Taking the Guesswork
OUT OF GAS DETECTION

It's second nature to take actions that keep yourself and others safe while driving. When you get into the driver's seat, you buckle your seatbelt. When you approach a red light, you stop. When your dash alerts you that your car's gas level is low, at some point in the very near future, you fill your tank. When your check engine light comes on, you take the car to a mechanic. When you witness an accident, you call 911.

But we aren't born with these instincts—we learn about car safety as kids, observe our parents throughout life, and undergo months of training and practice as teenagers—and then we still need help making good choices. So each new vehicle model comes with new smart technology to make it even easier to make good, safe decisions. We've adapted vehicles to take the guesswork out of driving.

This same trend holds true for workplace safety and gas detection. As you use your gas detector, some safe habits are instinctual, while others are easy to forget. That's why it's so important to use technology that reminds you what to do. When it comes to lifesaving gas detectors, you can't afford to guess.

If you use personal gas detectors long enough, it becomes a habit to carry the monitor—much like putting on your seatbelt in a car. But simply clipping on a monitor doesn't keep you safe. You need to understand the power and limitations of a gas detector, which requires some "driver's ed." Training is critical to ensure that you understand potential environmental hazards as well as how to use and maintain the monitor. A monitor that is not properly maintained may be useless during an emergency.

Gas detectors today come equipped with smart features that not only provide clear information on the instrument status and sensors, but also tell you how to react when an alarm goes off. This takes away any guesswork about how to interpret the monitor.

Here, you'll learn about the latest technology that takes the guesswork out of gas detection, so you'll always know exactly how to respond to keep yourself and others safe.

Know if Monitors are Ready to Use

Before even turning on the monitor, a quick status screen tells you whether the gas detector is charged and what sensors are installed. Preprogrammed maintenance reminders, such as BUMP DUE or CALIBRATION DUE will pop up automatically on the screen so that you don't need to guess whether your monitor is ready to use.

Gas monitors can display a DOCK DUE message for entry-level users, which reminds them to place the monitor on the docking station for automatic bump testing and calibration. This simplifies the critical maintenance process and minimizes or eliminates the need to train workers on manual bump tests and calibrations.

Think of these on-screen messages as the check engine light for your gas monitor—they make it easy to see your monitor's status at a glance.

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Make Good Safety Decisions Easy

When the monitor is turned on, customizable start-up messages can communicate basic safety procedures, such as WEAR FALL PROTECTION ON CATWALK. While these may be habitual for some, the message enforces accountability for others. For new workers or contractors who are not familiar with a company's safety policies, a reminder like this can make the difference between a safe day on the job and a catastrophe.

Once the worker is going about his or her daily work, what happens when the gas detector goes into an alarm, indicating a gas hazard in the atmosphere? Will they know what the readings mean and whether they should evacuate? Or does the "I need to get my work done" or "I'll be all right" mentality prevail, and they ignore the alarm or even turn off the monitor? Workers will more frequently make the safe choice when their monitors can communicate the correct action and reinforce safe behavior.

Even if you're confident that your workers have been trained and will make safe decisions in these instances, consider this: The ratio between company staff and contractors has risen from about a 1:1 ratio 20 years ago to approximately 1:5 today[1]. Contractors and new employees may not have encountered a gas alarm before, so it's likely that they won't know how to react in an emergency. These contractors and new employees will likely look to tenured workers for guidance. But that's not a permanent solution. A wave of Baby Boomer retirements – especially in the oil and gas industry – will create a shortage of 10,000 to 40,000 petrochemical professionals by 2025.[2]

To create a future-proof solution to the challenge of improving worker response, safety managers can set custom alarm action messages, like EVACUATE or WEAR SCBA to correspond with alarm setpoints. These messages help users take the appropriate action in case of an emergency, without relying on expertise from peers.

Aside from custom alarm action messages, it's helpful to have full-screen alarms. Full-screen alarms use the entire display area for information on the sensor in question. This makes it easy for the user to focus on the gas is causing the alarm. This offers a strong benefit over screens that display all sensors simultaneously during an alarm event. More sensor information requires more interpretation and can lead to longer reaction times when every second counts.

The Right Gas Monitor for the Environment

For a gas detector to perform its lifesaving duty, it needs to be configured properly for the environment. This means assessing:

- What atmospheric hazards are present at your site
- How many gases you need to monitor at once
- Whether you have confined spaces to monitor
- What you want and need your monitor to do

Although there is no "silver bullet" gas monitor that will detect every possible combination of gas hazards, a multi-gas monitor is a good place to start. Using a properly configured five-gas monitor, like the Ventis® Pro5, allows you to advance the level of detection, giving you better awareness of the gas hazards around you.
The hazardous gases you should monitor vary by industry, so the combination of sensors that you choose for one application may not provide the same detection coverage in another. For the most accurate detection, customize your sensors to monitor the gases you're most likely to encounter in your application or those that could pose the most danger should they be present.

Many users configure their multi-gas monitors with a combination of oxygen, combustible gas, and toxic (like CO and H2S) sensors. However, there are many different hazards to detect, so knowing your environment is critical. Once you know which gas hazards you need to detect, you can use one gas detector that offers flexible sensor options and accessories to adapt to any environment. Using one flexible monitor allows you to swap sensors and easily transition from confined space monitoring to personal monitoring when needed. This allows you to simplify and scale your gas detection program by eliminating the need to learn and maintain several different gas monitors. This in turn simplifies training, maintenance, and reduces your overall cost of ownership. Put all of this in a small multi-gas detector like the Ventis Pro5 that's IP68-rated, easy to use, and covered by a Guaranteed for Life™ warranty, and you eliminate the key issues workers encounter when carrying a gas detector.

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Technology for Easier Tracking

The technology mentioned so far addresses the needs of gas detector users. Yet management often struggles with gas detection as well, just in a different context. Safety managers have the grueling task of determining the source and details of incidents so they can prevent them from happening in the future. As gas monitors become more sophisticated, they are able to store larger amounts of valuable data. As a result, you're getting more information than ever before. More gas detection data is a good thing, but it might not feel like it if you don't know how to use it. Traditional gas monitors don't make it easy to tie the numbers back to what's happening in the field, let alone use the data to make decisions for the future. Figuring out who was carrying monitor number 176 (out of 400+ monitors) when it went into an H_2S alarm can be a manual and tedious task if you're using the wrong instruments and technology.

Industrial Scientific's iAssign® Technology fixes that. iAssign uses near field communication (NFC) to assign a user and a location to an instrument. This means that all gas detection data, including gas readings and alarms, can be tagged with the worker's name and location information, making the data easier to understand and act on.

Using Industrial Scientific's Ventis Pro5 Multi-Gas Monitors and iAssign Technology, the worker taps their iAssign tag to a monitor to wirelessly enter their name into the instrument. Then, as they move around the facility, the monitor automatically registers the worker's location when within range of an iAssign® Beacon, a Bluetooth device that provides location and access information to the gas monitor.

All data the gas detector collects will be tagged with the worker's name and location, allowing you to easily see who had the instrument and where they were located during an alarm.

iAssign Beacons can also be programmed with permission levels to keep workers out of restricted areas. If a worker attempts to enter a hazardous area before they have been given permission, their gas monitor will sound an alarm and display a message on the screen. This allows you to keep your workers safe while reducing the need for separate devices, extra signage, physical barriers, or manual processes to manage worker clearances.

Your gas detection data can give you valuable insights into your site and workers – you just need the right tools to help you use the data to gain actionable insights.

Responding to Workers in Danger

More than 5,200 people die at work each year in the United States alone,[3] so it's critical that workers not only have personal protective equipment (PPE) but also tools that allow them to summon help when they need it. Workers can use a gas detector to call for help with a dedicated panic button that sounds a loud alarm to alert nearby workers. If worker loses consciousness or can't move, a man down feature senses the lack of motion and sounds a loud alarm to alert others.

However, worksites are loud and busy places, so it's easy for a beeping and flashing monitor to go unnoticed. This is where connectivity can strengthen your gas detection program. Connected gas detectors give managers and peers on the ground real-time insights into what's happening across a site, from hazardous gas levels and device health to worker status and location.

There are generally two levels of connectivity: peer-to-peer and cloud connected.

Peer-to-peer connectivity links nearby gas monitors to automatically share gas readings, panic alarms, man-down alarms, and more. Instead of guessing what to do when a gas monitor goes into alarm, peer-to-peer connectivity in gas detectors ensures that peers get the information they need to act fast. Whether a gas hazard, man-down, or panic situation causes an instrument to alarm, all peers in the connected group will instantly receive an alert on their own monitors showing who is in danger and why. Workers can even pick up readings from nearby area monitors so they know whether gas hazards are approaching their work area.

For example, if workers carry Ventis Pro5 Multi-Gas Monitors with LENS® Wireless peer-to-peer connectivity (standard in these monitors), the team will be notified any time a monitor goes into alarm. If a man-down alarm is triggered, the rest of the team will know whether they can safely approach the worker in need. But if an alarm is triggered by a high concentration of a toxic gas, then the team will know they need to take additional precautions first. This leads to better safety outcomes for individual workers, the team, and the whole organization.

On the other hand, cloud-connectivity eliminates guesswork for managers through instant alerts that show exactly who needs help, why, and where they're located. Real-time knowledge of each worker's location and environment is essential in industrial environments, especially during a gas release. Connected devices with live monitoring tools, like the Ventis Pro5 paired with iNet® Now Live Monitoring software, can automatically alert safety contacts via text or email when a worker encounters a gas hazard, falls, or experiences any other emergency. At the same time, peer-to-peer mesh networks can alert workers on the ground so they can take appropriate action.

Cloud connectivity is the future of gas detection, so it's important to consider connectivity options that work for your site both now and in the future. Wi-fi, satellite, and cellular are the most popular ways to connect a gas detector to cloud-based live monitoring tools. Choosing a monitor that can use any of these options gives you the flexibility to connect workers across all areas of your site for years to come.

Both live monitoring and peer-to-peer connectivity take the burden of communication off the worker in danger and enable faster emergency response.

Take the Guesswork Out of Maintenance

Once you've taken the guesswork out of gas monitoring, it only makes sense to extend this simplicity to your maintenance and repair program. The docking stations mentioned earlier are ideal for routine bump tests, calibration, and charging. But they can also help you eliminate the pain of monitor repairs when paired with a subscription maintenance service.

In a full-service, subscription-based program like iNet® Exchange, you lease gas detectors and pair them with docking stations to automate routine maintenance and eliminate repairs. When a docking station senses a decline in a monitor's performance, it automatically orders a replacement device to eliminate instrument downtime and the hassle of warranty claims. Once you receive the replacement monitor, you send back the old one.

Services like this reduce the number of backup units you need to have on hand, reduce the risk of downtime in your operation, and guarantee that workers will always have a working monitor—no troubleshooting required.

Building a Modern Gas Detection Program

Workplace safety is a constantly evolving concept, especially in fast-moving industrial environments. Thanks to technological advancements, what was considered safe 10 or 20 years ago often doesn't hold up to present-day safety standards. This is especially true for gas detection.

While up-to-date gas detectors cannot eliminate every safety challenge, they can make it significantly easier for your workers by removing the guesswork. Providing workers who are on the frontlines with a gas detector that is easy to use and carry, communicates proper emergency reaction, and ultimately earns your workers' trust is not just a "nice to have," it's a requirement.

Building, implementing, and using the right gas detection program for your site can be a challenge, but it's one we can walk you through. We can help you audit your gas detection fleet and compare your current costs and safety culture to an industry-leading program. If you'd like to start this process, our team is always ready to help. **Talk to an expert today.**

[1] Noguchi, Y., 2018. NPR.org. Available at: https://www.npr.org/2018/01/22/578825135/rise-of-the-contract-workers-work-is-different-now

[2] Andrews, D., Datta, A., Newman, C. and Rousset, J., 2019. Accenture.com. Available at: https://www.accenture.com/_acnmedia/PDF-55/Accenture-Strategy-Talent-Well-Oil-Gas.pdf

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