Standard Operating Procedure: Cryogen Dispensing (Liquid Nitrogen)

**Hazards:**
- Cryogenic burns, frostbite and tissue damage
- Asphyxiation hazard
- High pressure hazard

1. **Purpose:** to provide step by step guidance on how to dispense liquid N2 (LN2)

2. **Scope:** applies to all students, staff and faculty needing to dispense LN2

3. **Prerequisites:** You must be trained by an experienced person in your lab or by Stores personnel

4. **Responsibilities:** it is everybody responsibility to follow SOP and read the cryogens section of the Online Departmental Health and Safety Guide as well as the SDS for LN2

5. **Personal Protective Equipment (PPE)**
5. **Procedure: Dispensing LN2**

<table>
<thead>
<tr>
<th>Liquid N2 dewers and dispensing unit</th>
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| ![Images of liquid nitrogen dewers and dispensing unit](image1)
| ![Images of liquid nitrogen dewers and dispensing unit](image2)
| ![Images of liquid nitrogen dewers and dispensing unit](image3) |

- Ensure all proper PPE is worn correctly; long pants, closed toed shoes, safety goggles, a face shield and cryogens gloves. The face shield and cryogen gloves are located in the cryogenic facility or can be attained from Stores.

- The loading dock roller door must be kept open. If working after hours, close roller door when dispensing is completed.

- Ensure you are using only specially designed containers when transporting and handling LN2, examples shown below.

- Prior to dispensing LN2, check that the tanks pressure is lower than 20 psi. If pressure exceeds 20 psi vent the tank with the rear valve (A - in picture below).
• Place dispensing tube (B - in picture above) a couple inches into receiving vessel and open the yellow output valve slightly.

• Once receiving vessel has cooled and dispensing tube has begun to freeze open the yellow output valve further.

• Monitor your receiving vessel, when full, close yellow output valve completely

• Those that leave vessel unattended when filling (overflow occurs) will be charged an extra fee of 50 liters.

• Do not attempt to decant LN2 from a larger container into a smaller container. This will significantly increase chance of exposure or incident

6. **Oxygen Deficiency Alarm**

• O2 alarm will sound if oxygen levels drop below 19.5%.
• If alarm sounds stop dispensing immediately and exit the cryogens facility.

• Report situation to Raymond Akbar (Manager, Chem-Labs Technical Support and Services) and do not return to facility until the situation is resolved.

Reviewed by Grace Flock; Director Operations and Technical Services (DOTS)