Liquid Nitrogen – Best Practices Stats and Facts



FACTS

1. **Improper Transfer Methods:** Using funnels, unapproved containers, or pouring without control leads to splashes and cryogenic burns.
2. **Inadequate Ventilation:** Performing tasks in enclosed or poorly ventilated spaces allows nitrogen gas to displace oxygen, risking worker asphyxiation.
3. **Incorrect PPE Usage:** Workers not wearing insulated gloves, face shields, or aprons are highly susceptible to frostbite and eye injuries.
4. **Container Overfill:** Overfilling storage dewars can lead to overflow during pressure buildup, increasing risk of spills or equipment rupture.
5. **Unlabeled or Misused Containers:** Using unmarked or improper vessels leads to pressure hazards, spills, or confusion during emergency handling.
6. **Lack of Training:** Workers unfamiliar with cryogenic properties may mishandle materials, ignore warning signs, or skip essential safety checks.
7. **Neglected Equipment Maintenance:** Damaged vent valves, worn seals, or compromised pressure relief systems can cause uncontrolled nitrogen release.

STATS

- 2024, OSHA recorded 5,190 workplace fatalities, with LN2-related fatalities rare (<0.5%), typically tied to asphyxiation in confined spaces. Proper ventilation and PPE could prevent most incidents, per NIOSH.
- In 2024, PPE violations (29 CFR 1910.132) ranked 6th (1,876 citations), including inadequate cryogenic gloves or face shields. Hazard Communication violations (29 CFR 1910.1200) ranked 2nd (3,200 citations), often due to missing SDS or training.
- A 2022 NIOSH study found that 15% of cryogenic workers faced oxygen depletion risks due to poor ventilation, with 8% reporting symptoms like dizziness.
- WorkSafeBC reported 25–30 annual fatalities in British Columbia (2020–2023), with LN2-related incidents rare (<1%) but tied to confined spaces. Ventilation and PPE are critical.
- CCOHS 2023 data showed that cryogenic PPE and ventilation reduced LN2 injuries by 20%, especially in food service and construction.
- In 2024, Ontario introduced fines up to $500,000 for repeat OHS violations, including PPE non-compliance for LN2 handling.