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# MARINE INDUSTRY & SHIPYARD CONFINED SPACE ENTRY & WORK

## What Is a Confined Space?

As defined by NFPA 350, *Guide for Safe Confined Space Entry and Work*, a space is considered to be a *confined space* if it meets all of the following conditions:

- It is large enough and so configured that a person can enter and perform work.
- It has limited or restricted means for entry or exit.
- It is not designed for continuous occupancy.

On marine vessels, confined spaces include, but are not limited to, cargo tanks, fuel tanks, ballast tanks, sewage tanks, void spaces, cofferdams, double bottoms, and chain lockers.

To work in a confined space you must be trained to do the following:

- Recognize confined space characteristics.
- Anticipate and be aware of the hazards and adverse health effects that may be encountered during entry and work.
- Understand the physical signs and reactions related to exposures to such hazards.
- Know which type of personal protective equipment is needed for entry, work, and emergency exit from the space.
- Know how to exit the space upon activation of an alarm, notification to evacuate, or whenever you perceive that you are in danger.

## An Untested Space Is an Unsafe Space.

No one can enter a confined space unless it has been first tested with a properly calibrated atmosphere testing device.



An untested confined space should be considered IDLH (immediately dangerous to life and health).

visually inspected, and then designated “Safe for Workers” by a competent person (as defined by OSHA and NFPA 306), an NFPA Certificated Marine Chemist, a Certified Industrial Hygienist, or a U.S. Coast Guard Authorized Person.

## Recognize, Evaluate, and Control Confined Space Hazards.

Working in confined spaces presents a greater likelihood of severe injury, illness, or death than any other type of work that mariners or shipyard workers and contractors may face.



Confined space entry occurs whenever you break the plane of the opening to the space.

Confined space hazards can include atmospheres that are oxygen deficient, oxygen enriched, flammable, or toxic. A variety of physical hazards in confined spaces can include slippery surfaces, noise, heat, entrapment, or engulfment.

Personnel who enter and work in confined spaces must be able to do all of the following:

- **Recognize** confined spaces and the hazards within them.
- **Evaluate** the atmosphere hazards by measuring oxygen, flammable gas, and toxic substances.
- **Control** hazards with permits, ventilation, isolation (lockout/tagout), and then recheck for changing conditions.

OSHA requires that all employees who enter and work in confined spaces be trained by their employer to perform all required duties safely.



# MARINE INDUSTRY & SHIPYARD CONFINED SPACE ENTRY & WORK CONTINUED

## FAQs

### What is meant by the “Safe for Workers” designation?

According to the OSHA *Shipyards Employment Standard* (29 CFR 1915) and NFPA 306, *Standard for the Control of Gas Hazards on Vessels*, all of the following conditions must be met for a confined space to be considered “Safe for Workers:”

- Oxygen content is between 19.5% and 22% by volume. (20.8% is ideal.)
- Flammable gas concentration is less than 10% of the Lower Explosive Limit (LEL). (0% LEL is ideal.)
- Toxic vapor concentration is less than the permissible concentration. [OSHA Permissible Exposure Limit (PEL) or American Conference of Governmental and Industrial Hygienists Threshold Limit Value (TLV).]

If the atmosphere is determined to be safe, a competent person must then conduct a visual inspection of the space, its surroundings, and its contents to identify hazards such as, but not limited to, restricted accessibility, residues, and unguarded machinery, piping, or electrical systems.

Spaces that fail to meet this criteria shall be designated and labeled “Not Safe for Workers” in accordance with OSHA 29 CFR 1915 and NFPA 306.

### What are the qualifications of the marine chemist?



A marine chemist is the holder of a valid certificate issued by NFPA in accordance with the “Rules for the Certification and Recertification of Marine Chemists.” This establishes the person’s qualifications to determine whether construction, alteration, repair, or shipbreaking of vessels can be safely undertaken.

### When is an NFPA Certificated Marine Chemist needed for confined space entry?

According to the OSHA Shipyards Employment Standard, if a space cannot be ventilated so that its atmosphere meets the requirements for the “Safe for Workers” designation, an NFPA Marine Chemist or Certified Industrial Hygienist must re-test until the space can be certified “Enter with Restrictions” or “Safe for Workers.” [29 CFR 1915.12(c)(3)]

Coast Guard personnel can only enter confined spaces aboard commercial vessels after the space has been certified as “Atmosphere Safe for Workers” by an NFPA Certificated Marine Chemist, per the USCG Safety and Environmental Health Manual, Chapter 13 B.5.a. (COMDTINST M5100.47B), revised May 2016.

### For More Information

For more information about maritime confined space safety, NFPA Certificated Marine Chemists, and confined space/competent person training, visit NFPA’s Certificated Marine Chemist (CMC) page at [www.nfpa.org/MarineChemists](http://www.nfpa.org/MarineChemists) or contact NFPA’s Marine Field Service.

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This Fact Sheet contains some basic information about confined space entry and work in accordance with NFPA 306, NFPA 350, OSHA 29 CFR 1915, and the USCG Safety and Environmental Health Manual. It identifies some of the requirements found in those publications as of the date of publication of this Fact Sheet. This material is not the complete and official position of the NFPA on the referenced topics which is represented solely by the NFPA documents in their entirety. For free access to the complete and most current version of these and all NFPA documents, please go to [www.nfpa.org/docinfo](http://www.nfpa.org/docinfo). References to “Related Regulations” is not intended to be a comprehensive list. The NFPA makes no warranty or guaranty of the completeness of the information in this Fact Sheet. In using this information, you should rely on your independent judgment and, when appropriate, consult a competent professional.