December 2020

BWC SAFETY BULLETIN

Below are tips and resources to help workers safely handle dry ice used for occupational purposes.

Dry Ice

Background

The first shipments of COVID-19 vaccines are arriving at Ohio hospitals and pharmacies and will continue to be distributed into 2021 and beyond. Several of the vaccines are transported and stored at ultra-cold temperatures. Dry ice (solid carbon dioxide) keeps the vaccines cold. Handling dry ice can be hazardous and requires special precautions by hospitals, pharmacies, and others that may handle the vaccines. Other industries, including industrial cleaning and artificial fog production, also use dry ice, so its hazards are not just limited to the medical sector.

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Hazards

- Dry ice is extremely cold, with a temperature of approximately -109°F (-78°C), which can cause frostbite, lesions, or thermal burns if it touches skin.
- Surfaces touching dry ice may become damaged due to the cold; adhesives may become brittle and break.
- Dry ice converts directly to a gaseous state (sublimates) at room temperature. Sublimation can occur rapidly, resulting in pressure buildup and potential container bursting. For this reason, never store dry ice in air-tight or glass containers.
- The carbon dioxide (CO_2) gas resulting from sublimation is colorless, odorless and, since it is heavier than air, may rapidly accumulate in low-lying spaces. This can lead to asphyxiation, unconsciousness, or death. This presents a particular hazard for dry ice storage and transport, as storing dry ice in poorly ventilated rooms and transporting it in closed vehicles increases the asphyxiation risk.
- Improper disposal of dry ice can create a hazardous atmosphere for both humans and animals.

Precautions

- Wear a face shield, long sleeves and pants, closed-toed shoes, and use protective thermal gloves and/or tongs to eliminate skin contact with dry ice.
- Use and store dry ice in a cold, well-ventilated area to minimize sublimation and CO_2 accumulation. Use ventilation and CO_2 monitoring in areas where buildup is most likely to occur, such as low-lying and enclosed spaces, to ensure CO_2 levels remain under 5,000 parts per million (ppm). Never store dry ice in freezers, refrigerators, walk-in coolers, closets, and other closed unventilated spaces.
- **Do not store dry ice in a vehicle.** Place dry ice in the vehicle immediately before transporting to mitigate CO2 buildup. If possible, open all windows to ensure a continuous fresh air supply and transport the dry ice outside the vehicle's main cab.
- To properly dispose of dry ice, allow it to sublimate in a well-ventilated area; do not dispose of it in a sink or drain as this can cause structural damage.

For more information on how to handle ultra-cold vaccines, please refer to the **Ohio Department of Health COVID-19 Ultra-Cold Vaccine Planning Considerations**.

Have questions about safety? BWC can help. We provide consultation services to private and public employers at no additional cost. You can request our services at **www.bwc.ohio.gov** or by phone at **1-800-644-6292**.

We also offer the Public Employment Risk Reduction Program, which focuses on the unique safety needs of Ohio public employers (**1-800-671-6858**) and the OSHA On-Site Consultation Program, which focuses on safety and health assistance for small- to medium-sized, high-hazard private employers (**1-800-282-1425**).

Other resources

- Dry Ice Safety for Healthcare Professionals by the Centers for Disease Control and Prevention
- Compressed Gas Association's Dry Ice Safety Resource Center
- Compressed Gas Association's Industry Tool Kit
- Getting ready for COVID-19 vaccine distribution by the U.S. Fire Administration

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