Health and Safety Office

Code of Practice Compressed Gas Cylinders

**1.  Introduction**

This code of practice (COP) is to be read in conjunction with the relevant elements of the university safety statement. The university safety statement contains both general safety policy and specific guidelines and procedures on a number of safety-related issues, particularly those concerning laboratories and workshops, where compressed gas cylinders are commonly found.

Gases contained in cylinders are used in the university principally in laboratory teaching and research and for soldering, welding and flame cutting in maintenance workshops. They are safe when adequate risk control is in place but users and others sometimes suffer accidents if careful risk assessment has not been carried out. The main causes of accidents with gas cylinders and compressed gases are:

(a)  inadequate training and supervision of users;

(b)  poor installation;

(c)  poor examination and maintenance;

(d)  faulty equipment and/or design (e.g. badly fitted valves and regulators);

(e)  poor handling;

(f)  poor storage;

(g)  inadequately ventilated working conditions;

(h) insufficient knowledge of the hazards posed.

**2.  Risk control**

(a)  Where any school, college, research unit or support services unit owns and/or uses gas cylinders these must be designed and manufactured to an approved specification to withstand everyday use and to prevent danger; they must be periodically examined by a competent person at the intervals set out in a written scheme of examination to ensure that they remain safe in service; and the filling of the gas cylinders (if it happens on campus) must be described in a detailed working procedure.

(b)  Anyone who uses a gas cylinder must 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, in particular:

(i)  Users should be able to carry out an external visual inspection of the gas cylinder, and any attachments (e.g. valves, flashback arresters, and regulators), to determine whether they are damaged. Visible indicators may include dents, bulges, evidence of fire damage (scorch marks) and severe grinding marks, etc.

It is necessary to keep a record of annual and formal inspections which must be carried out by a competent person who may be a contractor. NB: it is general industry practice to renew regulators five yearly and in the case of toxic gases two yearly.

(ii)  Gas cylinders should be used in a vertical position, unless specifically designed to be used otherwise.

(iii) Cylinders should be securely restrained at all times to prevent them falling over from static locations and when they are being transported to and from storage. Cylinder trolleys should for transportation only and be fit for purpose.

(iv) Users should always double check that the cylinder/gas/regulator is the right one for the intended use.

(v)  Before connecting a gas cylinder to equipment or pipe work, users should make sure that the regulator and pipe work are suitable for the type of gas and pressure being used. All connection and disconnection operations must be subject to risk assessment. There may be risk of harmful gases being released at these times and appropriate precautions must be taken.

(vi) When required, users should wear suitable safety shoes and other personal protective equipment (manually handling gas cylinders).

(vii)  Users must not drop, roll or drag gas cylinders.

(viii)  Users must close the cylinder valve and replace dust caps, where provided, when a gas cylinder is not in use.

(ix)  Where appropriate, users should fit cylinders with residual pressure valves (non-return valves) to reduce the risk of back flow of water or other materials into the cylinder during use.

**3.**  **Storage**

(a)  Gas cylinders should be stored in a secure, dry, safe place, on a flat surface, in the open air. If this is not reasonably practicable, storage should be in an adequately ventilated building or part of a building specifically reserved for this purpose. Storage areas must be identified with an appropriately sized warning sign. Cylinder stores should be identified in emergency planning and marked up on any plans.

(b)  Gas cylinders should be protected from external heat sources that may adversely affect their mechanical integrity.

(c)  Gas cylinders must be stored away from sources of ignition and other flammable materials.

(d)  Avoid storing gas cylinders where they may be liable to stand or lie in water.

(e)  Valves should be kept shut on empty cylinders to prevent contaminants getting into the cylinder.

(f)  When not in use, gas cylinders should be stored properly restrained, unless designed to be freestanding.

(g)  Gas cylinders must be clearly marked to show what they contain and the hazards associated with their contents.

(h)  Cylinders must be stored where they are not vulnerable to hazards caused by impact, e.g. from vehicles.

**4.  Action required**

(a)  Identify the gas cylinders in use in the school, college, research unit or support services unit and ascertain whether they are leased or owned.

(b)  If cylinders are owned, check that they are stamped with a record of examination carried out in accordance with 2.(a) above and that there is a detailed written procedure for filling the cylinders.

(c)  Check that leased cylinders are stored and used in accordance with the guidance given above and check that there are records of the inspection identified in 2.(b)(i) above.

(d) Check that cylinder valves, regulators and flashback arrestors are suited for the gas in use. Check that the regulator is ‘in date’. Check that unions, nuts, hoses and connectors are securely fitted and that leaks are avoided.

(e) Keep a maintenance log of all key pieces of equipment, noting inspections, replacements and repairs.

(f) Ensure that appropriate safety training is received by all users. Complete a safety training needs assessment and forward it to the Safety Office.

**END**

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