



## CS CoP005– Pressurised Gas Cylinders

### 005.1 Building design

Wherever practicable, and especially at times of major refurbishment or new builds, University buildings must be designed and fitted out in such a manner that all pressurised gas cylinders supplying the building can be connected to a manifold sited external to the building and the gas under pressure piped into the building and individual laboratories.

In such cases the supply pipes should be of stainless steel construction marked with identification of the gas type and direction of flow. There should be a gas shut off valve, lever or solenoid, sited in a position near to the laboratory exit so that this can be safely operated at times of emergency.

This design requirement is particularly important in the case of flammable or toxic gases, but all gas cylinders, regardless of their gas content, are potentially dangerous when exposed to fire and may explode, consequently the Fire and Rescue Service may no longer enter buildings that contain pressurised gas cylinders in a fire situation because of the high risk of explosion and danger to their personnel. In such a case the fire is then only fought from the outside of the building and there is therefore the potential for greater loss of research work as well as building fabric where gas cylinders are involved in areas of fire.

Where cylinders are presently and unavoidably sited for use within buildings only the minimum number of cylinders of compressed gases in actual use should be kept within each laboratory and all the cylinders must be firmly supported in a vertical manner by restraining chains, bench clamps or similar devices specifically designed for that purpose. It is strongly recommended that where cylinders are sited within laboratories that they are housed in dedicated pressurised gas cylinder cabinets that conform to BS EN 14470-2.

### 005.2 Storage

- Gas cylinders must be stored in a properly constructed well ventilated store, preferably in the open air, where full and empty cylinders should be separated, and where the use of naked flames is prohibited. Where it is not reasonably practicable to store cylinders external to a building they must be stored in an adequately ventilated part of the building specifically designed for this purpose.
- Storage areas must be secure and lockable.
- Ensure the external of the entrance to the store is designated by proper and appropriate hazard warning signage in compliance with both the COSHH and DSEAR Regulations and any appropriate mandatory signage (e.g. NO NAKED FLAMES)



- Cylinders of oxidising gases must be kept separate from cylinders of flammable gases, and toxic and/or corrosive gases should always be stored separately, as should LPG.
- All cylinders must be secured upright away from heat sources, flammable or corrosive materials and oils. Cylinders must not be stored in standing water.
- Rotate stock on a first in, first out basis – this ensures that cylinders are returned to the supplier for regular legally required safety checks.

### 005.3 Handling gas cylinders

Gas cylinders are generally unstable due to their diameter to height ratio and are easily toppled; they are also heavy with large cylinders weighing over 100kg when full. The potential for injury when handling cylinders is therefore high, this being the case the law requires that a formal manual handling risk assessment be undertaken and any significant findings recorded.

- In many cases a generic risk assessment will suffice for multiple laboratories or stores areas in a building, but remember that there may be specific areas of building design within your work area that present additional hazard e.g. rough ground, steps, low headroom, etc. this has to be taken into consideration in your steps to mitigate risk.
- Similarly the personal capability of the employee expected to carry out the manual handling of cylinders must be taken into account; factors such as physical build, gender, health, etc need to be explored.
- Specialist training in the moving of cylinders will be required e.g. in the technique of 'churning', this can be effectively carried out in-house by experienced members of staff, but all training must be recorded.
- Ensure that the Safety Data Sheets for the gases being handled are available.
- Do not drop, roll or drag gas cylinders.
- If moving cylinders more than a few metres a properly constructed cylinder trolley must be used.
- Always use appropriate protective equipment. Eyes, hands and feet should be protected when handling or using cylinders.
  - Safety footwear should be to BSEN345 or EN ISO 20345 standard, providing impact protection of at least 200 joules - footwear with metatarsal protection is recommended, and once provided safety footwear must be worn when moving cylinders.
- Never attempt to catch a falling cylinder but rather get out of the way.



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- Cylinders transported in lifts should not be accompanied by personnel and steps must be taken to ensure that persons cannot enter the lift at intermediate floor stops.

General guidelines for gas cylinder storage are published by the British Compressed Gases Association @ <http://www.bcgga.co.uk/preview/publications.php>. This site is also the source of many helpful Guidance Notes, Technical Information Sheets and Codes of Practice.

Gas company emergency contact numbers:

- Air Liquide 01675 462695
- Air Products 0500 02 02 02
- BOC 0800 111 333
- Energas 01482 329 333