SAFETY ALERT

WHS-ALERT-014 - 2024

Date: 25/06/2024

Area of Concern: all JCU staff and students

Dry Ice Safety

An incident occurred in May 2024. Dry ice was placed within a walk-in cold room. A researcher entered the space and felt lightheaded. A box with dry ice was found in the cold room. The cold room is a sealed space, which allowed CO_2 to build up as the dry ice (solid CO_2) evaporated into CO_2 gas.

Dry Ice

Dry ice, solid carbon dioxide (CO_2) at a temperature of -78.5°C (-109.3°F), is commonly used for a variety of purposes, including as a cooling agent for biological samples in transit and preservation of field samples.

At room temperature it will transfer directly into gaseous form without residues. This procedure is known as sublimation. It is connected to an important increase in volume: 1 kg of dry ice will convert to approximately 541 L of CO_2 gas.

CO2 in gas state non-flammable, odourless and tasteless. Since CO2 is 1,5 times heavier than air, it usually sinks down to the floor level of any room. This property leads to some important rules that consequently needs to be taken into consideration when using dry ice.

Safety Guidelines

This safety alert aims to highlight the potential risks associated with dry ice and provide guidelines for safe usage.

Make dry ice users aware of the following.

Ventilation: Always use dry ice in well-ventilated areas to prevent the buildup of CO_2 gas. Never store dry ice in a walk-in cold room or freezer.

Personal Protective Equipment (PPE): Wear insulated gloves when handling dry ice to protect against frostbite and cold burns. Avoid direct skin contact with dry ice.

Storage: Store dry ice in well-ventilated containers specifically designed for dry ice storage. Never store dry ice in airtight or sealed containers to prevent pressure buildup and explosion risk.

Handling: Use insulated tongs or gloves when handling dry ice to avoid direct contact. Do not place dry ice in glassware or bottles that may shatter due to temperature changes.

Disposal: Dispose of dry ice safely by allowing it to sublimate in a well-ventilated area. Do not dispose of dry ice in sinks, drains, or enclosed spaces where CO_2 build up can occur.

Training: Ensure that personnel handling dry ice are properly trained in its safe usage, storage, and disposal. Provide adequate education on the potential hazards and safety protocols.

Transport: Only use the recommended amount of dry ice for shipping biologicals as indicated on the shipper.

Do not have dry ice in a vehicle cabin with the occupant, transport in a separate part of the vehicle.

Need more information.
The Work Health and Safety Unit acknowledges that the University carries out a broad range of activities and supports the application of a practical and risk-based approach to safety. If you are unsure of how to comply with dry ice safety standards, please contact the WHS Unit at safety@jcu.edu.au.