Swansea University
Prifysgol Abertawe

HEALTH & SAFETY
IECHYD A DIOGELWCH

Compressed Gas Policy Arrangements

HSA-10122

Contents

Document Control

Document Name	Compressed Gas Policy Arrangements
Document Reference Number	HSA-10122
Revision	2.0
Date of Issue	01 November 2024
Written By	Claire Burt
Amended by	Will Finn-Lewis
Reviewed by	Alison Trace and Lorraine Wild
Contact Email	healthandsafety@swansea.ac.uk

Amendment Record

Revision	Date	Amendment(s)
0	01/02/2016	Draft
1	01/06/2016	First written compressed gas policy arrangements.
2	01/11/2024	Full review of the policy arrangements.
3		
4		
5		

1. Scope

The standards set out in these arrangements are the minimum requirements for work with compressed gases and gas systems at Swansea University. These arrangements are written in accordance with University Health and Safety Policy arrangements (HSA10100-01 Health and Safety Statement of Intent and HSA10100-02 Health, Safety, Resilience and Sustainability Policy Part 2, Organisation Document).

It is beyond the scope of these arrangements to set out safe operating procedures (SOPs) for all gas systems in use within the University. These must be based on risk assessment within the faculty/ PSU and in accordance with industry best practice.

2. Introduction

It is recognised that gases and gas distribution systems are used across the university as a critical part of teaching, research, and innovation. From breathing gas (diving), dispensing beverages through to welding and laboratory experiments.

These arrangements, and associated university standards provide a framework for faculties, PSUs, and tenants to manage gas safety at the university. All documents are available here: Staff H&S intranet pages and PG MyUni pages. These include:

- Gas Cylinder Storage
- Gas Equipment Checks and Inspection
- Gas Risk Assessment Guidance and Information
- Gas Deliveries and Collection by supplier
- Control Measures – Gas Cylinder Manual Handling
- Gas Manual Handling Information Sheet
- Gas Manual Handling Risk Assessment template
- Control Measures - Monitoring, Ventilation, Detection and Alarms
- Control Measures - Gas Cylinder Safety Training
- New Installations, Standalone and piped gases

All users must be trained in accordance with the gas training requirements document and have specific training on the system they work. This training should include the safe use of the gas systems and all emergency plans.

3. Roles and Responsibilities

In addition to the roles and responsibilities set out in the Health, Safety, Resilience and Sustainability Policy HSA-10100-02, the following specific requirements are in place to manage compressed gas safety at the University.

3.1 Executive Dean of Faculty PVC, Directors of PSUs, Deputy Executive Dean, Directors of Faculty Operations, Associate Dean (Research Innovation and Impact) and Head of School.

Are accountable for managing health and safety within their faculty. This includes ensuring adequate resources and appropriate measures are in place for the management of risks from activities involving compressed gases. They must ensure:

- Risk assessments are carried out prior to work starting.
- Recommendations of all internal and external inspections are implemented.
- Appropriate procedures are in place and monitored to control how gases are purchased.
- Appropriate procedures are in place and monitored to control how alterations to existing systems and any new installations are agreed.
- Adequate storage facilities are available in line with university requirements for all authorised installations.
- High risk installations are authorised.
- Appropriate maintenance and inspection programmes are in place for any gas monitoring equipment and any recommendations are implemented.
- Practical gas trainers are appointed within the faculty who will deliver the practical training to gas users. Faculties must inform the HS&R team of the name and contact details of the practical gas trainers for the faculty.
- A named individual is appointed for the day-to-day management of gas stores.

3.2 Principal Investigators (Academic leading a grant funded project), Supervisor, (Research and Academic/ Teaching and Learning), Line Managers and where appropriate the Supervisor of the Specific Research Activity

Principal Investigators (PIs) and project supervisors are responsible for managing the health and safety of their research and teaching activities, and ensuring all work with compressed gases complies with the requirements of these policy arrangements and must:

- Adhere to the requirements set out in these University Compressed Gases Safety Arrangements and how they relate to their field of work.
- Ensure any new facilities are notified to the Faculty Technical and Operations Team.
- Ensure all gas users complete the specified online and practical training.
- Ensure all people who move gas cylinders are trained as gas “users.”
- Ensure arrangements are in place to provide information, for all who may be affected, such as other lab users on potential hazards and what to do in the event of an emergency and/ or non-routine situation as part of an induction.
- Understand the operating conditions for compressed gas systems under their control and the purpose and function of any protective devices.
- Ensure that no unsolicited modifications are carried out to piped systems that are likely to render them unsafe.

- Ensure suitable risk assessments have been carried out for work involving gases and systems and all people under their direction have information about the risks and risk control measures that apply to their work.
- Ensure manual handling risk assessments for the moving of gas cylinders are completed and the control measures identified are implemented.
- Provide on-the-job training on the safe use of specific apparatus/ gases to users (this should also include routine users checks and emergency procedures).
- Ensure researchers are trained in risk assessment techniques to identify and control all health and safety risks and are competent to supervise others in their research activity.
- Apply operation systems to effectively manage gas installations and ensure procedures and training are in place and are being adhered to.
- Undertake, review of risk assessments and other documents associated with the storage, use and transportation of compressed gases within the departments own area.
- Ensure that pressure regulators are maintained in good condition, are within their lifespan and that any regulators that fail their annual inspection are taken out of service and repaired or replaced.
- Ensure that any new regulators acquired meet the required standards and are obtained from reputable suppliers.
- Carry out weekly tests on panel for visual and audible alarm to ensure working correctly.
- Ensure any actions/ recommendations following any internal or external examinations are carried out.
- Cooperate with HS&R for arrangements for insurance inspections.
- Ensure all adverse events involving compressed gases including accidents and leakages are reported via the University online Report It! System.
- Carry out or assist with any adverse event investigation.
- Adhere to faculty/PSU process for purchasing of gas cylinders and accessories.

3.3 Faculty/ Professional Service Units

Faculties/ PSUs that use gas cylinders or manifold systems must:

- Appoint practical gas trainers within the faculty who will deliver the practical training to gas users. Faculties must inform the HS&R team of the name and contact details of the practical gas trainers for the faculty.
- Appoint a named individual for the day-to-day management of gas stores.
- Apply operation systems to effectively manage gas installations and ensure procedures and training are in place.
- Ensure all gas users, practical trainers, and others follow the training request process as outlined in the control measures – Gas Cylinder Training document.
- Ensure all gas users including those who move gas cylinders complete the specified online and practical training.

- Ensure arrangements are in place, for all who may be affected such as other lab users, on potential hazards and what to do in the event of an emergency and/ or non-routine situation.
- Supervisor/ line managers must ensure practical instruction is provided on the safe use of specific apparatus/ gases in the area where people are expected to work as part of the local induction.
- Ensure that training records are maintained for all lab users within their Faculty/ PSU.
- Manage cylinder stores/ cages that belong to the faculty/ PSU.
- Ensure manual handling risk assessments for the moving of gas cylinders are completed and the control measures identified are implemented.
- Provide suitable gas trolleys for the safe movement of gas cylinders and ensure that these trolleys are inspected and maintained.
- Ensure all people who move gas cylinders are provided with and wear correct Personal Protective Equipment.
- Hold a register of all faculty installations and gas system.
- Implement a procedure for the purchasing of gas cylinders and accessories within the faculty/ PSU, advise staff and researchers on new systems.
- Ensure that pressure regulators are maintained in good condition, are within their lifespan and that any regulators that fail their annual inspection are taken out of service and repaired or replaced.
- Ensure that any new regulators acquired meet the required standards and are obtained from reputable suppliers.
- Carryout inspections of gas system where required.
- Ensure that no unsolicited modifications are carried out to piped systems that are likely to render them unsafe.
- Maintain all records of testing and maintenance carried out either by contractor or in house whether reactive, planned maintenance or testing of equipment.
- Implement any actions/ recommendations following any internal/ external examinations.
- Cooperate with HS&R for arrangements for insurance inspections.
- Ensure that relevant planned preventative maintenance schemes are in place for piped systems.

3.4 Gas Inspectors/ Trained Faculty Technical and Operations Staff

These are independent of the faculty/ PSU users and must:

- Attend Gas User and Inspector and Level 2 training.
- Carry out practical training for all gas users following completion of the online course.
- Understand the operating conditions for compressed gas systems used in the faculty and the purpose and function of any protective devices.
- Apply operation systems to effectively manage gas installations and ensure procedures and training are in place.

- Assist with the creation of standard operating procedures and safe systems of work.
- Report any defects with compressed gas systems to the relevant persons and take equipment out of service until it has been suitable repaired.
- Ensure that no unsolicited modifications are carried out to piped systems that are likely to render them unsafe.
- Carry out annual inspections of single cylinder systems and record these.
- Advise staff and researchers on new systems for ordering cylinders, accessories, and training of users.
- Report any adverse events through the university online Report It! System.

3.5 Faculty/ PSU Designated Gas Store Local Contact

A named individual (the Local Contact) must be assigned responsibility for the day-to-day management of each cylinder store within the Faculty/ PSU/ Student Union facility; their name and contact details must be displayed at the entrance to the store.

The local contact must:

- Ensure the security of the store is maintained (see Gas Cylinder Storage document).
- Ensure that empty gas cylinders, gas cylinders that are no longer required, excess stock and quarantined cylinders are returned to their supplier, as soon as practical.
- Ensure that prior to collection, the supplier is informed of any cylinders that have been quarantined and the reason for their quarantine.
- Ensure there is adequate supervision of cylinder deliveries and collections carried out by gas suppliers.
- Ensure no other work is carried out within the gas store.
- Ensure all maintenance work/ refurbishment work within the store is carried out through the Estates Helpdesk/ Projects Team. A permit to work is required for maintenance activities in a gas store.
- Ensure that there is an up-to-date inventory of gas cylinders (location and quantity). This information should be accessible by the emergency services in the event of an incident.
- Carry out monthly gas store inspections (see Gas Equipment Checks and Inspection) and ensure that the store remains safe for continued use. A copy of the completed gas store inspection checklist must be forwarded to Faculty Technical and Operations Teams or equivalent.
- Ensure a risk assessment for the store is available and regularly reviewed, when required. These reviews shall ensure existing and emerging risks are managed, for example, due to inventory changes, changes to the site of surroundings, shortfalls in management control, adverse events, updates to codes and best practice documents, etc.

3.6 Staff and Students

All staff and students working with compressed gases must:

- Attend all training required to operate a gas cylinder/ manifold system.
- Understand how these arrangements relate to any research they are carrying out. Especially in cases where new or experimental work is being undertaken involving compressed gases.
- Understand risk assessments and follow all controls and local rules in place for work with compressed gases.
- Understand the emergency procedures for the gas/ system they are using.
- Report any defects with compressed gas systems to the relevant persons i.e. PI, Faculty Technical and operations Team, manager and take equipment out of service until it has been suitable repaired.
- Wear the appropriate protective equipment and clothing.
- Always supervise undergraduate students when working with compressed gases.
- Ensure operating procedures and associated controls are adhered to.
- Ensure that no unsolicited modifications are carried out to piped systems that are likely to render them unsafe.
- Maintain operating instructions and other documentation relating to piped systems and compressed gases where it can be readily accessed.
- Report any adverse events through the university online Report It! System.
- University staff and students who require access to gas cylinders stores must be trained as gas users.
- Adhere to faculty/ PSU process for purchasing of gas cylinders and accessories.

3.7 Health, Safety and Resilience (HS&R) Team

HS&R must:

- Engage with Estates and Project Services Team during the concept and design stage of any design, installation, modification, and repair of compressed gas system.
- Specify the gas safety training courses required for in-house practical trainers, gas users and others, and liaise with the training provider to ensure sufficient training and refresher training opportunities.
- Provide a syllabus and a PowerPoint presentation for in-house practical training.
- Maintain a list of authorised practical trainers within the Faculties/ PSUs.
- Provide the online gas safety training access codes which are funded by the HS&R team. If an individual fails to complete the training within 3 months of issue or fails the first attempt of the online training course, the HS&R team will charge the Faculty/ PSU for every attempt, thereafter, utilising the university recharge process.
- Support Faculties/ PSUs in maintaining their training records as required. Provide a monthly report for online training code registration and completions.

- Audit and review gas cylinder management systems, including Faculty/ PSU training records to ensure compliance with the University's standards for gas safety management.
- Arrange insurance inspections at intervals defined within the WSEs.
- Carry out annual audit of each gas cylinder store and report findings to relevant faculty/ PSU.

3.8 Estates and Campus Services - Projects Team

The Estates and Campus Services Projects Team must:

- Ensure that any piped gas system fitted is installed in accordance with all relevant industry standards.
- Engage the Health and Safety team during the concept and design stage of any design, installation, modification, and repair of compressed gas system.
- Ensure competent designers and contractors are selected for the work under their control.
- Ensure any defects alterations or unsafe practices observed during the course of their work are reported.
- Ensure that suitable commissioning of the system is carried out and that the relevant handover documentation is provided. Information will typically include the following:
    - Details of maximum and minimum design temperature and pressure.
    - Details of maximum flow at design pressure.
    - Operating instructions.
    - Maintenance instructions.
    - Written Scheme of Examination (WSE)
    - Test certificates.
    - System schematic or flow sheet.
    - Schedule of protective devices and their function.
    - Copy of the declaration of conformity.
- Ensure that users receive appropriate training in the operation of relevant parts of the new system.
- Provide sufficient notice and timely handover of documentation to the faculty teams, prior to system hand over to end users.

3.9 Estates and Campus Services - Technical Services

The Estates and Campus Services Technical Services Team must:

- Ensure that any piped gas system fitted is installed in accordance with all relevant industry standards.
- Ensure any defects alterations or unsafe practices observed during the course of their work are reported.
- Maintain all records of testing and maintenance carried out by contractor whether reactive or planned maintenance or testing of equipment.
- Appoint appropriate contractors to carry out maintenance and testing.

- Assist in the investigation of any reported adverse events.

3.10 Appointed Contractors

Appointed contractors must:

- Be able to evidence their competence with appropriate experience, training and/or certification for the task identified, prior to appointment.
- Carry out planned or reactive maintenance/ testing as directed by the University teams and in line with industry standards.
- Ensure all records are forwarded in a timely manner to the appropriate University teams.
- Abide by the university Code of Conduct for Contractors.
- Provide job specific risk assessments and method statements to their university contact prior to work commencing.
- Repot any accidents or near misses to their university contact at the earliest opportunity.

3.11 Security and Campus Response

Security and Campus Response are responsible for responding to the activation of a gas alarm. This response may include:

- Providing access to stores for the Emergency Services
- Preventing access to the room/ building.
- Initiating the call out to the relevant faculty members to alert them of an activation.

Security and Campus response are not required to investigate the reasons for a gas alarm activation or to silence a gas alarm.

4. Risk Assessment

All activities involving the use, storage and movement of gases must be appropriately risk assessed. See Gas Risk assessment, information, and guidance document.

5. Written Scheme of Examination

Under Regulation 8 of Pressure System Safety Regulations 2000 (PSSR), most pressure systems will require a Written Scheme of Examination (WSE). Some gas installations may be classed as a pressure system and as such will fall under these regulations. Please see Pressure Systems Policy Arrangements.

A WSE must be in place prior to the pressure system being handed over to end users and brought into service for the first time.

6. New Installations

All new installations whether fixed or mobile must follow see new gas installation process flow.

7. Emergency Procedures

Emergency procedures must form part of the risk assessment process for the system and the activity. All users and individuals working in the same area must have appropriate training.

8. Regulations, Supporting Documents and Further Information

H&S webpage (Swansea University): https://staff.swansea.ac.uk/healthsafety/

Health and Safety Executive (HSE) guidance: www.hse.gov.uk/pubns/

Dangerous Substances and Explosive Atmospheres Regulations 2002 Approved Code of Practice and guidance L138: https://www.hse.gov.uk/pubns/books/l138.htm

Health and Safety Legislation: www.legislation.gov.uk

The following regulations and others may apply when working with compressed gases and systems:

- Management of Health & Safety at Work Regulations 1999;
- The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002;.
- The Control of Substances Hazardous to Health Regulations (COSHH) 2002;
- The Provision and Use of Work Equipment Regulations (PUWER) 1998; .
- The Manual Handling Operations Regulations 1992;
- The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (the Carriage Regs) 2021
- Confined Spaces Regulations 1997. (https://bcga.co.uk/publications/)
- The Pressure Equipment Regulations (PER) 2016;
- The Pressure Systems Safety Regulations (PSSR) 2000;

British Compressed Gas Association

The main recognised body that issues national guidance and is referred to by the HSE, is the British Compressed Gas Association (BCGA). In particular, the following documents are available to download from: https://bcga.co.uk/publications/

- BCGA CP18 - The safe storage, handling, and use of special gases (e.g. toxic, corrosive, flammable and pyrophoric gases).
- BCGA CP40 - Security requirements for the industrial, medical and food gases industry.
- BGCA CP44 - The storage of gas cylinders.
- BCGA CP47 - The safe use of individual portable or mobile cylinder gas supply equipment.
- BCGA CP52 - The management of risks from gases in the workplace.
- BCGA GN11 - The management of risk when using gases in enclosed workspaces).
- BCGA TIS48 – Gas Equipment – Security Cages.

Other

- Liquid Gas UK CP7 – Storage of Full and Empty LPG Cylinders and Cartridges
- The National Health Service Protect document, Guidance on the security and storage of medical gas cylinders.
- HTM 02-01, Part B, Section 8, Medical gas pipeline systems.
- BCGA GN 32, Medical gases. Good distribution practice.