

# LIQUID NITROGEN PLANT ROOMS

## INSTRUCTIONS FOR DISPENSING LIQUID NITROGEN OR REFILLING CRYOSTORES

Relevant sections of the Safety Manual must be read *by all persons* intending to enter and work within the plant room *before* they begin working in the plant room for the first time.

**IN CASE OF EMERGENCY:** In the event of a plant room emergency, extrication of unconscious persons, or of workers who may be experiencing early symptoms of asphyxia (and who not respond to orders to leave the room), may be achieved by calling for assistance from Lothian & Borders Fire and Rescue Service (Dial 9-999 from any extension at a safe location, or 999 directly from a call-phone *etc*). **DO NOT** proceed into the room yourself; you may be overcome by whatever has affected those already inside the room.

1. It is *essential* that all those using this room must first have completed Parts 1 and 2 of liquid nitrogen plant room training and that they have been explicitly authorised to work within any liquid nitrogen plant room.
2. Lone-working within liquid nitrogen rooms is *strictly prohibited*; there are no reasons why it will ever be considered acceptable for someone to be working in this room unsupported by another person.
3. For Chancellor's Building and QMRI, the key and oxygen depletion monitor should be signed for at Reception by an authorised person *and* their support buddy. The keys and monitor will only be issued to those that have completed Parts 1 and 2 of liquid nitrogen plant room training. For IRR(N), a PIN code will be issued to authorised workers after completion of Parts 1 and 2, which should be used together with the worker's swipe/proximity card after uplifting a monitor from the oxygen monitoring panel opposite the plant room entrance.
4. Please note that keys for the Chancellor's Building and QMRI plant room will only be issued to authorised workers who are accompanied to Reception by a buddy (who must countersign the log book). Keys will be

issued for routine access only between 09:00 and 17:00 Monday to Thursday and 09:00 and 14:00 on Friday. Those who may wish to contest their access status should discuss this with their line manager and not with Reception staff.

5. Workers *must not* enter the room when an unsafe state is indicated by visual and audible alarms; in such cases, *always* seek support from a competent person.
6. The first person through the door, and the last person to leave, should be the worker carrying the personal oxygen depletion monitor (which, of course, should be switched on and allowed to complete its test and calibration cycle *before* the worker enters the room, and then tested by breathing onto the sensor pad), which an authorised person must uplift from Reception together with the keys (Chancellor's Building and QMRI).
7. *All* necessary items of personal protective equipment must be worn to prevent skin contact and splashes into eyes *etc* (*i.e.* cryogen-certified gauntlets, after removing jewellery *etc*, a full-face protective shield, and a lab coat or apron *etc*). Suitable footwear (covering the whole foot; *i.e.* open-toed shoes are completely unacceptable in the plant room) and other clothing should be worn.
8. Doors (Chancellor's Building and QMRI) *must* be unlocked and propped open when workers are present within the plant room.
9. Ensure that there is *always* a clear path to exit in the event that you need to leave the room quickly.
10. Doors *must* be secured after leaving the plant room.
11. If tanks are showing signs of being insufficiently filled with liquid nitrogen, and they do not seem to be being replenished from the supply tank, inform a competent person\*.
12. If alarms are triggered, the supply of liquid nitrogen from the external tank will be interrupted. Reset may be carried out only by a competent person.
13. Dispensing liquid nitrogen may create splashes, and will certainly result in clouds of nitrogen gas around the dispensing tube.
14. Care should be taken when dispensing liquid nitrogen to avoid any unnecessary splashing or breathing in nitrogen gas. Dispense liquid

nitrogen as slowly as possible, and do not direct the dispensing tube anywhere other than into the receptacle to be used.

15. Do not touch the dispensing tube with unprotected hands, and avoid bending the tube unnecessarily. The dispensing tube should be directed by use of the handle itself, rather than by any direct contact with the hose.
16. Dispensing more than 20 litres of liquid nitrogen requires two people in order to safely manage manual handling of the receptacle.
17. Do not allow liquid nitrogen to fall through columns of warm air before filling a receptacle. This is not only wasteful, but it creates clouds of nitrogen gas which are likely to impair visibility.
18. Do not use a funnel at any time when dispensing liquid nitrogen or insert hollow tubes into liquid nitrogen.
19. Raise small containers on blocks if the dispensing tube is not long enough to reach inside, but do not hold it there with your hands.
20. Small containers should be placed within the polystyrene box provided within the plant room in order to help protect the operator from liquid nitrogen splashing out under the pressure of delivery from the tube.
21. To dispense liquid nitrogen, simply insert the dispensing tube into the container and press the button on the control panel.
22. Upon completion of the task, the plant room should be left in a safe and tidy state and secured against unauthorised access. The keys and oxygen depletion monitor should be returned to Reception (Chancellor's Building and QMRI).
23. All accidents, and also all near-miss incidents must be reported using the on-line accident reporting form at <https://health-safety.ed.ac.uk/accident-reporting> and to a competent person\*.

**NOTE:** Details guidance regarding safety related to liquid nitrogen plant rooms is contained in Section 14 of the site's Safety Manual at

<https://medicine-vet-medicine.ed.ac.uk/staff-and-current-students/cmvm-health-and-safety/edinburgh-bioquarter/manual>

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