Gas Cylinder Safety

Business Name:	ABN:	
Business Address:		
Contact Person:	Phone:	Email:

THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE PROJECT

Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.

Full Name:		
Signature:	Title:	Date:

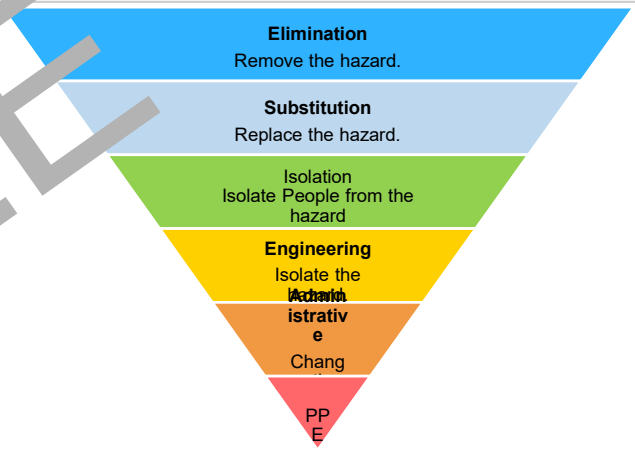
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

Client:	SCOPE OF WORKS
Project Name:	
Project Address:	
Project Manager:	
Contact Phone:	
Date Risk Assessment supplied to Project Manager:	

RISK MATRIX

LIKELIHOOD	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC	SCORE	ACTION
ALMOST CERTAIN	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4 ACUTE		
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED
POSSIBLE	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	4 ACUTE	3H HIGH	Rev before work
UNLIKELY	1 LOW	1 LOW	2 MODERATE	3 HIGH	4 ACU	2M MO RATE	Ensure control measures in place.
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 H	1L LOW	Monitor and keep records.

HIERARCHY OF CONTROLS



Risk Rating & Required Action:

4A	Stop work. The risk is intolerable. E inate the hazar redesign the activity before proceeding. A Safe Work Method Statement (SWMS) or hi er-level authorisati is required.
3H	Review and approve additional c rols b ask arts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in ace and effe ive. Proceed with caution; monitor conditions.
1L	Proceed, following standard operating procedures Monitor and keep records.

Consequence Scale:

Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
Catastrophic	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
Major	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
Moderate	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
Minor	First-aid only, no lost time	negligible delay	Isolated non-conformance
Insignificant	No injury	no schedule impact	Deviation caught and corrected on site

Notes on Hierarchy of Controls:
Remember to apply controls in the preferred order shown by the coloured pyramid:

1. **Eliminate**
2. Substitute
3. Isolate
4. Engineering
5. Administrative
6. PPE

Always document **why** a lower-order control is accepted if elimination or substitution is not reasonably practicable.

aligned with Safe Work Australia's Managing the risk of fatigue at work *(2023) and ISO 45001:2018 clauses 6–8.*

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
1. Governance, WHS Duties & Regulatory Compliance	• Lack of clear allocation of WHS responsibilities for gas cylinder safety under WHS Act 2011 and WHS Regulations • Failure to identify and comply with relevant Australian Standards (e.g. AS 4332, AS 2030, AS 1596) for gas cylinders and LPG systems • Inadequate consultation with workers and Health and Safety Representatives (HSRs) on gas cylinder risks and controls • No systematic review of legal changes relating to hazardous chemicals, pressure equipment and dangerous goods transport • Insufficient due diligence by Officers in verifying that gas cylinder risks are being effectively managed • Inadequate documentation of policies, procedures and risk assessments for cylinder storage, handling, decanting, changeover and decommissioning	4A	• Establish a formal Gas Cylinder Safety Policy endorsed by senior management that references WHS Act 2011 duties and applicable WHS Regulations • Identify and maintain a legal register for gas cylinder safety (including AS 4332, AS 2030 series, AS 1894, AS 1596 and relevant Dangerous Goods transport codes) • Define and document clear WHS roles, responsibilities and accountabilities for gas cylinder management (PCBU, Officers, workers, contractors) • Implement a governance process requiring periodic WHS due diligence reporting to the Board or Executive on gas cylinder risk controls and incidents • Establish a consultation procedure requiring engagement with workers and HSRs when introducing new gases, storage arrangements, decanting systems or changeover processes • Schedule annual compliance audits (internal or third-party) against WHS legislation and relevant Australian Standards for gas cylinders and LPG systems • Maintain documented high-level risk assessments for gas cylinder storage, handling, changeover, replenishment, decanting and decommissioning activities, with scheduled review dates • Require documented contractor management arrangements ensuring third-party suppliers and gas contractors comply with site gas cylinder safety requirements	3H
2. Procurement, Specification & Approval of Gas Cylinders and Equipment	• Procurement of non-compliant, damaged or incorrectly certified gas cylinders and pressure equipment • Use of incompatible valves, regulators, hoses and fittings leading to leaks or incorrect connections • Purchase of cylinders without appropriate labelling, colour coding or Safety Data Sheets (SDS) • Inadequate technical review of new gas types or mixtures (e.g. propane, oxygen, acetylene, inert gases) prior to use on site • Failure to specify appropriate cylinder sizes, trolleys and lifting devices for manual and mechanical handling • Procurement of decanting and changeover manifolds without pressure	4A	• Develop a procurement standard for gas cylinders and associated equipment that mandates compliance with AS 2030, AS 4332, AS 2473 and relevant LPG codes • Require supplier prequalification, including provision of test certificates, design registrations (where applicable) and inspection records for cylinders and manifolds • Standardise valve types, regulators, hoses and quick-connect systems to prevent cross-connection and incompatibility between different gas types • Mandate that all supplied cylinders are correctly colour coded, labelled, barcoded (where feasible) and accompanied by up-to-date SDS from the supplier • Implement an engineering review and approval process for new gas types or pressure systems prior to procurement, including assessment of storage, ventilation and ignition controls • Specify ergonomic and mechanical aids (e.g. cylinder trolleys with securing chains, lifting frames, pallet cages) as part of all cylinder procurement packages • Require decanting and changeover systems to be designed with integrated isolation valves, flashback arrestors (for fuel gases), pressure relief devices and backflow prevention • Maintain an approved vendor list for gas suppliers and cylinder testing providers based on safety performance and compliance evidence	2M

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	relief, backflow prevention or isolation capability			
3. Facility Layout, Storage Design & Segregation of Gas Cylinders	• Inadequate separation of full, in-use and empty cylinders leading to confusion and unsafe use • Poor segregation between incompatible gases (e.g. flammables vs oxidisers vs toxics vs inert gases) • Insufficient ventilation in indoor storage or decanting areas causing gas accumulation and asphyxiation or explosion risk • Cylinders stored in trafficable areas with risk of vehicle impact or mechanical damage • Inadequate restraint of cylinders leading to tipping, falling or domino effects • Storage of propane tanks and LPG bottles near ignition sources, pits, drains or low-lying areas • Insufficient capacity and layout to safely manage peak inventory and changeover activities	4A	• Designate fixed, signed storage areas for gas cylinders that comply with AS 4332 and AS 1596, including separation distances and fire resistance where required • Implement clear segregation of cylinder groups (full, in-use, empty, quarantined) using labelled racks, cages or painted floor zones and signage • Segregate incompatible gases by physical distance, barrier walls or separate cages and ensure oxidisers, flammables and toxic gases are stored as per relevant Standards • Ensure all indoor storage and decanting locations are assessed by a competent person for natural or mechanical ventilation requirements and hazardous area zoning • Install compliant cylinder racks, chains, restraints or cages to prevent tipping and to resist knock-over from impact or seismic events (if relevant) • Provide vehicle impact protection (bollards, barriers) around cylinder storage, decanting points and propane tank replenishment areas exposed to traffic • Ensure LPG and propane storage is located away from pits, drains and basements, with drainage and grading designed to prevent gas pooling in low areas • Implement an inventory management system to control maximum numbers and sizes of cylinders on site to align with fire load calculations and emergency response capacity • Document and maintain layout drawings showing cylinder storage areas, gas lines, emergency shut-offs and hazardous zones	2M
4. Gas Cylinder Storage, Handling & Housekeeping Systems	• Uncontrolled stacking or laying cylinders horizontally when not designed for that orientation • Poor housekeeping around storage areas increasing trip, impact and fire load risks • Use of improvised handling methods (e.g. rolling, dragging, lifting by valve or cap) due to lack of suitable equipment or procedures • Failure to cap or protect valves on stored or transported cylinders • Inadequate systems for rotating stock (first-in, first-out) leading to out-of-test cylinders remaining in circulation	3H	[redacted]	2M

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	• Uncontrolled accumulation of empty or decommissioned gas bottles pending disposal		[redacted]	
5. Manual Handling, Lifting & Transport of Gas Cylinders	• Musculoskeletal injuries from lifting, carrying or manoeuvring heavy cylinders and propane tanks without mechanical aids • Cylinder drops, impacts or falls during loading/unloading or changeover due to inadequate securing or handling systems • Use of non-designed lifting equipment (e.g. slings around cylinders, forklift tines without cages) causing cylinder or valve damage • Unsecured cylinders in vehicles leading to movement, collision or ejection during transport • No system for assessing and controlling manual handling risks for remote sites or domestic-style bottle exchanges	3H	[redacted]	2M
6. Gas Cylinder Identification, Labelling & Information Management	• Use of unidentifie or mislabelled cylinders leading t ncompati connections or inco • Outdated or inaccessible Safety D a Sheets for gases used on site • Illegible or missing test stamps and inspection markings on cylinders • Workers unable to distinguish between different gas types, pressures and hazards (e.g. asphyxiant vs flammable vs oxidiser) • Inadequate communication of specific hazards associated with decanting, changeover and propane tank replenishment	3H	[redacted]	1L

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7. Training, Competency & Authorisation for Gas Cylinder Tasks	• Workers performing cylinder changeover, decanting, propane tank replenishment or decommissioning without adequate training • Lack of competency assessment for high-risk activities such as LPG decanting and manifold connection • Inconsistent knowledge among supervisors on gas cylinder hazards and control measures • Over-reliance on on-the-job learning without structured guidance or verification • No defined authorisation system for personnel permitted to conduct decanting or manage bulk propane systems	4A	[redacted]	2M
8. Gas Cylinder Changeover, Decanting & Propane Replenishment Systems	• Uncontrolled release of [illegible]uring cylinder changeover[illegible]ecanting or propane tank reple[illegible]shment • Incorrect connect[illegible] connection between cylinders and manifolds leading to overpressure [illegible] incompatible gas mixing • Lack of standardised procedures for isolating, depressurising and leak checking after changeover or decanting • Inadequate supervision of new or inexperienced workers during high-risk gas transfer tasks • Absence of formal controls for domestic-size bottle exchange where used in industrial settings	4A	[redacted]	2M

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			[redacted]	
9. Inspection, Maintenance & Testing of Cylinders, Equipment and Infrastructure	• Use of out-of-test or damaged cylinders due to inadequate inspection systems • Failure of regulators, hoses, valves or manifolds due to lack of preventative maintenance • Undetected leaks in fixed gas lines, bulk propane tanks or manifold systems • Inadequate documentation and tracking of inspections, test dates and repairs • Reliance on supplier inspections only, without verification by the PCBU	4A	[redacted]	2M
10. Hazardous Area Classification, Ignition Control & Fire Protection	• Uncontrolled ignition sources in areas where flammable gases (e.g. LPG, acetylene) may be present • Lack of hazardous area classification for storage, decanting and replenishment locations • Inappropriate electrical equipment installed within potential gas release zones • Insufficient fire detection and firefighting equipment for gas cylinder and propane tank fires • Failure to manage hot work and other ignition-producing activities near gas cylinder storage and use areas	4A	[redacted]	2M

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11. Emergency Preparedness, Incident Response & Leak Management	• Delayed or ineffective response to gas leaks, fires, explosions or uncontrolled releases • Workers unfamiliar with emergency procedures specific to gas cylinders and propane tanks • Inadequate evacuation routes and assembly areas relative to gas storage and decanting locations • Lack of suitable equipment and training for initial leak isolation where safe to do so • Poor post-incident investigation, leading to recurrence of gas-related incidents	4A	[redacted]	2M
12. Contractor, Supplier & Transport Interface Management	• Inconsistent safety standards betwe site and gas suppliers or transport companies during deliveries and cylind exchanges • Uncontrolled contra or activities involving decantin bulk propane tank replenishment or i tallation/ of gas systems • Lack of clarity over responsibilities r cylinder condition, testing and decommissioning betwee and supplier • Transport-related incidents during on-road carriage of cylinders to and from the site	3H	[redacted]	2M
13. Decommissioning, Disposal & End-of-Life Management of Gas Bottles	• Uncontrolled venting or residual gas release during decommissioning of cylinders and propane tanks • Return of non-compliant, damaged or unknown cylinders without appropriate isolation and tagging	3H	[redacted]	1L

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	• Improper disposal of old or privately owned gas bottles through general waste streams • Lack of traceability for cylinders removed from service, leading to uncontrolled re-use or scrap yard hazards		[redacted]	
14. Monitoring, Audit, Consultation & Continuous Improvement in Gas Cylinder Safety	• Failure to detect degradation of controls over time, leading to normalisation of deviance in gas cylinder handling practices • Insufficient worker consultation resulting in impractical procedures that are not followed • Lack of performance indicators specific to gas cylinder safety (e.g. leak reports, handling injuries, out-of-test findings) • No structured process to review emerging technologies or improved engineering controls for gas systems	3H	[redacted]	2M

EMERGENCY RESPONSE – CALL 000 FOR EMERGENCIES

Ensure to have an Emergency Management Plan in place as well as adequate numbers of trained first aid staff with easy access to fully stocked first aid kits, rescue equipment, material safety data sheets, adequate access to emergency communication equipment and fire-fighting equipment suitable for all classes of fire and ignition sources.

LEGISLATIVE REFERENCES

RELEVANT LEGISLATION AND CODES OF PRACTICE. DELETE THE LEGISLATIVE REFERENCES FOR ANY STATE THAT ARE NOT APPLICABLE

Queensland & Australian Capital Territory
Work Health and Safety Act 2011
Work Health and Safety Regulations 2011
Legislation QLD: https://www.worksafe.qld.gov.au/laws-and-compliance/work-health-and-safety-laws
Codes of Practice QLD: https://www.worksafe.qld.gov.au/laws-and-compliance/codes-of-practice
Legislation ACT: https://www.worksafe.act.gov.au/laws-and-compliance/acts-and-regulations
Codes of Practice ACT: https://www.worksafe.act.gov.au/laws-and-compliance/codes-of-practice

New South Wales
Work Health and Safety Act 2011
Work Health and Safety Regulations 2025
Legislation NSW: https://www.safework.nsw.gov.au/legal-obligations/legislation
Codes of Practice NSW: https://www.safework.nsw.gov.au/resource-library/list-of-codes-of-practice

Northern Territory
Work Health and Safety (National Uniform Legislation) Act 2011
Work Health and Safety (National Uniform Legislation) Regulations 2011
Legislation NT: https://worksafe.nt.gov.au/laws-and-compliance/workplace-safety-laws
Codes of Practice NT: https://worksafe.nt.gov.au/forms-and-resources/codes-of-practice

South Australia
Work Health and Safety Act 2012 (SA)
Work Health and Safety Regulations 2012 (SA)
Legislation for SA: https://www.safework.sa.gov.au/resources/legislation
Codes of Practice for SA: https://www.safework.sa.gov.au/workplaces/codes-of-practice#COPs

Tasmania
Work Health and Safety Act 2012
Work Health and Safety (Transitional and Consequential Provisions) Act 2012
Work Health and Safety Regulations 2012
Work Health and Safety (Transitional) Regulations 2012
Legislation for TAS: https://worksafe.tas.gov.au/topics/laws-and-compliance/acts-and-regulations
Codes of Practice for TAS: https://worksafe.tas.gov.au/topics/laws-and-compliance/codes-of-practice

Details of permits, licenses or access required by regulatory bodies (add or delete as required):

- Permits from local council
- Authorisation to commence work
- Any required documents.

Victoria
Occupational Health and Safety Act 2004
Occupational Health and Safety Regulations 2017
Legislation VIC: https://www.worksafe.vic.gov.au/occupational-health-and-safety-act-and-regulations
Codes of Practice VIC: https://www.worksafe.vic.gov.au/compliance-codes-and-codes-practice

Western Australia
Work Health and Safety Act 2020
Work Health and Safety Regulations 2022
Legislation Western Australia: https://www.commerce.wa.gov.au/worksafe/legislation
Codes of Practice WA: https://www.commerce.wa.gov.au/worksafe/codes-practice

Safe Work Australia Links
Law and Regulation (All States): https://www.safeworkaustralia.gov.au/law-and-regulation
Model Codes of Practice: https://www.safeworkaustralia.gov.au/resources-publications/model-codes-of-practice

Model Codes of Practice

- Managing noise and preventing hearing loss at work
- Confined spaces
- Labelling of workplace hazardous chemicals
- Managing risks of hazardous chemicals in the workplace
- Welding processes
- First aid in the workplace
- Managing the risk of falls at workplaces
- Hazardous manual tasks
- Managing the risk of falls in housing construction
- Managing electrical risks in the workplace
- Demolition work
- Excavation work
- Work health and safety consultation, cooperation and coordination
- Managing the work environment and facilities
- How to manage work health and safety risks
- Managing risks of plant in the workplace
- Construction work