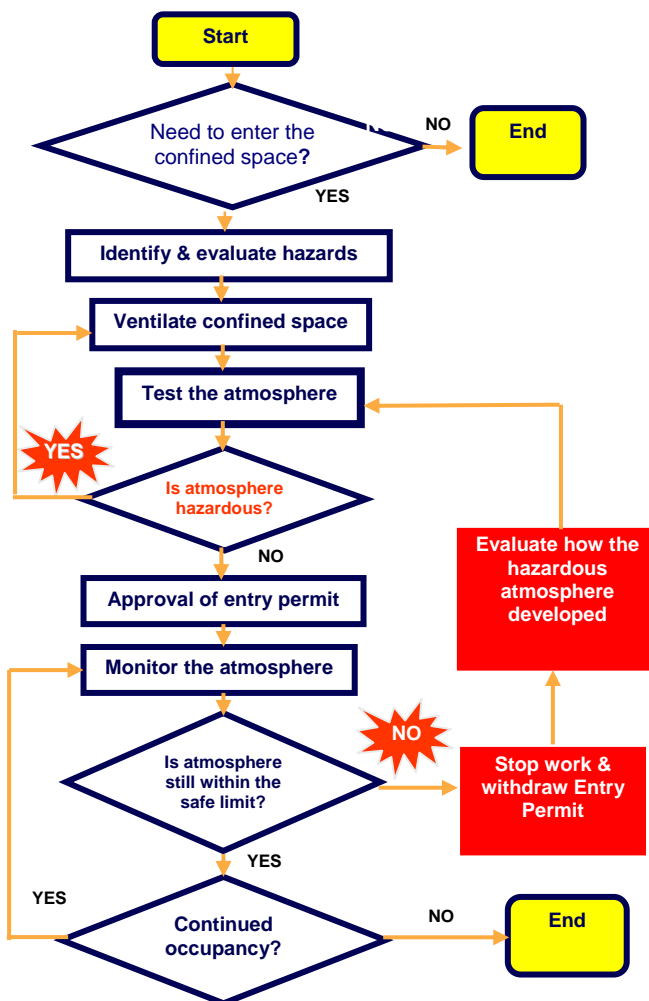
RESCUE OPERATION

A written plan should be established for rescue of persons in confined spaces. There must be sufficient supply of suitable breathing apparatus, harness, ropes and suitable resuscitation equipment made readily available for rescue operation. The equipment must be properly maintained and thoroughly examined by a competent person at regular intervals.

A drill for rescue in a confined space shall be held at least once in every 12 months. The record of such drill shall be kept and shall include the time, date of drill, personnel involved, a short description and evaluation of the drill.



Flow chart of the procedure for entry into a confined space



For more safety requirements on entry into and working in confined spaces, please refer to **Singapore Standard CP 84** Code of Practice for Entry Into and Safe Working in Confined Spaces.

Under the **Factories (Singapore Standards and Codes of Practice) Order 2001**, it is a mandatory requirement for factory occupiers to comply with Singapore Standard CP 84.