

XplorIR Solves Oxygen Displacement for Hazmat Response

BRANDON GAYLE, GAYLE TRAINING SOLUTIONS, LLC



Introduction

Most 4-gas or 5-gas air monitors used in emergency response employ an oxygen sensor for monitoring O₂ levels in the air. This serves two purposes simultaneously by ensuring that there is enough O₂ in the air for the unprotected responder and for the proper operation of the catalytic bead LEL sensor. If a drop in O₂ is observed, the operator should consider using a supplied air respirator, and is required by OSHA once the level drops below 19.5%, which is considered an IDLH atmosphere.

A small change in O₂ readings on an air monitor equals a potentially large quantity of contaminants in the air because the drop in O₂ only represents 1/5 of the actual displacement of air. Consider the following: a decrease of 0.1% (from 20.9 to 20.8%) O₂ is actually a 0.5% displacement of total atmosphere which equals ~5,000ppm of an unknown contaminant; if the instrument employs a "dead band" to reduce reading variation, the concentration of unknown could be 10,000 ppm or higher. These levels would be well above the IDLH level of most toxic chemicals.

Challenge

It is possible that no other sensor installed in the monitor is cross-sensitive to that contaminant, making the O₂ reading the only indication of a contaminant present. That being said, any unexplained drop in O₂, even with no other readings, should be treated as a potential IDLH environment and SCBA should be worn until the atmosphere is identified.

Solution

If the RedWave XplorIR is deployed with a 4-gas or 5-gas monitor during a recon entry, it is very likely that a contaminant would be identified at a much lower level (25-50ppm) than where an O₂ sensor would indicate displacement (~10,000ppm) therefore preventing an operator from blindly wandering into a potentially dangerous gas cloud.

Conclusion

The XplorIR is capable of identifying over 5,500 gases and vapors at levels well below what would cause an O₂ sensor to respond, therefore increasing the safety of responders during recon operations and filling a gap in our risk assessment technology.



XPLORIR

In collaboration with:



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475.237.4758
info@redwavetech.com
redwavetech.com

