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Laboratory 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:

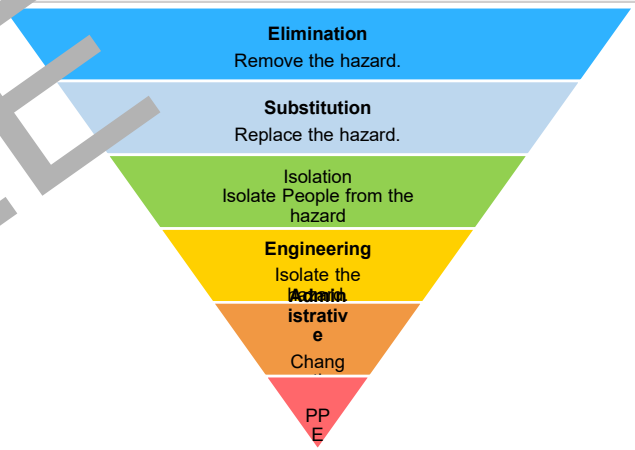
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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. WHS Governance, Responsibilities and Consultation	• Unclear allocation of WHS duties for laboratory managers, supervisors, technicians, contractors and students • Lack of documented laboratory-specific WHS policies aligned with the WHS Act 2011 and WHS Regulation • Inadequate consultation with workers, health and safety representatives and students on laboratory risks and changes • Poor integration of laboratory WHS governance into broader organisational WHS management system • Failure to monitor and review compliance with internal procedures for activities such as autoclaving, dissection, material testing and chemical handling • Insufficient oversight of specialist high-risk plant (industrial autoclaves, compression testing rigs, centrifuges, sterilisers, fume cupboards and fume hoods) • Absence of formal laboratory safety committee or governance forum	4A	• Establish and maintain a documented laboratory WHS governance framework that defines roles, responsibilities and reporting lines in accordance with the WHS Act 2011 and WHS Regulation • Appoint a competent Laboratory Manager or supervisor as Person Conducting a Business or Undertaking (PCBU) representative for each lab, with clearly defined WHS accountability in position descriptions • Establish a laboratory safety committee with worker and student representation to review incidents, propose improvements and monitor implementation of control measures • Implement documented laboratory WHS policies and procedures (including for chemical handling, autoclave use, compression testing, centrifuge operation, Bunsen burners, fume cupboards, oxygen cylinders and destructive material testing) • Ensure consultation arrangements with workers and health and safety representatives are documented, communicated and implemented prior to any significant change in plant, processes or layout • Integrate laboratory WHS requirements into organisational WHS management systems, including risk management, procurement, contractor management and emergency planning • Conduct annual management reviews of laboratory WHS performance, including audits of adherence to policies, training completion and incident trends • Ensure WHS duties under the WHS Act 2011 and due diligence obligations for officers are clearly communicated and supported with ongoing education	3H
2. Laboratory Risk Management and Change Control	• Inconsistent or informal risk assessments for laboratory activities such as science lab chemical handling, compression testing, material strength testing and mutual induction experiments • Failure to identify hazards associated with new or modified plant such as industrial autoclaves, sterilisers, centrifuges and testing rigs • Inadequate review of risk controls when introducing new substances, apparatus (e.g. spectrum discharge tubes, microscopes, incubators) or experimental methods • No formal management of change process for refurbishment, new	4A	• Implement a structured risk management procedure consistent with WHS Regulation requirements, mandating formal risk assessments for all laboratory processes and plant before use • Require task-based risk assessments (separate to SWMS) for high-risk categories including chemical handling, autoclaving, Bunsen burner use, oxygen cylinder handling, destructive and material testing, centrifuges and compression testing equipment • Establish a formal management of change process that reviews WHS risks before commissioning new equipment, changing lab layout or introducing new substances and procedures • Develop and maintain a laboratory risk register capturing key system, plant and process risks, responsible persons and planned actions • Ensure risk assessments are laboratory-specific and consider student skill level, research complexity, scale of operations and emergency arrangements • Implement document control for all risk assessments and procedures, including versioning, approval and scheduled review dates	2M

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	installations, or reconfiguration of benches, gas services or fume cupboards • Reliance on generic risk documents not tailored to specific laboratories, class groups or research projects • Poor documentation and version control of risk assessments, leading to outdated controls being applied		• Require sign-off of risk assessments by a competent person (e.g. Laboratory Manager or WHS Advisor) before high-risk plant or activities are allowed to commence • Schedule periodic review of risk assessments following incidents, near misses, introduction of new technology or changes to legislation or standards	
3. Laboratory Design, Layout and Infrastructure	• Poor laboratory layout causing congestion around fume cupboards, Bunsen burners, autoclaves, sterilisers and compression testing rigs • Insufficient segregation of incompatible activities such as dissection, science lab chemical handling, destructive testing and microscopy work • Inadequate bench space leading to cluttered work areas and unstable placement of laboratory glassware, microscopes, incubators and mutual induction apparatus • Insufficient or poorly positioned emergency exits, safety showers, eye wash stations and fire equipment • Inappropriate flooring or inadequate spill containment increasing slip and chemical exposure risks • Insufficient ventilation or incorrectly designed airflows around fume cupboards, fume hoods and autoclaves • Inadequate provision of secure storage for chemicals, gas cylinders and sensitive equipment	3H	• Design and maintain laboratory layouts in accordance with relevant Australian Standards, building codes and WHS Regulations, ensuring safe clearances around fixed plant and emergency equipment • Segregate incompatible activities spatially (e.g. high-temperature operations, compression and destructive testing, dissection, and chemical mixing) using designated zones and physical barriers where required • Ensure benches are of adequate size, height and load rating for equipment such as industrial autoclaves, centrifuges, incubators and testing rigs, and are anchored where necessary • Provide clearly marked and unobstructed emergency exits, safety showers, eye wash stations, fire extinguishers and fire blankets, with signage and lighting that meets standards • Specify slip-resistant, chemically resistant flooring and provide integrated bunding or spill containment where liquids are used or stored • Engage competent HVAC engineers to design and periodically verify ventilation systems, ensuring sufficient air changes and correct operation of fume cupboards and hoods • Provide lockable storage cabinets for chemicals, flammable liquids, corrosives and gas cylinders, and secure storage for valuable or delicate equipment • Incorporate ergonomic design principles for microscope workstations, computer use and repetitive bench tasks to minimise musculoskeletal risks	2M
4. Engineering Controls and Fixed Plant (Autoclaves, Sterilisers, Testing Rigs)	• Industrial autoclaves and sterilisers lacking appropriate interlocks, pressure relief, guarding or automatic shut-off, leading to explosion, scalding or crush injuries • Failure of compression testing and material strength testing equipment	4A	[redacted]	2M

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
	resulting from inadequate engineering controls or maintenance • Centrifuges operating without appropriate imbalance detection, lid interlocks or containment, causing ejection of rotors or samples • Laboratory incubators, ovens and temperature resistance test rigs without over-temperature protection or fail-safe controls • Use of non-compliant electrical and mechanical equipment in wet or corrosive laboratory environments • Inadequate calibration and verification of safety features, gauges and control systems on pressure and temperature equipment		[redacted]	
5. Laboratory Equipment Management (Routine Apparatus and Glassware)	• Poorly maintained general laboratory equipment such as microscopes, mut… induction apparatus, spectrum dischar… tubes and incubators leading to electric… shock, burns or exposure to UV or high… voltage • Unsystematic ma…gement of laboratory glassw… causing f… breakages, sharps … contamination • Use of damaged or unsuitable glassware in temperature… …nce tests, testing material strength or compression rigs, leading to shattering under load or heat • Uncontrolled proliferation of small electrical devices with no test and tag program, increasing fire and shock risk • Improper cleaning, storage and segregation of sharp dissection tools and fragile apparatus	3H	[redacted]	2M
6. Hazardous Chemicals and	• Inadequate system for identification, labelling and classification of chemicals used in science lab chemical handling,	4A		2M

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Laboratory Substances Management	dissection preservation, material testing and cleaning • Lack of current Safety Data Sheets (SDS) readily accessible in all labs where chemicals and laboratory substances are used • Poor segregation and storage of incompatible chemicals, leading to potential fires, toxic gas generation or violent reactions • Uncontrolled decanting of chemicals into unlabelled secondary containers during experiments and routine lab work • Insufficient management of laboratory waste streams including sharps, contaminated glassware, chemical residues and biological materials • Failure to assess and control exposure to hazardous substances generated during Bunsen burner use, destructive testing, spectrum discharge tubes or fume cupboard operations		[redacted]	
7. Gas Systems and Oxygen Cylinder Management	• Improper securing and storage of oxygen and other gas cylinders used in science labs, increasing risk of falls or valve damage • Inadequate system for leak detection, inspection and maintenance of gas lines feeding Bunsen burners, fume cupboards and other apparatus • Use of incorrect regulators, hoses or fittings on oxygen and fuel gas cylinders • Lack of procedural controls for cylinder transport within buildings and between storage and laboratory use areas • Insufficient segregation of oxygen cylinders from combustible materials and incompatible gases • Unclear emergency isolation locations for gas supplies in laboratories and preparation rooms	4A	[redacted]	2M

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
			[redacted]	
8. Ventilation, Fume Cupboards and Fume Hoods	• Use of fume cupboards and fume hoods that are not commissioned, tested or maintained to required performance standards • Undocumented processes leading to inappropriate use of open benches instead of fume cupboards for volatile, toxic or corrosive substances • Overloading of fume cupboards with equipment such as Bunsen burners, autoclave discharge, spectrum discharge tubes or material testing rigs, compromising containment • Blocked or altered ventilation ducts affecting performance of local exhaust systems • Lack of clear criteria defining what work must be conducted in fume cupboards, leading to inconsistent practices between staff and student cohorts	3H	[redacted]	2M
9. Thermal, Flame and High-Energy Processes	• Uncontrolled use of Bunsen near flammable materials, solvents, oxygen cylinders or combustible was • Inadequate oversight of hot surfaces and steam from autoclaves, industrial sterilisers, ovens and temperature resistance test rigs • Lack of system controls for high-energy tests such as destructive and material strength testing, leading to projectiles, fragment ejection or equipment failure • Insufficient policies restricting the use of open flames, hot plates and heaters in crowded teaching laboratories • No documented criteria for safe operating envelopes for temperature	4A	[redacted]	2M

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
	resistance tests and high-temperature material experiments		[redacted]	
10. Information, Training, Competency and Supervision	• Workers, students and visitors performing laboratory tasks without adequate induction or competency-based training • Reliance on informal on-the-job instruction rather than structured training for use of autoclaves, centrifuges, industrial sterilisers and material testing equipment • Insufficient supervision of inexperienced users during activities such as dissection, destructive testing, chemical handling and Bunsen burner work • Training materials not [redacted] to reflect current plant, procedures or legislative requirements • No system to verify competency prior to granting access rights to specific laboratories or high-risk equipment • Lack of documented training records, making it difficult to demonstrate compliance with WHS Act 2011 due diligence obligations	[redacted]	[redacted]	2M
11. Laboratory Access Control, Permits and Work Authorisation	• Unrestricted access to laboratories by untrained staff, students, visitors or contractors • High-risk work (e.g. after-hours experiments, destructive testing, oxygen cylinder changes, industrial autoclave operation) conducted without formal authorisation or permits • Contractors performing maintenance on autoclaves, sterilisers, fume cupboards or gas systems without	3H	[redacted]	2M

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
	adequate understanding of laboratory hazards • Lack of a clear sign-in, sign-out or lone worker system for out-of-hours laboratory activities • Inadequate management of visiting school groups or public tours entering operational science labs		[redacted]	
12. Personal Protective Equipment (PPE) and Laboratory Dress Standards	• Overreliance on PPE in place of higher-order controls for chemical, thermal and mechanical hazards • Inconsistent PPE requirements across different laboratories leading to confusion and non-compliance • Inadequate provision, maintenance and replacement of PPE such as safety glasses, face shields, lab coats, gloves and thermal protection for autoclave work • No system to enforce minimum laboratory dress standards (closed footwear, long pants, tied-back hair) for students and visitors • Insufficient guidance on glove selection and compatibility with chemicals, biological agents and temperature extremes	3H	[redacted]	1L
13. Housekeeping, Storage and Manual Handling	• Poor housekeeping leading to cluttered benches, blocked access to emergency equipment and increased risk of spills and breakages • Unsafe storage of heavy items such as gas cylinders, large glassware, centrifuge rotors and material samples at height • Inadequate systems for managing accumulated waste, including broken glass, off-cuts from testing specimens and contaminated consumables • Manual handling of heavy or awkward items such as autoclave loads,	3H	[redacted]	2M

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
	compression testing components and liquid containers without mechanical aids or procedural controls • Uncontrolled storage of personal belongings and bags in laboratory work areas, creating trip hazards and contamination risks		[redacted]	
14. Emergency Preparedness and Incident Management	• Lack of integrated emergency response plans for chemical spills, fires, gas leaks, electrical incidents and equipment failures in laboratories • Inadequate drills or exercises for laboratory-specific emergencies involving autoclaves, oxygen cylinders, Bunsen burners or destructive tests • Unclear roles and responsibilities for first aiders, wardens and laboratory supervisors during incidents • Insufficient access to and maintenan[redacted] of first aid kits, spill kits and emergency decontamination facilities • Under-reporting of n[redacted]es and minor incidents, lea[redacted]g to missed opportunities for s[redacted]em improv[redacted]nt	4A	[redacted]	2M
15. Health Monitoring, Exposure Control and Ergonomics	• Failure to identify tasks requiring h[redacted]lth monitoring under WHS Regulati[redacted] such as exposure to certain ch[redacted]als, biological agents or noise • Inadequate systems to manage cumulative exposure to solvents, disinfectants, preservatives and combustion products from Bunsen burners • Extended microscope use, repetitive pipetting and static postures at benches leading to musculoskeletal disorders • Inadequate control of thermal stress for tasks involving autoclaves, ovens, incubators and high-temperature test rigs	3H	[redacted]	2M

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
	• Lack of confidential reporting mechanisms for early signs of overuse injuries or sensitivity to laboratory substances		[redacted]	
16. Documentation, Records and Continuous Improvement	• Critical laboratory WHS documents such as risk assessments, procedures, maintenance records and training logs being incomplete, outdated or inaccessible • Lack of systematic review of laboratory WHS performance metrics, audit findings and action completion • Inconsistent application of lessons learned from incidents across different laboratories within the organisation • Overly complex or poorly written procedures leading to non-compliance or work-around practices • Failure to demonstrate due diligence and compliance during regulatory inspections due to poor recordkeeping	3H	[redacted]	1L

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