

FRONTLINE SAFETY CASE STUDY



# ARSINE, HYDROGEN & SILANE

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## WHAT WAS THE HAZARD?

In the semiconductor manufacturing process, various hazardous gases are used and produced. At the facility in question, there was a potential for gas leaks of highly toxic and flammable gases including silane ( $\text{SiH}_4$ ), hydrogen ( $\text{H}_2$ ), and arsine ( $\text{AsH}_3$ ). These gases not only pose significant health risks to the workers but can also lead to explosions if not managed correctly. The challenge was detecting these gases in real-time to ensure the safety of the facility and its workers.

## PROBLEM IN MORE DETAIL

Gas leaks in semiconductor manufacturing can cause safety and operational issues. The manufacturer had experienced such incidents before. They needed a gas detection system that could track multiple gases at once and warn operators quickly.

## AT A GLANCE

### Challenges

- Complex gas mixtures
- Real-time monitoring
- Safety compliance and regulations

### Benefits

- Enhanced Safety with the solution provided
- Precision Detection system ensuring accurate detection
- Regulatory compliance

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## WHICH SOLUTION AND WHY?

Frontline Safety recommended the GDS fixed gas detection system to address the gas leak challenges in the semiconductor manufacturing facility.

Here's why:

- **Multi-Gas Monitoring:** The GDS system is designed to monitor multiple gases simultaneously, making it perfect for complex environments like a semiconductor plant.
- **High Sensitivity Sensors:** With sensors explicitly designed for the gases in use – silane, hydrogen, and arsine – the GDS system offers high sensitivity and quick response times.
- **Real-time Alerts:** Integrated with the facility's central monitoring system, the GDS system provides real-time alerts, allowing immediate action in case of gas leaks.

Benefits of the GDS Solution:

- Accurate multi-gas monitoring tailored to the semiconductor environment.
- Enhanced safety through real-time alerts and rapid response times.
- Reduction in potential production losses and increased operational efficiency.