



TECHNICAL INFORMATION SHEET 37

Revision 1: 2017

MEDICAL GASES. GAS CYLINDER CLEANLINESS STANDARDS.

Introduction

The provision of a clean and safe healthcare environment is a major priority for all healthcare organisations. Under the Health and Social Care Act 2008, Care Quality Commission (CQC) registration requires that healthcare providers comply with essential standards of quality and safety. Cleaning provides one of the major elements of effective infection prevention and control, promotes patient confidence and demonstrates the existence of a positive safety culture.

Medical gases are commonplace and are used across all areas of healthcare, including hospitals, dental practices, the emergency services as well as being used in remote geographical areas, for example, infectious disease outbreaks or in support of military operations. As such there is a risk that medical gas cylinders can become contaminated.

Unlike many other medicine packages, the majority of medical gas cylinders are supplied on a rental basis. This requires that the user returns each cylinder back to the gas supplier when empty or when no longer required.

Gas suppliers ensure that initially cylinders are delivered to the healthcare provider in a suitably clean condition to allow patients, carers, healthcare and operational staff to use and handle them safely. The staff at healthcare facilities have a duty of care to ensure that if cylinders become soiled in use, they are returned back to the gas supplier either in a clean condition or identified and packaged with appropriate protection. The gas suppliers have a duty of care to ensure that their staff are protected when handling cylinders being returned from a healthcare provider.

Where a cylinder has become soiled in use then, before being returned back to the gas supplier, any potentially infectious contamination has to be cleaned from the cylinder, however, this needs to be done in such a way that the cylinder is not damaged, the contents are not contaminated and any labels on the cylinder are not defaced.

Materials

Medical gas cylinders have traditionally been manufactured from steel, but improvements in technology have introduced firstly aluminium cylinders and more recently cylinders of composite construction (resins, plastics, etc.). Most metal cylinders are given a painted finish. Valves are mainly manufactured from brass. Some cleaning chemicals can react and cause damage to these materials.

Labels are typically printed on a paper based background, and over cleaning can remove the information making them illegible.

Cylinders in use

It is expected that the user will keep the cylinders in a reasonably clean condition. The National Patient Safety Agency (NPSA) document - *National Specification for Cleanliness in the NHS*, identifies medical gas equipment as a key element for maintaining cleanliness and requires that “All parts (including underneath) should be visibly clean, with no blood or body substances, dust, dirt, debris or spillages.”

Where a cylinder is used in a medical facility, a homecare environment such as the patient’s home or by the emergency services, contact with blood or other bodily fluids should be avoided. Where it is known that a gas cylinder is soiled, the user should ensure that it is cleaned before further use or being returned.

Where a cylinder has been in an area where a biosecurity hazard, such as a notified infectious disease, is present, then the user has a duty to ensure the cylinder is cleaned to an acceptable standard before it is allowed to leave that area and prior to being returned, via the distribution chain, to the gas supplier.

If the container has been soiled, the following options are available to the user:

- Clean it, prior to returning to the gas supplier; or
- Quarantine, apply appropriate warning notices and agree with the gas supplier an appropriate and safe way to return the cylinder.

The user should notify the gas company of potential contamination.

Cleaning - Routine

The cleaning method shall not have a detrimental effect on the cylinder or valve.

Cleaning materials containing ammonia, amine or chlorine based compounds, (other than potable water) shall not be used. These can cause the corrosion of steel or aluminium alloy components and cause stress corrosion cracking of brass components. Alternative cleaning agents such as bleach shall not be used as these can potentially contaminate an ‘oxygen clean’ system.

Care is required to ensure that any labels on the cylinder are not damaged or removed during the cleaning process.

The preferred method of cleaning for routine soiling is:

- use hot water not exceeding 50 °C, to first remove the foreign matter; then
- ideally use Iso Propyl Alcohol (IPA) wipes.

NOTES:

- 1) Iso Propyl Alcohol in liquid solution should not be used because it is a potential fire risk and excessive use may also represent a potential health risk.
- 2) The cylinder is not to be immersed in water.
- 3) Care shall be taken to avoid cleaning fluids entering or remaining inside the valves.
- 4) The valves shall not be cleaned and shall be protected during the container cleaning process to avoid internal damage to the valve.

Further information is available in the European Industrial Gases Association (EIGA) Document TB 03, *Handling and cleaning externally soiled medicinal gas containers*.

Cleaning - Biosecurity

The user has a responsibility to ensure that any biosecurity hazard is removed before the cylinder leaves the controlled site.

Where cylinders may have come into contact with a biosecurity hazard, stronger chemicals will be used on the cylinders. Disinfectants should not be used unless decontamination is indicated. Where cleaning other than soap or water is carried out you should inform the cylinder supplier of which disinfectants have been used on which specific cylinders.

After a chemical disinfectant has been used, additional cleaning processes shall be necessary, for example, hot water, detergent cleaning and rinsing.

On completion of cleaning with such chemicals, the gas supplier should obtain a 'Certificate of Cleanliness' from the user clearly stating that the gas cylinder has been cleaned and that there is no risk of a further biosecurity hazard. The gas supplier should determine with the Authorities the types of cleaning agents that may have been used, and should then take appropriate action to ensure the cylinder remains safe for continued use.

NOTE: The common chemical disinfectant used is Virkon. This is chemically aggressive to copper alloys e.g. brass, and should be used with care.

For BCGA members, further information is available in BCGA GN 24, *The distribution, handling and cleaning of gas containers in a biosecurity environment*.

The user should contact the gas supplier if there is any doubt concerning the method to be used to clean the cylinder.

Returning cylinders

The user is encouraged to identify and report to the gas supplier when they have cleaned a cylinder so that the gas supplier can inspect the package prior to reuse.

Where cleaning may not be possible, or may not be to the required level of cleanliness, then an alternative method of returning a cylinder can be agreed between the user and the gas supplier. This could include, for example, covering and sealing the cylinder within a plastic bag and adding appropriate warning label(s).

Cylinders identified as being contaminated, shall be kept separate from other cylinders, until appropriate cleaning has taken place.

Gas suppliers' drivers and homecare service personnel shall receive appropriate information, instruction and training on how to handle visibly soiled cylinders, including the use of appropriate personal protective equipment, (e.g. gloves).

For more information:

British Compressed Gases Association (BCGA)

www.bcga.co.uk

European Industrial Gases Association (EIGA)

www.eiga.eu

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