

## Guidance on Safety with Dry Ice

When the Pfizer vaccine is shipped we know that it will come in special containers packed with dry ice. While it can keep the vaccines ultra-cold, dry ice comes with its own hazards and risks. Many have never dealt with dry ice, so we would like to offer some guidance and references to consider.

- Dry ice is the solid form of carbon dioxide (CO<sub>2</sub>). It is non-combustible (won't burst into flames), and is available in flakes, pellets or block form. Dry ice will sublime (vaporizes directly to the gas state) at a temperature of -78.5C (-109.3 F) or higher. In this case, vaporizing means that it is becoming CO<sub>2</sub> that will mix with the room's air (normal air is about 78% nitrogen, 21% oxygen, and only 0.035% CO<sub>2</sub>).
  - The sublimated carbon dioxide gas will sink to low areas and replace oxygenated air (meaning that if it is off-gassing in a closed room, the CO<sub>2</sub> levels will be higher along the floor. If the concentration of carbon dioxide rises above 0.5% it can become a health problem.
  - So it is important to note that the storage or use of dry ice in poorly ventilated areas can result in depletion of the oxygen levels resulting in potential asphyxiation. Therefore, the room that these vaccine coolers are stored in should have good ventilation, with a regular exchange of fresh air.
- Dry ice should never be stored in any air tight container. The sublimation of dry ice to carbon dioxide gas will cause any airtight container to expand, and it could possibly explode.
- Burns. Another significant hazard of dry ice includes "frost bite"-like injuries.
  - Contact with the skin will freeze cells and cause damage like that of a burn. Never use your bare hands to handle dry ice!
  - Insulated gloves must be worn when handling dry ice.
  - Use tongs if available, especially if they have serrated edges. Consider using the pointed edge of a chisel and tapping lightly if large pieces need to be broken up.
  - Treat dry ice burns the same as a regular heat burns. See a doctor if the skin blisters or comes off. Otherwise if only red it will heal in time as any other burn. Apply antibiotic ointment to prevent infection and bandage only if the burned skin area needs to be protected.
- **Do not** leave dry ice unattended around children.
- Countertops: Do not leave dry ice on a tiled or solid surface countertop as the extreme cold could crack it.
- Disposal: Unwrap and leave remaining dry ice at room temperature in a well-ventilated area. It will sublime from a solid to a gas.
- MSDS: Here is a Material Safety Data Sheet available on line for your records: <https://www.airgas.com/msds/001091.pdf>

### Reference sources used for this guidance:

- Dry Ice Info: <https://dryiceinfo.com/safe.htm>
- Safe Handling and Storage of Dry Ice: <https://www.safetymanualosha.com/safe-handling-and-storage-of-dry-ice/>
- Here is a link to a TEMPLATE for an organizational Safety Program Policy: <https://www.safetyinfo.com/written-safety-programs-dry-ice-solid-carbon-dioxide-safety-program-free-index/>