

Fall/Winter 2005 Report

Important safety information on demand -Access to NFPA Codes and Standards

A number of NFPA Codes and Standards are referenced in the Federal Regulations. NFPA 306, Standard for Control of Gas Hazards on Vessels is incorporated by reference in both OSHA and United States Coast Guard regulations (29 CFR 1915 and 46 CFR "Special Operating Requirements") As part of its commitment to enhancing public safety through the adoption and enforcement of key ANSI codes and standards, NFPA is making all of its codes and standards available for review online by the public.

"On-demand review of NFPA's consensus documents conveniently places important safety information on the desktops of traditional users as well as others who have a keen interest," said NFPA President James M. Shannon. "NFPA is committed to serving the public's increasing interest in technical information, and online access to these key codes is a valuable resource."



To review NFPA's codes and standards online:

- Go to NFPA Home Page at www.nfpa.org
- Click Codes and Standards on the top blue banner
- From the drop-down screen hit on Code and Development Process
- From the drop-down screen click Online Access
- Follow the instructions and hit the link to the NFPA Documents Information page
- Select the document you want to review.
- Scroll down to the heading "Additional information about this document" and click on the link "Preview this document".

News regarding NFPA's marine-related Codes and Standards.

NFPA 301

The Technical Committee on Merchant Vessels Report on Proposals (ROP) meeting for NFPA 301, *Code for Safety to Life from Fire on Merchant Vessels*, is set for February 7 and 8 in Baltimore, MD. In addition to reviewing public proposals the Technical Committee will address the target audience for the Code and revisions that will address fire hazards and fire protection on merchant vessels. The Committee will be looking at how to incorporate performance based approaches to fire protection when prescriptive requirements are not feasible.

NFPA 303, NFPA 307 and NFPA 312

The 2006 editions of

- NFPA 303, Fire Protection Standard for Marinas and Boatyards;
- NFPA 307, Standard for the Construction and Fire Protection

of Marine Terminals, Piers and Wharves; and

• NFPA 312, Standard for Fire Protection of Vessels During Construction, Repair and Layup,

are now available. Copies may be purchased from NFPA's online catalog on the NFPA website.

NFPA 306 Enter Annual 2008 Revision Cycle

The NFPA Standards Council approved the request to move NFPA 306, Standard for the Control of Gas Hazards, to the Annual 2008 revision cycle. Any individual or individuals representing an organization or Technical Committee or Technical Correlating Committee may submit a proposal. The submitter need not be a member of NFPA. Proposal submission instructions and forms may be found on the NFPA website.

Contacting NFPA

For general information or to request NFPA Technical Committee applications, copies ofthe Report on Proposals (ROP) or Report on Comments (ROC) for any NFPA document:NFPA Website:www.nfpa.orgNFPA Customer Service:(800) 344-3555

MCA 2006 Technical Seminar Schedule

The Marine Chemist Association Sectional Technical Seminars are scheduled.Atlantic SectionFebruary 11, 2006Baltimore, MDGulf-Inland SectionMarch 11, 2006Houston, TXPacific SectionMarch 12, 2006Los AngelesFor further details including meeting location and time, contact Marine ChemistAssociation Secretary, Ed Willwerth at www.marinechemist.org

Jack Rebstock Certified Marine Chemist 702

At its last meeting held in Houston, TX on October 19, 2005 the MCQB approved Mr. Jack Rebstock of Larose, Louisiana as the newest NFPA Certificated Marine Chemist. Mr. Rebstock was issued Certificate Number 702 by the NFPA Marine Chemist Qualification Board. Jack trained under the supervision of Lamar Labauve, CMC 576. Jack will work for Delta Labs and Gas Testing, Inc of Prairieville, LA.

Shipyard Representative Appointed to MCQB



Allen Rainsberger - Photo courtesy of Todd Pacific Shipyards Corp.

At the November 2005 meeting the NFPA Board of Directors, Mr. Allen D. Rainsberger was appointed to the Marine Chemist Qualification Board (MCQB) as the representative of the shipyard industry. Mr. Rainsberger takes the seat formerly held by Mr. Terry Guidry who steps down after serving two (2) consecutive three-year terms on the Board.

Mr. Rainsberger has worked in the shipbuilding/ship repair industry for the past twenty six years. He began his career with Todd Pacific Shipyards Corporation as a journeyman painter and he has also been union chief shop steward, and hazardous material technician and supervisor. In his current role, Al manages Todd Pacific Shipyards' overall Environmental and Occupational Safety and Health program to ensure safe work conditions and practices. In addition, he is responsible for the Todd Safety Response Team and for overseeing the Pollution Prevention Program. He has been the Manager of Safety/Security & Environmental Compliance at Todd for the past fifteen years.

Al is a Certified Hazardous Materials Manager, a Certified Environmental Inspector and a Certified Environmental Manager by exam, and he is a member of the American Society of Safety Engineers. Al is President of the Puget Sound Shipbuilder Association and President of the Environmental Coalition of South Seattle.

The Marine Chemist Qualification Board will meet in Philadelphia on March 21-22, 2006.

MARINE CHEMIST DIRECTORY – 2006 EDITION

The 2006 edition of the Marine Chemist Directory is in the process of being printed. If you would like a printed copy, please contact the NFPA Marine Field Service. An electronic version of the Directory may be down loaded from the NFPA website. Go to **www.nfpa.org**, and then click the *Learning* tab. Next, hit the tab for *Professional Development* and then *Marine Chemists* in the drop-down list. The on-line Directory is periodically updated as Marine Chemists' contact information changes.

OSHA Issues Compliance Directive for Shipyard Employment Standard

The Occupational Safety and Health Administration issued an updated compliance directive September 9, 2005 regarding enforcement policy for a shipyard rule it issued in 1994. Directive Number CPL 02-01-042 addresses 29 CFR 1915 Subpart B, Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment.

The instruction provides guidance concerning OSHA policy and procedures on the enforcement of safety and health standards for confined and enclosed spaces and other dangerous atmospheres in shipyard employment (i.e., ship repair, shipbuilding, and shipbreaking).

The new directive replaces OSHA Instruction STD 02-04-001 that went into effect June 23, 1995. According to OSHA the new instruction has been revised and updated to include the following:

• Delivers available shipyard employment safety and health information in a web-based format with links to noted references.

- Revises the format of the instruction to comply with current OSHA procedures
- Incorporates applicable shipyard employment definitions into the directive
- Clarifies an exception provided in 29 CFR 1915.14 that allows visual inspection and testing for hot work to be performed by the competent person

The new OSHA Directive explains that painting and use of related solvents, paint and preservative removers, and other vehicles capable of producing a flammable atmosphere, are covered by 29 CFR Part 1915, Subpart C, *Surface Preparation and Preservation*, and hot work shall not be performed until the paint, or other coating, is dry and all Subpart C requirements are met.

Interested persons are encouraged to review this new compliance directive. You can find Directive CPL 02-01-042 on the OSHA website, *http://www.osha.gov* under the heading, "*Directives*".

Tank Ship Explodes and Sinks off Virginia

"This is Bow Mariner, Bow Mariner! We are on fire!"

That was the Coast Guard's first news of the disaster that occurred 50 miles off Virginia's Eastern Shore on the night of February 28, 2004. A chilling recording of this MAYDAY call was available on a Virginia newspaper's website. Only six crew members were rescued by the Coast Guard. Commercial fishermen recovered three seamen who later died while en route to area hospitals. The bodies of 18 other eighteen crewmen were never found.

"Twenty-one people didn't need to die.", That's what the chief investigator into the sinking of the tanker Bow Mariner told the members of the Marine Chemist Association at the Annual Seminar in Portland, OR on July 26, 2005. Mr. Jerry Crooks, chief investigator for the U. S. Coast Guard Marine Safety Office Hampton Roads has submitted his findings to USCG Headquarters in Washington. Public release of the incident investigation report will follow USCG command chain procedures.

Mr. Crooks said, "We know what happened and we know why it happened. This was an accident that shouldn't have happened." Because the final report has not been released to the public, Mr. Crooks was only permitted to present the facts of the investigation. He also presented a video of the stricken vessel that was taken by U. S. Coast Guard aircraft. Some of the recommendations in the Coast Guard's final report may impact the international maritime industry. Even without a discussion of the findings of the Coast Guard's investigation, the story of the Bow Mariner illustrates the importance of the three-part system for working safely in, on or adjacent to confined spaces -

RECOGNITION – EVALUATION – CONTROL

- of the hazardous atmospheres these spaces may contain.

The 22-year old Singapore registered Bow Mariner was a 570-foot, 40,000-ton tanker carrying industrial-grade ethanol as cargo, and No. 6 fuel oil and diesel oil as fuel at the time of the explosion. The *Bow Mariner* had discharged a parcel of her cargo (MTBE) in New Jersey and was sailing for the Gulf of Mexico. Typical of many chemical/oil products tank ships the Bow Mariner's crew was preparing just-emptied cargo tanks for the next load in Houston. This operation includes cleaning and gas-freeing the cargo tanks while the ship is underway. This is a common practice that is not without risk; in fact it is probably the most hazardous operation that is routinely undertaken on tank vessels.

There are a number of recognized industry resources detailing procedures for tank cleaning and gas-freeing operations. Among these are *International Safety Guide for Oil Tankers and Terminals (ISGOTT)* and the *International Chamber of Shipping Chemical Tanker Safety Guide*. Each of these publications emphasizes the need to treat tanks that previously held flammable cargoes with the utmost care. In all cases after carrying flammable cargo, the empty tanks should be considered flammable as well. The only way to guarantee that an explosion cannot occur during washing and gasfreeing is to make certain that there is no source of ignition. This is achieved by strict observance of approved procedures and arrangements for the vessel.

It may have been a combination of improper work practices, faulty

equipment and failure to follow established procedures that resulted in the clear evening twilight of a February evening two-years ago to be shattered by a tremendous explosion and fireball that caused the deaths of 21 seamen. Regardless of the findings of the official investigation it is clear the primary lesson to be learned is that personnel engaged in tank cleaning and gas-freeing operations must be fully aware of the dangers and take necessary precautions. The consequences of an inadvertent error can be serious and far reaching as the Bow Mariner disaster demonstrated.

Bow Mariner Incident Footnote

There were certainly some fatalities as a direct result of the explosion and fire but the greatest cause of death was hypothermia and drowning. Surviving crewmembers reported their shipmates abandoned the vessel wearing the clothes on their backs and life jackets. The sea water temperature was 44° F. "The lack of immersion suits in cold water contributed to the high loss of life," Crooks told the Marine Chemists. U. S. flagged ships that operate in these waters are required to have cold water survival suits for all crewmembers. Immersion suits would have provided these crewmen several hours of protection from the cold sea water. Five vessels and three aircraft were on the scene within two hours.

The deaths of so many people to hypothermia is ironic because on February 23, 1983 the U. S. merchant ship *Marine Electric* capsized and sank in a storm off the Virginia coast. Of a crew of 34, only three survived. It was this disaster that caused the U. S. Coast Guard to require immersion suits on U. S. vessels.

4 - Workers Die Repairing Vessel Sewage Systems

Two fatal accidents in less than three months have occurred on board vessels while work was performed on vessel sewage systems.

In September three ship's crew were killed while attempting to replace a section of pipe on a sewage line in the shaft alley of the engine room. Another 20 people were treated at a local hospital.

In December a shipyard worker died when a sewage line was cut while he and another worker were working in the chemical holding tank (CHT) room on a cargo vessel. The second worker was hospitalized.

In both cases the cause of death was the same – exposure to extremely high concentrations of hydrogen sulfide. In one incident the concentration levels were sufficient to cause nearly instantaneous death.



HAZARDOUS AREA HYDROGEN SULFIDE EXTREME HEALTH HAZARD FATAL OR HARMFUL IF INHALED

Hydrogen Sulfide (H₂S) is a toxic, flammable, gas that has a distinct "rotten-egg" smell at low concentrations and causes you to quickly lose your sense of smell. Hydrogen sulfide gas is colorless. It is heavier than air, and may accumulate in low-lying areas.

Hydrogen Sulfide (H₂S) Hazards

Hydrogen sulfide (H_2S) is a by-product of organic decay (decomposition of plant or animals and the waste that comes from these organisms). Sewage systems contain hydrogen sulfide. The risk of exposure to lethal concentrations of hydrogen sulfide exists anytime work is performed on sewage systems.

Exposure Limits for Hydrog	en Sulfide (CAS# 7783-06-4)
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ACGIH	OSHA (29CFR1915.1000)	NIOSH
TLV®	PEL	IDLH
10 ppm * TWA-8	10 ppm TWA-8	100ppm
15 ppm * (STEL)		

*ACGIH 2005 Notice of Intended Change:

STEL to 5 ppm

Hydrogen Sulfide Exposure and Effects		
Concentration	Exposure Symptom	
0.3 – 30 ppm	Odor is obvious and unpleasant	
50 ppm	Eye irritation, dryness & irritation of nose, throat	
Above 50 ppm	Irritation of respiratory system	
100 – 150 ppm	Temporary loss of smell	
200 – 250 ppm	Headache, vomiting, nausea. Prolonged exposure may lead to lung damage. Exposures of $4 - 8$ hours can be fatal.	
300-600 ppm	Dizziness, headache, nausea within 15 minutes, loss of consciousness, death occurring within 30 to 60 minutes	
600-1000 ppm	Rapid unconsciousness, death occurring within a few minutes	
Above 1000 ppm	Instantaneous collapse, respiratory failure and death	

TLV to 1 ppm

Workplace Safety When Hydrogen Sulfide (H₂S) may be Present

Good planning, training programs for workers and active monitoring for hydrogen sulfide gas are the best ways to prevent injury and death. All personnel working in an area where concentrations of hydrogen sulfide may exceed the 10 parts per million (ppm) should be provided with training before beginning work assignments.

A good hydrogen sulfide (H₂S) contingency plan includes, but is not limited to:

- Instruction about the characteristics, sources, and hazards of hydrogen sulfide and where it may be found.
- Training workers to recognize the symptoms of exposure, and

proper response to, hydrogen sulfide warnings at the workplace.

- Proper use and maintenance of personal protective equipment. Demonstrated proficiency in using PPE should be required.
- Use of gas detection where hydrogen sulfide may exist.
- Appropriate respiratory protection for normal and emergency use.
- Proper rescue techniques and first-aid procedures to be used in a hydrogen sulfide exposure.
- Location of safe areas and routes of egress.
- Confined space safety procedures.

2006 Maritime Confined Space Safe Practices Seminar Calendar

NFPA is currently scheduling seminars for the 2006 calendar year. If you'd like to schedule a two or three day seminar please contact the NFPA Marine Field Service at: marine@nfpa.org Phone: 617-984-7948; Fax: 617-984-7110. Below is a current list of scheduled and planned seminars.

2006 Dates	Location	Туре
January 2006	Vancouver, BC	3-Day
Jan/Feb 2006	New Orleans, LA	3-Day
Jan/Feb 2006	TBD	3-Day
February 2006	Vancouver, BC	3-Day
March 16-17, 2006	Houston, TX	2-Day
June 1-2	Singapore	2-Day
September 21-22	London, UK	2-Day
November 9-10	Singapore	2-Day

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 - E-mail: marine@nfpa.org,

Phone: (617) 984-7948, Fax: (617) 984-7110