

## Newcastle University - Risk Assessment

<b>Project title</b>	Handling of liquid nitrogen		
<b>Description of work activity</b>	The following risk assessment and guidance has been developed to assess the hazards, risks related to the handling of liquid nitrogen. It identifies the appropriate prevention and control measures to reduce them.		
<b>Unit name</b>	Newcastle University – Biosciences Institute	<b>Location</b>	M3032, M3036 Cookson Building
<b>Assessor</b>	Dr. Johan Panek	<b>Approver (Manager / Responsible person)</b>	Dr. Arnaud Basle
<b>Date of assessment</b>	05/03/2025	<b>Review Date (2 years)</b>	Click or tap to enter a date.

	<b>Hazards</b>	<b>Risks (Who might be harmed &amp; how?)</b>	<b>Controls</b>
<b>1.</b>	Risk of freezing injuries (frostbite) by extremely cold nitrogen (-196 degrees Celsius).	Users	<ul style="list-style-type: none"> <li>- A brief list of guidelines is printed on all liquid nitrogen dewars.</li> <li>- Protective equipment and clothing are provided and must be worn (face shield, gloves).</li> <li>- Open-toed sandal should not be worn, and legs and arms should be covered.</li> <li>- Only appropriate containers and tools should be used (i.e. constructed to withstand the rapid changes and extreme temperatures).</li> </ul>
<b>2.</b>	Risk of asphyxiation (if less than 18% oxygen in the atmosphere)	Users	<ul style="list-style-type: none"> <li>- Room ventilation, should be enough to maintained a safe % of O2 even in case of leaking of the full stock of Liquid</li> <li>- O2 sensor alarm are present in the room.</li> </ul>
<b>3.</b>			

Additional Controls (is there anything you need to plan for?)	Who	Target Date	Completion Date
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Approved by: OHSS

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NA	[Insert Name]	Click or tap to enter a date.	Click or tap to enter a date.
<b>Emergency procedures</b> <b>In case of cyogenic burns:</b> In case of frostbite spray with water. DO NOT apply any form of direct heat. DO NOT rub affected parts either before or after warming. Move the casualty to a warm place (22° C). Arrange for the casualty to be transported to A&E without delay. While waiting for transport: <ul style="list-style-type: none"> <li>• Remove or loosen restrictive clothing.</li> <li>• Continue to flush the affected area with copious quantities of tepid water.</li> <li>• Protect any frozen parts with bulky, dry, sterile dressings. Do not apply to tightly.</li> <li>• Keep patient warm and at rest. • Ensure ambulance crew/hospital is advised of details of accident and first aid treatment already administered.</li> <li>• The casualty should not smoke, nor drink alcohol</li> </ul> <b>. If Someone is Experiencing Symptoms of Oxygen Deficiency</b> <b>DO NOT enter the area if you suspect an oxygen-deficient atmosphere unless properly trained and equipped with a self-contained breathing apparatus (SCBA).</b> <ul style="list-style-type: none"> <li>• Activate the emergency alarm (if available).</li> <li>• Call emergency services (999/112/911) and report a suspected asphyxiation incident.</li> <li>• If safe, immediately ventilate the area by opening doors/windows or activating exhaust systems.</li> </ul> <b>If the Person is Unconscious in a Confined Space:</b> <ul style="list-style-type: none"> <li>• DO NOT attempt a rescue without proper respiratory protection (SCBA). Entering without protection could lead to additional casualties.</li> <li>• Call emergency services immediately and provide details on the situation.</li> <li>• Monitor the victim from a safe distance and prepare to give first aid once the area is safe.</li> </ul> <b>If the Person is Conscious but Feeling Unwell:</b> <ul style="list-style-type: none"> <li>• Move them to a well-ventilated area or outdoors immediately.</li> </ul>			

- Loosen restrictive clothing and keep them calm and warm.
- Provide oxygen if trained to do so.
- Seek medical attention even if symptoms seem to improve.

**Prevent Further Risks**

- Evacuate all personnel from the affected area until oxygen levels are confirmed to be safe (>19.5%).
- Use an oxygen meter (if available) to assess air quality before re-entry.
- Isolate and inspect LN<sub>2</sub> sources (dewar leaks, cryostorage failures, etc.).
- Only allow re-entry once trained personnel confirm the environment is safe.

Signature of Responsible Person (Double click on the signature box below)

05/03/2025

X Johan Panek

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