 Chemistry UNIVERSITY OF TORONTO	The Department of Chemistry Lash Miller	SOP #	LM-SOP-007
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SOP Owner	Alexandra Morrissey	Approval	Grace Flock

Standard Operating Procedure: Dispensing Cryogen (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 cryogenics 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

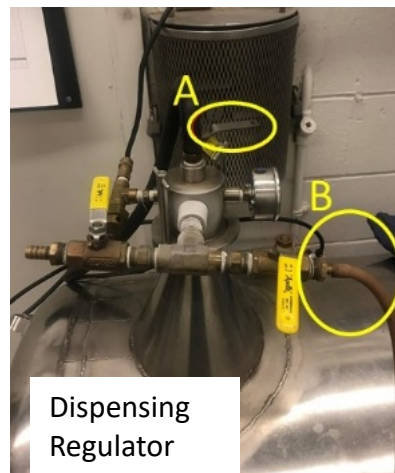
Liquid N2 dewers and dispensing unit



- Ensure all proper PPE is worn correctly; long pants, closed toed shoes, safety goggles, a face shield and cryogenics gloves. The face shield and cryogenics 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 cryogenics facility.
- Report situation to Alex Morrissey in Stores and do not return to facility until the situation is resolved.



Prepared by Alexandra Morrissey; Stores Supervisor.

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