

Technology Spotlight

DIGITAL GAS MONITORS

TECHNOLOGY SUMMARY

Digital gas monitors detect and alert users to toxic gases, oxygen-deficient areas, and combustible atmospheres in the workplace. Depending on the type of device, they can either be worn by workers for mobile use or placed in fixed locations for continuous environmental monitoring. Modern devices often feature additional capabilities like wireless connectivity, real-time monitoring, and integration into existing safety management systems. Starting with small-scale pilots, selecting devices rated for your specific work environment, and aligning with OSHA, NFPA, and ANSI standards can help ensure accurate performance and support effective implementation of gas monitors in the workplace.



Digital gas monitors are required for detecting hazardous gases in confined spaces, where toxic or flammable atmospheres can develop suddenly.



Gas monitors are widely used in manufacturing to detect chemical leaks, maintain air quality and protect workers in confined or poorly ventilated areas.

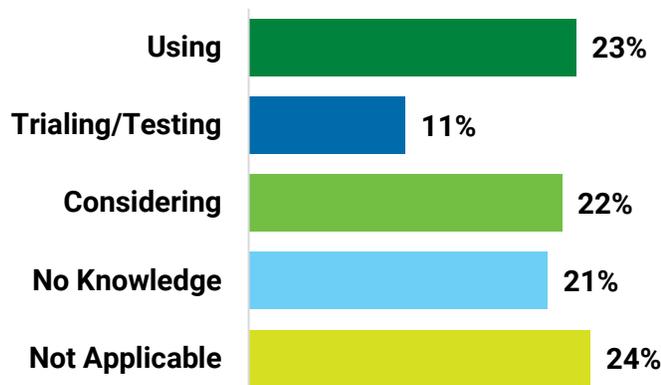


Emergency responders, including firefighters and hazmat teams, rely on gas monitors for rapid detection of toxic or explosive gases.

SAFETY TECHNOLOGY 2024 SURVEY RESULTS

According to an [NSC survey](#) of 500 employers and 1,000 employees in safety-sensitive industries, 23% of employers reported currently using wearable gas sensors in the workplace, while 33% said they are either testing or considering its use. The highest reported use of the technology came from employees in construction, utilities, and manufacturing.

Use of Gas Sensors in the Workplace:



Top Industries Testing or Using:



Construction
(53%)



Utilities
(47%)



Manufacturing
(36%)

Voices from the Workplace:



"High efficiency and energy savings. Gas sensors can automatically detect gas concentration and avoid excessive gas concentration that causes harm to the human body, but also save energy and reduce energy consumption costs."—Employer (Mining)



"Performance may be affected by environmental conditions and the limitations of the sensor itself."—Employer (Mining)



"Wearable gas sensors can prevent gas leaks or high gas levels before they become an issue or cause an accident by monitoring in real time"—Employee (Retail)



"When relying on the results of the wearable gas sensors, the issue of data accuracy needs to be treated with caution."—Employee (Utilities)

Benefits of Digital Gas Monitors

- Digital gas monitors provide instant readings and alerts to the presence of toxic, flammable or oxygen-deficient gases, helping prevent exposure-related injuries and fatalities.
- These devices can detect combustible gases early, reducing the risk of fires, explosions and equipment damage.
- Digital gas monitors can automatically store data for compliance, incident investigations and preventive actions.

Considerations for Adoption

- Sensors require regular calibration and testing to ensure accuracy and feasibility, especially in rugged or harsh industrial environments.
- Conduct a thorough hazard assessment to identify specific gas-related risks and ensure that the selected device is appropriate for your industry and environment.
- Familiarize yourself with OSHA, NFPA and ANSI regulations, as gas monitoring requirements vary by industry and are critical for ensuring compliance.

BEST PRACTICES

- **Identify a group of "digital champions"** representing all levels of the organization to support technology adoption, provide peer-to-peer support, and give feedback on the technology's use and effectiveness. This person can also help drive employee compliance with safety technologies.
- Consider how worksite conditions like temperature extremes, moisture, humidity or chemical exposure may affect gas monitor accuracy and reliability. **Select a device tested and proven for performance in your specific industry and environment.**
- **Begin with small-scale pilots** to evaluate how the technology performs in specific use cases or environments, identify technical or operational challenges, gather worker feedback, and adjust before scaling up to reduce initial monetary and resource investments.

For additional resources and guidance on adopting safety technologies, explore the [Work to Zero Safety Innovation Journey](#).