

Oxy-Acetylene Gas Cutting and Heating

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

THIS RISK ASSESSMENT IS APPROVED BY THE PCBU ON THIS 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	HIERARCHY OF CONTROLS	
ALMOST CERTAIN	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4 ACUTE			Elimination Remove the hazard.	
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED	Substitution Replace the hazard.	
POSSIBLE	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	4 ACUTE	3H HIGH	Review before work starts.	Isolation Isolate People from the hazard	
UNLIKELY	1 LOW	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	2M MODERATE	Ensure control measures in place.	Engineering Isolate the hazard	
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 HIGH	1L LOW	Monitor and keep records.	Administrative Change	
								PPE	

Risk Rating & Required Action:	
4A	Stop work. The risk is intolerable. Eliminate the hazard or redesign the activity before proceeding. A Safe Work Method Statement (SWMS) or higher-level authorisation is required.
3H	Review and approve additional controls before task starts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in place and effective. 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. WHS Governance, Policies and Legal Compliance	<ul style="list-style-type: none"> Absence of a documented oxy-acetylene cutting and heating policy aligned with WHS Act 2011 and WHS Regulations Failure to identify and comply with relevant Australian Standards (e.g. AS 4839, AS 2030, AS 4332, AS/NZS 5601 where applicable) Unclear allocation of PCBU, officer, supervisor and worker duties regarding oxy-fuel operations Lack of formal WHS objectives and performance indicators specific to hot work and gas systems Inadequate consultation with workers and health and safety representatives on oxy-fuel risks and controls No systematic review of incidents, near misses and audit findings related to oxy-fuel equipment 	4A	<ul style="list-style-type: none"> Develop and endorse a corporate Oxy-Fuel Cutting and Heating Policy that clearly references WHS Act 2011 primary duty of care and relevant WHS Regulations and Australian Standards Define and document roles, responsibilities and accountability for PCBUs, officers, supervisors, permit issuers and workers in relation to oxy-acetylene systems and hot work Integrate oxy-fuel risks into the organisation's WHS management system, including risk registers, objectives and key performance indicators (KPIs) Establish a formal consultation process (e.g. HSR forums, toolbox talks, safety committees) for oxy-fuel related changes, procedures and equipment selection Implement a schedule for annual review of the oxy-fuel policy, associated procedures and standards compliance including legislative and Standards updates Ensure due diligence by officers through regular reporting on oxy-fuel risk controls, incident trends and audit outcomes at management meetings 	3H
2. Competency, Training and Authorisation	<ul style="list-style-type: none"> Workers using oxy-acetylene cutting and heating equipment without formal training or competency assessment Supervisors lacking technical understanding of oxy-fuel standards, leading to poor oversight No differentiation between basic workers and personnel authorised for complex tasks (e.g. plate cutting attachments, propane ignition, repairs with oxy-fuel torches) Inadequate training on specific hazards of oxygen-enriched atmospheres, flashback, backfire, leaks and cylinder handling Failure to provide refresher training, leading to skill fade and normalisation of deviance Contractors performing gas cutting or soldering without verification of competency or licences where required 	4A	<ul style="list-style-type: none"> Develop a formal training and competency framework for all oxy-fuel operations including cutting, heating, soldering, plate cutting attachments and repair work with torches Implement mandatory initial training covering theory and practical components (hazard recognition, equipment selection, leak testing, flashback arrestors, fire watch, emergency response) Introduce a competency assessment process (written and practical) with documented sign-off before workers are authorised to operate oxy-fuel equipment Maintain a central training and authorisation register, including expiry dates for refresher training and any high-risk work licences that intersect with oxy-fuel use Provide targeted training for supervisors and permit issuers on reviewing SWMS, permits, and verifying competency in oxy-fuel tasks Include contractor management processes to verify external workers' training records, licences, and experience before granting site access for oxy-fuel work Schedule periodic refresher training and post-incident retraining focusing on lessons learned and updated procedures 	2M

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3. Plant and Equipment Design, Selection and Procurement	<ul style="list-style-type: none"> • Procurement of non-compliant or substandard oxy-acetylene equipment, cutting torches and heating attachments • Use of incompatible components (hoses, regulators, flashback arrestors, fittings) between oxygen, acetylene and LPG/propane systems • Absence of built-in safety features such as non-return valves and thermal shut-off devices on torches and regulators • Inadequate design of cutting attachments for plate cutting, rod cutting or heating, leading to unstable operation or overheating • Failure to specify equipment suitable for the intended duty cycle and environment (e.g. site repairs vs workshop use) • Lack of standardisation of equipment across the business, creating confusion in setup and maintenance 	4A	<ul style="list-style-type: none"> • Develop procurement specifications that mandate compliance with relevant Australian Standards for cylinders, regulators, torches, hoses, flashback arrestors and cutting/heating attachments • Standardise oxy-fuel equipment types and brands across the organisation to minimise mismatch of components and simplify training and maintenance • Require engineering review of new or modified oxy-fuel equipment (including plate cutting attachments and heating torches) prior to purchase and deployment • Ensure all torches, regulators and hoses are fitted with appropriately rated flashback arrestors and non-return valves on both the regulator and torch end where recommended by Standards and manufacturers • Select equipment specifically designed for the fuel gas type (acetylene vs LPG/propane) and rated for the maximum cutting thickness and heating load • Maintain a controlled asset register for all oxy-fuel plant with serial numbers, locations and maintenance history • Include supplier prequalification criteria that assess technical support, spare parts availability and compliance documentation 	2M
4. Inspection, Maintenance and Asset Management	<ul style="list-style-type: none"> • Lack of a scheduled maintenance program for regulators, hoses, flashback arrestors and cutting/heating attachments • Internal hose deterioration leading to leakage, flashback or oxygen-fuel mixing • Failure to remove damaged or out-of-test equipment from service (including cylinders and regulators) • No system for periodic integrity testing of flashback arrestors and non-return valves • Inadequate record-keeping of inspections, repairs and replacements • Ad hoc repairs or unauthorised modifications to oxy-fuel equipment by unqualified personnel 	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M
5. Gas Cylinder Management, Storage and Transport	<ul style="list-style-type: none"> • Improper storage of oxygen, acetylene and LPG/propane cylinders, increasing risk of fire, explosion or oxygen enrichment 	4A	<p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> Inadequate segregation of full and empty cylinders or incompatible gases Cylinders unsecured during storage or internal transport, leading to falls, valve damage or projectile hazards Use of out-of-test or unidentified cylinders due to poor tracking Inadequate controls for vehicle transport of cylinders (upright restraint, ventilation, valve protection) Lack of clear labelling and safety signage in storage areas for multiple gas types 		[REDACTED]	
6. Gas Distribution Systems, Hoses and Connections	<ul style="list-style-type: none"> Leaking connections, regulators or hoses causing flammable gas accumulation or oxygen enrichment Use of incorrect hose types (e.g. oxygen hose used for fuel gas) or incorrect colour coding Hose routing through high traffic or sharp edge areas leading to mechanical damage and failure Inadequate systems for leak testing when connecting cylinders or changing hoses and cutting torches Use of makeshift adaptors or fitting not rated for oxy-fuel service Lack of documented standards for hose lengths, pressure settings and manifold use 	4A	[REDACTED]	2M
7. Work Environment, Layout and Ventilation	<ul style="list-style-type: none"> Conducting oxy-fuel cutting, heating or soldering in poorly ventilated areas leading to accumulation of fumes, combustion products or flammable gases Inadequate separation between hot work areas and combustible materials, fixed plant or process lines Cluttered workspaces leading to trip hazards, hose entanglement and uncontrolled movement of torches 	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> • Incomplete assessment of confined spaces or partially enclosed areas where oxy-fuel equipment is used • Poorly designed workstations for plate cutting, rod cutting and repairs, increasing risk of fire spread or personnel exposure • Lack of environmental monitoring for oxygen levels and flammable atmospheres where warranted 		[REDACTED]	
8. Hot Work and Fire Risk Management	<ul style="list-style-type: none"> • Ignition of nearby combustible materials during gas cutting, plate cutting, rod cutting or heating operations • Failure to manage sparks, slag and hot metal travelling beyond the immediate work area • No formal hot work permit system for non-designated areas, including during plant repairs and modifications • Inadequate fire watch arrangements particularly for work above ground level or near concealed cavities • Insufficient fire protection equipment or poorly maintained extinguishers and fire blankets • Lack of pre-job assessment for hidden services (cables, pipes, fuel lines) in the cutting or heating zone 	4A	[REDACTED]	2M
9. Operational Planning, Permits and Job Sequencing	<ul style="list-style-type: none"> • Unplanned or reactive oxy-fuel tasks carried out without adequate risk assessment or SWMS review • Poor coordination between multiple trades (e.g. welding, grinding, painting) in shared work areas, leading to conflicting risks • No formal process to plan complex cutting sequences, large plate cutting jobs or multi-torch operations • Failure to consider interaction with production operations, vehicle movements or public access areas 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Inadequate communication of changes to job scope that alter oxy-fuel risks (e.g. change of location or material thickness) 		[REDACTED]	
10. Contractor and Supplier Management for Oxy-Fuel Work	<ul style="list-style-type: none"> Contractors conducting oxy-acetylene cutting, soldering or repairs without alignment to site WHS systems Inconsistent standards of equipment maintenance and testing between contractors and principal contractor Insufficient induction of contractors on local hot work permit, emergency response and reporting procedures Reliance on contractor procedures that may not meet Australian WHS legislative requirements or site standards Poor oversight of third-party cylinder suppliers and gas distribution system installers 	3H	[REDACTED]	2M
11. Personal Protective Equipment Program and Fit-for-Work Management	<ul style="list-style-type: none"> Reliance on PPE as the primary control instead of part of a managed hierarchy of controls Inconsistent provision and enforcement of PPE for oxy-fuel cutting, brazing and soldering (e.g. eye, face and respiratory protection) Failure to assess health conditions or medications that may impact operation of torches or emergency response Inadequate arrangements for managing fatigue, heat stress or visibility issues caused by PPE and hot work environments No system to ensure PPE is maintained, replaced and compatible with other equipment (e.g. face shields with respirators) 	3H	[REDACTED]	2M
12. Emergency Preparedness, Incident Response and First Aid	<ul style="list-style-type: none"> Delayed or ineffective response to gas leaks, flashback, fires or explosions involving oxy-fuel equipment 	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> Lack of clear emergency shutdown procedures for cylinders, regulators and torches Workers untrained in first aid for burns, smoke inhalation or eye injuries caused by hot work Inadequate communication systems to raise alarms in remote or isolated oxy-fuel work locations Poor post-incident investigation and corrective action processes, allowing recurrence of similar events 		[REDACTED]	
13. Documentation, Records and Change Management	<ul style="list-style-type: none"> Outdated or inconsistent procedures for oxy-acetylene and LPG/propane cutting and heating Loss of critical records such as training, maintenance, permits and inspections, making it difficult to verify compliance Uncontrolled introduction of new equipment, gases or cutting attachments without formal risk review Lack of version control leading to workers using superseded SWMS manufacturer instructions Inadequate documentation of engineering changes to gas distribution systems or workshop layouts 	3H	[REDACTED]	1L
14. Health Monitoring, Exposure Control and Ergonomics	<ul style="list-style-type: none"> Chronic exposure to fumes, combustion products and heat from repeated oxy-fuel cutting and heating tasks Poor ergonomic design of cutting stations, leading to musculoskeletal strain during plate cutting, rod cutting or prolonged torch use 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> • Insufficient controls for noise, vibration and radiant heat from high-intensity heating torches • Lack of monitoring for worker comfort and early signs of overexposure or fatigue when using torches in awkward positions • Underestimation of combined exposure when oxy-fuel is used in conjunction with welding, grinding or other hot work 		<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>	

SAMPLE

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>

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>

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-codes-of-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>

Northern Territory

Work Health and Safety (National Uniform Legislation) Act 2011
 Work Health and Safety (National Uniform Legislation) Regulation 2011
 Legislation NT: <https://worksafe.nt.gov.au/laws-and-compliance/workplace-safety-laws>
 Codes of Practice NT: <https://worksafe.nt.gov.au/laws-and-compliance/codes-of-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>

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>

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

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.