

Standard Operating Procedure (SOP):

Transfer of Liquid Nitrogen from a Storage Tank to a Thermos

Effective Date: 8/7/2025 (revised as needed)

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Approved By: Carl Taz Wininger, EHS Director

1. Purpose

To describe the safe procedure for transferring liquid nitrogen (LN₂) from a dewar or storage tank into a thermos or transferring container for laboratory or field use.

2. Scope

This SOP applies to all personnel handling liquid nitrogen in laboratory or industrial settings.

3. Responsibilities

Authorized personnel only may perform this transfer. All users must wear appropriate PPE and be trained in cryogenic safety. Supervisors are responsible for ensuring compliance with safety protocols.

4. Materials and Equipment

- Liquid nitrogen storage tank (Dewar or pressurized tank)
- Approved thermos for LN₂ (vacuum-insulated container rated for cryogenic use)
- Cryogenic gloves (loose-fitting, insulated)
- Face shield or safety goggles
- Lab coat or cryo-apron (if working in the lab setting)
- Closed-toe, non-absorbent footwear
- Tongs (if inserting objects into LN₂ after transfer)
- Ventilated and open work area (preferably fume hood or well-ventilated room)

5. Safety Precautions

Always wear PPE. Contact with LN₂ can cause severe frostbite. Ensure adequate ventilation. LN₂ displaces oxygen and may cause asphyxiation. Never fully seal liquid nitrogen in a closed container. Pressure buildup can cause an explosion. Check for damage. Ensure the thermos and tank are free of cracks or damage before use. Handle slowly. Rapid pouring causes splashing and excessive vapor. Use tongs to place or retrieve items in LN₂.

6. Procedure

6.1 Preparation

Inspect the work area for obstructions and tripping hazards. Put on all required PPE (gloves, goggles/face shield, lab coat). Place the thermos on a stable, non-metallic surface away from edges, if applicable. Ensure the LN₂ tank is secure and the transfer valve/nozzle is clean and dry.

6.2 Transfer

Slowly open the tank valve or start the LN₂ flow gently. If using a phase separator or flexible transfer hose, aim it toward the inside wall of the thermos to minimize splashing. Begin slowly filling the thermos with LN₂. Allow vapors to settle; they may obscure your view initially. You may hear bubbling or see fog — this is normal. Once the desired level is reached (maximum is typically about $\frac{3}{4}$ full), stop the flow. Let the thermos sit briefly for excess vapor to dissipate.

6.3 After Transfer

Close the tank valve securely. Do not seal the thermos completely — always leave a vented lid. Clean up any LN₂ spillage by allowing it to evaporate naturally. Store LN₂ containers in approved locations only. Record the transfer in the LN₂ usage log (if applicable).

7. Emergency Procedures

- Frostbite: Rinse the area with cool (not warm) water and seek medical help.
- Spill in confined area: Evacuate and ventilate. Do not re-enter until safe.
- Container rupture or explosion risk: Evacuate and contact emergency services.

8. Waste Disposal

Liquid nitrogen evaporates harmlessly in open air. Do not pour into sink or drain.

9. Training

[Liquid Nitrogen Training Video](#)

10. CONTACT INFORMATION

- **Environmental Health & Safety Office:**
 - o Carl Taz Wininger 337-482-1840 | safety@louisiana.edu
- **University Police/Emergency Services:**
 - o 911 or 337-482-6447 | police@louisiana.edu