

Ventilation Safety

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 for the task parts. 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. Ventilation Design & System Specification	<ul style="list-style-type: none"> • Ventilation system not designed to meet AS 1668 and NCC performance requirements for the specific workplace hazards • Undersized or poorly located extraction fans leading to inadequate contaminant capture • Failure to segregate clean air intakes from contaminated discharge points • Inadequate design for smoke and fume extraction in emergency conditions • Insufficient consideration of sawdust, welding fumes, vapours and other airborne contaminants in system capacity and layout • Failure to allow for future changes in plant layout or processes that affect airflow patterns 	4A	<ul style="list-style-type: none"> • Engage a competent mechanical engineer to design mechanical ventilation, extraction fans and louvre systems in accordance with WHS Regulations, NCC and AS 1668 series • Develop and implement a design brief that specifies contaminant types, emission rates, occupancy levels and indoor air quality targets consistent with Safe Work Australia guidance • Require formal design review, including documented risk assessments for smoke, fume, sawdust and general airborne contaminant control • Ensure design provides appropriate separation distances and locations between outdoor air intakes and exhaust discharge points • Specify system redundancy, monitoring points and access for maintenance (inspection hatches, fan isolation, duct cleanouts) • Include commissioning and performance validation criteria (airflow rates, capture velocities, pressure balance) in design documentation 	3H
2. Legal Compliance & Standards Management	<ul style="list-style-type: none"> • Ventilation systems not assessed against WHS Act 2011 and WHS Regulations requirements for airborne contaminants • Reliance on outdated standards or manufacturer information that no longer complies with Australian legislation • Lack of documented process to review changes in legislation, codes of practice and Australian Standards • Inadequate consideration of specific exposure standards for hazardous substances and welding fumes • Non-compliance with building approvals and essential safety measures for mechanical ventilation systems 	4A	<ul style="list-style-type: none"> • Establish a compliance register for ventilation, extraction and indoor air quality referencing WHS Act 2011, WHS Regulations, NCC and relevant Australian Standards (e.g. AS 1668, AS/NZS 3666, AS/NZS 1715) • Assign responsibility to a competent person for monitoring legal and standards updates and communicating changes to management • Undertake scheduled compliance audits of mechanical ventilation, exhaust extraction units and smoke & fume extraction systems • Ensure all new or modified installations are reviewed and certified by appropriately qualified designers and building certifiers • Maintain records of approvals, compliance certificates, performance testing and essential safety measure reports • Incorporate legal compliance checks into procurement, project approval and change management procedures 	2M
3. Ventilation Asset Procurement & Specification Control	<ul style="list-style-type: none"> • Procurement of fans, boosters, extractors and ventilators that are unsuitable for the contaminant type or duty cycle 	3H	<ul style="list-style-type: none"> • Implement a formal procurement standard for ventilation equipment specifying minimum performance, certification and compliance requirements • Require suppliers to provide technical data sheets, compliance declarations and installation manuals for extraction fans, booster fans and exhaust extraction units 	2M

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	<ul style="list-style-type: none"> • Low-quality or non-compliant extraction fans and louvres without appropriate certification or documentation • Inconsistent supplier specifications leading to incompatible components across ventilation systems • Inadequate consideration of noise, vibration and energy efficiency impacting long-term safe operation • Failure to specify appropriate ingress protection, spark-proofing or explosion protection where required 		<ul style="list-style-type: none"> • Standardise preferred brands and models for key components to simplify maintenance and ensure compatibility • Include lifecycle safety and maintenance requirements in purchasing decisions (e.g. access for cleaning, bearing life, filter change mechanisms) • Ensure equipment selected for sawdust, smoke and flammable vapour extraction is rated for the specific hazard (e.g. anti-spark impellers, appropriate electric classification) • Require pre-delivery inspections or factory acceptance tests for critical mechanical ventilation plant 	
4. Installation, Setup & Commissioning of Ventilation Systems	<ul style="list-style-type: none"> • Improper installation of extractor fans, booster fans, louvres and ductwork leading to reduced airflow or back-pressure • Inadequate support, anchoring or isolation of fans causing vibration, noise or structural damage • Incorrect wiring, controls or interlock affecting safe startup, shutdown and fault response • Failure to verify airflow rates, capture velocities and pressure balance during commissioning • Poor configuration when setting up ventilation fans and ventilators causing recirculation of contaminants • Improper fitting of ventilators and louvre systems leading to water ingress or corrosion 	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>	2M
5. Indoor Air Quality (IAQ) Monitoring & Management	<ul style="list-style-type: none"> • Failure to detect build-up of airborne contaminants, fumes, sawdust or smoke in occupied areas • Inadequate implementing of indoor air quality measures, such as CO2 monitoring in enclosed spaces • Occupant discomfort, heat stress or respiratory irritation due to poor airflow and temperature control 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> Lack of baseline and periodic IAQ monitoring, leading to undetected long-term health risks Reliance on subjective complaints rather than objective IAQ measurements 		[REDACTED]	
6. Operation & Control of Mechanical Ventilation and Booster Systems	<ul style="list-style-type: none"> Mechanical ventilation and booster fans not operated when required, leading to uncontrolled exposure Unclear responsibilities for starting, stopping and adjusting ventilation equipment Overriding of interlocks or automatic controls to 'improve productivity' Improper operation of booster fans altering capture effectiveness in extraction systems Failure to operate exhaust extraction units during tasks generating fumes or sawdust Unmanaged changes to operating schedules (e.g. turning off fans to reduce noise or energy use) 	3H	[REDACTED]	1L
7. Preventive Maintenance & Inspection Systems	<ul style="list-style-type: none"> Failure of extraction fans, ventilators and booster fans due to lack of preventive maintenance Blocked filters, ducts and louvres leading to reduced airflow and unscheduled degradation of control effectiveness Sawdust extraction system maintenance not scheduled, allowing dust build-up and fire risk Smoke & fume extraction system cleaning not undertaken, reducing capture and discharge performance Inadequate inspection of fan belts, bearings and guards leading to unexpected breakdowns Maintenance tasks carried out without isolating equipment, creating mechanical or electrical hazards 	4A	[REDACTED]	2M

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8. Cleaning, Dust & Contaminant Management in Extraction Systems	<ul style="list-style-type: none"> Accumulation of sawdust and combustible dust in extraction ducts, hoods and filters increasing fire and explosion risk Build-up of welding fumes, smoke residues and oil mist in smoke & fume extraction systems Cross-contamination of work areas during inadequate cleaning of ventilation plant Inappropriate cleaning methods (e.g. dry sweeping) re-suspending fine particulates into the air Lack of clear ownership for arranging extraction system cleaning and verification 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	1L
9. Change Management for Processes & Layout Affecting Ventilation	<ul style="list-style-type: none"> Relocation of plant or workstations without re-assessing effectiveness of local exhaust and general ventilation Introduction of new materials or processes (e.g. new timber products, coatings, welding methods) increasing contaminant loads Blocking or altering ventilation louvres, grilles and intakes during building modifications Installation of new equipment that competes for air (e.g. additional extraction units) without increasing system capacity Incremental changes over time resulting in poor airflow patterns and stagnant zones 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M
10. Training, Competency & Supervision in Ventilation Safety	<ul style="list-style-type: none"> Workers unaware of proper ventilation procedures and their role in controlling airborne contaminants Maintenance staff not competent to identify deterioration or faults in ventilation systems 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	1L

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	<ul style="list-style-type: none"> Supervisors not trained to recognise inadequate ventilation or IAQ warning signs Incorrect use of exhaust extraction units and local exhaust hoods due to lack of instruction Reliance on informal 'on the job' instruction without verification of competency 		[REDACTED]	
11. Governance, Monitoring, Audit & Continuous Improvement	<ul style="list-style-type: none"> Lack of oversight of ventilation system performance at management level No systematic auditing of extraction and ventilation controls against risk assessments Failure to learn from ventilation-related incidents, near misses and health surveillance outcomes Data on breakdowns, IAQ events and complaints not analysed for trends Absence of clear performance indicators for ventilation and indoor air quality 	3H	[REDACTED]	2M
12. Emergency, Failure Response & Business Continuity for Ventilation	<ul style="list-style-type: none"> Unplanned failure of mechanical ventilation or extraction system leading to immediate exposure to harmful contaminants Inadequate emergency procedure for smoke, fume or dust events where ventilation is compromised Lack of backup systems or contingency plans for critical ventilation in confined or enclosed spaces Delays in isolating faulty equipment or switching to safe modes during breakdowns Workers remaining in affected areas due to unclear evacuation or stand-down criteria 	4A	[REDACTED]	2M

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13. Documentation, Labelling & Information Management	<ul style="list-style-type: none"> • Incomplete or outdated documentation for ventilation and extraction systems hindering safe operation and maintenance • Poor labelling of fans, isolators, dampers, louvres and control panels leading to incorrect operation • Loss of historical records for commissioning, maintenance, IAQ testing and modifications • Contractors and new staff unable to access accurate information about system configuration and limitations • Confusion over which systems serve which areas, resulting in partial or ineffective ventilation coverage 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	1L
14. Contractor & Supplier Management for Ventilation Works	<ul style="list-style-type: none"> • Contractors performing installation, cleaning or maintenance without understanding site-specific ventilation risks • Inconsistent safety standards between different ventilation service providers • Poor coordination of works affecting ventilation availability during critical operations • Lack of verification that contractor recommendations align with legislative and organisational requirements • Uncontrolled changes made by contractors to system settings during service tasks 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	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>

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.