



Safety Bulletin

Liquid Nitrogen (LN): Are you at risk?

With changing legislation for workplace safety, it is vital that all staff who work with LN are protected; using approved storage vessels and personal protective equipment (PPE). NitrogenX's focus on safety is a critical part of our service to customers throughout the Auckland region. When it comes to cryogenics, the use of LN means that everyone must take specific precautions.

Why the type of storage vessel is so important?

LN only exists at very low temperatures and as a result must be stored in an appropriate vessel. Existing at -198°C means it has potential dangers when stored or used incorrectly eg: under pressure. We have found a number of practices store their LN in non-approved vessels such as thermos flasks, the potential for harm associated with this is certainly very high, which is why professional practices avoid them, using only approved cryogenic vessels and cryosurgical equipment.

What could go wrong?

Non-approved vessels which are not vented correctly will eventually build up pressure that may cause the storage vessel to explode. e.g. if you are using a thermos flask as a storage vessel, you might prevent the pressure build up by leaving the lid loose. Needless to say, by doing this you will boil off your LN. However there is also a risk that a staff member may accidentally knock over the flask, spill the LN and cause severe injuries to themselves or a patient. Therefore the risks of injury associated with thermos flasks are high as could be the case for proven negligence in your practice. It's just not worth taking the risk.

What types of vessels are appropriate for Liquid Nitrogen storage?

Only cryogenic Dewars are designed specifically for the safe storage of LN. They are made using special ventilation and insulation systems which are appropriate for LN.

What steps should I take to avoid injury when using Liquid Nitrogen?

NitrogenX as a leading supplier of cryogenic liquids strongly recommends that all users should wear the appropriate personal protective equipment (PPE) when handling LN. Areas of potential contact should be well covered so it is recommended that long sleeves and pants are worn. It is also essential to wear protective gloves and a face shield or safety glasses.

Is my workplace safe?

- How safe are your Liquid Nitrogen procedures?
- Do you use appropriate storage?
- Do users of Liquid Nitrogen wear appropriate protective equipment?
- Do your staff understand the hazards associated with Liquid Nitrogen and take the appropriate precautions?
- Are you at risk of being found negligent by your staff or patients?

How do I protect the Dewar contents?

Materials stored in a LN Dewar with a wide mouth are protected by the extremely low temperature of the LN or the gas that issues from the evaporating Liquid Nitrogen. When all of the LN has evaporated, the temperature inside the unit will rise slowly to ambient. The rate at which the LN will evaporate depends upon the pattern of container use and the age and condition of the container. Evaporation increases as insulation efficiency deteriorates with age and rough handling. Opening and closing to insert and remove materials and moving the unit will also increase the evaporation rate. When you are filling a container or Dewar remember this: you will use up a lot of LN just chilling down the vessel. Doesn't matter if you are filling a Dewar, a bain, or a styrofoam cup—when you first add LN, it will smoke furiously while the surface of the container gets chilled down to LN temperatures. After the container is chilled, it will fill up in an orderly and efficient way. Rule of thumb for LN efficiency: don't let your containers run dry and warm up if you don't have to. Keep them cold. **You'll want to order Liquid Nitrogen before you run completely dry**

For information regarding LN and safety procedures please contact NitrogenX on: 0800 22 33 85