



GUIDELINES FOR HANDLING EXTERNALLY CONTAMINATED MEDICAL CYLINDERS IN A PANDEMIC SITUATION

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Introduction

This document describes the principles and outlines the procedures for handling and decontaminating medical cylinders (and ancillary equipment) potentially contaminated with bacteria and viruses in a pandemic outbreak situation.

Scope

The scope of this document encompasses the collection of cylinders from the customer premises and their return to the cylinder filling facility or warehouse. These guidelines should apply during a pandemic outbreak situation.

Definitions

- *Pandemic*: A pandemic is a regional or worldwide epidemic of a disease.
- *Healthcare Facility*: Any establishment that is engaged in direct patient care on site.
- *Shall and Should*: Although this guide is not intended to be a mandatory code, the word "shall" is frequently used and implies a very strong concern that the particular practice be followed for safety reasons. The use of the word "should" implies that the referenced practice is commonly followed but recognizes that other safe practices may be used.

4 Sources of contamination

The sources of medical cylinder contamination are both visible and non-visible. Non-visible contamination includes:

- Severe Acute Respiratory Syndrome (SARS) virus
- Avian Flu virus

5 Principles for safe handling of contaminated cylinders

5.1 Collection of contaminated cylinders

Potentially contaminated cylinders are likely to be first handled at the customer premises. As this is the first point of contact, a procedure for the initial cleaning and handling of externally contaminated cylinders should be followed in order to prevent any exposure to the contaminants. Drivers and personnel involved shall be trained in this procedure (see section 9).

5.2 Preventing exposure and PPE (Personal Protective Equipment) requirements

Any exposure is likely to be initiated through skin contact, inhalation or ingestion. The following should be followed to prevent such exposure:

- Gloves should be worn when handling all medical cylinders from customer premises. Disposable gloves made of lightweight nitrile or vinyl or heavy duty rubber work gloves that can be disinfected should be worn.
- Disposable particulate respirators (e.g. N-95) are the minimum level of respiratory protection that should be worn.
- Protective clothing should be worn, preferably disposable outer garments or coveralls, an impermeable apron or surgical gown with long cuffed sleeves, plus an impermeable apron.

- Personnel handling medical cylinders shall observe good personal hygiene prior to eating or drinking, for example washing hands with soap and water for a minimum of 15-20 seconds and drying the hands.
- After handling these cylinders, personnel shall discard disposable PPE properly and non-disposable PPE should be cleaned and disinfected.
- Waste PPE (used gloves, disposable particulate respirators, disposable outer coveralls, etc.), should be collected in biohazard bags for disposal as regulated medical waste in accordance with local requirements at the designated medical facility.

6 Recommended cleaning agents and decontamination methods for cylinders

6.1 Decontamination with disinfectant

Alcohol-based wipes containing 70% alcohol are recommended. These are available in all countries.

100% alcohol shall not be used because it is a potential fire hazard and excessive exposure to alcohol is also a potential health hazard.

Alternative cleaning agents (e.g. soap and water) may be used. However, cleaning agents (such as bleach) which may generate chlorine, ammonia or sulphur dioxide shall not be used for the decontamination of cylinders and valves. Their use can potentially:

- be a health hazard to personnel
- contaminate an 'oxygen clean' system
- cause the corrosion of steel components
- cause stress corrosion cracking of non-ferrous components

6.2 Decontamination with steam

Decontamination with steam may be carried out using:

- steam from an existing steam generation system where available, or
- mobile steam generating equipment that produces steam under pressure

When applying steam on aluminium or composite cylinders, the surface temperature of the cylinder shall not be permitted to exceed 70°C as this may permanently weaken the structural integrity of the cylinder, rendering it unsafe for filling. A surface temperature measurement instrument should be used to ensure compliance.

7 Decontamination at filling facility or warehouse

The decontamination procedure should be undertaken at designated sites with appropriate cleaning equipment and facilities, and a safe and efficient waste disposal system.

8 Customer liaison

8.1 Reduce risk to employees

The Healthcare Facility should be advised that:

- When non-visible contamination is suspected, they should take action to reduce the risks to their own staff and to the gas supplier employees.
- They have a duty to return cylinders in a clean condition.

8.2 Washing and labelling

The Healthcare Facility should be encouraged to wash down the cylinders with soap and clean water to remove contamination prior to collection by the gas supplier. They shall make sure that all externally contaminated cylinders are clearly labelled or clearly marked 'contaminated cylinder' or 'biohazard'.

9 Procedures and training

Procedures shall be developed and training conducted to ensure that all personnel know how to safely collect and handle contaminated cylinders. These shall include:

- Cylinder cleaning and handling externally contaminated cylinders
- Use of the required PPE
- Cylinder decontamination procedures