

# GAS DETECTION SOLUTIONS FOR CO<sub>2</sub> HAZARDS IN VACCINE SHIPPING & STORAGE

Application Brief

While dry ice is critical in preserving temperature-sensitive products, it poses a risk to workers. As frozen CO<sub>2</sub> warms and sublimates into gas it can create hazardous environments. Large-scale vaccine distribution with dry ice requires handling unprecedented volumes of this hazardous material. CO<sub>2</sub> levels should be monitored throughout the vaccine supply chain to alert workers to unsafe conditions and minimize disruptions.

**THOSE SHIPPING AND HANDLING MATERIALS PRESERVED WITH DRY ICE SHOULD FOLLOW GOVERNMENT GUIDANCE, ESTABLISH PROCESSES AND TRAINING FOR MITIGATING HEALTH RISKS AND ENSURE SAFETY MEASURES ARE RIGOROUSLY FOLLOWED.**

## About Carbon Dioxide (CO<sub>2</sub>)

A colorless and odorless gas, CO<sub>2</sub> is widely used in the food industry in the carbonation of beverages, in fire extinguishers as an inerting agent and in the chemical industry. Dry ice is the solid form of CO<sub>2</sub> commonly used in the shipment and storage of temperature sensitive products, such as vaccines. As dry ice warms it sublimates (moves directly from a frozen state to a gas), which can create toxic levels of CO<sub>2</sub> in the local atmosphere. The outgassing from dry ice can cause hypercapnia

(abnormally elevated CO<sub>2</sub> levels in the blood) due to buildup in confined locations.

## The Health Risks

The primary mode of action of CO<sub>2</sub> is as an asphyxiant, although it also exerts toxic effects at the cellular level. A high concentration can displace oxygen in the air. If less oxygen is available to breathe, symptoms such as rapid breathing, rapid heart rate, dizziness, disorientation, headaches and fatigue can result.

CO<sub>2</sub> concentrations greater than 10% in breathable air may cause convulsions, vomiting, coma and even death, and the lack of oxygen can cause permanent damage to organs, including the brain and heart.

When dry ice warms rapidly, large amounts of CO<sub>2</sub> are generated and can accumulate in hazardous amounts in low-lying areas, especially in confined spaces.



## PROTECTION SOLUTIONS

Honeywell offers the broadest range of portable and fixed gas detection solutions to meet all your safety and budget needs. CO<sub>2</sub> detectors can be used to accurately detect for leaks or background toxic levels so that workers and facilities are aware of hazardous gas levels and can respond quickly.

- Portable gas detectors are ideal for workers handling and transporting dry ice, particularly in confined spaces such as truck cabs and shipping containers
- Fixed gas detectors are recommended for sites shipping, receiving and storing dry ice

**Honeywell**



## INDUSTRIES

- Research Laboratories
- Medical Testing
- Vaccine Manufacturing
- Distribution Centers
- Logistics
- Parcel Delivery
- Hospitals
- Health Care Facilities
- Pharmacies
- Government
- University Campuses
- Nursing Homes

## SOLUTIONS



### HONEYWELL BW™ SOLO CO<sub>2</sub>

A serviceable, portable single-gas detector for CO<sub>2</sub>

- Simple, one-button operation
- Compact, lightweight design
- Large display can be easily seen through PPE
- Ease of maintenance
- Connected Bluetooth capabilities
- Gases detected: CO<sub>2</sub>



### HONEYWELL SAFE AREA XCD

A fixed flammable, toxic and oxygen gas detector for safe area applications

- Plug-and-play functionality
- Integrated power supply
- Backlit tricolor LCD
- Alarm horn and strobe included
- Aluminum enclosure
- Gases detected: CO<sub>2</sub>

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