Maritime &
Coastguard
Agency

Enclosed Spaces

Guidance for fishing vessel operators

Image: *Holyhead Towing Company*

Would you recognise an Enclosed Space?

When a space is closed up for a period of time, the lack of ventilation can mean that the atmosphere outside the enclosed space may be different from inside.

Spaces that are enclosed may lack oxygen, which can cause you to suffocate and become unconscious.

A lack of oxygen in an enclosed space can occur due to rusting, rotting organic matter (including fish) or use of chemicals such as paints.

Other dangers in enclosed spaces may include exhaust from machinery and leaks of refrigerant gas. Enclosed spaces can also contain flammable or toxic gases.

"Over 50%* of workers who die in enclosed spaces are attempting to rescue other workers."

***Credit: Confined Space Safe Practice**
- International Association of Classification Societies.

The risk is serious

Going into enclosed spaces can be extremely dangerous and can result in multiple fatalities

Is entry into the closed space necessary?

Toxic gases are usually invisible, and a lack of oxygen can only be detected by atmosphere testing equipment. That is why you can never assume an enclosed space is safe.

Even if the space has been tested, dangerous gases can seep in from connected spaces. That is why you must always take precautions, and keep testing the atmosphere when you enter an enclosed space.

Enclosed spaces are not designed for people to work in on a continuous basis. These can include certain store rooms and tank cargo spaces, where occasional entry is required for survey, inspection, repair and maintenance.

Remember: even spaces you enter everyday (such as fish holds and bait rooms) can pose a risk.

As well as a hazardous atmosphere, there may be additional hazards due to the structure of the space.

Enclosed spaces often contain trip and fall hazards.

Rescue from these spaces can be particularly difficult, which should be considered in any risk assessment.

Enclosed spaces are not always obvious

Many spaces on vessels are small and without windows, but an enclosed space is one that is dangerous because it may not contain enough oxygen to breathe properly or there could be a build up of dangerous gases.

All enclosed space access doors, hatches or manholes should be secured against inadvertent entry. It is recommended that all enclosed spaces are highlighted as hazardous and requiring permission to enter from the Skipper or Mate proceeding entering. A space may seem safe, and the tests may indicate that it is safe at first, but if it is connected to an unsafe space, the hazardous vapours can migrate, making the space unsafe. Toxic gases or poorly oxygenated atmosphere can be trapped in pockets within the space, even if the space has been ventilated and tested. Refrigerant gases pose a particular concern for fishing vessels. Spaces should be left ventilated for several hours before entry is attempted.

Common enclosed spaces on a fishing vessel include:

- Refrigerated sea water (RSW) tanks
- Fuel tanks
- Fish holds containing decaying fish, fish waste or offal
- Fresh water tanks
- Sea or fresh water ballast tanks
- Void spaces
- Store rooms
- Stores containing chemicals

Enclosed spaces can change

Changing conditions within an enclosed space such as water ingress, oxygen-depleting work (burning, welding), ventilation failure and vapours from paint or cleaning materials must be monitored. Potentially hazardous changes to conditions within the enclosed space caused by external factors are also crucial but less easily managed. These may be caused by the inadvertent actions of other vessels or shore staff, work in adjacent or connected spaces, pumping ballast or fuel transfer and hot work, as well as communications of work being carried out in the enclosed space, for example, when there are shift or watch changes.

It's your turn to assess. Make a note of any enclosed spaces you have aboard the vessel you work on:

Think: Are there risk assessments for each of these spaces?

Precautions to take when entering an enclosed space

Can entry be avoided?

If possible, entry into enclosed spaces should be avoided, or planned well in advance. In many cases the work should be done by trained professionals.

Can I just ventilate the space?

It is important to always ventilate enclosed spaces properly before entry. Structures within the space may create areas where air circulation does not occur effectively when ventilated or sitting water has not been completely pumped out. If testing equipment is onboard this should always be used to confirm effectiveness of ventilation process.

Before entry

A competent person should make an assessment of the space and a responsible person or officer be appointed to take charge of the operation to:

- carry out a risk assessment to identify any potential hazards
- secure the space for entry, to avoid others entering
- If possible, ventilate the space by opening any access points
- Consider using atmosphere testing equipment

Personal gas meters are NOT appropriate for carrying out the atmosphere testing, as they only test a very small range.

Enclosed Spaces

Crews should understand the risks of enclosed space entry and be aware of the precautions to take before entry. Safety drills should be practiced often enough that crews will be component enough to:

- Understand when enclosed space entry should be avoided
- Avoid life-threatening rescue attempts
- Ensure an efficient and calm response to an emergency.

Entering a space

Enclosed space entry should always involve someone on standby, outside the space.

The standby person should be equipped, when possible, with any rescue equipment that is carried onboard the fishing vessel. This may include breathing apparatus but not in all cases. The person entering the space and the person on standby should maintain constant communications. This way, rescue can be started as soon as there is any sign of trouble.

The atmosphere should be tested frequently, whilst the space is occupied, if the fishing vessel carries such equipment. Any person should be instructed to leave the space immediately should there be deterioration in the conditions. Always take regular breaks from working in an enclosed space.

Refrigerated salt water (RSW) tanks

Refrigerant gases are highly toxic and include

- Hydrochlorofluorocarbons (HCFCs)
- Ammonia
- CO_2– which is odourless, so could easily be missed if there is a leak

Toxic gases are also produced by fish as they decay. For this reason you should:

- Immediately clean all un-chilled RSW tanks after use, removing all residues.

- If cleaning has not occured immediately and a mixture of fish and sea water has been left for more than a few days, then the RSW ranks should be flushed tghrough if possible (using the appropriate sea water pump) and fully ventilate the tank.
- Ensure adequate ventilation exists in spaces adjacent to RSW tanks.

Emergency rescue

If you see someone lying motionless DO NOT rush to carry out a rescue by yourself. An unplanned rescue is likely to end in tragedy as personnel repeatedly rush into lethal atmospheres under the misconception that they will be able to save colleagues.

When you see someone unconscious, it is natural to want to rush in and help.

But you should stop and think:

- Why are they unconscious?
- Could the this be an enclosed space and restrict my breathing?

If you run in to a space without enough oxygen, you may become unconscious too

In addition to risks associated with the atmosphere in an enclosed space, more general health and safety risks (e.g. slips, trips and falls) can also be present. Rescuing or helping an individual whilst they are in an enclosed space is dangerous for the rescuer, which is why careful planning and the provision of appropriate equipment is especially important.

If there are indications that the person in the space is being affected by the atmosphere, the person outside the space should immediately raise the alarm. On no account should the person stationed at the entrance to the space attempt to enter it before additional help has arrived.

No one should attempt a rescue without wearing breathing apparatus and having a back up rescuer at hand fully kitted up with a second BA set. The rescuer must also have a rescue harness and, whenever possible, communication equipment and a lifeline. If this equipment isn't available then do not enter and call for help.

If things go wrong

✘ If you see someone lying motionless **do not** rush to carry out a rescue by yourself. An unplanned rescue is likely to end in tragedy as personnel rush into lethal atmospheres under the misconception that they will be able to save colleagues

✓ **Stop, think** – why are they unconscious, could this be an enclosed space?

✓ Should an emergency occur, the alarm should be raised so that back-up is immediately available to rescue the team

✘ Under no circumstances should the standby person enter the space without the proper precautions

Image: *Derek Cardno*

Rescue

✘ **Do not** enter the space without the authorisation of the skipper, mate or vessel owner if they are present

✘ **Do not** enter the space without testing the atmosphere, if the equipment is onboard

✓ Rescue equipment including breathing apparatus should be immediately available, if carried onboard

✘ If the atmosphere is unsafe, do not enter unless it is an emergency. If it is an emergency, you must wear breathing apparatus before entering the space. If this equipment isn't available then you must wait for the emergency services

✘ Emergency escape breathing devices (EEBDs) are NOT safe to use in enclosed space entry by the rescuer but can be used on the casualty to aid rescue

✓ Rescue procedures should be established before entry - the rescue procedure should be specific for each type of enclosed space

Failure to follow this advice may result in multiple fatalities

Maritime & Coastguard Agency

UK Regulations and guidance

- Merchant Shipping and Fishing Vessels (Entry into Enclosed Spaces) Regulations 2022
- The fishing vessel owner must ensure that a suitable and sufficient risk assessment has been carried out and documented. Guidance is available at *www.gov.uk/guidance/fishing-vessel-health-and-safety#risk-assessment-forfishing-vessels*

Further reading

- The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997
- MGN 587 (F) Amendment 1 ILO Work in Fishing Convention (No. 188)
- Please see our website for more guidance and further reading – *https://www.gov.uk/government/publications/enclosed-spaces-on-sea-going-vessels*

Enclosed space entry gone wrong can have fatal consequences.

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