



MARINE

Field Service News

Fall/Winter 2006 Edition

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471



Call for Proposals NFPA 306

The *Standard for the Control of Gas Hazards on Vessels, NFPA 306* has entered the Annual 2008 Revision Cycle. NFPA is accepting public proposals for revisions to this document. **The proposal closing date is 22 November 2006 (5:00 PM EST).**

Proposals may be submitted by mail, fax or online. Information about proposal submission is found on the NFPA website (www.nfpa.org) by clicking the *Codes and Standards* and *Code Development Process* buttons

To encourage public input the marine industry is reminded the *Standard for the Control of Gas Hazards on Vessels, NFPA 306* applies to vessels that carry or burn as fuel, flammable or combustible liquids or that carry flammable compressed gases, chemicals in bulk. The standard describes the conditions required before a space can be entered or work can be started, or continued on any vessel under construction, alteration, or repair, or on any vessel awaiting shipbreaking. The standard applies to Marine Chemists performing activities related to inspection and certification and consulting services on board any vessel.

Fall/Winter 2006 Edition IN THIS ISSUE

Call for Proposals – NFPA 306	1
Chris Scott's MCQB Service	
Recognized	2
Changes to MCQB Membership.....	2
OSHA Toolbag Directive	3
Health Facts for Hexavalent Chrome.....	4
New Marine Chemist – Lynn Jones.....	4
Fixed CO2 extinguishing System Fatal Incident Report.....	5
Hazards in Chain Locker Causes Accident.....	6
Fire Protection Module in OSHA eTool for Shipyards.....	8

NFPA 306 is incorporated by reference in both OSHA's Shipyard Employment Standard (29 CFR 1915) and USCG requirements for hot work on vessels in ports or places of the United States and its territories (46 CFR – Shipping).

Contacting NFPA

For general information, advisory service; or to request NFPA Technical Committee applications, copies of the Report on Proposals (ROP) or Report on Comments (ROC) for any NFPA document call the NFPA Customer Service: (800) 344-3555 or go to the NFPA Website at: www.nfpa.org

Christopher Scott's MCQB Service Recognized



Christopher Scott, of Marine Chemists of Louisiana, was recognized for his six-years of service as a principal voting member to the Marine Chemist Qualification Board. Mr. Scott represented the Marine Chemist Association both as an alternate and principal during his time on the Board. During the last four years of his tenure Mr. Scott was the Chairman of the MCQB. Chris Scott was presented with a flame safety lamp to thank him for volunteering his time and valuable contribution to the Marine Chemist Qualification Board.

MCQB members are appointed by the NFPA Board of Directors and may serve two consecutive 3-year terms.

Changes to the Marine Chemist Qualification Board Membership

At its June meeting the NFPA Board of Directors appointed the following individuals to the Marine Chemist Qualification Board:

New Voting Members

The Board of Directors appointed Captain Timothy O'Connor (Principal, representing Tank Ship Operators), to Chairman of the MCQB. Captain O'Connor's term as Chairman began on August 01, 2006.

Mr. Kenneth Mercer was appointed Principal, representing Marine Chemist Association and Mr. Robert H. Walker, III appointed Alternate – Marine Chemist Association
Three-year term appointments begin August 01, 2006.



The NFPA Board of Directors appointed Mr. H. Evans Rustad as Principal, representing Independent Marine Chemists. Mr. Rustad's 3-year term will commence on November 01, 2006 replacing Kimble Lehman at the conclusion of Mr. Lehman's second consecutive term.

New Non-voting Member

Commander Richard J. Raksnis was appointed Principal representing U. S. Coast Guard for an indefinite term commencing September 01, 2006. Commander Raksnis follows Commander Robert Hennessey who retired from the USCG in August 2006.

OSHA Issues Shipyard Employment "Tool Bag" Directive

On August 3, 2006 the Occupational Safety and Health Administration (OSHA) issued a directive to provide guidance for applying occupational safety and health standards in shipyard employment.

The directive provides tools to support OSHA compliance officers and consultants, and other interested government and industry parties, with information to support shipyard employment intervention efforts and to minimize employee exposure to hazards. In addition, guidance is offered for the applicability of 29 CFR Part 1910, General Industry Standards, to shipyard employment worksites. The directive replaces CPL 02-00-133 that was issued on October 22, 2003.



Significant Changes – According to OSHA, the directive includes updates of:

- enforcement inspection scheduling guidance including Site-Specific Targeting (SST) and the Enhanced Enforcement Program (EEP);
- references and directives to include new documents and the current version of documents previously listed;
- inspection data guidance to include information regarding the North American Industry Classification System (NAICS) codes;
- additional guidance information regarding boat building, repair or breaking operations that are performed at boat marinas;

Shipyard Toolbag Directive Significant Changes (continued)

- guidance regarding the applicability of 29 CFR Part 1910, General Industry Standards, to shipyard employment worksites (Appendix A);
- answers to commonly asked shipyard employment questions, previously issued interpretations to include references to the recently issued shipyard employment fire protection standard (Subpart P);
- and removes two fish processing vessel interpretations that are addressed by CPL 02-01-020, OSHA/U.S. Coast Guard Authority over Vessels, November 8, 1996.

Shipyard employment “Tool Bag” Directive, CPL 02-00-142, is available on OSHA’s website. For more information contact Director, Office of Maritime Enforcement, 200 Constitution Avenue, N.W., Room N-3610, Washington, DC 20210; (202) 693-2399.

Health Facts Sheet for Hexavalent Chromium Available on OSHA website

A fact sheet on the health effects of hexavalent chromium has been posted on the OSHA website. The final rule for hex-chrome was promulgated February 28, setting exposure limits at 5 micrograms per cubic meter for eight-hour time-weighted average.

The fact sheet provides information to reduce harmful effects of hex-chrome, how exposure may occur and highlights some of the final standard’s requirements. The fact sheet is available at <http://www.osha.gov/OshDoc>

Newly Certified Marine Chemist – Lynn Jones



At its last meeting held in St. Pete Beach, FL on July 13, 2006 the MCQB approved the initial certification of Lynn Jones. Mr. Jones is NFPA Certificated Marine Chemist #703. He trained under the supervision of Marine Chemists John Sansing, CMC 539 and Kimble Lehman, CMC 603.

Mr. Jones received a BS degree in Chemistry from Louisiana State University. He has more than two-dozen years of technical experience including work in shipyards, petrol-chemical industry, marine terminals and environmental compliance.

Lynn Jones is currently employed at Southwest Shipyards in Channelview, TX.

A Routine Inspection of Fixed CO₂ Extinguishing System Kills Four Ship's Officers

The Marine Department, Hong Kong Special Administrative Region released a report of a fatal accident that occurred in September 2004 where 4 ship's officers were killed during the routine inspection of the vessel's fixed CO₂ extinguishing system that.

The Incident - Following an Annual Safety Equipment survey on the one-year old vessel a class surveyor recommended annual servicing and maintenance of the fixed extinguishing system, semi portable and portable fire extinguishers.

The Chief Engineer and Second Assistant Engineer had been on board the vessel less than one week prior to the incident. The Chief Engineer lacked sufficient knowledge to prepare the fixed CO₂ extinguishing system for inspection and maintenance. No effective risk assessment was performed in advance of work done on the CO₂ extinguishing system.

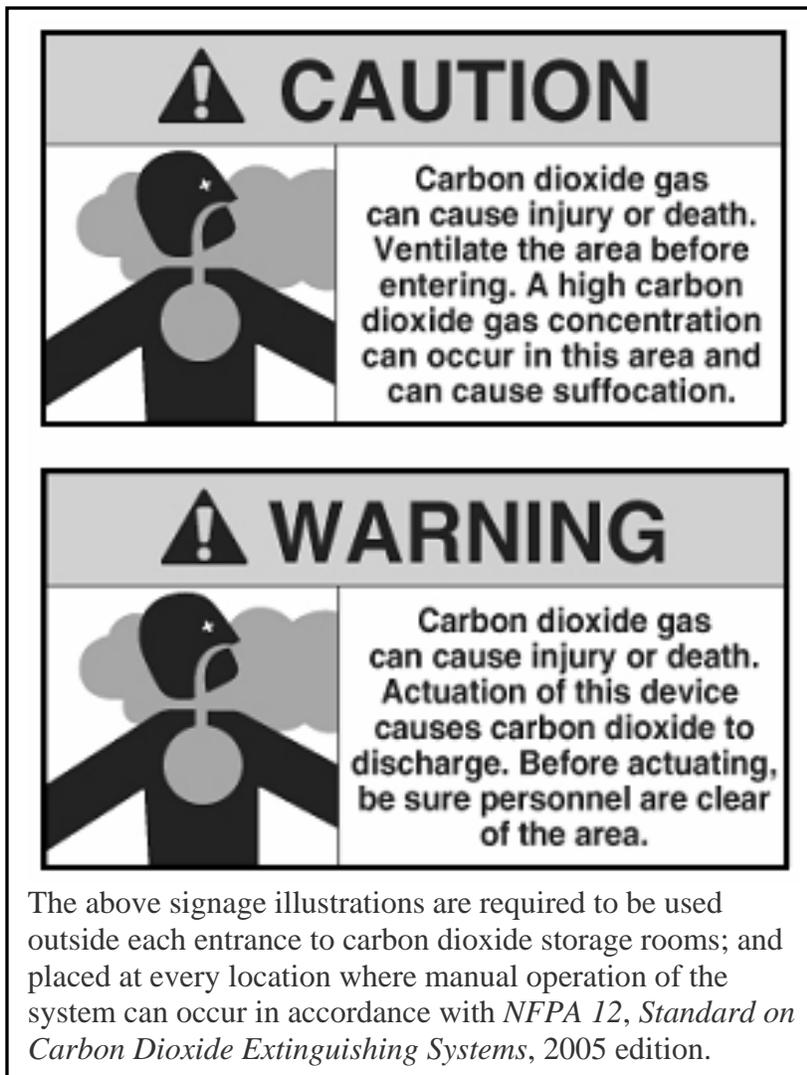
Two weeks after the class survey, the vessel was underway approaching Singapore when the Chief Engineer accidentally triggered the CO₂ starting cylinders activating 92 CO₂ bottles during an inspection of the CO₂ system. Approximately 5,060 kg of carbon dioxide remained trapped and under pressure inside the CO₂ system manifold. After departing Singapore for the Suez Canal, with advice from the managing company, the crew attempted to release the gas to the atmosphere outside of the CO₂ room. An improvised discharge pipe used to effect this operation failed causing a large quantity of carbon dioxide to flood the CO₂ room. The Master, Chief Engineer, Chief Mate and Third Assistant Engineer were all inside the CO₂ room and died from exposure to lethal concentration of CO₂.

Other Incident Facts

- Vessel was operated by a Japanese company.
- Master and Chief Engineer were Korean and understood Japanese. All other crew were Filipino and did not understand Japanese.
- All instructions (verbal and written) given by company were in Japanese.
- CO₂ cylinders could not be manually closed.
- Neither the Flag Administration, Port State nor Classification Society were informed by the Master or operating company of the initial accidental activation of the CO₂ system.
- The company and crew had no previous experience with similar situations.
- Company gave verbal instructions to the Master and Chief Engineer.
- The fabricated a discharge pipe had no securing arrangement.

Lessons Learned

The fatalities were caused by exposure to lethal concentrations of CO₂ that was discharged in a confined space.



Lessons Learned Continued:

- The vessel's entire command staff should not be in a hazardous location at the same time.
- The operation was not well planned or executed in a safe and controlled manner.
- Vessel crews should be reminded of the hazards associated with working on or around fixed fire extinguishing systems.
- Sufficient and clear instructions and warnings should be provided to avoid improper handling of these systems and accidental release of CO₂.
- The accidental activation and release of CO₂ from a vessel's extinguishing system may leave the engine space and cargo holds unprotected by a fixed system in the event of a fire. For this reason work on such systems should be done in port where appropriate shore assistance is available.

Failure to Recognize Hazards Leads to Incident in Chain Locker

The London P&I Club issued a report on August 22, 2006 warning of the potential dangers that may be encountered when entering confined spaces on marine vessels.

A ship's officer performed a risk assessment prior to entry into a large chain locker, but concluded there was no significant risk involving toxic or flammable vapors or gases.

The London Club reported, "The risk of oxygen depletion appears to have been misjudged, such that the oxygen content of the atmosphere was not tested prior to entry. The misjudgment became apparent when a crew member collapsed shortly after entering the chain locker." The chain locker was not ventilated prior to anyone entering the space.

Fortunately the crew remembered the basic safety rule for confined space incidents and resisted the urge to rush into the chain locker to rescue their ship mate. The vessel's emergency team was able to quickly assemble and effect a successful rescue. The report stated the seaman has made a full recovery.

He was lucky. Maybe next time he won't be. This accident is a classic example of failing to recognize hazards; failing to properly evaluate the hazards and failing to incorporate proper hazard controls.

Good judgment is gained from experience. Unfortunately experience usually comes from bad judgment. We can agree that avoiding bad experiences is in the interest of everyone. The first step in this process is recognizing hazards. That means identifying confined spaces on your vessel. These are spaces that are not intended for continuous occupancy; have limited entry and exit; inadequate ventilation and a hazardous product, process or reaction occurring inside.

Confined Space Accidents Happen When Workers

- **Fail to Recognize Hazards**
- **Trust Their Senses**
- **Underestimate the Danger**
- **Become Complacent**
- **Try to Save a Their Buddy**

A chain locker is not intended to be occupied, it has limited access, it is not ventilated and the oxidation of the bulkheads and anchor chain are consuming oxygen. Any organic material deposited in the chain locker will decay and thus consume oxygen as well as displace oxygen with toxic gases such as hydrogen sulfide, carbon monoxide, and methane. These toxic gases are also flammable.

Recognizing a confined space and its hazards tells us what we need to test for – oxygen, flammable gas and toxic gases. All confined spaces must be tested before anyone is permitted to enter – EVERY TIME. If the oxygen concentration is 20.8% by volume, flammable gas is 0% LEL (lower explosive limit) and toxic gases are below permissible concentrations then safe entry may be allowed.

If minimum requirements are not met then the space must be ventilated until a safe condition is achieved. Oxygen deficiency in confined spaces is the most common hazard, but it is also the easiest to fix. Mechanical ventilation can quickly remedy an unsafe space like a chain locker.

The need for proactive approach to recognition, evaluation and control of confined space hazards – even in apparently innocuous confined spaces - is once again highlighted by this recent accident.

Questions or Comments Any questions or comments regarding this newsletter or the Marine Field Service should be directed to Marine Field Service Newsletter Editorial Staff. Additionally if you would like to contribute to the MFS Newsletter please send articles, pictures, announcements, etc. to the Newsletter Staff care of: NFPA Marine Field Service, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471
E-mail: marine@nfpa.org
Phone: (617) 984-7948, Fax: (617) 984-7110

Fire Protection Module of the Shipyard Employment eTool

A new Fire Protection Module of the Shipyard Employment eTool has been posted on OSHA's web site. This tool is a product of the Alliance of the American Shipbuilding Association, National Shipbuilding Research Program, Shipbuilders Council of America and OSHA. The Shipyard Employment eTool describes common hazards and possible solutions for tasks performed during ship repair, ship building, shipbreaking, and barge cleaning processes. The new fire Protection Module addresses the Fire Protection in Shipyard Employment Standard (29 CFR 1915 Subpart P) that became effective December 14, 2004.

Many of the basic tasks involved in shipyard employment, such as welding, grinding, and cutting metal with torches, provide an ignition source for fires. There are also many combustible materials on vessels and in shipyards, including flammable fuels, cargo, wood structures, building materials, and litter. Torches used in hot work may create an oxygen-enriched atmosphere that may cause normally fire-resistant materials to readily burn.

Very often hot work tasks are performed in confined or enclosed spaces on vessels. Confined and enclosed spaces by their very nature have limited or obstructed egress making escape difficult or impossible. Fires erupting in these spaces may generate combustible gases, toxic fumes, or oxygen-deficient air or super-heated air.

In short, the risk of fire in shipyard employment is very real. The consequences are often catastrophic. Information in the module was created to help shipyard employers and employees develop effective programs to protect workers from fire hazards while engaged in ship repair, shipbuilding, shipbreaking, and related work activities as well as firefighting activities.

This module includes guidance on the following topics:

- Fire Safety Plans
- Precautions for Hot Work Fire Watches
- Fire Response
- Fixed Fire Extinguishing System Hazards on Board Vessel
- Land-side Fire Protection Systems
- Training

There are also Links to additional resources including:

- *Fire Protection FAQs*. OSHA, Directorate of Enforcement Programs (2006) and
- *OSHA's Shipyard Fatality Video - Volume 1: Accident #3 - Painting in Confined Space Causes Fire*

The Fire Protection Module of the Shipyard Employment eTool may be accessed on the internet by going to:

http://www.osha.gov/dcsp/products/etools/shipyard/fire_protection/index.html