

ABS REGULATORY NEWS

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CONFINED SPACE ENTRY

This Regulatory News provides an overview of IMO Resolution [MSC.581\(110\)](#), which introduces the Revised Recommendations for Entering Enclosed Spaces Aboard Ships. These new Recommendations supersede and revoke Resolution A.1050(27), replacing them with updated safety measures, definitions, and procedural requirements aimed at reducing fatalities during enclosed space entry.

BACKGROUND

The objective of the IMO's Revised Recommendations is to enhance safety during enclosed space entry, reduce persistent fatalities, and strengthen the process of hazard identification, risk assessment, and crew empowerment. These Recommendations may be applied to all ship types and provide guidance for ship operators, crew, port workers, and other shore personnel involved in operations on board.

The IMO recognizes that many enclosed space accidents stem from a failure to systematically identify hazards, assess risks, and implement appropriate entry procedures. Investigations further highlight that the complex structural arrangements of certain spaces can hinder ventilation, illumination, and safe movement. Organizational leadership ashore and on board plays a critical role, particularly in empowering personnel to stop unsafe operations and make informed decisions to prevent accidents. Recent casualty trends underscore the ongoing need for improved risk assessment practices and increased awareness of CO₂-related hazards.

The IMO Sub-Committee on Carriage of Cargoes and Containers (CCC 10) developed amendments to Resolution A.1050(27) in 2024 to combat the continued loss of life resultant from the hazards of enclosed space entry. These revisions were adopted by the 110th session of the Maritime Safety Committee on 27 June 2025 through Resolution [MSC.581\(110\)](#), and finally endorsed by the 34th Assembly on 3 December 2025, which formally revoked A.1050(27). The new resolution introduces a more comprehensive and structured approach to enclosed space entry, including new definitions, strengthened atmospheric testing requirements, enhanced responsibilities toward shore personnel, and updated emergency preparedness measures.

SUMMARY OF KEY RECOMMENDATIONS / AMENDMENTS

Topic	Recommendation	Actions to be taken
CO ₂ Exposure Limit	<ul style="list-style-type: none">CO₂ in gas readings should be < 0.5% by volume or 5,000 ppm, before entry (para. 7.4)If limits are not achieved, the space remains unsafe	<ul style="list-style-type: none">Update atmospheric testing criteria in SMSEnsure ventilation procedures allow achieving below CO₂ threshold limitProhibit entry until all atmospheric limits (O₂, CO, CO₂, LFL, OEL) are confirmed

KEY NOTES

Entry into effect date:
3 December 2025

Application:
All ship types

References:

- [MSC.581\(110\)](#)
- SOLAS XI-1/7
- MSC.1/Circ.1477

Topic	Recommendation	Actions to be taken
CO ₂ detection	<ul style="list-style-type: none"> • People entering enclosed spaces should be provided with calibrated and tested personal gas detection instruments or instruments that monitor the levels of oxygen, carbon dioxide, flammable gases or vapors, toxic gases (including carbon monoxide), and any other gases identified in the risk assessment (para. 8.2) • Gas detection equipment must be capable of operating in oxygen-depleted atmospheres (para. 7.1) 	<ul style="list-style-type: none"> • Verify existing detector capability • Replace or supplement with CO₂ – capable detectors as needed • Update SMS training and familiarization section • Ensure maintenance and calibration records
Enclosed Space Entry Criteria	<ul style="list-style-type: none"> • The company must ensure that single-person entry into an enclosed space is not permitted. (para. 3.11) • Entry doors or access hatches leading to enclosed spaces should always be secured against entry, unless the spaces have been risk assessed, atmospherically tested as required and declared safe for entry. (para. 6.3) 	<p>To determine safe entry into an enclosed space the person responsible should ensure that:</p> <ol style="list-style-type: none"> 1. All potential hazards have been identified (risk assessment completed) 2. The space has been thoroughly ventilated by natural or mechanical means. 3. The atmosphere has been tested using certified, calibrated instruments and found safe for entry (O₂ ≥ 20.9%, CO₂ < 0.5%, LFL < 1%, OEL for toxic gases < 50%). 4. The space has been declared safe for entry and properly illuminated 5. A suitable system of communication has been agreed and tested. 6. All personnel entering the space are wearing personal portable gas detection equipment. 7. An attendant has been nominated and properly instructed 8. Rescue and resuscitation equipment is positioned, tested, and ready for immediate use at the entrance. 9. Personnel are provided with the appropriate PPE 10. The required permits have been issued, authorizing entry.
Enclosed Space Register	<p>Every ship should have an Enclosed Space Register, which contains information, including (para. 4.2):</p> <ul style="list-style-type: none"> • physical and specific hazards in the space • means of ventilation • means of atmosphere testing • connection to adjacent spaces • locking and signage arrangements • estimated time taken to achieve the air changes for safe entry • the equipment necessary to facilitate emergency rescue from the space. 	<ul style="list-style-type: none"> • Establish and maintain the Enclosed Space register on board and ashore, ensuring it is regularly reviewed and updated based on cargo operations, structural changes, or hazard re-assessment (para. 4.1, 4.2)

Topic	Recommendation	Actions to be taken
Connected and adjacent spaces	<ul style="list-style-type: none"> New definitions for connected spaces, adjacent spaces and trapped hazardous atmospheres have been introduced (para. 2.2 – 2.4) Connected and adjacent spaces may contain hazardous atmospheres and should be treated as unsafe until tested and ventilated (para. 1.1 – 1.3, 2.2) 	<ul style="list-style-type: none"> Include all connected and adjacent spaces in the Enclosed Space Register and risk assessments Ensure these spaces are tested and ventilated as part of entry preparation (in accordance with para. 4.3 and 6.5.2) Assume connected/adjacent spaces are hazardous until proven otherwise
Enclosed Space Emergency Response Plan	<ul style="list-style-type: none"> Each ship should have a ship-specific Enclosed Space Emergency Response Plan, detailing rescue roles, equipment, communications and procedures (Sec. 11 and Appendix 1) A means to facilitate safe evacuation must be available, as required by the emergency plan (para. 9.4) 	<ul style="list-style-type: none"> Develop / Update the Enclosed Space Emergency Response Plan (Sec. 11 and Appendix 1) Ensure that the plan is part of the company's SMS, easily understood and accessible to the crew. Conduct regular enclosed space rescue drills, verifying the effectiveness of the plan (para. 11.4). Ensure rescue equipment for testing, protection and recovery is available and functional (para. 11.5) Train personnel accordingly (para 3.8 and Sec. 11)
Assessment process	<ul style="list-style-type: none"> Throughout the assessment process, there should be an assumption that the space to be entered is considered hazardous until positively proved to be safe for entry (para. 4.8) Entry into enclosed spaces where the atmosphere is known or suspected to be unsafe requires careful consideration, including an assessment of the hazards, residual risks and required mitigations (para. 9.1) 	<ul style="list-style-type: none"> Strengthen SMS risk-assessment procedures to explicitly assume enclosed spaces are hazardous until all atmospheric limits are met Ensure risk assessments document hazards, residual risks, and mitigations before permitting entry.
Cargo Hazard Awareness	<ul style="list-style-type: none"> Safety information for the cargo that the ship is carrying can be found in: <ul style="list-style-type: none"> the shipper's declaration the Safety Data Sheets (SDS) the IMDG Code the IMSBC Code the IBC Code the IGC Code (para. 3.2 and 7.1, Section 10)	<ul style="list-style-type: none"> Ensure hazard information is distributed to the crew Incorporate into risk assessments Update cargo-specific enclosed space procedures
Hazards related to specific types of ships or cargo	New sub-sections: <ul style="list-style-type: none"> Enclosed hold access trunks Steel-related hazards Specific dangers associated with carbon dioxide (para. 10.5) Acceptable and unacceptable levels of O₂, CO₂, CO (Appendix 5) Cargo-specific hazards (dangerous goods in packaged form, liquid bulk cargoes, solid bulk cargoes, fumigation hazards) 	<ul style="list-style-type: none"> Consider SDS, IMDG, IMSBC, IBC and IGC Code information in the risk assessment For enclosed hold access trunk, prohibit use until the trunk is ventilated, tested, and declared safe (paras. 10.3.1.1 – 10.3.1.3) For steel-related spaces (e.g. chain lockers, scrap metal holds), ensure atmospheric testing considers oxygen depletion due to oxidation Record all cargo-related hazards and ventilation requirements in the Enclosed Space Register.

Topic	Recommendation	Actions to be taken
Entry Permit Validity	<ul style="list-style-type: none"> The Enclosed Space Entry Permit should have a defined validity period and should never exceed 8 hours (para. 5.2) 	<ul style="list-style-type: none"> Update SMS procedures to apply the maximum 8-hour validity requirement Ensure Responsible Persons are trained to enforce permit validity limits.
Emergency Escape Breathing Device (EEBDs)	<ul style="list-style-type: none"> EEBDs are not suitable to use for entry into enclosed spaces. (para. 9.2) 	<ul style="list-style-type: none"> Update SMS procedures to indicate that EEBDs shall be used for escape purposes only and not for entry into unsafe spaces.
SAFE / UNSAFE Signage	<ul style="list-style-type: none"> Access points should be physically marked as SAFE or UNSAFE FOR ENTRY (para. 4.2 and Appendix 3) 	<ul style="list-style-type: none"> Suitable portable signage, which is easily understandable by the vessel's crew and by shore personnel, indicating the hazards, should be posted on entry doors or access hatches leading to an enclosed space. Update signs when the space becomes safe for entry or when a safe space becomes unsafe.

ENCLOSED SPACE REGISTER, PROCEDURES, FORMS AND PLANS

The example of the Enclosed Space Register was removed from the revised recommendation, leaving it to the **company to develop its own registry**, along with the risk assessment, forming the basis for the development of the enclosed space contingency plan. The revised recommendations also contain an updated example of an Enclosed Space Entry Permit, and an Enclosed Space Emergency Response Plan.

KEY POINTS TO CONSIDER

The hazards from lack of Oxygen (O₂) and the build-up of gases such as Carbon Dioxide (CO₂) and Carbon Monoxide (CO) are well known, but their relationships are not always fully understood. More recent studies show that, as well as Oxygen levels, the levels of Carbon Dioxide and Carbon Monoxide should be checked before entry is made to any enclosed space or adjacent connected space. To emphasize this, CO₂ is now explicitly included in the revised Recommendation.

CO₂ is a potent asphyxiant and can cause rapid loss of consciousness and death. Its behavior in cargo spaces justifies CO₂ monitoring before and during enclosed space entry, in addition to CO and other toxic gases.

The following points provide additional clarification on specific elements of the revised Recommendations and address common questions regarding atmospheric monitoring, cargo-related hazards and gas detection equipment.

Risk Assessment

A risk assessment should be conducted by the competent person prior to opening an enclosed space. The competent person should be appropriately trained. This training should include adequate theoretical knowledge and practical experience; allowing them to make an informed judgement of the space to be opened/entered.

The risk assessment should assess the likelihood of a dangerous atmosphere being present or subsequently developing within the space along with any other potential hazards in the space as identified in the vessel's Enclosed Space Register, and the need to ventilate adjacent spaces.

Cargo-related gas emission risks

There is no general published list of cargoes that may produce flammable, toxic, corrosive or asphyxiant gases (such as CO₂). Instead, hazard information should be derived from:

- the shipper's declaration

- Safety Data Sheets (SDS)
- the IMDG Code
- the IMSBC Code (including individual cargo schedules)
- the IBC Code
- the IGC Code

The revised Recommendations (para. 10.3.3) highlight several cargoes that have caused fatalities due to fire, explosion or asphyxiation. These include coal; wood products; wood chips/pellets; metal sulfide concentrates; ferrous materials; seed cake cargoes; scrap metal; and certain grain/timber cargoes. It should be noted that these cargoes may be classified as group A or group C by the IMSBC Code.

Number of portable gas detectors

[MSC.581\(110\)](#) does not change existing SOLAS or IGC Code requirements regarding the quantity of portable gas detectors. However, Paragraph 7.3 reinforces that all ships must carry at least two sets of gas detection equipment as per SOLAS XI-1/7. Ships carrying cargoes capable of generating hazardous vapor and requiring regular entry must carry two additional sets. Moreover, detectors must be supplied with sufficient spares and calibration means and may use flexible hoses or fixed sampling lines to test remote areas safely.

Gas detection capabilities of portable gas detectors

The requirements remain consistent with previous minimum requirements as detailed in MSC.1/Circ.1477. Paragraph 8.2 details that personal detectors should measure:

- oxygen (O₂)
- any other gases identified in the risk assessment
 - carbon dioxide (CO₂)
 - toxic gases, including carbon monoxide (CO)
 - flammable gases or vapors (LEL)

ABS SUPPORT AND GUIDANCE

ABS is closely monitoring IMO implementations and updating Rules, Guides, and approval procedures. For additional information or assistance in assessing compliance with these amendments, please contact your local ABS office or visit [ABS Regulatory News](#).

REFERENCES

Document	Title
MSC.581(110)	Revised Recommendations for entering enclosed spaces aboard ships
SOLAS XI-1/7	Atmosphere Testing Instrument for Enclosed Spaces
MSC.1/Circ.1477	Guidelines to facilitate the selection of portable atmosphere testing instruments for enclosed spaces as required by SOLAS regulation XI-1/7

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