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# A short guide to gas monitoring in the HOSPITALITY INDUSTRY

ANALOX
Sensor Technology

# HOW ARE GASES USED IN THE HOSPITALITY INDUSTRY?

## Carbon dioxide

Carbon dioxide ($CO_2$) is used to carbonate and dispense beer and soft drinks.

Next time you are at your local pub, cinema, theatre or leisure centre, if you look hard enough, you might be able to find a cylinder and pipe which carries $CO_2$ (which is sometimes known as 'cellar gas' or 'dispense gas' to a beer or soft drink dispenser.

If you work in the brewery or **winery industries**, carbon dioxide is also a byproduct of fermentation. Yeast converts sugar into ethanol (alcohol) and $CO_2$.

Carbon dioxide is also used to create **dry ice**, which can be used to store food products, as well as for theatrical effects.

**Carbon dioxide can also build-up in commercial kitchens if ventilation is poor.**

## Nitrogen

**Nitrogen ($N_2$) can be used as an alternative dispense gas to carbon dioxide**. For example, some beers and stouts are 'carbonated' with a blend of nitrogen and carbon dioxide as this makes smaller bubbles, and a smoother, creamier drink.

**Nitrogen can be used with coffee to create a cold drink called nitro-brew.**

Nitrogen is frequently used in kitchens and factories. **Liquid nitrogen can be used to freeze ice cream fast**, making it smoother and creamier. It is also used to put bubbles in chocolate bars.

**Nitrogen is used to preserve food - by using nitrogen in food stores or replacing oxygen in food packaging with nitrogen, the shelf-life of products can be extended.**

# THE DANGERS OF A GAS LEAK

Nitrogen and carbon dioxide have no taste, colour or smell, which means that it will be hard to tell if there is a gas leak. All it takes is a rip or a hole in the pipe connecting a gas cylinder to a drinks dispenser and a room could quickly fill with dangerous gas.

## Carbon dioxide

Carbon dioxide is naturally present in the air, but an increase in concentration can be dangerous.

An increase in levels can cause effects including headaches, reduced hearing and sight and an increase in blood pressure. Higher levels still can cause unconsciousness, coma and death.

Carbon dioxide is heavier than air and can concentrate at ground level. If you get a monitor, it is essential to put the central unit/alarm at head height so you don't have to bend down to read it.

There have been some tragic stories of people dying due to carbon dioxide in the hospitality industry:

- **In 2007, a man died near a brewery due to incorrectly laid pipes which were carrying carbon dioxide into a nearby stream.**
- In 2011, a woman died in a fast-food restaurant bathroom after an improperly wired carbon dioxide tank caused a dangerous gas build up.
- In 2014, a woman in Spain died at a winery after becoming intoxicated by CO2 fumes and falling into a vat of wine.

**We sometimes see people getting carbon dioxide and carbon monoxide confused. The two are totally different gases and need to be monitored in different ways.**

## Nitrogen

Nitrogen displaces oxygen in the atmosphere, meaning an increase could mean that oxygen drops to a dangerous level and cause asphyxiation.

Liquid nitrogen expands when it evaporates. One litre of liquid nitrogen can turn into approximately 700 litres of gas, which can cause an oxygen-deficient atmosphere really quickly.

People have died from misuse of nitrogen in the food industry. In 2013 two employees died after being told to hold their breath to enter a nitrogen-filled storage unit where levels of oxygen were just one percent. The farm manager was convicted of manslaughter.

**Please don't confuse nitrogen with nitrous oxide** - the two are entirely different gases!

# WHICH GAS MONITOR IS RIGHT FOR ME?

## The Ax60+ - our fully customisable solution


The **Ax60+** is a wall-mountable customisable product which comes with a central display unit, sensor units and alarm units. The sensor options we currently offer are $O_2$ for enrichment and also depletion from inert gases, and $CO_2$. There is scope for additional gases to be developed and added in the future. The $CO_2$ and $O_2$ sensors are interchangeable and can be fully integrated as part of a multi-point, multi-gas detection and alarm system.

The Ax60+ can be connected to a maximum of four sensors and eight alarms, making it fully customisable for both small and large businesses. Alarm set-points can be fully customised.

**The Ax60+'s predecessor, the Ax60, was approved by the McDonalds Corporation's 'Restaurant Solutions Group'.**

## The Ax60+K - the affordable solution for smaller businesses

The **Ax60+k** carbon dioxide detector is a smaller version of the popular Ax60+ carbon dioxide monitor.

It consists of a sensor unit and alarm unit, ideal for smaller restaurants, fast food kiosks and micro breweries.


01924 444 577 hello@gemscientific.co.uk gemscientific.co.uk

## The Aspida - portable and backup monitoring

The **Aspida** is our hand-held gas monitor which can be used to personally protect staff from the dangers of a leak of carbon dioxide, enriched oxygen or inert gas. It is easily clipped on the belt of the user. It is also useful as backup when a primary gas monitoring system fails.

The Aspida can be used to monitor carbon dioxide or oxygen or can also come as a dual monitor which can monitor both. If you use nitrogen in your brewery, the option to monitor oxygen could be ideal. It offers audio/visual alarms, data logging and a man down alarm.

## The O2NE+ - accurate oxygen depletion monitor


The **O2NE+** is an easy to use oxygen deficiency monitor which can be used to detect nitrogen leaks, as well as any other inert gases. It comprises of a wall mounted main sensor unit and a repeater to warn of danger outside of the room.

It is ranged from 0 to 25% and has two low audio/visual alarms. The sensor is long life and calibration is only required every 12 months which can be achieved using certified air.

**What is an oxygen depletion monitor?**

# IS IT THE LAW TO HAVE A GAS MONITOR?

It depends on which country you are in. Some countries have standards and recommendations when it comes to gases, and others don't.

Currently the US-based OSHA (Occupational Safety and Health Administration) and European EH40 standards have both set an exposure limit of 5,000ppm (0.5%) $CO_2$ over an eight-hour period.

For example, **there is a standard in Australia which highlights the compliance which needs to be adhered to if you use nitrogen or carbon dioxide to dispense beverages**.

Bear in mind that it is not a legal requirement to follow standards, but even if it is not a legal requirement to have a gas monitor; it is highly advisable to have one in order to ensure the safety of your staff and customers.

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**Tel:** 01924 444577
**Email:** hello@gemscientific.co.uk
**Web:** www.gemscientific.co.uk