The food and beverage industry poses very different challenges in terms of work safety. Not all gas detection devices, respiratory protection and chemical protection suits are suitable for all work processes. Analysing, identifying and selecting the appropriate safety products and solutions is a skilled job.
The challenge

Just as consumers desire healthy and safe food, as an employer in the food and beverage industry you want to protect your workers against harmful effects.

From harvesting, raw materials transport and storage to preparation and manufacturing processes and packaging: Each stage of value creation in the food and beverage industry has its own setting. Due to these wide number of very different processes like fumigation in the grain industry, ammonia-based cooling processes and cold storage, mixing beverages with carbonic acids as well as working in confined spaces (e.g. for tank service and cleaning) companies in the food and beverages industry face diverse risks.

If these risks are known, your safety officers can address them precisely and take precautions based on the risk assessment. Depending on the processing stage, these reach from gas range monitoring to gas detection devices as well as respiratory protection and physical protection against toxic disinfectants and cleaners.

Dust, toxic or explosive gases and vapours, and a lack of oxygen are just some of the many typical causes of accidents in the food and beverage industry.

The risks

It is important to recognise, name, evaluate, and minimise plant and process-specific risks. Every subsegment and every production stage has its own typical pitfalls for employee health and plant safety.

<10 pathogens

of the highly contagious bacterium Coxiella burnetii are enough to infect a person with a feverish pneumonia.

Workers in a meat processing plant must protect themselves from the dangerous pathogens, using harmful disinfectants to effectively eliminate the pathogens.

Every day, employees harvesting and processing grain are exposed to dust that could have a negative effect on their respiratory system. Unprotected inhalation over a long period of time can lead to chronic or fatal respiratory illnesses like asthma and silicosis. In meat production, there should be no contact with pathogenic germs. For this reason, extremely strong cleaning agents and disinfectants are used that represent a serious health risk if they are used incorrectly. Additional problematic materials include toxic coolants like ammonia. In addition, some work processes, such as work in confined spaces, can only be completed with special safety precautions.
The solution

The good news: It is possible to provide reliable protection against occupational accidents or incidents leading to an interruption of production, as well as partial and total losses of production units.

Beginning with a plant-specific risk assessment, you can define effective preventative protection concepts and procedures. This assessment forms the basis for selecting the appropriate gas warning systems, evaluation units, personal protective equipment, and escape and rescue equipment. The safe handling of toxic cleaners and disinfectants, skilled device maintenance, and intensive application training are important for the safe completion of your work processes.

If you are faced with the challenge of procuring the best material for you and your employees, you can trust Dräger. Our portfolio has an answer to the most diverse requirements of your working practice.
AMMONIA QUALIFIES AS A SAFE COOLANT. IN CASE OF AN INCIDENT, HOWEVER, THE SITUATION CAN ESCALATE QUICKLY.

Cold storage

Ammonia has been a classic coolant for use in industrial processes worldwide for over a century. It is efficient because even a small amount of ammonia is very effective in cooling processes. Under normal working conditions, it is considered relatively safe. Any unplanned release, however, runs the risk of poisoning and even fire and explosion.

Ammonia \((\text{NH}_3)\) is efficient in cooling raw materials and intermediate and final products in food and beverage production. As long as the process chain is not interrupted, there is no danger to people or the plant. However, if wear, corrosion, or human error results in leaks, the situation can quickly become a life-threatening danger for the employer and the public. Ammonia is toxic and reacts with oxygen to create an explosive mixture. A stationary gas detection system can immediately detect critical concentrations of ammonia in the production area and trigger an alarm. Counter and evacuation measures can then be introduced.
Stationary and mobile gas detection systems

Dräger Polytron® 7000
The Dräger Polytron 7000 is equipped with an exceptional precise NH₃ sensor that reliably measures the concentration of ammonia in the ambient air within a range of -40 to +150 °F. Even high temperature and humidity fluctuations do not influence the measurement results which are displayed right away.

Dräger Polytron® 3000
A standard variant is the Dräger Polytron 3000. Its electro-chemical NH₃ sensor detects ammonia in a concentration up to 300 ppm. The intrinsically safe measurement head is simple to install via the docking station and easy to use.

Dräger Pac® 7000
The mobile Dräger Pac 7000 single-gas measuring device is suitable for measuring personal work areas. It is lightweight, compact, and easy to fasten to work clothing. If other hazardous gases beside ammonia can occur, the Dräger X-am 5600 multi-gas detection device is more recommended.

Personal protection equipment and respiratory protection

Dräger CPS 6900
The Dräger CPS 6900 gas-proof chemical suit optimally protects employees against toxic contact with ammonia. The suit is made of Umex – a mechanically durable but especially light material that limits the mobility of the wearer as little as possible.

Dräger X-plore® 5500
With two filter attachments and a large visor, the Dräger X-plore 5500 full face mask provides comfortable and secure respiratory protection against hazardous substance concentrations. The bayonet filters are easy to mount. An intelligent ventilation system prevents the visor from fogging up.

Dräger PARAT® 4900
When environments turn toxic, a fast and safe escape is crucial. The Dräger PARAT Escape Hood is designed to be easily donned and protecting users from toxic ammonia gases during escape. It increases the time to escape to a maximum of 15 minutes.
FIZZY REFRESHMENTS ARE POPULAR. HOWEVER, THEIR PRODUCTION CAN INCLUDE CRITICAL SITUATIONS.

Carbonation

Carbonation of beverages is a proven method for extending the shelf life of drinks. The application of carbon dioxide (CO₂) under cooling and overpressure gives soft drinks their pleasant fizzing effect.

Employees who control and monitor the carbonation process can be exposed to a potentially increased CO₂ concentration in an accident. If the clear and odourless gas flows out of a leaking line unnoticed, this can lead to a loss of consciousness and even to death. Because the gas is heavier than air, it typically collects near the floor. Manufacturing processes using CO₂ must therefore be measured continuously with a stationary gas detection system.

Stationary and mobile gas detection systems

Dräger PIR 7200
The robust Dräger PIR 7200 infrared-optical transmitter is a specialist in the continuous monitoring of CO₂. It is SIL2-certified. Its activation can be configured individually. In fast mode, the PIR 7200 displays every measurable gas concentration in one second.

Dräger Pac® 7000
The compact Dräger Pac 7000 personal gas measuring device, equipped with a DrägerSensor® XXS, keeps employees aware of potential dangers. During the carbonation process, toxic CO₂ concentrations are notified in three ways: optically, acoustically, and with a vibration alarm.

Dräger X-am® 5600
The Dräger X-am 5600 is suitable for measuring up to six gases in the direct ambient air around the wearer. It reliably detects explosive, combustible, and toxic concentrations of CO₂, NH₃, and other gases and organic vapours. Another plus: poison-resistant IR sensors.
RAW MATERIALS ALSO REQUIRE MAXIMUM HYGIENE DURING STORAGE AND FURTHER PROCESSING.

Fumigation and grain processing

Today, grain is often harvested many kilometres away from the processing facility. Raw materials must be protected against insects, fungus, and spoiling, particularly during intercontinental transport.

The use of toxic chemicals and gases to combat pests poses a challenge to the personal health of employees. They should not have any direct contact with these substances and must avoid inhalation. A personal gas detection device can signal which hazardous substance is present in the air. The minimum safety factor that the self-contained breathing apparatus must feature depends on the type of substance used. Effective protection against dust particles is especially important when grain is involved. Both circulating air-dependent and independent devices are used.

Respiratory protection and mobile gas detection systems

Dräger X-plore® 6300
The Dräger X-plore 6300 single-filter full face mask is useful in areas with high hazardous substance concentrations, such as when combating pests with phosphine or methyl bromide. With a double-layer face seal and triple sealing edges, it provides a secure and comfortable seal for every type of face.

Dräger X-plore® 8000
The Dräger X-plore 8000 powered air purifying respirator and corresponding filter makes work in tough, hot environments much easier. The innovative temperature and pressure sensor technology enables continuous self-regulation of the system. The device is dust and splash-resistant.

Dräger Pac® 7000
The mobile Dräger Pac 7000 measuring device gives the wearer an overview of hazardous concentrations, e.g. phosphine. Upon reaching the set alarm level, a triple alarm is issued: optical, acoustic, and vibrating. The device is also lightweight and compact.
Working in confined spaces

Whether it is for batch changes, maintenance, or plant inspections, workers in the food and beverage industry regularly need to enter tanks and silos. Non-compliance with safety processes, carelessness, or incidents can lead to a multitude of dangers.

Confined spaces and containers are locations with increased accident potential. Among other things, they are characterised by limited and narrow access and escape options, closed or mainly closed walls, low standing height, and reduced air exchange. Risks here include a lack of oxygen due to chemical reactions or the inhalation of toxic substances and loss of consciousness and death. Working with equipment that is not ex-protected could cause explosions. A lack of protection against toxic substances holds potential later risks like cancer and respiratory illnesses. In many cases, these are unfortunately a reality for tank cleaners.

Clearance measurement of the atmosphere inside the tank or space offers important protection against personal and plant damage. Wearing personal protective equipment also increases both the safety and the employees’ feeling of safety.

Before employees enter confined spaces, the safety officer must determine and evaluate acute dangers; if they conclude that no danger is present, then a permission certificate for entry is issued.
Gas area monitoring and mobile gas detection devices

Dräger X-zone® 5500
Combined with the mobile Dräger X-am® 5000/5600 gas detection devices, the Dräger X-zone 5500 is a mobile area monitoring. Best of all: Up to 25 Dräger X-zones may be connected in wireless fenceline. This enables the simultaneous control of diverse work areas.

Dräger X-am® 7000
The Dräger X-am® 7000 multi-gas measuring device can be combined with a matching pump to take samples in various depths and tank areas. The pump hose has a length of 150 ft. A concentration analysis of up to five different gases is possible.

Dräger X-am® 2500
The Dräger X-am 2500 four-gas measuring device specialises in monitoring the ambient air. It measures combustible gases and vapours like oxygen (O₂), carbon dioxide (CO), nitrous dioxide (NO₂), sulphur dioxide (SO₂), and hydrogen sulphide (H₂S).

Respiratory protection and escape equipment

Dräger AirPack 1
A circulating self-contained compressed air hose system like the Dräger AirPack 1 makes time-consuming jobs easier. It improves mobility and is less of a burden for the wearer than compressed air bottles. This is important for working in confined spaces with optimal mobility.

Dräger PAS® Colt
In an emergency, employees with the Dräger PAS Colt are ideally prepared for speedy escape. The combination of mask and breathing apparatus is easy to use. The cylinder can be detached and re-attached quickly prior to entry or exit out of a confined opening.

Dräger Saver CF
The Dräger Saver CF hood escape device provides the wearer with a constant air supply via overpressure. It prevents any penetration of hazardous substances. The breathing air supply activates automatically if the device bag is opened. The hood is also ideal for workers with beards or glasses.
Cleaning and disinfection

The food-safe production of foods and beverages is subject to legal regulations. The thorough cleaning and disinfection of production areas and machines is therefore a hot topic in the industry.

There is a particular focus on eliminating pathogenic germs using chemicals like alcohol, aldehyde, or sodium hypochlorite. Classical substances in the disinfection process include toxic gases like hydrogen peroxide ($\text{H}_2\text{O}_2$), ozone ($\text{O}_3$), chlorine ($\text{Cl}_2$), and chlorine dioxide ($\text{ClO}_2$). Reliable personal protective equipment helps to avoid all contact between employees and these hazardous substances or at least to maintain workplace threshold values.

Respiratory protection and personal protective equipment

**Dräger X-plore® V 1720+**

Hardly noticeable breathing resistance thanks to the specially developed CoolSAFE+ filter material: The Dräger X-plore® V 1720+ particle filtering face piece provides optimum breathing comfort through minimum breathing resistance during dusty cleaning work.

**Dräger X-plore® 6300**

The Dräger X-plore® 6300 meets stringent requirements with regard to reliability, secure fit and comfort. It ensures during disinfection and sterilization with gases such as hydrogen peroxide, chlorine and ozone full breathing protecting.

**Dräger CPS 7800**

The Dräger CPS 7800 chemical protection suit protects against gaseous, fluid, aerosol, and solid hazardous substances. The suit material is simultaneously flexible, comfortable, and resistant. The suit has a life span of up to 15 years and can be cleaned and disinfected fully automatically.
A TIP: REGULAR MAINTENANCE AND EFFICIENT SERVICING
WILL KEEP YOUR EQUIPMENT IN TOP CONDITION.

Maintenance and service

The regular maintenance of technical safety products increases their durability and ensures that they function. If a task cannot be corrected in-house, then the Dräger service technicians offer advice and practical solutions.

Precise measuring results depend on the careful calibration of mobile gas detection devices with a suitable test gas. Self-contained breathing apparatus must be cleaned, disinfected, and serviced after each use. Reusable chemical protection suits may only be reused if they have been subjected to proper cleaning, disinfection, and testing processes. For all of these processes, Dräger provides the necessary accessories, training, and supporting know-how.

Dräger Services – more than you expect

Product Service

Our product service department supports you with a range of service packages— in our shops or on site in your plant. Care, servicing and maintenance are key factors when it comes to safety. Preventive checks, service procedures and original replacement parts make your investment last longer.

Rental Service

From bridging a temporary shortage of equipment to procuring special equipment for applications involving specific requirements: Dräger Rental Service with a broad range of rental equipment is an economical alternative to purchasing. Fast, straightforward and with a wide range of additional services available on request.

Training

The Dräger Academy has imparted well-founded and practical knowledge for over 40 years. With over 110 authorized trainers and more than 600 available topics, we conduct more than 2,400 training sessions per year. We equip your employees with the knowledge required for real-life situations.