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**MEASUREMENT OF LIQUID PHASE H<sub>2</sub>S IN RESIDUAL AND CRUDE OILS**

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Hydrogen Sulfide (H<sub>2</sub>S) is a very toxic gas and at certain concentration levels can be fatal. It is a natural component in crude oils and an unwanted by-product of residual fuel manufacture.

Over many years the presence of H<sub>2</sub>S has been identified globally within refineries, terminals and fuel oil storage systems, during bunkering or fuel handling on board ships as well as during carriage and handling of crude oil.

Vapour phase measurements are relatively simple to carry out but are strongly influenced by the amount of H<sub>2</sub>S in the liquid phase, temperature, headspace and the degree of agitation. Measurement of H<sub>2</sub>S in a liquid phase is much more difficult. Liquid phase measurements provide an indication of the amount of H<sub>2</sub>S that can potentially be generated in the vapour phase. The liquid-phase measurements are therefore the best approach for measuring safe levels of H<sub>2</sub>S

The Energy Institute's laboratory spectrophotometric test method IP 399 can be considered the industry norm for providing liquid phase results, but the procedure can take 3 hours. This paper includes the development of a new lab-portable instrument to determine the content of H<sub>2</sub>S in liquid samples of crude oils and fuel oil. This development has involved a number of crude and marine fuels, with measurement times less than 20 minutes, with a limit of detection at sub ppm levels. The apparatus is automated and does not require significant analytical expertise.

The presentation will review the technology applied, test / correlation results and the implementation of the new lab-portable instrument for this new exciting technology development that was developed in collaboration with Lloyds Register EMEA Group and the international oil industry.