

# Application Article 236

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## Offshore gas monitoring for health and safety

### Summary

The need to maximise availability and to implement the most challenging of drilling plans, while all the time meeting stringent health and safety requirements, places immense pressures on offshore facilities managers. The costs of downtime and any subsequent clean-up due to an incident are unthinkable, and the costs of ill health are growing. Legislation demands the implementation of a health and safety plan built around extensive monitoring, but is somewhat vague on just how frequently this monitoring should be carried out or with what technologies, particularly in relation to chemicals such as benzene and other VOCs. However, for facilities managers looking to raise the standard of protection, modern VOC detectors will automatically detect harmful chemicals before they become a problem.



### Introduction

While detection strategies for combustibles and hydrogen sulphide on offshore oil and gas facilities are well understood and effectively implemented, detection strategies for toxic by-products such as benzene and toluene are less well specified. Health and safety requirements define exposure limits to the extremely toxic benzene, for example, as no higher than 1ppm over a time weighted average (TWA) eight hour day, or 5ppm for 15 minutes as a short-term exposure limit. Guidelines give an indication of the areas that should be monitored, but are somewhat vague when it comes to how frequently monitoring should be carried out.

### The Need For On-going Monitoring

It is believed that many cases of ill health are almost certainly due to inhaling toxic vapours, even if today that is impossible to prove. However, there is still no doubt that the cost of ill health is becoming very expensive. The problem is that with chemicals such as benzene being so aggressive in the smallest concentrations, having a health and safety plan in place does not necessarily guarantee either health or safety. The question is one of how best to monitor for these chemicals, and the practical implementation of a health and safety plan is often to perform spot checks. But this provides, at best, only an incomplete picture of any toxic chemicals present, and at worst can provide a completely false picture. The goal of an effective health and safety plan on offshore oil and gas facilities should be more frequent or even continuous monitoring, offering assurances that zero contamination readings really do mean zero contamination.

### Hand-held And Fixed Gas Monitors

Ion Science offers a full range of hand-held and fixed gas monitors, including an ATEX certified fixed continuous total VOC detector. The TVOC has a selectable detection range of 0-10ppm, 0-100ppm or 0-1000ppm, and incorporates advanced patented Fence Electrode technology for increased resistance to humidity and contamination. With a 4-20mA analogue output, the TVOC VOC detector can be simply integrated into a DCS control system to provide warnings of the presence of toxic VOCs. ATEX approvals enable a 3-wire TVOC system to be used in Zone 2 hazardous areas without safety barriers. In addition, ATEX and IEC Ex approvals allow TVOC to be used in Zone 1 hazardous areas without safety barriers. The TVOC fixed VOC detector utilises a diffusive sample technique resulting in less contamination issues compared to pumped systems, reducing lamp cleaning and servicing requirements. Simple to install service and calibrate, TVOC requires no hot work permit and the PID sensor is accessible and changeable in a matter of seconds.

To aid in frequent monitoring of the entire offshore facility, Ion Science also offers a host of hand-held VOC detectors, including PhoCheck Tiger and PhoCheck+. All enable the rapid and accurate detection of VOCs from 1ppb up to 20,000ppm – a range unmatched by other PID gas detectors on the market.

For more information contact Ion Science:

E-mail: [info@ionscience.com](mailto:info@ionscience.com)

[www.ionscience.com](http://www.ionscience.com)

 Leuvensteenweg 607  
1930 Zaventem  
T: 02 - 757 92 44  
F: 02 - 757 92 64  
[info@euro-index.be](mailto:info@euro-index.be)  
[www.euro-index.be](http://www.euro-index.be)