



Multi-Gas Monitors

for Oil and Gas Industry: Understanding the Proper Use and Monitor Capabilities

An H₂S monitor is likely not enough

Multi-gas monitors can protect workers from unseen workplace hazards, such as toxic, flammable, and oxygen deficient atmospheres.

By alarming in the presence of harmful atmospheres, a properly calibrated multi-gas monitor can alert the worker to unsafe conditions. Multiple atmospheric hazards may occur separately or at the same time. When the monitor alarms, the worker needs to safely move away (crosswind and upwind) and then determine which sensor is going off.

Select the **MONITOR** based on the **HAZARD** & **NEVER** ignore an alarm!

Hazards

Conduct atmospheric hazard assessments at the worksite and educate workers about these potential hazards associated with oil and gas operations

- Oxygen (O₂)
 - Deficiency—too little oxygen to support life (< 19.5%)
 - Enriched—increased fire hazard (> 23.5%)
- Flammable gases and vapors (Lower explosive limit—LEL)
- Hydrogen sulfide (H₂S)
- Carbon monoxide (CO)
- Other atmospheric hazards may be present, such as sulfur dioxide (SO₂), other hydrocarbons (e.g., Benzene), and any immediately dangerous to life or health (IDLH) atmospheric condition that may require additional monitoring or assessment.

Limitations

Must have the right monitor for the application

- H₂S monitors are not intended for detecting flammable gases or vapors or lack of oxygen.

May not accurately detect flammable gases in a low oxygen environment

- Most monitors require at least 10-15% oxygen.

May not detect flammable gases above the upper explosive limit (UEL)

- UEL condition doesn't mean there is no immediate fire/explosion hazard.
- Monitor may initially alarm and quickly go out of alarm (e.g., due to shifting winds, change in oxygen concentration) leading to false sense of security. The potential hazard may still be present.

Respond to all alarms in the same way

- Evacuate area immediately when any alarm goes off and do not return to the area until it is deemed safe to re-renter.

Follow manufacturers' instructions and recommendations for instrument operation, care, calibration, and maintenance

- Also refer to OSHA Safety and Health Information Bulletin: Calibrating and Testing Direct-Reading Portable Gas Monitor SHIB 09-30-2013.

<https://www.osha.gov/dts/shib/shib093013.html>

Use

Make sure workers using the monitors are aware of potential hazards, understand instrument readings and limitations, know how to respond to alarms, and notify supervisor of alarms

- Make sure the monitor is equipped with appropriate sensors for the potential hazards.
- Make sure the audible alarm is set to the appropriate atmospheric hazard that is being monitored and the task being performed.
- The monitor may need a sample pump to sample potentially hazardous areas remotely (e.g., confined space, areas where gas may stratify) prior to entry or hotwork.

Turn the monitor on in clean, fresh air away from vehicles and other engines, heaters, and hydrocarbon sources

- Make sure the monitor is on, charged, and working.
- Make sure the monitor is calibrated and perform a bump test (function test) per manufacturers' recommendations.
- Always wear the monitor in the breathing zone.
- Never turn multi-gas monitor off for any reason and if monitor is malfunctioning, etc., leave area and report to supervisor.



Always turn your multi-gas monitor on in fresh clean air

If you're uncertain about potential risks or have questions,
STOP THE JOB AND ASK — IT COULD SAVE YOUR LIFE!