Liquid Nitrogen (LN2, N2), is commonly used in UCSC research. Its properties allow for rapid cooling of materials, but also pose unique worker safety hazards. Below are guidelines for how to work with LN2 safely.

HAZARDS OF LN2

- **Contact Hazard:** At -321 °F (-196 °C), skin contact with LN2 can lead to severe frostbite; skin cells freeze and become damaged very quickly.

- **Asphyxiation Hazard:** LN2 will evaporate (change from liquid to gas) at any temperature above -320 °F. This may release substantial volumes of N2 (1 Liter = 704 liters gas @ room temp), which can displace oxygen quickly in the air around the LN2, causing difficulty breathing, loss of consciousness and death. This is especially of concern in non-ventilated or confined spaces.

- **Explosion Hazard:**
  - Due to the rapid emission of large volumes of N2 gas, any LN2 that is stored in a closed container can pressurize the container. Given enough time at normal room temperature, such a container may explode if the gas is not able to escape.
  - LN2 can condense oxygen, which can cause explosions. Liquid oxygen is a pale blue. Do not leave LN2 traps open to the atmosphere.

HANDLING LN2

Use the following precautions when handling LN2:

- Wear appropriate eye protection, including safety glasses and/or a face shield, as well as a laboratory coat.
- Use loose-fitting, thermally insulated “Cryo” gloves to manually transfer LN2 between containers. Nitrile exam gloves will not provide enough protection. **Never handle LN2 with bare hands.** Contact ppe@ucsc.edu for assistance in obtaining Cyro gloves.

STORAGE AND DISPOSAL

- Always store LN2 containers (Dewars) in a well-ventilated location.
- Do not store LN2 in confined areas with limited ventilation. This includes cold rooms, walk-in refrigerators and environmental chambers.
- Never store LN2 in a tightly sealed container, such as a plastic or glass bottle, or any container with a screw-top lid that will not vent.
- To dispose of LN2, place it in a well-ventilated area at room temperature; the remainder will evaporate away.
- Never dispose of LN2 in a trash can, chemical waste container or other garbage/waste can.
- Never dispose of LN2 in a sink, toilet or other fixture; the temperature difference can crack the plumbing.
- Do not leave LN2 unattended in open areas.

TRANSPORTING LN2

- Only place LN2 in containers that are appropriate Dewars, with a loose fitting lid to allow gas to escape.
- Use Dewars that have handles. For Dewars which are >500 mL, place the Dewar on a wheeled cart.

For questions about working with LN2, contact EH&S at ehs@ucsc.edu or 831-459-5114.