



Storage and Handling of Gas in Cylinders Procedure

1. Guiding Principles

This procedure relates to the safe use, handling and storage of portable gas cylinders and the training of employees who are required to work with such materials.

All employees required to use compressed gas in their course of their work are to be provided with information, instructions, training and appropriate supervision for the safe use and handling of compressed gas cylinders.

2. Scope

This procedure applies to all workplaces in WACHS where gas in cylinders are used, stored or handled.

The following compressed gas cylinders are excluded from the scope of this procedure:

- handheld portable fire extinguishers
- medical equipment such as oxy-viva
- natural gas cylinders used in motor vehicles
- bulk gas storage containers / bullets.

3. Definitions

Gas cylinder	In the context of this procedure means a portable compressed gas storage container.
Personal Protective Equipment (PPE)	All equipment which is intended to be worn or held by a person to protect them from risk to health and safety while at work.
Responsible person	The line manager or the person in control of the workplace where this is not the line manager.
Safety Data Sheet (SDS)	A document prepared by a manufacturer or importer of chemicals, which describes the use, chemical and physical properties, health hazard information, precautions for use, safe handling information and the emergency information.

4. Roles and Responsibilities

4.1 Employees

Employees are responsible for:

- taking reasonable care for their own health and safety and not adversely affecting the health and safety of other persons
- complying with any reasonable instruction and cooperating with any WACHS policy or procedure relating to the use, and storage of gas cylinders in the workplace

- ensuring relevant PPE is accessible or obtained before commencing individual tasks
- ensuring work is performed in accordance with appropriate work practices, as instructed
- ensuring they attend and complete relevant training when instructed
- reporting all hazards, incidents, injuries, dangerous occurrences and system failures in a timely manner which occur or have the potential to occur using the WACHS [Safety Risk Report Form](#) (SRRF).

4.2 Contractors

Contractors are responsible for:

- taking reasonable care for their own health and safety and not adversely affecting the health and safety of other persons
- obtaining site approval for the use of portable gas cylinders, including on-site storage requirements if applicable
- ensuring relevant PPE is accessible or obtained before commencing individual tasks
- complying with any reasonable instruction and cooperating with any WACHS policy or procedure relating to the use, and storage of gas cylinders in the workplace
- reporting all hazards, incidents, injuries, dangerous occurrences and system failures in a timely manner which occur or have the potential to occur to their site contact.

4.3 Supervisors and Managers

Supervisors and Managers are responsible for:

- ensuring that employees are instructed and trained in the appropriate handling and operating procedures for working with gas cylinders
- ensuring that gas cylinders are stored in an appropriate area which has been designated for the storage of cylinders
- ensuring that there is inspection, maintenance, and testing of equipment and cylinders
- ensuring that gas cylinders are recorded in the site Dangerous Goods Manifest, risk assessments are completed and current safety data sheets (SDS) are available.

5. Procedure

General Requirements

It is a requirement of the Dangerous Goods Safety (Storage and Handling of non-explosives) Regulations 2007 that workplaces where hazardous chemicals, including compressed gases are stored, used or handled contain accessible copies of:

- current Safety Data Sheets (SDS) for each gas
- risk assessments
- Safe Work Method Statements (SWMS) or Safe Work procedures where required by risk assessment
- dangerous goods manifests
- emergency management and chemical spill processes.

5.1 Use and Handling of Gas Cylinders

- Large cylinders can be heavy. The responsible person is to ensure that manual handling requirements have been considered in risk assessments and appropriate controls are documented in safe work method statements (SWMS), including manual handling training and the use of an appropriate trolley.
- Employees required to use and handle gas cylinders are to wear appropriate PPE, which may include safety footwear, eyewear and gloves.
- Cylinder valves are to be closed when moving cylinders and any other equipment (e.g. oxy-acetylene equipment) should be detached.
- Cylinders are to be handled with care and not knocked violently or allowed to fall.
- Cylinders are not to be rolled as this may inadvertently cause the valve to open. It may also damage the cylinder, label and paintwork.
- Damaged, date expired or corroded cylinders are to be tagged as unfit for use and returned to the supplier at the earliest opportunity.
- Gas cylinders containing acetylene, butane or propane are to be fitted with flashback arresters without exception.

5.2 Decanting into cylinders

Decanting gas into cylinders is to be conducted by external contractors, unless all of the below conditions are met and authorisation is obtained from the responsible person:

- The workplace is located in a remote area.
- The nearest gas supplier is a significant journey away.
- There is a critical service delivery imperative.
- The employee has received appropriate training which is documented and verifiable.
- Appropriate decanting equipment is available and in fit for purpose condition.
- A safe work method statement signed by the employee and the responsible person has been developed to identify and control safety risks for the specific event prior to decanting taking place.

5.3 Training requirements

All employees using and handling gas cylinders are to be trained in:

- the properties and hazards associated with the specific gases handled by reference to the relevant SDS
- applicable safe work methods or procedures, including manual handling procedures for heavy cylinders
- the correct use of PPE and its care, maintenance and storage
- actions to be taken in emergencies, including leaks, gas escape, fire and explosion.

5.4 Storage of cylinders

- Access to site and work areas containing gas cylinders is to be controlled and restricted to people having a legitimate purpose.
- If gas cylinders must be located in unrestricted public locations, the cylinder valves and regulator are to be guarded by a metal hood, the cylinder protected from toppling and all connecting pipework is to be arranged so that it is not vulnerable to tampering or accidental impact.

- Oil and grease is to be kept away from cylinders and valves as the presence of oil, grease, dust or organic particles may increase the risk of ignition in an oxygen or nitrous oxide installation.
- Full and empty cylinders are to be kept separate.
- Cylinders are to be kept in cool, well ventilated areas, at least three (3) metres away from heat sources, sources of ignition and combustible materials, especially flammable gases.
- LP gas cylinders are to be kept at least three (3) metres from oxidising gas except where the cylinders of LP gas and oxidising gas for part of a portable oxy-fuel system used for welding or brazing activities.
- Cylinders are to be stored upright and restrained to prevent them toppling, being knocked violently or allowed to fall.
- Any store for gases in cylinders that is attached to or located within a building is to be separated from the rest of the building by one or more walls, each having a Fire Resistance Level (FRL) of at least 240/240/240.
- Stores are to display clear signage in accordance with Dangerous Goods regulations. This includes Class Diamonds; HAZCHEM; no smoking and naked flame warning signs.
- Gas cylinders are not to be stored below ground, in areas of heavy traffic or near emergency exits.
- Avoid storing cylinders below 0°C. Some mixtures may separate below this.
- A system of first in, first out is to be in place, particularly for acetylene cylinders.

5.5 Transportation of Cylinders

- Hazardous chemicals labelled “too dangerous to be transported” are not to be transported by WACHS staff under any conditions.
- Wherever possible, gas cylinders are to be transported by external contractors.
- However, where a need exists for WACHS staff to transport gas cylinders designated Dangerous goods, the transport method and documentation must comply with the requirements of the [Dangerous Goods Safety Guidance Note: Dangerous goods transport documents](#), travel authorisation must be provided by both the site responsible person and the regional OSH Coordinator, and the dangerous goods quantity must be less than 25% of the placard load limit (see [Appendix A](#)).
- Transport considerations are to include:
 - An open vehicle such as a trailer or utility are to be used. The cylinders are not to be covered with tarpaulins.
 - Ensure that cylinder valves are tightly shut and, if provided, valve protection guards/caps and/or valve outlet gas tight plugs or caps are fitted and nipped up.
 - Ensure cylinders are secured to the vehicle to prevent movement under all transport conditions. Flammable liquefiable gas must be transported vertically.
 - Ensure cylinders are not damaged by other equipment carried on the vehicle. This could lead to cylinder damage or rupture.
 - Remove regulators, hoses and other attachments from cylinders before transporting.
 - DO NOT smoke, use naked flame or non-flameproof electrics anywhere near a vehicle carrying Class 2.1 flammable gases.

6. Compliance

Failure to comply with this policy may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the [Employment Policy Framework](#) issued pursuant to section 26 of the [Health Services Act 2016](#) (HSA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies is mandatory.

7. Evaluation

Site Responsible persons are to ensure bi-annual audits of site Chemical Registers, Dangerous Goods Manifests and chemical stock holdings are conducted.

Annual Chemical Audits are to be conducted using the WACHS [Chemical Audit Checklist](#).

8. Standards

[EQUIPNational Standards](#)

Standard 15: Corporate Systems and Safety - 15.12.1, 15.13.3

9. References

[Occupational Safety and Health Act 1984](#)

[Occupational Health and Safety Regulation 1996](#)

[Dangerous Goods Safety Guidance Note: Dangerous goods transport documents](#)

Standards Australia, (2004), *AS 4332-2004 – The storage and handling of gases in cylinders*, Homebush, NSW.

Standards Australia, (2014) *AS 1596-2014. (The Storage and Handling of LP Gas)*., Homebush, NSW.

10. Related Forms

WACHS [Safety Risk Report Form](#)

WACHS [Chemical Audit Checklist](#)

11. Related Policy Documents

[Managing Risks of Hazardous Chemicals and Dangerous Goods Procedure](#)

12. Related WA Health Policies

[WA Health Code of Conduct](#)

[WA Health Discipline Policy](#)

13. WA Health Policy Framework

[Employment Policy Framework](#)

**This document can be made available in alternative formats
on request for a person with a disability**

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APPENDIX A – QUANTITIES OF DANGEROUS GOODS

For the purposes of the table below, the Placarding Quantity or Manifest Quantity is equal to the total of the quantities determined in accordance with regulation 12 of the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007 (WA).

In the Table below:

- kg or L means, where this combination of letters immediately follows numbers, the combined total of —
 - (a) the number of kilograms of non-liquid dangerous goods; and
 - (b) the number of litres of liquid dangerous goods; and
 - (c) the capacity of containers of Class 2 dangerous goods,

Determined in accordance with regulation 12 of the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007 (WA)

Item	Description of dangerous goods	Packing group	Placarding quantity	Manifest quantity
1.	Division 2.1 except aerosols	N/A	500 L	5 000 L
2.	Division 2.2 except aerosols	N/A	1 000 L	10 000 L
3.	Division 2.3	N/A	50 L	500 L
4.	Division 2.1 and 2.2 aerosols	N/A	5 000 L	10 000 L
5.	Any one of Class 3, Division 4.1, 4.2 or 4.3, Division 5.1 or 5.2, Division 6.1, Class 8 or Class 9, or any combination of those classes or divisions	I	50 kg or L	500 kg or L
		II and III (aggregate)	1 000 kg or L	10 000 kg or L
		I, II and III (aggregate) where quantity of goods in packing group I does not exceed 50 kg or L	1 000 kg or L	10 000 kg or L
6.	Goods too dangerous to transport	N/A	5 kg or L	50 kg or L
7.	combustible liquids with fire risk dangerous goods	N/A	1 000 L	10 000 L
8.	Other combustible liquids	N/A	10 000 L	100 000 L

Note for this Schedule:

For the purposes of item 5 in the Table —

- (a) all Type B Division 4.1 Self Reactive Substances that do not have a packing group assigned to them are to be taken to be assigned to packing group I
- (b) all Types C to F Division 4.1 Self Reactive Substances that do not have a packing group assigned to them are to be taken to be assigned to packing group II
- (c) all Type B Division 5.2 Organic Peroxides that do not have a packing group assigned to them are to be taken to be assigned to packing group I
- (d) all Types C to F Division 5.2 Organic Peroxides that do not have a packing group assigned to them are to be taken to be assigned to packing group II
- (e) Class 9 dangerous goods that do not have a packing group assigned to them are to be taken to be assigned to packing group III
- (f) all other articles and things that do not have a packing group assigned to them are to be taken to be assigned to packing group II.