Chemistry UNIVERSITY OF TORONTO	**The Department of Chemistry Lash Miller**	**SOP #**	LM-SOP-008
		Revision #	01
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Page #	1 of 4	**Last Reviewed / Update Date**	2019-04-16
SOP Owner	Alexandra Morrissey	**Approval**	Grace Flock

Standard Operating Procedure: Cryogen Dewar Change

Hazards:

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

1. Purpose: to provide step by step guidance on how to change the liquid nitrogen dewar attached to the dispensing unit

2. Scope: applies to all students, staff and faculty needing to change the dewar attached to the dispensing unit

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 the SOP and read the cryogens section of the Online Departmental Health and Safety Guide as well as the SDS for LN2

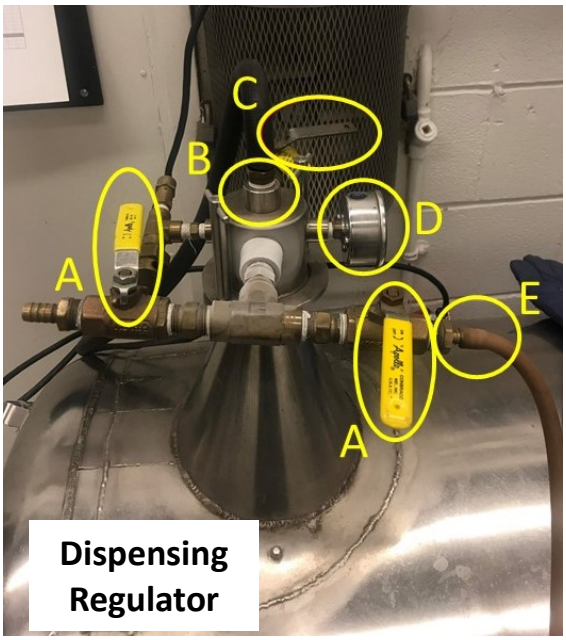
5.

Personal Protective Equipment (PPE)



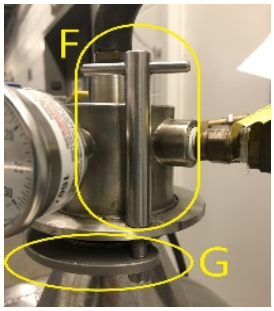


Liquid N2 dewers and dispensing unit



5. ***Procedure:*** LN2 tank change over

- When a LN2 tank has been depleted the dispensing regulator (pictured above) must be transferred to a full tank.
- Turn off tank pressurizing line (see red arrow in picture on right).
- Release pressure from empty tank by opening the rear valve (above pic- C) and remove airline tubing from dispensing unit (above pic - B).



- Unscrew long bolts (right pic - F) from the top of the dispensing unit clamp and remove the bottom fastening ring (right pic - G) and bolts, set aside.
- Exchange empty tank for a full N2 tank.
- Check to make sure no ice is present on the o-ring on the bottom of the dispensing unit or on the opening of the N2 tank, ice will prevent a proper seal.
- Place dispensing unit into full tank of N2 and screw fastening clamp back onto the dispensing unit loosely.
- Ensure dispensing unit o-ring is centered on tank opening, while tightening the fastening clamp. It is imperative to make sure the o-ring stays centered (perfect seal is required for pressurization of tank).
- Replace airline on tank (above pic – B) and turn on tank pressurizing line.
- Once tank reaches 5 psi dispensing can commence.
- If tank doesn't reach 5 psi there is an air leak. Most likely issue is due to either improper o-ring placement or ice buildup preventing air tight seal.
- Turn off air-line and depressurize the tank. Loosen and reposition dispensing unit. Retighten, turn on air to pressurize tank and check pressure.

- If pressurization issues persist see Alex Morrissey in Stores.

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 Alex Morrissey in Stores and do not return to facility until the situation is resolved.

Prepared by Alexandra Morrissey; Supervisor, Chemical Stores.

Reviewed by Grace Flock, Director of Operations and Technical Services (DOTS).