



UNITED STATES COAST GUARD

U.S. Department of Homeland Security



MARINE SAFETY ALERT

Sector Houston-Galveston

June 3, 2011
Houston, TX

Alert 02-11

1,3 - Butadiene TLEV vs. LEL exposure hazard

The purpose of this Safety Alert is to remind all personnel of the potential atmospheric hazards that may be present while working on and around Liquefied Petroleum Gas (LPG) carriers. The importance of understanding risks associated with hazardous cargos cannot be overstated. We strongly recommend reviewing this safety alert, operation specific procedures, as well as the Material Safety Data Sheets (MSDS) for individual cargos to heighten awareness of potential short and long term exposure term safety concerns.

Sector Houston – Galveston personnel recently averted a potentially hazardous exposure to 1,3 Butadiene, a known carcinogen, while conducting a Port State Control Certificate of Compliance “Gas” (COC-Gas) exam. The examiners followed USCG Sector Houston-Galveston guidance for entry into cargo compressor rooms that required the space to be certified “Safe for Workers” by a Marine Chemist prior to entry of Coast Guard personnel. With the compressors secured and ventilation in operation the Marine Chemist found 35 ppm of 1,3 Butadiene within the compressor room and could not certify the space as safe for workers in accordance with the published NIOSH Short Term Exposure Limit (STEL) of 5 ppm.

When notified of the gas in the compressor room the inspection team discussed their concern with why the fixed gas detection system was not identifying the presence of the gas. Further research determined that the lower explosive limit (LEL) for 1,3 Butadiene is 20,000 ppm, and the fixed gas detection alarm set point of 10% of LEL would be 2,000 ppm. The 35 ppm reading obtained on the Marine Chemists photo-ionization detector (PID) would correlate to approx .00175 % LEL, a level not measurable on the fixed gas detection system. Failure to follow this local guidance would have resulted in personnel being exposed to 7 times the maximum limit allowed by the STEL.

All personnel working around 1,3 Butadiene should be keenly aware of and cautious of gas leaks and review MSDS for specific hazards and exposure limits. It is critical to understand the different hazards associated with all gaseous cargos and the limitations of the meters in use on board and carried. Failure to follow written procedures or take appropriate precautions prior to entering or working in an area suspected of or likely to contain even the slightest amount of cargo vapor may result in long term health issues

This safety alert is provided for informational purposes only and does not relieve any domestic or International safety, operational or material requirement. Developed and distributed by Sector Houston-Galveston, United States Coast Guard, Houston, TX. Questions can be addressed to the Port State Control Division at 713-671-5184.

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