

NSW Health Position Statement on the Decommissioning of Reticulated Nitrous Oxide in NSW Health Facilities

June 2025

Background

Nitrous oxide (N_2O) has been widely used in healthcare as an anaesthetic and analgesic agent for more than a century. In many healthcare settings nitrous oxide is supplied via reticulated systems. There is increasing evidence that these reticulated systems are prone to significant leakage of nitrous oxide, leading to unnecessary losses to the atmosphere. These leaks increase the operational costs and further contribute to climate change, whilst providing no clinical benefit.

Nitrous oxide is a potent greenhouse gas with a global warming potential (GWP) of 298, and an atmospheric lifetime of more than 100 years. Therefore, reducing nitrous oxide emissions would have a meaningful impact in reducing the carbon footprint of the health system.

In Australia, overall clinical use of nitrous oxide is declining, although it is still used in some settings such as maternity.

The decommissioning of reticulated nitrous oxide systems to areas of low or no use is a practical measure to reduce emissions, lower operational costs, and improve sustainability in healthcare settings. It is consistent with the Australian Health Facility Guidelines (April 2025) which notes that, "Reticulated nitrous oxide and associated scavenge outlets are not mandatory for any healthcare service and point of care cylinders can meet clinical requirements for the majority of healthcare facilities. Where found to be clinically necessary, the provision of nitrous oxide via piped outlets or via cylinder is to be determined at a project level, based on an assessment of expected clinical need and associated risk assessment, particularly for services with high utilisation such as birthing suites. Birthing suites may have a dedicated reticulated nitrous oxide system, whilst the rest of a facility is supplied by point of care cylinders."

Consensus Recommendation

Due to the environmental impact and the potential for significant gas wastage due to leaks, it is recommended that reticulated nitrous oxide systems be decommissioned in NSW Health facilities in areas where there is low clinical use, with the exception of selected paediatric services. Of note, 'decommissioning' refers to removing the nitrous oxide manifold supply to the pipeline system or capping-off the terminal units to the areas of low use. Reticulated nitrous oxide is no longer considered essential to support modern anaesthetic practice, and its continuous supply via reticulated systems should be phased out where feasible. Healthcare facilities should consider transitioning to point-of-use cylinders for nitrous oxide where clinically appropriate.

If reticulated nitrous oxide is required in the design of a new building, it is recommended to install a smaller, localised reticulated system that supplies nitrous to specific areas only. For example, pipelines should target areas such as birthing units, while the remainder of maternity services and other specialities can utilise portable cylinders.

It is recommended that reticulated nitrous oxide systems are decommissioned in NSW Health facilities where there is low or no clinical use, and that the decommissioning be scheduled into the Local Health Districts (LHD)'s repairs and maintenance program over the next 15 months.

It is recommended that the transition is completed by the end of FY2026/27. The Australian Government's and NSW Health's guidelines listed below provide further information.

Guidelines

1. Detecting and reducing nitrous oxide leaks in healthcare facilities – A practical guide
2. Guidance for the reduction of nitrous oxide waste in existing healthcare facilities: Current builds
3. Guidance for the supply of nitrous oxide in new healthcare facilities: New builds

References

1. Australian Health Infrastructure Alliance: Australian Health Facility Guidelines. Revision 7; October 2024.
2. Royal College of Anaesthetists (2024). 'Consensus statement on the removal of pipeline nitrous oxide in the United Kingdom and Republic of Ireland.'
<https://www.rcoa.ac.uk/sites/default/files/documents/2024-07/Consensus%20statement%20on%20removal%20of%20pipeline%20nitrous%20oxide.pdf>
3. Chakera A (2021). 'The Nitrous Oxide Project: assessment of advocacy and national directives to deliver mitigation of anaesthetic nitrous oxide.'
The Nitrous Oxide Project: assessment of advocacy and national directives to deliver mitigation of anaesthetic nitrous oxide
4. Southall P (2024). 'Consensus on decommissioning piped nitrous oxide from UK and Ireland operating theatre suites: a rational approach to an increasingly ignoble gas.'
Consensus on decommissioning piped nitrous oxide from UK and Ireland operating theatre suites: a rational approach to an increasingly ignoble gas - Southall - 2024 - Anaesthesia - Wiley Online Library