



Safety Notice 010/16

MEDICAL GAS CYLINDERS

10 October 2016

Distributed to:

- Chief Executives
- Directors of Clinical Governance
- Directors of Clinical Operations
- Director, Regulation and Compliance Unit
- Directors of Engineering / Biomedical Engineering

Action required by:

- Chief Executives
- Directors of Engineering / Biomedical Engineering

We recommend you also inform:

- Directors of Anaesthesia & Surgery
- Directors of Emergency Medicine
- Directors of Intensive Care Units
- Director of NSW Newborn & paediatric Emergency Transport Service
- Directors of Medical Services
- Directors of Radiology
- Directors of Nursing and Midwifery
- All Medical staff
- All Nurses and Midwives
- All Allied Health Staff
- All Paramedical staff
- All Patient Transport Officers
- All Patient Support staff

Expert Reference Group

Content reviewed by:

- Testing of Medical Gases Working Group
- Intensive Care Coordination and Monitoring Unit
- Anaesthesia Perioperative Care Networks

Clinical Excellence Commission

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Review date
October 2018






As part of a risk management strategy for the use of medical gases the following sets out the current requirements for the identification and use of medical gas cylinders in NSW Health services. Adherence to these requirements will reduce the risk of staff connecting to an incorrect medical gas cylinder.

This Safety Notice supersedes SN 004/10.

Medical Gas Cylinders

Labelling and appearance

1. The body of all medical gas cylinders must be white [to distinguish from non-medical gas cylinders].
2. The gas contents of the cylinder should primarily be identified by the labelling / marking on the cylinder.
3. A secondary way of identifying the gas contents is via the colour of the cylinder's shoulder. Each gas has a different shoulder colour code.¹

Name of gas	Chemical symbol	Cylinder colour	Shoulder colour	Shoulder visual
Air	Air	White	Black and white	
Carbon dioxide	CO ₂	White	Green grey	
Oxygen	O ₂	White	White	
Nitrous oxide	N ₂ O	White	Ultramarine	
Nitrous oxide [50%] in oxygen	50% N ₂ O in O ₂	White	Ultramarine and white	

Source: Adapted from *New 'white' appearance for medical gas cylinders* at http://webcache.googleusercontent.com/search?q=cache:IMV9qHY5bzJ:www.bochealthcare.co.uk/internet.lh.ln.gbr/en/images/501365-Healthcare%2520White%2520Medical%2520Cylinder%2520Identity%2520A2%2520Poster%252002409_74968.pdf%3Fv%3D.+&cd=1&hl=en&ct=clnk&gl=au

4. The letter "N" on medical gas cylinders is redundant [from May 2016 the provider should remove the letter "N" at or before the cylinder's next periodic inspection].



Source: Adapted from Air Liquide Healthcare, *Regulatory Changes to Medical Oxygen Cylinders*. 11/09 at <https://www.airliquidehealthcare.com.au/valve-conversion-flyer>

Actions required by Local Health Districts / Networks

1. Distribute this Safety Notice to appropriate areas for action.
2. Ensure a system is in place to document actions taken.
3. Notify any incidents in the incident management system.



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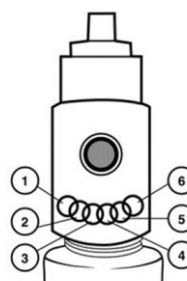
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Medical Gas Cylinders

Medical gas cylinder valves

1. Medical gas cylinders, regardless of size, should be fitted with a pin-indexed valve.
2. The valve should be pin indexed with **holes** in the valve in specific locations so that the cylinder can only be connected to a regulator with pin/s in the exact same location/s. The pin hole locations are numbered 1 to 6 with combinations of these [pin code] indicating the gas contents of the cylinder.
3. The following table describes the pin codes for some of the key medical gas cylinders.²

Name of gas	Chemical symbol	Pin code
Air	Air	1.5
Carbon dioxide	CO ₂	1.6
Oxygen	O ₂	2.5
Nitrous oxide	N ₂ O	3.5
Nitrous oxide [50%] in oxygen	50% N ₂ O in O ₂	Single pin hole



Source: Adapted from PocketDentistry, Delivery of N₂O / O₂ Sedation, Jan 12 2015, <http://pocketdentistry.com/7-delivery-of-n2oo2-sedation/>

Medical gas cylinder regulators

1. The regulator connects to the valve on the medical gas cylinder.
2. Prior to use ensure the regulator is not due for any routine maintenance, and it is intact with pin/s present and secure.
3. Consider replacement of any old or worn regulators. If there are no pin/s on the regulator **do not use**.
4. Before connecting the regulator to the cylinder valve check that the medical gas cylinder contains the gas required by checking the labelling / marking on the cylinder and the colour/s of the cylinder shoulder.
5. The pins on the regulator should precisely match the pin holes on the valve of the medical gas cylinder. This eliminates the risk of connecting to the wrong medical gas cylinder.

Steps to minimise risk associated with the use of medical gas cylinders

All areas where medical gas cylinders are available should:

1. Update local procedures for the maintenance and use of medical gas cylinders and regulators to ensure consistency with this Safety Notice.
2. Check all medical gas cylinder regulators to ensure routine maintenance is up to date and the regulator is intact with pin/s present and secure.
3. Immediately remove from use regulators where the pins are missing or damaged.

References

1. Refer to Australian Standard AS 4484:2016 *Gas cylinders for industrial, scientific, medical and refrigerant use – Labelling and colour coding* for the complete list of medical gas cylinder shoulder colours.
2. Refer to Australian Standard AS 2473.3 - 2007 *Valves for compressed gas cylinders Part 3: Outlet connections for medical gases (including pin-indexed yoke connections)* for the complete list of medical gases and their corresponding pin codes.