

Refrigeration Maintenance

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, Consultation and Legal Compliance	<ul style="list-style-type: none"> Lack of documented WHS responsibilities for refrigeration work leading to unclear authority and supervision Failure to identify refrigeration, cold room and refrigerant activities as specific WHS risks in the WHS management system Non-compliance with WHS Act 2011, WHS Regulations, and relevant Australian Standards (e.g. AS/NZS 1677, AS/NZS 5149, AS 2030, AS 3666) Inadequate consultation with workers, HSRs and contractors about refrigeration-specific hazards and changes to systems of work No formal process to review incidents, near misses and audit findings related to refrigeration maintenance and cold room servicing Poor integration of licensed refrigeration work, pressure equipment, electrical and confined space obligations into WHS procedures Failure to maintain current status of plant, pressure vessels, refrigerants and safety data sheets (SDS) 	4A	<ul style="list-style-type: none"> Establish and maintain a WHS governance structure that assigns clear accountability for refrigeration plant and cold room safety, including executive and line management responsibilities Develop a documented WHS policy and refrigeration safety standard referencing relevant Australian legislation, Codes of Practice and standards used on site Implement a formal risk management procedure requiring periodic refrigeration-specific risk assessments, including cold rooms, freeze-dry machines, chilled water plants and ultralow temperature systems Ensure effective worker consultation mechanisms (toolbox talks, HSR meetings, safety committees) specifically address refrigeration and refrigerant gas hazards and system changes Maintain and regularly update a legal and standards register covering refrigerant handling, pressure equipment, electrical safety and plant isolation requirements Implement a structured audit and inspection program of refrigeration maintenance systems, including corrective action tracking and close-out verification Require periodic management review of refrigeration safety performance, including KPI reporting on incidents, near misses, leak events and unplanned plant outages 	3H
2. Competency, Licensing and Training for Refrigeration Work	<ul style="list-style-type: none"> Use of unlicensed or under-qualified technicians for refrigeration plant work, refrigerant recovery or refilling Freon-equivalent gases Inadequate training in safe handling of refrigerant gases, including flammable (A2L, A3) and high-pressure refrigerants used in ultralow temperature refrigeration Insufficient understanding of cold room, freezer and chiller operational hazards such as entrapment, oxygen displacement and thermal stress Lack of competency in pump down refrigeration circuits, refrigerant recovery 	4A	<ul style="list-style-type: none"> Implement a competency framework that defines mandatory qualifications, trade licences, refrigerant handling licences and high-risk work licences for all refrigeration tasks Maintain a central competency and licence register for employees and contractors, with expiry tracking and verification prior to engagement Provide role-specific training on refrigerant properties, toxicity, flammability, high pressure hazards and cryogenic/ultralow temperature risks Ensure technicians are trained and assessed as competent in pump down procedures, refrigerant recovery systems, leak testing, vacuum procedures and charging methods Deliver structured training on cold room and freezer safety, including entrapment prevention, manual release mechanisms and emergency response Provide refresher training at defined intervals and following plant modifications, incidents or introduction of new refrigerants (e.g. A2L blends, CO₂, ammonia, hydrocarbons) 	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
	<p>systems use, and transport of refrigeration units</p> <ul style="list-style-type: none"> • No verification of competency for contractors undertaking specialised tasks such as deep freeze containment regulation or large plant overhauls • Failure to provide refresher training on changes to plant, refrigerants, controls, or emergency procedures • Poor awareness of environmental and WHS implications of refrigerant leaks and incorrect disposal 		<ul style="list-style-type: none"> • Require contractors to submit evidence of competency and licences during pre-qualification, and verify through periodic audits and on-site supervision 	
3. Design, Procurement and Modification of Refrigeration Plant and Equipment	<ul style="list-style-type: none"> • Procurement of refrigeration units, cold rooms, freezers, ice machines and refrigerated display cabinets that are not fit-for-purpose or non-compliant with Australian Standards • Design of refrigeration systems without appropriate safety features such as pressure relief devices, gas detection, emergency stops and interlocks • Inadequate consideration of refrigerant choice (toxicity, flammability, global warming potential) for the specific application and location • Poor layout and design of refrigeration plant rooms, roof-mounted condensers, and deep freeze equipment leading to unsafe maintenance conditions • Lack of engineered controls for ultralow temperature equipment, including guarding, insulation and defrost systems • Uncontrolled modifications to refrigeration plant, pipework, controls or refrigerant type without engineering review or revised risk assessment • Inadequate selection of materials and components for corrosive or moist environments (e.g. cold room door hardware, drain lines, evaporators) 	4A	<ul style="list-style-type: none"> • Establish a formal plant design and procurement procedure requiring WHS, engineering and maintenance input for all refrigeration installations and major upgrades • Specify compliance with relevant Australian Standards and manufacturer requirements in all purchase and installation contracts for refrigeration plant and cold storage equipment • Require engineering risk assessments and design reviews for new or modified refrigeration systems, focusing on refrigerant choice, pressure relief, gas detection, access and maintenance ergonomics • Mandate inclusion of engineered safety features such as gas detectors, pressure relief valves, isolation valves, emergency stops, interlocks and fail-safe controls where applicable • Ensure plant rooms and equipment locations provide safe access, adequate working space, lighting, ventilation, emergency egress and structural support for maintenance activities • Implement a Management of Change (MoC) process for any modification to refrigerant type, operating pressures, control logic or plant configuration • Maintain as-built drawings, P&IDs and equipment manuals for all refrigeration plant, updated promptly following any authorised changes 	2M
4. Planned Preventative Maintenance,	<ul style="list-style-type: none"> • Absence of a structured planned maintenance program for refrigeration 	4A		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
Inspection and Testing Systems	<p>units, cold rooms, chillers, ice machines and deep freeze systems</p> <ul style="list-style-type: none"> • Over-reliance on reactive breakdown maintenance increasing likelihood of catastrophic failures and refrigerant loss • Inadequate inspection of safety devices (pressure relief valves, emergency stops, interlocks, door releases, alarms) • Lack of periodic leak testing, vacuum integrity verification and calibration of controls and sensors • Failure to service and clean refrigerated display cabinets, evaporators and condensers leading to overheating, ice build-up or hygiene risks • Poor documentation and traceability of maintenance activities, resulting in repeated issues and undetected degradation • Third-party maintenance contractors not integrated into the maintenance system or schedule 		[REDACTED]	
5. Refrigerant and Chemical Management (Storage, Handling, Recovery and Disposal)	<ul style="list-style-type: none"> • Uncontrolled handling of refrigerant gas cylinders and recovery cylinders leading to leaks, exposure, asphyxiation or fire • Incorrect pump down procedure and refrigerant recovery systems use causing over-pressurisation or cylinder rupture • Improper refilling of Freon-equivalent refrigerants or mixing of incompatible refrigerants in the same system • Inadequate labelling, segregation and inventory control for refrigerant gas storage, including flammable and high-pressure gases • Failure to use suitable recovery and recycling equipment leading to 	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
	<p>environmental release and regulatory non-compliance</p> <ul style="list-style-type: none"> Lack of SDS access and training for refrigerants and cleaning chemicals used in ice machine service and repair Uncontrolled venting of refrigerants during servicing of chillers, commercial freezers and refrigerated display cabinets 		[REDACTED]	
6. Plant Isolation, Lockout/Tagout and Energy Control	<ul style="list-style-type: none"> Work on live refrigeration plant, cold room systems or ice machines due to inadequate isolation procedures Failure to isolate all energy sources (electrical, pneumatic, hydraulic, mechanical, stored pressure, thermal) before maintenance Bypassing of safety interlocks or guards on refrigeration plant, refrigerated display cabinets and ultralow temperature equipment Uncontrolled restart of compressors, fans or pumps while personnel are still working on the system Inadequate verification of zero energy state before opening refrigeration circuits or pressure Confusion over responsibility for isolations when multiple contractors or shifts are involved 	4A	[REDACTED]	2M
7. Work Environment, Access and Cold Room / Freezer Safety	<ul style="list-style-type: none"> Poor access and egress to refrigeration plant rooms, roof-top condensers and rear of refrigerated display cabinets Risk of entrapment in cold rooms, commercial freezers and deep freeze containment areas due to faulty doors or lack of internal releases Inadequate ventilation in plant rooms or enclosed spaces leading to accumulation of leaked refrigerant gas and oxygen depletion 	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
	<ul style="list-style-type: none"> Slips, trips and falls due to ice formation, water pooling, poor drainage or clutter in cold storage areas Insufficient lighting around refrigeration equipment, plant rooms, loading docks and freezer aisles Inadequate management of extreme cold exposures for workers servicing ultralow temperature refrigeration or deep freeze systems 		[REDACTED]	
8. Contractor and Subcontractor Management for Refrigeration Activities	<ul style="list-style-type: none"> Use of refrigeration contractors who lack appropriate licences, insurances or WHS systems Poor coordination between multiple contractors working on the same refrigeration plant leading to conflicting isolations or interference Contractors bypassing site safety procedures for refrigerant handling, hot work or working at heights Insufficient site-specific instruction regarding cold room, freezer, refrigerant and plant room hazards Lack of oversight of contractors engaged by primary refrigeration contractors Inadequate review of contractor SWMS, risk assessments and work methods for high-risk refrigeration work 	4A	[REDACTED]	2M
9. Permit-to-Work, High-Risk Activities and Confined Spaces	<ul style="list-style-type: none"> Maintenance work on refrigeration systems in plant rooms or pits that meet confined space criteria without appropriate controls Hot work on or near refrigeration plant, pipework and insulated panels increasing fire or explosion risk, especially with flammable refrigerants 	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
	<ul style="list-style-type: none"> • Work at heights on roof-mounted condensers or evaporative units without formal planning or control • Live electrical work during fault finding on refrigeration controls and motors without authorisation • Inadequate assessment of simultaneous high-risk activities (e.g. hot work and refrigerant recovery in the same vicinity) 		[REDACTED]	
10. Transport, Handling and Installation of Refrigeration Units and Components	<ul style="list-style-type: none"> • Unsafe manual handling and lifting of refrigeration units, compressors, condensers and ice machines causing musculoskeletal injuries • Inadequate securing of refrigeration units and cylinders during transport, leading to movement, damage or leaks • Use of unsuitable lifting equipment or methods when positioning rooftop units, evaporators or refrigerated display cabinets • Damage to refrigerant pipework, insulation or electrical components during handling or installation • Lack of planning for access to lifts or use of forklifts in confined loading docks or plant rooms 	3H	[REDACTED]	2M
11. Monitoring, Alarm Management and Emergency Preparedness	<ul style="list-style-type: none"> • Failure of refrigerant leak detection, temperature monitoring or alarm systems without timely detection • Poorly defined or untested emergency response procedures for major refrigerant leaks, cold room entrapment or plant room fires • Alarm fatigue or disregard of repeated nuisance alarms from refrigeration control systems, leading to missed critical events • Lack of coordination with emergency services regarding refrigerant types, plant room access and isolation points 	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
	<ul style="list-style-type: none"> Inadequate first aid preparedness for cold burns, frostbite or asphyxiation associated with refrigerant exposure and ultralow temperature systems 		[REDACTED]	
12. Documentation, Records, Change Management and Continuous Improvement	<ul style="list-style-type: none"> Outdated or inconsistent procedures for refrigeration maintenance, refrigerant handling and cold room operation Loss of critical records such as maintenance histories, leak tests, certifications and commissioning data Uncontrolled changes to plant, controllers, setpoints or refrigerant types without WHS consideration Failure to learn from refrigeration-related incidents, near misses or equipment failures Poor communication of procedural updates and lessons learned to technicians, supervisors and contractor 	3H	[REDACTED]	1L
13. Fatigue, Work Scheduling and Remote / After-Hours Refrigeration Call-Outs	<ul style="list-style-type: none"> Technicians responsible for refrigeration breakdowns after hours or in remote locations while fatigued Inadequate journey management and communication for technicians travelling to service refrigeration units at remote client sites Pressure to restore cold rooms, freezers or display cabinets quickly leading to risk-taking and bypassing of safety procedures Lone working in plant rooms, on rooftops or in deep freeze areas without appropriate monitoring or escalation arrangements 	3H	[REDACTED]	2M

SAMPLE

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

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.