



## Entry into enclosed spaces - are you prepared?

Recurring enclosed space incidents serve as a stark reminder that entry into such spaces without proper training or following procedures can result in seafarers being killed or seriously injured. Far too often, we also see that seafarers who die in enclosed spaces do so in the course of attempting to rescue fellow crew members.

Published 23 April 2025

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Please be aware that the IMO's recommendations for entering enclosed places onboard ships, Resolution A.1050(27), are currently being amended. Our alert "[Improved safety recommendations for entering enclosed spaces onboard ships](#)" provides additional details.

## **Spotting a pattern**

Over the last years the Republic of the Marshall Island (RMI) has published several [Marine Safety Advisories](#) warning that accidents in enclosed spaces remains one of the most common causes of work-related fatalities onboard ships. According to the flag state's records, six seafarers died in four enclosed space entry incidents onboard RMI-flagged ships during 2018-2019. Both tankers and bulk carriers have experienced such incidents and it is not only the seafarers' lives that are at stake. In 2020, two seafarers and three shore personnel died in enclosed space entry incidents on RMI-flagged ships. Two incidents involved shore personnel entering cargo holds without a prior permission from the ship's crew.

The RMI's investigations into the circumstances surrounding enclosed space entry incidents have shown that there are some repeating patterns with regard to how these accidents continue to occur in the same way and in the same locations onboard ship. Some of the similarities noted are:

- a lack of awareness of the dangers of enclosed spaces and entry into such spaces without taking precautions;
- failure to notify senior crewmembers of the need/intention to enter an enclosed space;
- senior crew members failing to ensure that ships' safety procedures are followed prior to directing junior crew members to enter an enclosed space;
- entry into enclosed spaces by shore personnel without prior notification and without permission or assistance from the ship's crew; and
- would-be rescuers acting on instinct and emotion rather than knowledge and training.

These incidents serve as a stark reminder that failure to observe and understand simple enclosed space entry procedures can result in seafarers being killed or seriously injured. They are also reminders that a well-intentioned seafarer who enters an enclosed space to assist a fellow crew member is likely to become a victim requiring assistance, as well as delay a proper rescue operation and increase the potential for additional deaths.

## **Dangerous enclosed spaces may not be easily identifiable**

An enclosed, or confined, space is normally defined as one that:

- has limited openings for entry and exit;
- has inadequate ventilation; and

- is not designed for continuous worker occupancy.

Any enclosed space deprived of regular and constant ventilation may become a 'dangerous space'. Such spaces may have atmospheres deficient in oxygen, and/or contain flammable or toxic fumes, gases or vapours, thus presenting a major risk to health or life for anyone entering the enclosed space. However, while cargo tanks, double bottoms, fuel tanks, ballast tanks, cofferdams, void spaces, etc. are the type of spaces that immediately spring to mind when thinking about enclosed spaces onboard ships, it is important to emphasise that not all dangerous enclosed spaces are easily identifiable.

- Some enclosed spaces are dangerous only temporarily, perhaps due to the type of cargo carried or the work undertaken, e.g. a compartment during spray painting. Cargo under fumigation can also be a source of toxic gases.
- Spaces may become dangerous even if they are not enclosed on all sides. Ships' cargo holds, for example, may have open tops but the nature of the cargo carried can make the atmosphere in the lower hold dangerous. Often apparently harmless cargoes such as wood chips, wood pellets or pulp wood can be the cause of such accidents.
- Fumes and gases in paint/chemical lockers and battery rooms can make these spaces dangerous, despite being arranged with ordinary openings/doors for entry and exit. Due consideration should also be taken of the possibility of an oxygen deficient atmosphere when entering CO<sub>2</sub> rooms.
- If there is an unexpected reduction in, or loss of, ventilation in spaces usually ventilated by whatever means, such spaces should be considered as dangerous.

### **Recommendation No.1: Review existing procedures**

Ship managers are advised to review their enclosed space entry procedures and, if necessary, revise them to ensure they comply with the applicable requirements. This includes adequately prohibiting entry into enclosed spaces by shore personnel prior to the necessary precautions being implemented.

- The IMO's recommendations for entering enclosed spaces aboard ships are outlined in [Resolution A.1050\(27\)](#) and its guidelines for selecting portable atmosphere testing instruments can be found in MSC.1/Circ.1477.
- For RMI-flagged ships, the requirements and safety standards that must be followed by personnel entering enclosed spaces are outlined in [RMI Marine Notice 7-041-1](#).

- Other flag states will have similar requirements and one such example is the UK “[Code of Safe Working Practices for Merchant Seamen](#)” (COSWP) and its Chapter 15 deal with the entering of dangerous enclosed spaces.
- Section 10 of the ILO’s “[Code of practice for accident prevention on board ship at sea and in port](#)” provides similar practical recommendations and guidance.

Ship managers should ensure that a risk assessment is conducted to identify all enclosed spaces on board the ship and periodically revisit the assessment to ensure its continued validity. Gard also recommends establishing an inventory of all enclosed spaces on board that seafarers may enter and where there is any likelihood that they might become dangerous. The inventory should record the particular characteristics of the space, the likely hazard involved, and the measures taken to prevent entry unless safety procedures are followed. Any difficulties inherent in a rescue from the space should also be considered, and solutions identified, so that in the event of an emergency, the crew is in the best position to respond quickly.

### **Recommendation No.2: Ensure that procedures are fully understood and followed**

The problem with procedures is that good intentions often become paper-pushing exercises. It is therefore important to ensure that those performing tasks involving entry into enclosed spaces understand that the purpose of the procedures is to prevent accidents and not simply to satisfy the regulators or their immediate superiors. Trying to do a job quickly can result in poor decision making. Never rush a task or minimise safety critical steps due to time pressure.

Ship managers should consider sending a letter or bulletin to all ships in their managed fleet addressing:

- the dangers of improperly entering an enclosed space;
- how to recognize an enclosed space and examples of the different types of enclosed spaces a seafarer might encounter while performing their day-to-day shipboard tasks;
- that all seafarers, regardless of seniority, must not enter an enclosed space without permission and then only in accordance with the ship management’s established procedure;
- who on-board is authorized to permit entry into an enclosed space;
- the actions to be taken by crew members when it is necessary for shore personnel to enter enclosed spaces onboard, including when shore personnel refuse to comply with the ship’s enclosed space entry procedures; and
- that the best way to assist a fellow seafarer or shore person inside an enclosed space is to immediately raise the alarm so that an organised rescue can be conducted in accordance with ship management’s established procedure.

### **Recommendation No.3: Provide proper onboard training**

It is important that seafarers are given proper onboard training to help them recognise, evaluate and control hazards associated with entry into enclosed spaces. In addition to conducting [mandatory enclosed space entry and rescue drills](#) every two months, masters should consider holding a special safety meeting with particular emphasis on enforcing the responsibility that all seafarers have to prevent enclosed space entry related incidents and the need for crew members to resist their natural urge to immediately enter an enclosed space in order to assist a fellow crewmember.

Gard regularly publishes Case Studies for safety meetings focusing on the risk assessment process and identification of the chain of errors that led to an incident. One of our Case Studies addresses entry into enclosed spaces and we encourages masters to use this [Case Study](#) as part of their training - for comparison, analysis and discussion among officers and crew onboard their ships.

### **Gard's safety awareness campaign on enclosed space entry training**

The above findings from RMI's investigations correspond well with Gard's own experience. Over the years we have handled numerous cases of death and injury resulting from enclosed space entries and in most such cases, a lack of knowledge of the hazards present and/or taking procedural shortcuts seem to be the prevalent causes.

A near fatal accident involving one of Gard's own surveyors has also served as a real-life reminder to us that any enclosed space is potentially life threatening - and that even trained professionals make mistakes. Our surveyor entered a void space onboard a barge without testing the atmosphere first and collapsed due to the lack of oxygen inside the space. The story of our surveyor has been captured in one of Gard's [Loss Prevention awareness videos](#) . By sharing an experienced surveyor's near fatal-mistake we aim to warn crews not to become complacent about the risks associated with enclosed space entries and to emphasize the importance of training and following established procedures - even for those that "have done this a thousand times" and are certain that they "know the procedure from A to Z".

The following link will take you to the safety awareness campaign website, which contains our video, a case study and additional loss prevention material addressing entry into enclosed spaces: <https://www.gard.no/document/enclosed-space-entry-training/>

**Remember – knowledge and training save lives!**