M2205

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Categories: General Maritime, Superyachts

Report Title Asphyxiation hazard

Initial Report

A crewmember entered a freezer compartment for routine duties where, unknown to them, dry ice was being stored. The crewmember quickly lost consciousness because of the high CO2 levels produced by the dry ice. Luckily, another crewmember quickly raised the alarm, and they were rescued and given first aid. They were then sent to the hospital for a confirmatory check-up.

Comment

The decision to transport dry ice for culinary presentation carries significant risks, and management is responsible for them. The management team must thoroughly evaluate the associated risks at the organisational level before approving the procurement of dry ice.

Strict adherence to regulations and guidelines is essential when dealing with dry ice, considering its inherent hazards. Key considerations involve recognising dry ice as a dangerous good (UN 1845) and understanding the specific risks it poses during transportation. Compliance with regulations becomes vital for ensuring the cargo's safety and the well-being of the individuals involved in its handling. Emphasis must be placed on proper handling, packaging, and ventilation to mitigate the risks of transporting dry ice. A thorough risk assessment must be conducted to ensure that all potential hazards are explored.

Since the dry ice is sourced from a franchisee/sub-contractor, it is imperative to communicate detailed information regarding its hazards, proper handling, and safe storage to various stakeholders, including management, the master, the chief officer, the chief engineer, and all ship's staff. The storage compartment for dry ice immediately falls under the classification of an enclosed space, requiring an enclosed space permit for entry.

Solid dry ice must be packaged in non-airtight containers to allow the safe release of carbon dioxide gas produced during sublimation (change from a solid to a gas without becoming a liquid), thereby preventing container overpressure and the associated risk of an explosion. Adequate ventilation becomes crucial, avoiding the accumulation of carbon dioxide gas in enclosed spaces and mitigating the potential for asphyxiation for anyone working in the compartment. Entry into a fridge space containing dry ice necessitates a permit to work.

Comprehensive training for crew members handling dry ice is a management responsibility. It covers hazards such as explosion, suffocation, and tissue damage due to extremely low temperatures. Training programs must highlight the importance of proper ventilation and avoiding unventilated compartments. Management should establish robust mitigation strategies and emergency response procedures, including incorporating personal gas detectors and enforcing appropriate PPE to prevent skin contact damage.

Key Issues

Capability- Dry ice, or solid CO2, demands good knowledge to mitigate the risks. Does your shore management team have the necessary skills to manage the risks for the crew? Have you been aware of the dangers if you have carried it, especially on a cruise liner or superyacht? Did you know that it is classified as a dangerous goods cargo? Have you received training in the handling of dry ice?

Communication- How well are you aware of the carriage of dry ice in the galley fridges of other compartments where it may be stored? Are these spaces labelled as enclosed spaces?

How is this communicated to everyone on board?

Alerting- A crew member nearly died because of a lack of knowledge of dry ice and its hazards. Does your company provide extra information on dry ice carriage? Have you seen dry ice's material safety data sheets (MSDS)? Have they been explained to you?