OSHA® FactSheet

Confined Space Safety on Commercial Fishing Vessels

Confined spaces pose serious hazards to workers on commercial fishing vessels when not properly identified, tested and ventilated.

Both OSHA and the U.S. Coast Guard have regulations which apply to different activities in the fishing industry. These activities include the maintenance, cleaning, repair, alteration or overhaul of vessels at sea, dockside, or in a shipyard, all of which may involve work in confined spaces. While there are several hazards (e.g., fires, explosions, falls) that workers may be exposed to during work in confined spaces, this fact sheet only covers the atmospheric hazards present. Generally, anything that relates to the harvesting of fish or the normal operation of a vessel is governed by the U.S. Coast Guard. However, OSHA regulates activities that are covered under the general industry (29 CFR Part 1910) and shipyard employment (29 CFR Part 1915) standards within three nautical miles of the coast line, except for the Gulf coast of Florida, Texas, and Puerto Rico, where the territorial waters extend for nine nautical miles. For a detailed discussion on OSHA regulations that apply during specific work activities, see Appendices A and B of OSHA Directive, CPL 02-01-047, February 22, 2010.

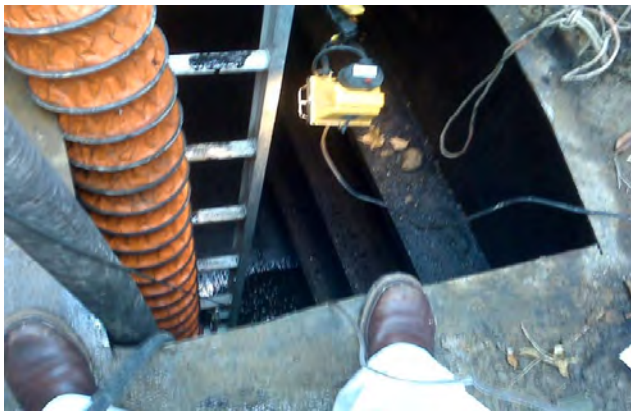

Figure 1. Ventilation hoses provide air and exhaust toxic vapors during confined space entry. The use of a guardrail would also be necessary to protect workers from potential falls.

Figure 2. A shipboard confined space undergoing repair. It contains foam insulation, which can present a fire hazard.

Atmospheric Hazards in Confined Spaces on Vessels

Three main atmospheric hazards may be encountered in confined/enclosed spaces. These hazards consist of low or high oxygen levels, toxic gases or vapors, and flammable atmospheres. To ensure that these spaces are safe to enter, test the atmosphere prior to entry.

- **Oxygen Levels:** Oxygen levels that are too low (less than 19.5 percent) can cause an initial loss of awareness and can lead to suffocation and death. Oxygen levels that are too high (greater than 22 percent) can cause a fire hazard by allowing a fire to burn at a faster than normal rate.
- **Toxic Chemicals:** Toxic chemicals like hydrogen sulfide and ammonia can present significant risk for workers, affecting their skin, eyes, and respiratory tract. Exposure to toxic chemicals at excess levels or for long periods of time may be lethal.
- **Flammable Atmospheres:** The presence of flammable or combustible gases or liquids can result in an explosion when an ignition source (spark) is introduced.

Examples of Potential Hazards

Space	Hazard
Ballast Tanks or Voids, Lazarette, Chain Locker	Low oxygen levels due to rusting or displacement by paint vapors or other gases.
Sewage Tanks	Toxic hydrogen sulfide levels, flammable gases and low oxygen levels.
Refrigeration Spaces	Freon can displace oxygen, resulting in low oxygen levels. Ammonia can become flammable. Both are toxic. Foam insulation can catch fire.
Fuel, Lube or Hydraulic Oil Tanks	Flammable and toxic atmospheres. Low oxygen levels.
Slop Tanks, Holds or Voids where organic matter, like fish or fish slime, may collect and decompose	Low oxygen levels and exposure to hydrogen sulfide as a result of the decomposition process.

Safe Confined Space Entry Practices

- Ensure that a Shipyard Competent Person or Marine Chemist evaluates each confined space in accordance with OSHA requirements.
- Test all spaces for oxygen content, flammability, and toxicity, using properly calibrated instruments, prior to entry (29 CFR 1915.12). Continuous testing may also be needed. A Marine Chemist or Competent Person will determine if this is needed and how testing must be done.
- Before performing hot work in any space where fuel or oil exists or was previously contained, make sure that a Marine Chemist tests the space. This includes adjacent spaces as well.
- Post entry requirements (certificate) based on the results of testing; ventilation, respirators, or protective suits may be required.
- Be sure that properly working ventilation (e.g., electric fan and blower) is available. Ventilation is normally the best way to remove toxic vapors and to supply clean air to a confined space.
- Be aware of what is taken into a confined space. Paints or chemicals in a confined space may cause the atmosphere to become toxic.
- Never bring portable internal combustion engines into a confined space. This could lead to carbon monoxide poisoning.
- Personnel performing tank watch duties should never enter a space to attempt a rescue. A high percentage of confined space fatalities involve workers attempting to rescue a coworker.
- In the event of an emergency, be sure that a plan is in place to contact emergency services. Make sure that the local rescue services are aware of your confined space activity so that they are prepared to respond. A sample plan is outlined in 29 CFR 1915, Subpart P.
- Remove all gas hoses from the space when not in use and during breaks (e.g., lunch periods). Test all gas hoses prior to entry to ensure no leak is present.

Definitions

A ***Shipyard Competent Person*** is designated by the employer and undergoes training, which generally consists of how to test potentially hazardous atmospheres, the proper use of instrumentation, maintaining proper records, and knowing when a Certified Marine Chemist is required (29 CFR 1915.7).

A ***Marine Chemist*** is an individual who possesses a current Marine Chemist Certificate issued by the National Fire Protection Association (29 CFR 1915.11(b)). A Marine Chemist can permit entry and hot work in any space by issuing a Marine Chemist Certificate that states the conditions under which entry is permitted, the type of work that can be conducted safely, as well as instructions for each Competent Person to maintain the certificate.

A ***Confined Space*** includes any compartment of small size with limited access in which the potential for a hazardous atmosphere exists (29 CFR 1915.4(p)).

An ***Enclosed Space*** is any space, other than a confined space, which is enclosed by bulkheads and overheads (29 CFR 1915.4(q)). Examples include cargo holds, tanks, berthing quarters, and machinery and boiler spaces.

For Additional Information

- OSHA Directive, CPL 02-01-042
- www.marinechemist.org
- www.aiha.org
- www.osha.gov/SLTC/etools/shipyard/index.html
- Local safety suppliers or consultants

For assistance, contact us. We can help. It's confidential.

OSHA® Occupational Safety and Health Administration

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