

specialist knowledge

accredited mixtures

dedicated support

stock management

FAQ's on Gases and Handling

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stability

safety

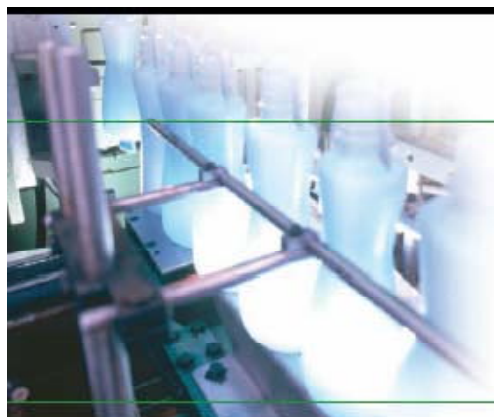
range of equipment

**MCERTS WORKSHOPS
BRETBY**

25th and 26th April 2007



Following on from two articles in IET



Gases – FAQ's answered

ENVIRONMENTAL ANALYSIS

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In many analytical operations a key focus is put onto the analytical equipment and the selection of the correct specification. In many cases a significant capital investment is required, so the focus is understandable, in the same way as when choosing a new car. For a car if you choose the wrong lubricants and fuel the results can be messy and expensive. The same can be said for gases which are essential to the smooth running of your analytical equipment. However there are a lot of cases where there are misunderstandings in terms of selection, handling and safe use and storage. In many cases the choices are made unconsciously – “we have always done it that way” – with the original decision maker and reasons lost in the mists of time. This article will look to address a number of frequently asked questions and misconceptions, which will hopefully make it easier for users of gases make an informed choice in their use of an important part of their day to day operations.

A photograph of a laboratory setting. In the foreground, a person in a white lab coat is working with a piece of equipment, possibly a gas cylinder or a flowmeter. The background shows various laboratory instruments and equipment. The text 'Gases FAQ's answered - Part 2' is overlaid on the image in a large, white, sans-serif font.

Gases FAQ's answered - Part 2

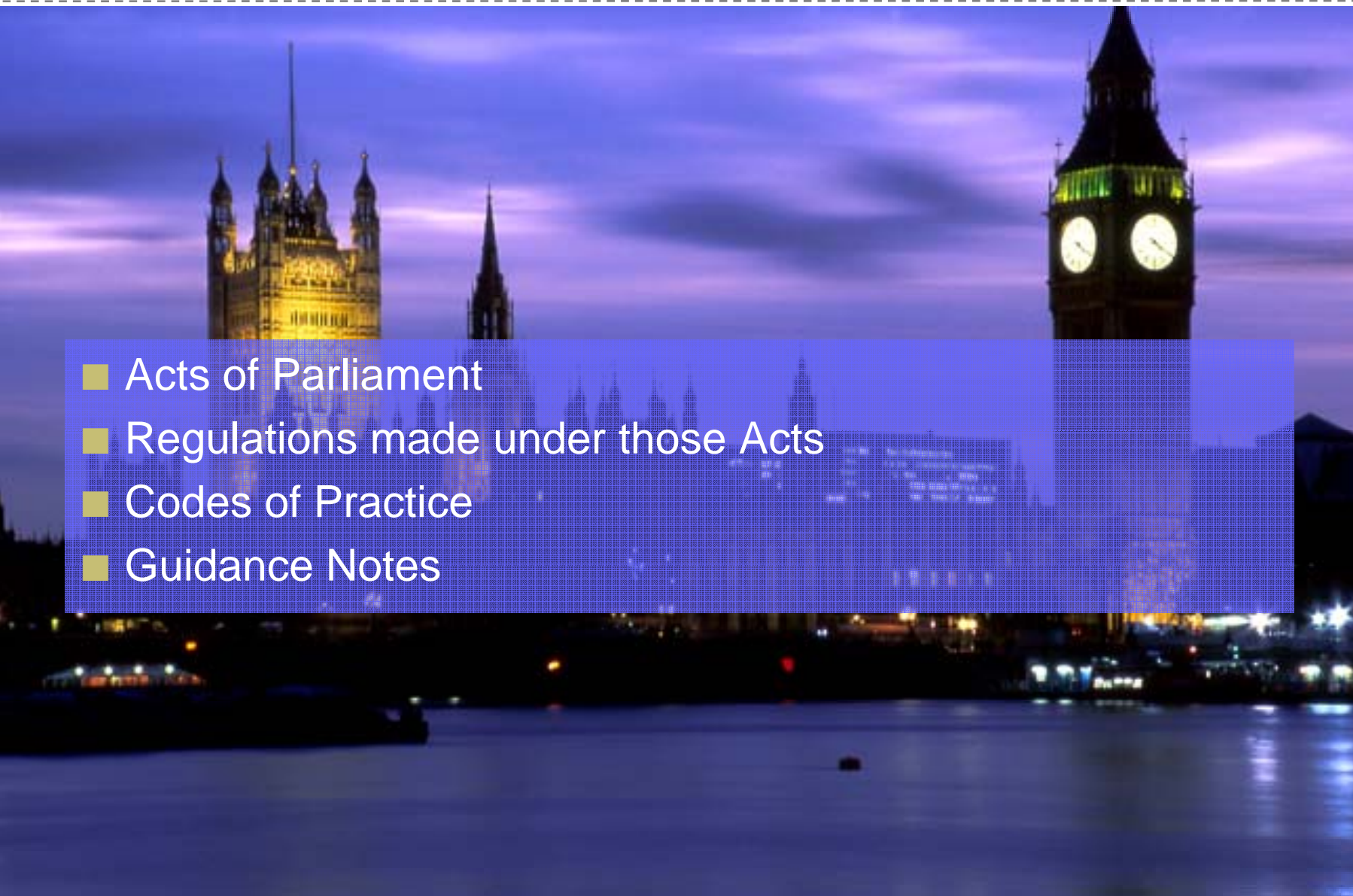
Legislation

Codes of Practise

Guidance on Cylinder Handling and Storage

Safety Training – for Gases

HEALTH AND SAFETY LEGISLATION

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- A nighttime photograph of the Houses of Parliament and Big Ben in London, with the River Thames in the foreground. The sky is a deep purple and blue, and the buildings are illuminated with warm lights. A semi-transparent blue box with a grid pattern is overlaid on the image, containing a list of items.
- Acts of Parliament
 - Regulations made under those Acts
 - Codes of Practice
 - Guidance Notes

Q4. Is there any HSE guidance on compressed gases?

HSE has produced the following guidance on compressed gases:

- HSG 139 The safe use of compressed gases in welding, flame cutting and allied processes
- HSG 71 Chemical warehousing, the storage of packaged dangerous substances
- HSE 8 (rev 2) Take care with oxygen - Fire and explosion hazards in the use of oxygen
- INDG 297 Safety in gas welding cutting and similar processes
- INDG 308 The safe use of gas cylinders
- INDG327 Take care with acetylene

SAFE USE OF GAS CYLINDERS

GUIDANCE ISSUED BY THE HEALTH AND SAFETY EXECUTIVE

Issue 1

June 2004

<http://www.hse.gov.uk/cdg/pdf/safusgc.pdf>

HSE Guidance – Safe Use of Gas Cylinders



Accidents involving gas cylinders can cause serious injury or even death. This guidance provides simple practical advice on eliminating or reducing the risks associated with using gas cylinders.

The guidance is aimed at anyone who manufactures, owns, fills, repairs or uses gas cylinders at work, and especially at those who own or manage small businesses.

HOW TO REDUCE THE RISKS

Training

Anyone who examines, refurbishes, fills or uses a gas cylinder should be suitably trained and have the necessary skills to carry out their job safely. They should understand the risks associated with the gas cylinder and its contents.

Handling and Use

Transport

Storage

HSE Guidance – Safe Use of Gas Cylinders



LEGISLATION

The two main sets of Regulations covering gas cylinders are:

- The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004 (the "Carriage Regulations") which came into force on 10 May 2004.

- The Pressure Equipment Regulations 1999 (SI 1999/2001) (PER) cover within their scope the design, manufacture and initial integrity of cylinders used in breathing appliances and portable fire extinguishers, together with valves and other accessories used with these gas cylinders which have a direct safety function. These types of cylinder built after the Carriage Regulations come into force will also need to meet the requirements for "new" and "old" pressure receptacles in the Carriage Regulations in certain circumstances (see Table). The periodic examination of these cylinders is also governed by the requirements of the Carriage Regulations.

BCGA publishes guidance notes, technical reports and codes of practice on the safe handling and storage of industrial gases. The guidance notes are generally accepted as industry standards. They are prepared by technical committees drawn from member companies. Revisions are frequently made to existing codes to ensure they reflect new developments and new or changes in standards and legislation. New codes of practice are prepared, if appropriate.

CP4 Industrial Gas Cylinder Manifolds & Distribution Pipework/Pipelines (excluding acetylene). Revision 3: 2005

Gives minimum safety standards for design, installation, operation and maintenance of industrial gas supply manifolds, and associated distribution pipework up to 54 mm nominal bore. The manifold pressure is up to 300 bar, while the distribution pressure is limited to 40 bar.

CP17 The Repair of Hand-held Blowpipes & Gas Regulators used with Compressed Gases for Welding, Cutting & Related Processes. Revision 2: 2004

CP18 The Safe Storage, Handling & Use of Special Gases in the Micro-Electronics Industry. Revision 2: 2005

CP23 Application of the Pressure Systems Safety Regulations 2000 to Industrial and Medical Pressure Systems Installed at User Premises. Revision 1: 2002

Gives detailed requirements imposed by the Pressure Systems Safety Regulations 2002 on gas systems, containers and mobile systems installed at users' premises

CP24 Application of the Pressure Systems and Transportable Gas Containers Regulations 1989 to Operational Process Plant: Revision 1: 2004

The Pressure Systems Safety Regulations 2000 (S.I.128) include requirements for the in-service inspection and maintenance of pressure systems. This code of practice addresses these requirements for such systems installed at process plant within the industrial gases industry. Model written schemes of examination are provided for typical installations.

CP31 Safe Storage and Use of Cylinders in Mobile Workshops and Service Vehicles

Covers the design and construction of mobile workshops and other specialist vehicles with regard to the safe storage of cylinders and the installation of gas equipment on such vehicles. Also includes procedures for safe operation and training.

L1 Carriage of gas cylinders by road in cars, vans and other vehicles. Rev 1 : 2005.

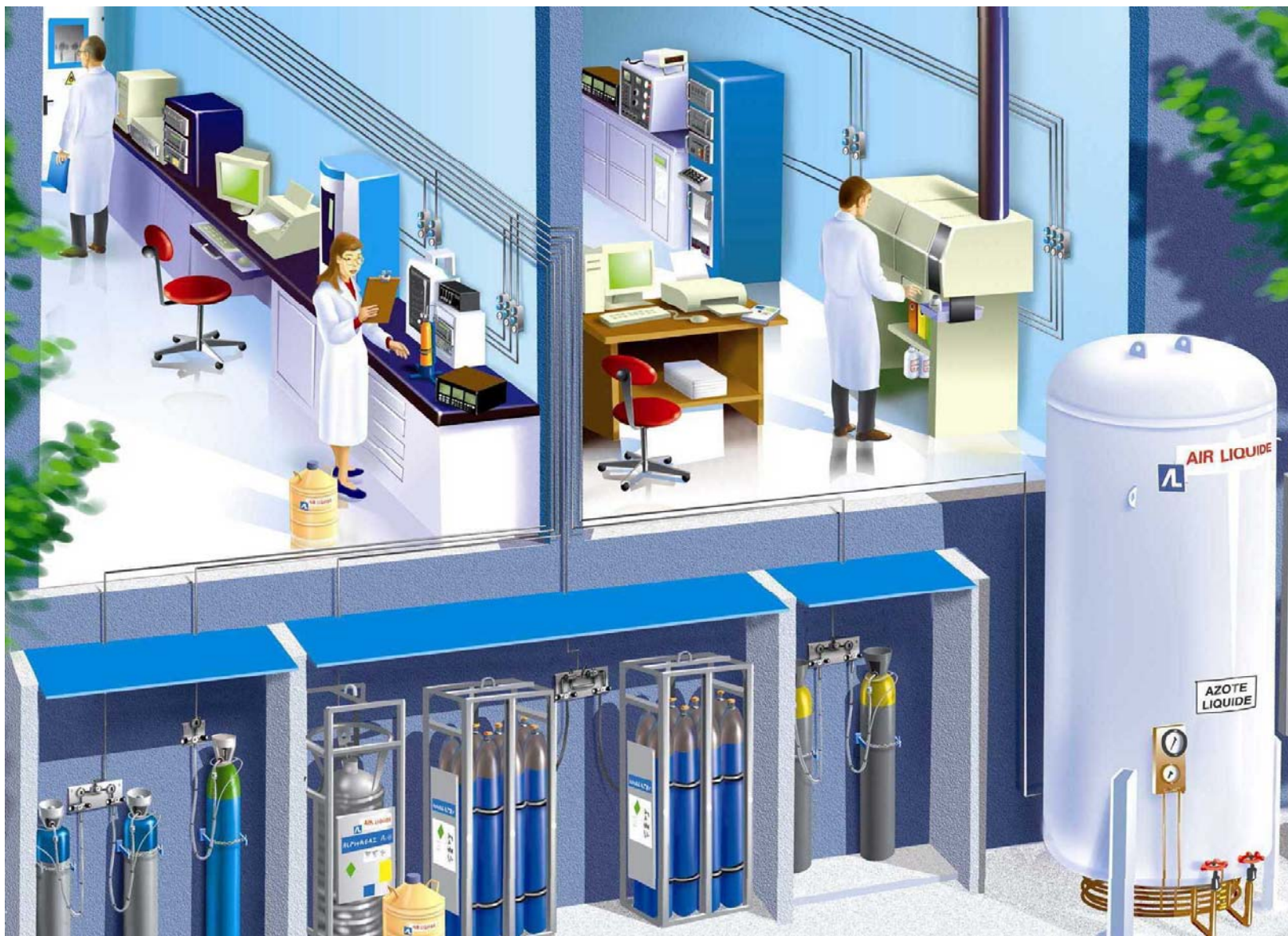
[Available Free: click here to download PDF](#)

Calculation of Threshold Quantity for Carriage Regulations

Basic requirement that drivers are trained in:

- Potential Hazards and Dangers of Goods**
- Safe Handling of Gas Cylinders**
- Emergency Procedures and the Use of Firefighting Appliances**
- A record should be kept of all training.**

Setting up Gas Supply Infrastructure



Guidance Notes - Cylinders



BCGA GUIDANCE NOTE GN 2

**Guidance for the Storage of Gas Cylinders
in the Workplace**

Revision 3 : 2005



BCGA GUIDANCE NOTE GN 3

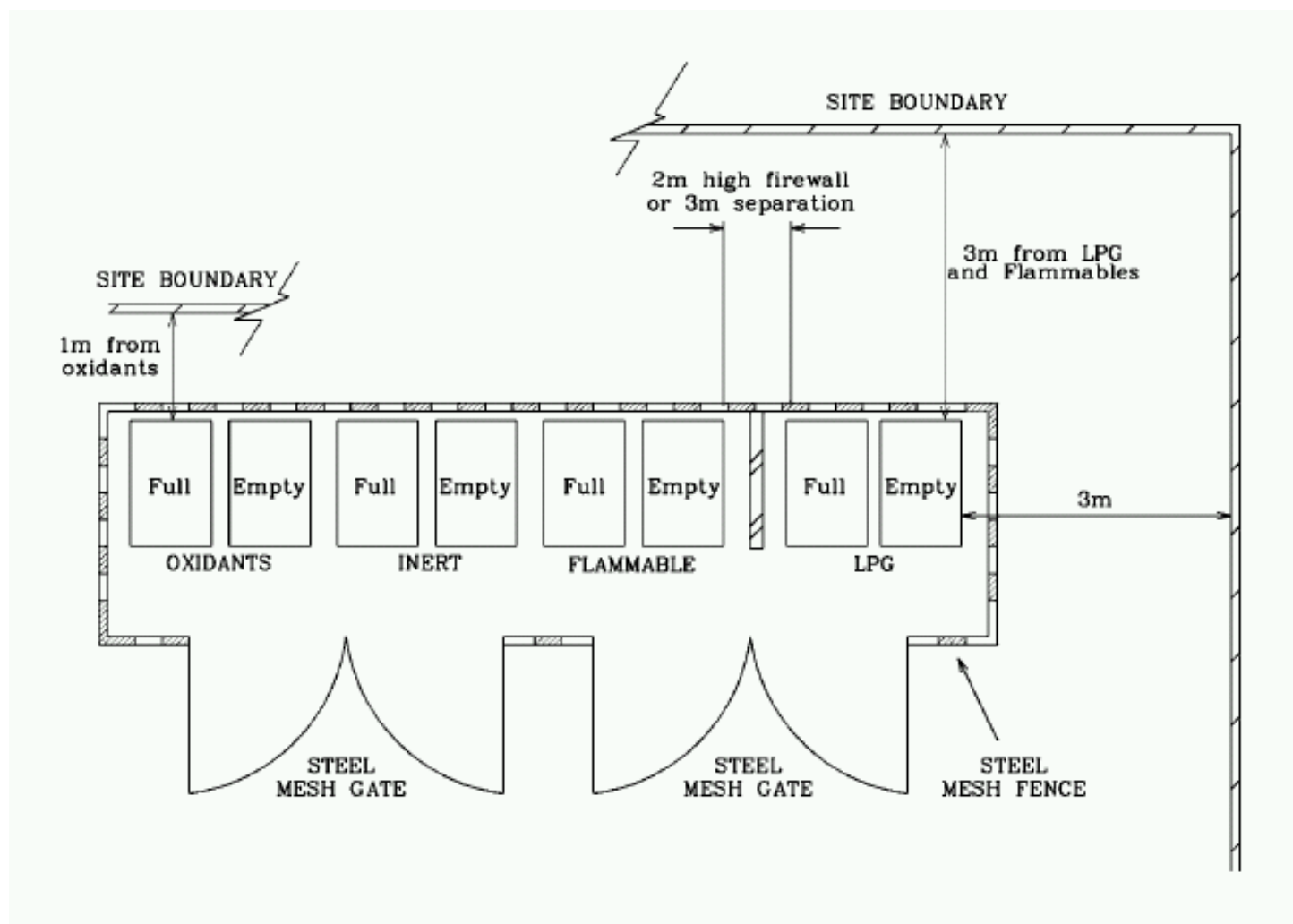
**Safe Cylinder Handling and the Application
of the Manual Handling Operations
Regulations to Gas Cylinders**

Revision 1 : 2005

GN2 Guidance for the Storage of Transportable Gas Cylinders for Industrial Use. Revision 3: 2005.

Defines the principles of safe practice for the storage of gases in cylinders and pressurised containers for cryogenic liquids of not more than 1,000 litres. This Guidance Note is intended for users, distributors and stockists of cylinder gases. Revision 3 incorporates new and revised legislative references, and deals with issues arising from the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).

Guidance Notes - Cylinder Storage GN2



GN3 Safe Cylinder Handling and the Application of the Manual Handling Operations Regulations to Gas Cylinders. Revision 1 : 2005

Guidance Note GN3 defines the principles of safe practice for users when handling and moving cylinders, provides a basic understanding of the Manual Handling Operations Regulations as relating to gas cylinders and offers specific guidance to managers and their staff in handling cylinders containing compressed, dissolved and liquefied gases at work places.

GN3 includes a summary of the duties of employers and employees under the Manual Handling Operations Regulations 1992, as amended by the Health and Safety (Miscellaneous Amendments) Regulations 2002 with regard to the handling of gas cylinders by users. It also takes account of HSE's revised Guidance L23 on the Manual Handling Operations Regulations 1992 (as amended in 2004) and of HSE's Research Report 228 – "Review of the risks associated with pushing and pulling heavy loads".



Technical Information Sheet

TIS No 8 : 2005

Information for Customers Collecting Gas Cylinders (Flammable, Inert and Oxidising Gases)

An open vehicle is recommended for the carriage of all cylinders. This is particularly important for acetylene and LPG cylinders which should be transported and stored upright. If a closed vehicle is used ensure there is adequate ventilation. It is recommended to drive with a window open.

Secure the cylinder in the boot/load area and remove the cylinder from the vehicle as soon as the journey is completed. Customers who transport cylinders in vehicles - refer to BCGA leaflet L1.



Technical Information Sheet

TIS No 12 : 2005

HANDLE GAS CYLINDERS SAFELY

Information for Customers Handling Gas Cylinders

Musculoskeletal disorders (MSDs) are the most common occupational illness in Great Britain; affecting 1.1 million people a year. An estimated 12.3 million working days are lost annually to work-related MSDs.

Gas cylinders are generally heavy and are relatively unstable due to the base diameter to height ratio. Large cylinders can weigh over 100kg when full and being tall and thin they are easily toppled over. This TIS has been produced to help users of large gas cylinders to handle them in a safe manner.

This leaflet should be read in conjunction with BCGA Guidance Note GN3 and BCGA TIS 8.

Maintaining Systems including Pipework

CP23 - Application of Pressure Systems Safety Regulations.....

Importance of Written Schemes of Examination

Examination in Accordance with Written Scheme

Maintenance, Modification and Repair

Importance of Written Records

GUIDELINES FOR WRITTEN SCHEME OF EXAMINATION FOR PRESSURE SYSTEMS ATTACHED TO TRANSPORTABLE PRESSURE VESSELS

9 Regulators and their interstage/outlet integral protective devices	5-years	a) Replace with new or refurbished unit, or b) Locally refurbish with approved spare parts kit and functionally check. See note 1 below.
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Note 1 Where a relief valve is installed downstream of a regulator, which is capable of discharging the failed regulator flow, then this becomes the protective device and the regulator need not be changed.

Some Training Options

- Foundation 3 hours



- Regulator fitting & Manual handling practical 1 hour



Manual Handling Training

- Load
- Task
- Environment
- Individual capability



- Gases play an essential part in analysis and their correct selection is critical to achieving reliable & repeatable results
- There a number of codes of practise on top of legislation that it is important to be aware of
- When choosing supply of gas – look for support in advice on use of gases but also guidance on training and education of staff.
- It is important to ensure that not only is training conducted but that there is a record of training