

Safety Code of Practice 46, Part 3

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# MANAGEMENT AND SAFE USE OF WORK EQUIPMENT: GAS SAFETY



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# 1 SUMMARY

**Safety Guide 46 Part 1 Management and Safe Use of Work Equipment describes the management systems required to purchase, use and maintain all types of equipment used at work, including industrial and mains gases. Part 2, Pressure Systems, details the specific requirements that apply to pressure systems, including gases under pressure. This Safety Guide, Part 3, details the other requirements that apply to gas systems, including system design, maintenance of gas regulators, cylinder storage and safety in use.**

**This Guide applies across the University where industrial and natural (mains) gas is used. This includes liquefied petroleum gas (LPG), bottled laboratory gases, gas generation systems and cryogenic gases. It includes requirements for academic, commercial, residential and tenanted properties. The purpose of this guidance is to ensure that all portable and fixed gas systems used within the University are safe and compliant with legislation.**

It is beyond the scope of this guide to set out safe operating procedures (SOPs) for all gas systems in use within the University. These must be based on risk assessment within Schools/Directorates/Units, and in accordance with industry best practice. The relevant bodies are the:

- Gas Safe Registration Scheme for natural (mains) gas and fixed LPG systems;
- UKLPG trade association for other LPG systems;
- British Compressed Gases Association (BCGA) for industrial and medical gases.

Facilities Management Directorate (FMD) are responsible for all fixed domestic and LPG gas systems. The owning School/Unit is responsible for all other industrial and special gases and gas systems, including associated pipe work. For each system there must be:

- Safe design
- A suitable and sufficient risk assessment
- Standard Operating Procedures (SOPs) or local rules, based on the risk assessment, and including emergency procedures
- Defined arrangements for the maintenance and inspection of the system (see SG46 Part 2)
- Safe storage of gas cylinders, where appropriate.

All users **must** be trained in the safe use of the gas system on which they work. This must be in accordance with a written training scheme, based on SOPs. Training must include the emergency procedures.

There are specific legal requirements for written schemes of examination and inspection for pressure systems, including gas systems. Details are given in Safety Guide 46 Part 2 *Pressure Systems*. Schools/Directorates/Units may need to obtain specialist advice from Health and Safety Services or from specialist engineering inspectors to determine what inspection regime is appropriate for the equipment that they are responsible for.

See also Safety Guide 4 Dangerous Substances and Explosive Atmospheres which has information on the safety of flammable gases.

## 2 INTRODUCTION

**This Safety Guide applies across the University where industrial and natural (mains) gas is used. This includes liquefied petroleum gas (LPG), bottled laboratory gases, gas generation systems and cryogenic gases. It includes requirements for academic, commercial, residential and tenanted properties. The purpose of this guidance is to ensure that all portable and fixed gas systems used within the University are safe and compliant with legislation. Because of the seriousness of the risks, legislation is very prescriptive and the penalties for failing to follow the legislation are severe.**

Guidance:

The following Safety Guides are relevant:

*Safety Guide 46 Part 1 Safe Use of Work Equipment - includes general safety requirements for work equipment.*

*Safety Guide 46 Part 2 Pressure Systems - covers the requirements that apply to pressure systems, including gases under pressure.*

*Safety Guide 46 Part 5 Cryogenic Gases – covers the cryogenic properties and associated risks and controls necessary for working with cryogenic gases.*

*Safety Guide 4 Dangerous Substances and Explosive Atmospheres - has information on the safety of flammable gases.*

## 3 SCOPE

This guidance covers all portable and fixed gas systems including, but not exclusively:

- all gases provided in cylinders regardless of capacity;
- all gas generation systems such as hydrogen gas generators;
- any liquid not under pressure that can produce a hazardous gas at room temperature i.e. liquid nitrogen and other cryogenic gases;
- gas heating or cooking systems including mains gas, propane and butane.

The main legal requirements arise from the *Gas Safety (Installation and Use) Regulations 1998*, the *Pressure Systems Safety Regulations 2000* and the *Dangerous Substances and Explosive Atmospheres Regulations 2002*. The *Provision and Use of Work Equipment Regulations 1998* cover the training of staff in the use of work equipment, and general safety requirements for design, use and maintenance of work equipment.

## 4 RESPONSIBILITIES

Facilities Management Directorate (FMD) are responsible for the management, maintenance and monitoring of all fixed domestic and LPG gas systems.

The 'owning' School/Department/Unit is responsible for all industrial and special gases and gas systems, including the pipework associated with gas cylinders.

### 4.1 Duties on University managers

Managers must ensure that:

- this guidance is brought to the attention of all staff and students who work with or control portable or fixed gas systems;
- the Gas Safe Practices notice at Appendix 1, and emergency notices at Appendix 2, are displayed where any gas system is in use;
- all users are suitably trained and authorised before being allowed to work on gas systems (see Appendix 3);
- suitable and sufficient risk assessments have been completed;
- standard operating procedures (SOPs), including emergency procedures, are developed and that all users are trained in accordance with the SOPs;
- a written scheme of examination is in place (see Safety Guide 46 Part 2) for any gas pressure systems (unless an exemption applies);
- gas systems are examined and maintained as required by legislation and in accordance with the written scheme (see section 8 for legislation);
- gas appliances and flues in tenanted residential accommodation (including Halls of Residence) are checked for safety at intervals not exceeding 12 months, in accordance with the requirements on landlords under the Gas Safety (Installation and Use) Regulations;
- all gas systems are correctly marked with the designed gas and pressure limits – a guidance sheet on gas system markings is attached, see Appendix 4;
- a record is kept of the dates of purchase, installation, maintenance and refurbishment of all regulators in a gas system (see section 7);
- all contractors, staff and students who work on flammable gas systems are qualified under the Gas Registration Scheme (effective from 1 April 2009, as a replacement for CORGI);
- all industrial gas systems are designed, installed and used in accordance with guidance published by the British Compressed Gases Association (BCGA) – see section 5;
- portable LPG systems are used in accordance with UKLPG guidance;
- safe and secure storage for gas cylinders is provided and used;
- the guidance for the use of patio heaters and gas BBQ systems (Appendix 5) is followed;
- all gas systems are monitored for compliance with both the University's requirements and those of legislation.

**Guidance:**

Until 31 March 2009, CORGI was the UK statutory registration scheme for gas installation businesses. On 1 April 2009 this role was taken over by the Gas Safe Register, managed by Capita.

## **4.2 Duties of staff, building occupants and students**

All persons working with gas systems must have received appropriate training (see section 6 and Appendix 3). They must work in accordance with standard operating procedures and local rules.

### **4.2.1 Duties on tenants**

Tenants must inform the University if they intend to use gas systems on University property (excluding mains gas). All such systems must be safe by design and in use, and be compliant with legislation. Tenants are referred to the industry guidance and Codes of Practice referenced in this Safety Guide.

## 5 HAZARDS

The main hazards associated with transportable gas cylinders, gas generation and liquefied gas systems are:

- manual handling
- explosive atmospheres
- oxygen rich or oxygen deficient areas
- toxic (acute and chronic) gases or by-products, including carbon monoxide
- high pressure venting or leaks
- embolisms due to high pressure gas penetrating the skin or eye
- cold burns
- incorrectly fitted systems leading to damage to the system or end distribution point
- flying objects due to incorrect pressure release/equipment failure/user error.

## 6 DESIGN AND OPERATION OF GAS SYSTEMS

Gas systems must be designed with safety as the lead principle; a well-designed system will prevent failure and hence eliminate the risk to people.

### 6.1 Industrial, special and medical gases

The BCGA produces a series of Guidance Notes (GNs) and Codes of Practice (CPs) to guide users, designers and installers of industrial/special gas systems. Whilst these documents are not legal requirements, they are recognised as representing industry best practice. **It is University policy that industrial/special gas systems should, wherever reasonably practicable, be designed, maintained and used in accordance with BCGA guidance.** Any systems not designed, installed or used in accordance with BCGA guidance must have a full risk assessment that establishes reasonable grounds for non-conformance.

The following BCGA Codes of Practice and Guidance Notes are relevant to the University and should be followed:

#### **Industrial gas systems and manifolds**

*CP4 Industrial Gas Cylinder Manifolds & Distribution Pipework/Pipelines (excluding acetylene). Revision 3: 2005* covers the design and installation of industrial gas systems and manifolds.

#### **Transportable gas cylinder systems**

*GN 7 The Safe Use of Individual Portable or Mobile Cylinder Gas Supply Equipment: Revision 2: 2008* covers the use of transportable gas cylinder systems i.e. where a portable cylinder is connected into a fixed pipework system.

#### **Acetylene**

*CP5 The Design & Construction of Manifolds using Acetylene Gas from 1.5 bar to a Maximum Working Pressure of 25 bar (362 lbf/in<sup>2</sup>). Revision 1: 1998* applies to systems using acetylene.

#### **Special Gases**

*CP18 The Safe Storage, Handling and Use of Special Gases in the Micro-electronics and other Industries. Revision 2: 2005.* Gives technical and safety guidelines for the safe storage and handling

of special gases in transportable containers up to the point where product is provided at the required pressure and flow at the junction with the user process.

BCGA GN11 *Use of Gases in the Workplace. The management of risks associated with reduced oxygen atmospheres*. 2002. Provides guidance on risk assessment and control measures for workplace where gases are produced, stored or used, and where reduced oxygen atmospheres could occur.

## 6.2 Pressure Systems Safety Regulations

In addition, the Pressure Systems Safety Regulations 2000 require that:

- A documented pressure systems design review must be completed before any system is put into use;
- A written scheme of examination must be in place for continued use and maintenance (see SG46 Part 2).

# 7 COMPETENCY

Gas systems must be designed, installed and inspected by competent people. The design, installation, maintenance and use of domestic and LPG systems (flammable gases) are covered by the Gas Registration Scheme. The FMD Gas Duty Holder is responsible for ensuring that:

- the registration for Maintenance Services staff is maintained;
- FMD staff carrying out works to gas installations and appliances are competent and are regularly trained in accordance with the FMD Gas Procedures manual;
- contractors are registered for the type of gas work to be carried out.

Specialist gas systems as used in laboratories are not included in the Gas Safe Register scheme. There is currently no licensing or registration scheme for designers or installers of industrial gases. However all relevant contracts and contractor selection should require an understanding of the appropriate BCGA Codes and Guidance and be able to demonstrate that any such system is designed, installed or maintained with these guides as the criterion.

# 8 GAS REGULATORS

Users must ensure that the regulator is **matched** to the selected gas, at the correct inlet and outlet pressures and flow rate. For gas welding equipment the pressure regulator must comply with BS EN ISO 2503 and for medical gases with BS EN 738. Many existing regulators were made to standards which have now been withdrawn such as BS 5741, BS 7650 and BS EN 585. These may not be suitable for pressures above 200 bar; users should check with the manufacturer. **Only special purpose regulators can be used with oxygen cylinders.**

Regulators must be visually examined by the user to determine suitability each time the regulator is used. Each regulator must be inspected annually, and a record kept. The annual inspection must be undertaken by a competent person (normally a member of the School technical staff who has attended the 'Connecting Regulators Practical Workshop'). The inspection should include a functional test to ensure the correct operation of internal components.

Industrial gas regulators should normally be replaced or refurbished every 5 years, or in line with the manufacturer's recommendations. If refurbished, it should be in accordance with the British Compressed Gases Association (BCGA) Code of Practice CP17 rev 1.

Where corrosive gases are used, more frequent testing and inspection periods may be required. The following maintenance frequencies are based on recommendations in the USA provided by Gas Safety UK.

SERVICE	LEAK TEST	CREEP TEST	INERT PURGE	OVERHAUL	REPLACE
Non-corrosive	Monthly	Annually	N/A	5 year	10 year
Mildly corrosive	Fortnightly	Six monthly	At shutdown	2 year	5 year
Corrosive	Fortnightly	Three monthly	At shutdown	1-2 year	3-4 year

Table 1 Regulator inspection, tests and replacement

The guidance given above on refurbishment/replacement periods for industrial gas regulators is based upon industry experience and best practice. If a department decides that it is reasonably practicable to adopt a less frequent refurbishment/ replacement regime, this must be justified by a full, written, risk assessment, taking into account data on e.g. conditions of use and/or storage, local operating experience, results of tests and inspections, etc.

## 9 SAFE STORAGE

### 9.1 Design of gas stores

BCGA Guidance Note GN2 *Guidance for the storage of gas cylinders in the workplace* should be followed when designing and using gas stores. For LPG stores, HSE Guidance Note CS 4 *The keeping of LPG in cylinders and similar containers* should be followed. University standards and guidance for the design of stores for flammable substances may also be relevant – see *Safety Guide 24 Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)*.

#### 9.1.1 External storage

Key points are summarised below:

- BCGA recommended separation distances should be adopted wherever practicable;
- storage areas should be well defined and located in the open air where there is good natural ventilation to allow dispersion of any leaks. Storage within a building is not recommended and should not be considered for new locations for cylinder stores;
- outdoor storage structure should ideally be designed with no roof and up to two solid walls not more than 2m in height. However, a storage structure for non-flammable cylinders or for small quantities of flammable cylinders may consist of three adjacent walls, provided that at least 25% of the perimeter is constructed to ensure that ventilation is not impaired e.g. meshed fencing. If overhead weather protection is required, then roofing designed to prevent potential gas pockets is suitable e.g. gaps between the wall and sloping roof, natural ventilation in the roof apex etc;
- stores must be lockable and secure;
- stores must be designed to include separate areas for full and empty cylinders;

- the design and location of gas stores should enable gases to be segregated with due regard to the potential hazards of the particular gases;
- storage locations for cryogenic, liquefied and heavier-than-air compressed gases, e.g. argon, carbon dioxide, LPG, liquid nitrogen, should be sited with regard to the dangers of seepage into drains, basements, cable ducts, etc;
- the storage area should be located so that it is readily accessible for cylinder movements with manual handling distances kept to a minimum and clear access maintained at all times for deliveries and the emergency services;
- for safe access to cylinders and to facilitate housekeeping and stock control, aisles should be provided. Typically, they should be 0.6 metres wide;
- the area should have adequate lighting to assist in the identification of the cylinder contents;
- where flammable gases are involved a risk assessment is required to determine whether protected electrical equipment is required. LPG stores will generally be classified as Zone 2 areas and hence require electrical equipment suitable for use in accordance BS EN 60079 Part 14 - *Electrical Apparatus for Explosive Gas Atmospheres. Part 14 Electrical installations in hazardous areas (other than mines)*.

### 9.1.2 Internal storage

Where external storage is not reasonably practicable, the following recommendations for indoor storage of LPG cartridges and cylinders must be observed:

- no more than 70kg of LPG may be stored in cylinders or cartridges in an academic building. A lower limit of 15kg applies in residential accommodation such as Halls;
- all LPG must be stored in a fire-resisting, locked, cabinet or cupboard; there should only be one cabinet/cupboard within a building. The cabinet/cupboard must have adequate ventilation at high and low level to a safe place outside the building.

## 9.2 Management of gas stores

Key points are:

- only authorised users should have access to gas stores;
- full cylinders must be stored separately from empty cylinders; Cylinders of different gases should be segregated, based on the properties of the gas. It is acceptable to store oxidants, inert gases, compressed flammable gases (e.g. hydrogen, acetylene) in the same area of the store provided they are separated by gas type;
- LPG cylinders must not be stored within 3 metres of any compressed gas cylinders;
- cylinders must be stored away from sources of heat. The cylinder storage must be designated a **NO SMOKING AREA**. If LPG is stored, a warning sign "highly flammable LPG" must be displayed;
- cylinders must be stored with valves uppermost, particularly where they contain liquid such as acetylene;
- cylinders must not be stored below ground level or near to drains or basements – most gases are heavier than air and are asphyxiants;
- cylinders must be protected from damage e.g. by chaining unstable cylinders in racks or on special trolleys;
- emergency information about bottled gases stored in and around the curtilage should be kept readily available in the building emergency folder;
- acetylene cylinders **MUST** be stored in a secure store outside buildings when not in use;

- stores must have readily available portable fire fighting equipment in case of a minor fire involving grass, rubbish etc. For any fire involving LPG the Fire and Rescue Service must be called and users must not place themselves at risk by trying to put the fire out.

## 10 EMERGENCY ACTIONS

The Gas Safe Practice notice (Appendix 1) must be brought to the attention of all staff and students who work with or near gas systems.

A detailed emergency procedure must be readily available and be part of any induction, training and operating system of a designated gas area. The emergency procedure should be simplified and used as an emergency notice to be displayed in the designated area. Examples of simple emergency notices are given in Appendix 2.

The list of key hazards at section 4 must be considered when assessing any gas system. However, designers must bear in mind that other systems may impact on the use of a gas system and this should also be included in the hazard assessment. Where asphyxiant gases or pure oxygen are used, the hazard assessment must include calculations of the worst possible scenario i.e. a catastrophic leak, in order to determine if an oxygen-deficient or enriched atmosphere may result (see SG 46 Part 4).

Unintended releases of gases and liquids from pressure systems have to be reported under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR). Any such reports will be made by Health and Safety Services (H&SS); any department experiencing a gas leak must inform H&SS immediately.

## 11 LEGISLATION

The following UK legislation applies:

- The Gas Safety (Installation and Use) Regulations 1998 covers both portable and fixed installations in all properties;
- The Pressure Systems Safety Regulations 2000 cover all systems with a pressure of 0.5 bar or more above atmospheric pressure;
- The Dangerous Substances and Explosive Atmospheres Regulations 2002 cover any gases that are flammable/explosive;
- The Provision and Use of Work Equipment Regulations 1998 covers the requirement to have a safe system of work, training for staff in the use of gas systems and the maintenance of equipment;
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 require a report to be made to HSE where there has been an unintended release from any pressurised system.

## 12 FURTHER ADVICE AND INFORMATION

1. HSE gas website <http://www.hse.gov.uk/gas/index.htm>
2. Gas Safety UK [www.gas-safety.uk.com](http://www.gas-safety.uk.com)
3. British Compressed Gases Association [www.bcgga.co.uk](http://www.bcgga.co.uk)
4. HSE Guidance Note CS 4 *The keeping of LPG in cylinders and similar containers*

5. Liquefied Petroleum Gas Association website <http://www.lpga.co.uk/LPGA.htm>
6. Liquefied Petroleum Gas Association Code of Practice No. 7. *Storage of Full and Empty LPG Cylinders and Cartridges (March 2004)*
7. BCGA CP4 *Industrial Gas Cylinder Manifolds & Distribution Pipework/Pipelines (excluding acetylene). Revision 3: 2005*
8. BCGA CP5 *The Design & Construction of Manifolds using Acetylene Gas from 1.5 bar to a Maximum Working Pressure of 25 bar (362 lbf/in<sup>2</sup>). Revision 1: 1998*
9. BCGA CP18 *The Safe Storage, Handling & Use of Special Gases in the Micro-Electronics Industry. Revision 2: 2005*
10. BCGA CP23 *Application of the Pressure Systems Safety Regulations 2000 to Industrial and Medical Pressure Systems Installed at User Premises. Revision 1: 2002*
11. BCGA GN2 *Guidance for the storage of gas cylinders in the workplace*
12. BCGA GN7 *The Safe Use of Individual Portable or Mobile Cylinder Gas Supply Equipment: Revision 2: 2008*
13. BCGA GN11 *Use of Gases in the Workplace. The management of risks associated with reduced oxygen atmospheres. 2002.*
14. Safety Guide 24 *Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR).*
15. Gas Safe Delegate Workbook *Cylinder Gases, Nov 2007*
16. Gas Safe Delegate Workbook *Cryogenic Gases, 2008*
17. BS EN 60079 Part 14 - *Electrical Apparatus for Explosive Gas Atmospheres. Part 14 Electrical installations in hazardous areas (other than mines).*

## Appendix 1: Gas safe practices

### Designated gas working area

- All areas where gas systems are used must be designated and identified in the building emergency folder and by signage.
- Suitable and sufficient warning signs and emergency action signs must be displayed (see attached examples).
- Specific risk assessments are required for gas systems.
- Staff and students who work with gas systems must be trained on that system.
- All designated areas must have an emergency plan.
- All staff and students working in a designated area must receive a briefing on safe use of the gas system and emergency procedures.

### Designed gas systems

- Any gas system that requires installation, pressure release valves (PRV), pressure gauges, or pressure storage tanks, operating at more than 0.5 bar above atmosphere, or which involves the transport of domestic or LPG gas is required to have a 'written scheme of examination'.
- Any designed gas system that has a written scheme of examination must be inspected/tested by a competent person in accordance with the requirements of the written scheme.
- A designed gas system that has a 'written scheme of examination' must not be changed or modified without reference back to a competent person.
- All designated systems must be marked with the gas type, using the name and colour coding as in EN 1089-3.

### Protection for users

All gas systems must have protection systems and all users must be aware of those systems. All gas users must:

- Be aware of the protection devices;
- Know and understand the properties of the gas that they are using, and have access to the safety data sheet;
- Know, understand and follow the standard operating procedures for the task/equipment being used with the gas;
- Adopt safe handling techniques for moving and storing cylinders;
- When changing gas cylinders, wear appropriate PPE - the minimum requirements are industrial gloves, safety shoes and safety glasses;
- Only change LPG cartridges in the open air, away from any source of ignition.
- Ensure that the operation of a safety device does not cause a significant hazard e.g. the safe venting of a nitrogen vessel should not create an oxygen deficient area/room;
- Not circumvent, interfere with or tamper with any protection device;

### Cryogenic systems

- When filling dewars or decanting cryogenic gas, as a minimum wear pocket-less lab coats, face shields or safety glasses with cheek and brow guards, non-absorbent insulated gloves and protective footwear (with no lace holes);
- When filling dewars or decanting in an area where there is any possibility of oxygen enrichment or deficiency, wear a personal oxygen monitor that will alarm if oxygen content of the atmosphere deviates by more than 1.5% from that of normal air.

## Appendix 2: Sample emergency notices

# Gas emergency

*(For flammable gases)*

If you smell gas, **leave the area immediately** and alert others to do the same.

Do not switch on or off any electrical systems.

Extinguish any naked flames.

Call the FMD Helpdesk on extn. 7000 or Security on extn. 6300, stating the location of the leak and your contact details.

**Get out and stay out**

If you can isolate the supply without re-entering the area, do so and await the arrival of the FMD gas specialist.

Do not re-enter the area until told its safe to do so.

Contact :

The Building Manager, Area Health and Safety Co-ordinator, or local management

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# Gas emergency

*(For non-flammable, toxic and non toxic gases)*

For unintended releases of gas, isolate the supply if you can do so safely without contacting the gas jet.

Open windows to allow ventilation.

Do not allow re-entry until the atmosphere is safe.

Contact:

Building Manager, Area Health and Safety Co-ordinator, or local  
management .....

Health and Safety Services on extn. 8888.

Do not move or alter any part of the system as Health & Safety Services will need to examine the system to make an incident report (legal requirement).

## Appendix 3: Gas safety training

All persons who install, service or change LPG or domestic gas systems must be registered under the Gas Safety Registration scheme, effective from 1 April 2009. This is a legal requirement and there are no exceptions under the regulations for academic use.

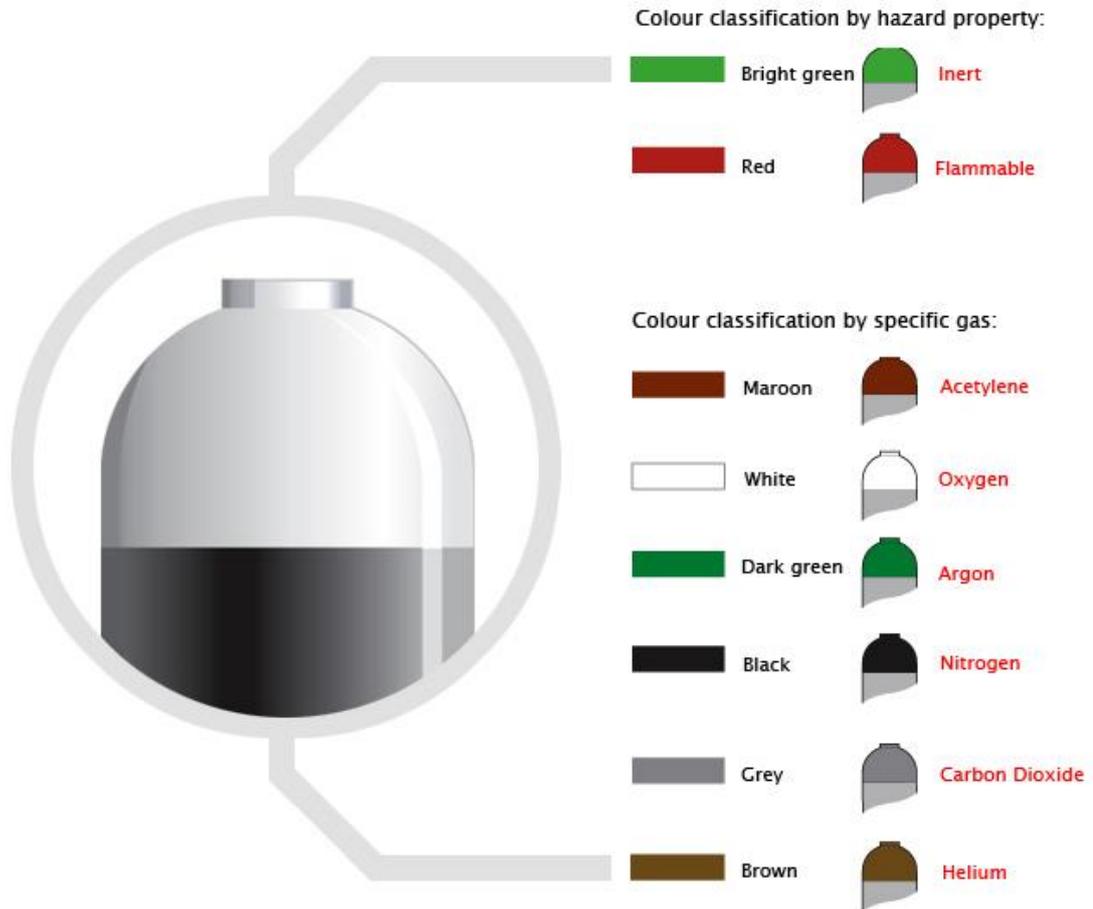
For industrial/special gases i.e. non LPG or domestic gases, the University provides the following courses:

- On-line training using gas cylinders safely within Universities – Gas Safe Consultants Limited
- Connecting Regulators Practical Workshop – Gas Safe Consultants Limited
- Safe decanting of liquid nitrogen - Gas Safe Consultants Limited

Senior technical staff must attend these, or equivalent, courses. It is acceptable for other staff, postgraduate students and other users to be trained in-house by the School senior technicians. This in-house training must cover the hazards, risks and standard operating procedures for the gas system(s) in use within the School/Department. All users must attend in-house training and be assessed as competent before they are authorised to handle and use gas cylinders or cryogenic gases or to connect regulators. All training must be recorded.

## Appendix 4: Gas cylinder markings

The following guidance comes from the new EN 1089-3 portable gas cylinder making requirements.



## Appendix 5: Outdoor heating and cooking

Every year a large number of injuries and property fires occur in the UK from barbeques and patio heaters. Apart from the obvious hazards from naked flames setting fire to materials such as awnings and sun shades the most common mistakes are:

- attaching the wrong type of gas cylinder to a domestic barbeque (DO NOT 'jury rig' an acetylene cylinder to a barbeque);
- incorrectly fitting gas regulators to cylinders, leading to leaks;
- adapting gas fittings and pipe work to either extend or hide supply sources;
- failing to correctly switch off fittings/controls before putting them away;
- cold burns from touching the cylinder when it has been in use over a long period.

Safety in the use of gas for outdoor heating and cooking is simple:

- always read the manufacturer's guidance for the equipment;
- always set up the equipment on a level surface;
- ensure that the equipment is away from flammable materials;
- check for adequate ventilation but away from wind conditions that may blow out the flame;
- if the equipment flame has been blown out, take care the un-burnt gas has not collected at a nearby down wind, low point;
- ensure that the cylinder and its pipe work are protected from naked flames and coals;
- if you have to connect or change the gas cylinder, test the joint with soap solution or a proprietary leak detection fluid and ensure the joint is leak tight before lighting the appliance;
- when putting the equipment away, make sure that it is cool enough not to set fire to any materials nearby.

Information of the food safety and hygiene aspects of BBQs is given in Safety Note 40.

## Appendix 6: Version control

VERSION	KEEPER	REVIEWED	APPROVED BY	APPROVAL DATE
X.X	H&S	Every four years	XXXXX	XX/XX/XX
X.X	H&S	Annually	XXXXX	XX/XX/XX