



Dry Ice Policy

This policy covers all teaching and research use of solid carbon dioxide, also known as 'dry ice'. The training and general precautions sections also apply to the use of other cryogenics, such as liquid nitrogen.

Dry ice is the solid form of carbon dioxide, which is available in the form of flakes, pellets, and blocks from commercial vendors. It can also be made in-house using cylinders of liquid carbon dioxide with a siphon tube and a 'dry ice maker'. Dry ice sublimates at temperatures of -78.5°C or higher, at a rate of 5-10 pounds in a 24 hour period. A one pound block of dry ice produces approximately 250 L of carbon dioxide gas upon sublimation. Concentrations greater than 5000 ppm (0.5%) can cause asphyxiation. For comparison, normal air contains 400 ppm (0.04%) carbon dioxide.

The two greatest hazards associated with the use of dry ice are frostbite and possible asphyxiation when used in confined spaces or in areas with inadequate air exchanges, i.e. passenger compartments of vehicles. All individuals using dry ice must be trained regarding frostbite concerns as outlined in AKOSH's Physical Agent Data Sheet (PAD) for Cold Stress. Additionally, users must be made aware of the asphyxiation hazards of using dry ice. Dry ice should only be used in well ventilated areas.

Training

- Training is the responsibility of the PI or their designated lab representative.
- Training shall be based on a lab specific SOP and expected handling and use.
- Training shall include reading the AKOSH PAD for Cold Stress and the General Precautions listed below.
- Training shall be documented.

General Precautions

- Avoid eye or skin contact with dry ice.
- Protect your skin by wearing appropriate clothing, i.e. ankle length pants, long-sleeved shirt, socks, and footwear that completely covers the feet – no open toes, heels, tops, or cut-outs of the footwear material.
- Never handle dry ice with bare hands.
- Use cryogenic gloves to handle dry ice. These should fit loosely so they can be readily removed should a piece of dry ice fall into them.
- Always use appropriate eye protection.

Purchasing

- Procurement should be in quantities that can be expected to be used up immediately.
- Dry ice up to 5 lbs. can be purchased using a university ProCard, account code 4455. No additional authorizations are required for these transactions.
- EHS authorization by email is needed for all dry ice purchases greater than 5 lbs. The email should include the name of the responsible person, proposed use and quantity of dry ice needed. Consult the CHO if you need to make repeated and/ or frequent purchases of more than 5 lbs.

Shipping

- All packages containing dry ice for sample shipping must be shipped using FedEx and comply with 49 CFR 173.217 (a) and (c).
- The quantity of dry ice per package must not exceed 5.5 lbs. The package must be marked "Carbon Dioxide Solid" or "Dry Ice" and be labeled with the name of the contents, i.e. "Fish Tissue"
- The package must be designed and constructed to permit the release of carbon dioxide gas to prevent any buildup of pressure that could rupture the packaging.

Storage

- Dry ice is to be stored in a well-ventilated location and placed in a Styrofoam chest, insulated cooler, or a cooler designed for the storage of dry ice.
- Dry ice must not be stored in any tightly sealed device, such as ultra-low freezers, cold rooms, or any glass or plastic containers.

Transportation

- Any individual using their personal vehicle for the transportation of dry ice accepts and all liabilities associated with the transport of dry ice including unforeseen events.
- Dry ice must not be transported inside the passenger compartment of any vehicle UNLESS all windows are open to permit sufficient air exchange.

Disposal

- NEVER dispose of dry ice in a sink, floor drain, toilet, or in ordinary trash receptacles.
- Dispose of all unused dry ice in a shallow plastic container that has 1" (inch) of insulating material, such as Styrofoam, between the bottom of the container and the working surface inside an operating fume hood.
- DO NOT permit dry ice to sublime on an open bench top outside of an operating fume hood.
- In winter, dry ice can be dropped onto a snow bank away from people and animals.