NO TAKE 2
Safety Alert

FROSTBITE INJURIES DURING CRYOGENIC WORK



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The Chinese University of Hong Kong

Basic Information

Incident: Improper practices during cryogenic work

Injury: Frostbite to hands

Potential: Severe frostbite/ permanent tissue damage

Events Description

Case 1:
Poor cryogenic glove grip and the slippery surface of a frozen liquid nitrogen (LN_2) container made it difficult to open. The user removed the cryogenic gloves and handled the container directly with only disposable inner gloves, resulting in frostbite.

Case 2:
A rod fell into an LN_2 tank. The user immersed cryogenic-gloved hands into LN_2 to retrieve it and sustained frostbite.

Contributory Factors / Root Causes

- **Underestimated** the severity and rapid onset of frostbite.
- **Misunderstood** the limitations of cryogenic gloves.
- **Time pressure** and **task difficulty** contributed to unsafe decisions.
- **Failed to use** appropriate tools to avoid direct contact with LN_2
- **Failed to stop and seek assistance** when the task could not be performed safely.

STOP when the task cannot be completed safely

Corrective / Preventive Actions

- **SELECT** cryogenic gloves suitable for the task and exposure.
- **USE WATERPROOF** cryogenic gloves where LN_2 spills or splashes may occur.
- **CHOOSE** cryogenic gloves with a grip palm to improve grip and dexterity.
- **NEVER** immerse hands in LN_2, even with waterproof cryogenic gloves.
- **STOP** if grip is inadequate, gloves become wet, or difficulty is encountered.
- **USE** suitable tools to retrieve any items in LN2 tank and seek assistance if necessary.

RIGHT GLOVE • GOOD GRIP • NO IMMERSION