Petroleum and Petrochemical Bulletin

Hydrogen Sulfide (H_2S) considerations and measurement	Bulletin 16-05 Rev. 1 - 0

TIC Council member companies have noted some confusion around the use of H_2S readings taken on board marine vessels. This is an important issue as, in addition to safety concerns, measurements are used to influence cargo treatment processes.

Differences in H_2S readings and their application should be noted as follows:

1. Working environment

   TIC Council member companies are committed to the health and safety of their employees and of those around them and follow appropriate regulations, recommendations and good practice. Inspectors are required to wear H_2S personal gas detectors within the working environment upon a vessel or a shore tank. These devices are worn and are normally clipped to the inspector's chest on the outermost layer of clothing close to the breathing zone.

   Alarm limits are typically set to 5 or 10ppm depending on local regulations and if these levels are exceeded work should stop and only recommence if H_2S concentration can be reduced.

2. Quantitative H_2S Measurement – Vapour space

   Personal gas detectors are not suitable to quantify levels of H_2S.

   H_2S concentration in tank vapour space may be determined using equipment and procedure as given in EI HM 69 *Procedures for determining H_2S concentration in cargo tank headspaces*. H_2S concentration may need to be determined as part of a risk assessment before opening a tank.

3. Quantitative H_2S Measurement – Cargo

   H_2S measurements are often used to predict the need for chemical treatment, and/or the amount of chemical treatment to be applied to a cargo.

   It should be noted that the concentration of H_2S in the vapour space is not a reliable indication of the concentration of H_2S in the liquid cargo. TIC Council member companies recommend (and note that cargo treatment providers normally require) that the data used to determine the need for and/or quantity of H_2S treatment is obtained from analysis of cargo samples using a recognised test method; e.g. ASTM D5705, ASTM D6021, ASTM D7621, IP 570.

   Please also refer to TIC Council Bulletins B12-02 (Bunker sampling for H_2S) and B16-04 (H_2S to ASTM D5705)

Revisions/Reaffirmations	
Rev. 0	January 2017
Rev 1	April 2023

If an alternative procedure is proposed, the procedure, together with an appropriate risk evaluation, should be fully documented. Also, any measurement instrument used should be approved by the manufacturer for use in the atmospheric conditions expected in a cargo tank. The procedure should be fully understood and agreed between the parties prior to its use.

It is essential that critical H_2S measurements are obtained using techniques appropriate to their purpose and that all parties are aware of their roles and obligations in the production and use of these measurements.

When reporting vapour space H_2S measurements TIC Council member companies are advised to use the following disclaimer:

Warning: Measurements of H_2S concentration in tank vapour spaces do not necessarily give an accurate representation of the H_2S content of the liquid cargo, which should be determined from samples using a recognised test method.

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