Liquid Nitrogen

The university is able to supply Liquid Nitrogen to those who require it for their research or teaching.

We maintain a couple of low pressure (< 22 psi) liquid N2 storage tanks. One is always in SC 102. Users of Liquid Nitrogen who will need it in either the DNA building or LHS building should contact Angela Sikma.

Personnel who wish to get liquid Nitrogen should contact Angela Sikma (angelasikma@trentu.ca) to arrange for Training on how to safely dispense liquid nitrogen from the low pressure tanks.

Under no circumstances should anyone dispense liquid from the high pressure outlet without the express permission of Science Facilities. The large tank dispenses liquid at 170 psi and if not performed correctly, a dangerous situation can result. Contact Chris Williams (Cwilliams@trentu.ca) if you feel you need to access liquid from the high pressure tanks.

Personnel who wish to use liquid nitrogen should have their own dewar . A dewar is the term for the insulated container filled with the cryogenic material. No dewar can provide perfect thermal insulation so the cryogenic liquid slowly boils away. Inside a sealed container, this can result in a catastrophic failure (in other words an explosion). Therefore all containers or dewars for liquid nitrogen must:

* Be made of a material which will not shatter or break when it comes in contact with Liquid Nitrogen (- 170oC)
* Have a top which will contain the liquid but has one or more pressure relief devices or a design which prohibits pressure from building in the container (loose fitting top).

Personnel should be aware of the hazards associated with a build-up of ice which may block small openings and that cold gaseous nitrogen (from the boil off) can in sufficient quantities displace the oxygen in the room gradually creating an asphyxiation hazard.

Once the liquid is dispensed into the dewar, the user needs to fill in the Liquid Nitrogen Log book with the name of the user, the volume of liquid taken, your supervisor and the date. A correction factor for the amount of waste created while filling dewars is applied to each fill based on the users average fill volume. For example if after 3 months, the average liquid fill volume of a user is less than 10 L a correction factor of 3 is applied, 10-25 L a correction factor of 2 is applied and average fills of greater than 25 litres at a time gives a correction factor of 1.5. These correction factors are based on the fact that smaller dewars require relatively more liquid to cool, and the surface area to volume ratio is quite high resulting in a significantly higher rate of boil off.