

Maritime New Zealand Guidelines

SAFETY BULLETIN ISSUE 21 – SEPTEMBER 2009

ENCLOSED AND CONFINED SPACES CAN KILL

This safety bulletin is for:

- New Zealand ship owners, masters and crew
- any contractors, ship builders or repairers working on board ships
- safe ship management companies and surveyors
- classification societies in New Zealand and class surveyors
- MNZ maritime safety inspectors.

Purpose

This bulletin is issued to highlight dangerous confined spaces onboard ships, some of the lethal hazards present, how best to reduce the risks involved and to alert people to the hazards of poorly planned rescue attempts.

Warning – risk of death

Life is risked every time someone enters an enclosed or confined space without following the correct procedures.

The space may be deficient in oxygen. Oxygen deficiency can be caused by:

- rusting steel or chain
- rotting organic matter
- drying paint or coatings
- motors/petrol pumps
- refrigerants and other gases
- hot work (torching or welding).

The space may also contain flammable or toxic fumes, gases or vapours. Carbon monoxide damages your ability to absorb oxygen and this effect can also accumulate for days after exposure. Hydrogen sulphide is highly poisonous, often lethal and can evolve from fuel tanks, pipes, sewage and organic decomposition.

Enclosed or confined spaces

A dangerous enclosed or confined space is a space with the following characteristics:

- severely limited natural ventilation
- capacity to accumulate or contain hazardous atmosphere
- exits that are not readily available
- designs that are not meant for continuous occupancy.

Examples of enclosed spaces are:

- cargo holds
- pump rooms
- fuel/bunker tanks
- chain lockers
- paint/chemical lockers
- sanitary/waste tanks
- pipe tunnels
- peak tanks
- any other poorly ventilated confined space
- battery lockers
- boiler furnaces
- ballast tanks
- void spaces
- fresh water tanks
- double bottom tanks
- engine crankcases
- cofferdams

Precautions and procedures

Familiarise yourself with the health and safety advice provided in the Maritime New Zealand *Code of Safe Working Practices for Merchant Seafarers*, the Department of Labour information sheets - *Safe Working in a Confined Space*, and IMO Resolution A.864(20). These documents describe how to establish procedures for entry into enclosed spaces and should be considered in addition to identifying all of the confined spaces on board that may pose a hazard. Procedures include examples of permit to work systems and the rationale on how to apply them on board for both the ship's crew, and importantly, all contractors working on board.

Before entry

The space should be assessed by a person with sufficient knowledge and experience to ensure that:

- the potential hazards of the space are identified
- the space is prepared for entry
- the space is secured for entry
- the atmosphere of the space is safe for entry, involving a test of the atmosphere whenever necessary.

On entry

On entering a dangerous space ensure that:

- you never carry out entry work alone
- you have a person assigned on safety standby for each entry
- the person on standby is equipped with the right equipment to be able to raise an emergency alarm, adequate protective clothing and sufficient equipment to initiate a rescue
- the space is well ventilated.

If things go wrong

If you see someone lying motionless, even if at the bottom of a ladder in an enclosed space, **DO NOT rush in to carry out a rescue by yourself**. Typically, personnel react by rushing into lethal atmospheres under the misconception that they will be able to save colleagues. But unplanned rescues are likely to end in tragedy.

When an emergency occurs the alarm should be sounded so that back-up is immediately available to the rescue team. Under no circumstances should the attendant enter the space before help has arrived and the situation has been evaluated. The safety of rescuers entering the space must be ensured.

Rescue procedures

Full consideration should be given to rescue procedures and specifically that:

- rescue procedures should be planned before entry and taken into account in any risk assessment.
- the rescue procedure should be specific for each type of dangerous enclosed or confined space.
- rescue equipment should be immediately available.
- breathing apparatus should be **self contained breathing apparatus (SCBA)** and **NOT** emergency escape breathing devices (EEBDs).
- any rescue procedure should be practised frequently enough to provide a level of proficiency that eliminates life-threatening rescue attempts and ensures an efficient and calm response to any emergency.

Further reading

Maritime New Zealand *Code of Safe Working Practices for Merchant Seafarers 2007*, Chapters 16 and 17.
<http://www.maritimenz.govt.nz/Commercial/Shipping-safety>

Department of Labour *Safe Working in a Confined Space*
<http://www.osh.govt.nz/order/catalogue/pdf/confined.pdf>

IMO recommendations for entering enclosed spaces aboard ships, annex to Resolution A.864(20) adopted 27.11.97 [http://www.imo.org/includes/blastData.asp/doc_id=10569/864\(20\).pdf](http://www.imo.org/includes/blastData.asp/doc_id=10569/864(20).pdf)

Further Information

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