MARINE CHEMIST QUALIFICATION BOARD

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471
Telephone: 617-770-3000
Fax: 617-984-7110

MEMORANDUM

TO: All Marine Chemists and Trainees

FROM: Marine Chemist Qualification Board (MCQB)

DATE: 07 April 2025

SUBJECT: Documentation of Test Result for Airborne Concentration of Benzene on the Marine Chemist's Certificate for Spaces to be Entered by USCG Personnel

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At its recent meeting in New Orleans, LA the Marine Chemist Qualification Board (MCQB) discussed the current American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Value® (TLV®) for benzene (CAS No. 71-43-2) with members of the United States Coast Guard (USCG). As you know, in January 2024, the ACGIH lowered its TLV® for benzene to 0.02 parts per million (ppm). Additionally, benzene now carries a skin notation, indicating that skin absorption creates an additional potential exposure to workers in addition to inhalation.

Benzene is considered a confirmed human carcinogen by ACGIH, International Agency for Research on Cancer (IARC), National Toxicology Program (NTP) and the U.S. Environmental Protection Agency (EPA). The January 2024 change to the benzene TLV® is intended to minimize the risk of bone marrow toxicity and other adverse health effects associated with benzene exposure, including conditions like myelodysplastic syndrome, acute myeloid leukemia, and chromosomal damage. The U.S. Coast Guard is expected to adopt the benzene TLV® to protect Coast Guard personnel from occupational exposure to benzene. This value is different than the occupational exposure limit noted in 46 CFR 197.501, Subpart C – Benzene which is applicable to cargo.

Petroleum is made up of many types of hydrocarbons with various molecular structures and properties. The term, total petroleum hydrocarbon (TPH) is the summation of the identifiable

hydrocarbon compounds in oil. The term, total volatile organic compound (TVOC) refers to the thousands of organic (carbon-containing) chemicals that are present mostly as gases or vapor at ambient temperature. Since TPH and TVOC are measured gross quantities without identification of individual constituents, the TPH or TVOC "value" represents a mixture. Thus, TPH or TVOC are not direct indicators of the risk of exposure to a specific chemical substance – such as benzene.

With the aim of protecting its workforce, the USCG makes the following request to all NFPA Certificated Marine Chemists: **When evaluating a space or an area that previously contained (or contains) a mixture or a product that includes benzene, the Marine Chemist's Certificate shall include a test result for the concentration of benzene in the atmosphere, and not a test result for TPH or TVOC alone.** This request applies to spaces or areas that may be entered by USCG personnel.

The documentation of the concentration of benzene in the atmosphere of a confined space or other work area where such an exposure may occur will enable the Coast Guard to adhere to the updated benzene TLV® and minimize the benzene exposure risk to Coast Guard personnel. The MCQB supports this request by the U.S. Coast Guard. Your cooperation in this matter – effective immediately - is appreciated.

In the event that the competent person lacks testing equipment capable of measuring the airborne concentration of benzene at or below the current TLV®; the Marine Chemist can note on the Marine Chemist's Certificate that further testing for benzene is not required if the Marine Chemist has determined that benzene has been eliminated or is not capable of regeneration to hazardous levels while the atmosphere conditions within the space or area are maintained as directed on the Marine Chemist's Certificate. See §7.1.1.4 of NFPA 306, *Standard for the Control of Gas Hazards on Vessels*, 2024 edition.

Questions or comments regarding the content of this memorandum may be directed to the Secretary of the MCQB by email: lrussell@nfpa.org or telephone: 617-984-7499.