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, notify the Manager of Chem-Labs Technical Support and Supplies.

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 the Manager of Chem-Labs Technical Support and Supplies @ 416-706-1856, and do not return to facility until the situation is resolved.

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