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

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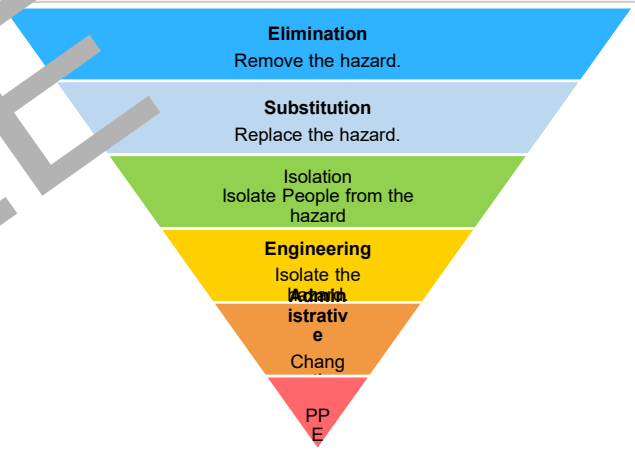
RISK MATRIX

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



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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.*

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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, Legislative Compliance & Licensing	• Failure to identify and comply with WHS Act 2011, WHS Regulation and state/territory radiation control legislation • Absence of a formal radiation management plan covering ionising and non-ionising radiation sources • Inadequate or lapsed radiation licences for company, facilities, radiation safety officers and operators • Unclear allocation of radiation safety roles, responsibilities and accountabilities at senior management level • Failure to integrate radiation safety into the organisation's WHS management system and due diligence processes • Poor change-management processes when new radiation technologies, nuclear density gauges or industrial radiography equipment are introduced • Inadequate review of compliance following legislative or st ds updates (ARPANSA ues, AS/NZS standards)	4A	• Establish and maintain a documented Ra ion Manag ent System aligned to WHS Act 2011, WHS Regulation and relevant state/territory radiati legisla and ARPANSA codes of practice • Appoint a competent Radiation Safety Officer O) with docu nted authority and direct reporting line to senior management • Maintain a compliance registe f all required radia ences, registrations, approvals and permits, including for indust graph nuclear density gauges and densometers • Implement a ocumented v ernan proce e requiring regular legal compliance reviews and gap analyses by a itably qual d radiati sultant • Inte radia s y into the organisation's WHS policy, risk management framework and safety objecti with boa level oversight • Estab h a rmal m agement of change procedure for introduction, modification or decommissioning of any io ising non-io ising radiation source • hedu annu internal audits and periodic external audits of the Radiation Management System, with corre e actions tracked to completion Ensure participation in industry forums and subscription to regulatory updates to maintain current k wledge of radiation safety obligations	3H
2. Radiation Risk Management & Planning	• Inadequate identi ation sks involving exposure to ising and non-ionising radiation (e.g. industria radiography, nuclear density gau utilisation, work in radiati as) • No documented radiation risk assessments for new projects, new equipment or changes to usage patterns • Failure to consider cumulative radiation dose for workers undertaking multiple tasks or working near multiple sources • Insufficient assessment of exposure to electromagnetic fields (EMF) from non-ionising radiation sources • Over-reliance on PPE rather than higher-order controls for radiation exposure mitigation	4A	• Develop formal radiation risk assessment procedures that distinguish between system-level risks and task-level SWMS requirements • Require documented, activity-specific radiation risk assessments for all operations using radioactive substances, nuclear densometers, industrial radiography or EMF-generating equipment • Incorporate the principles of justification, optimisation (ALARA/ALARP) and dose limitation into all planning processes • Mandate pre-job radiation planning meetings for higher-risk tasks such as industrial radiography work and work in designated radiation areas • Use dose modelling tools and expert advice to predict exposures for complex tasks or cumulative exposure scenarios • Integrate radiation risk assessments with broader project risk registers and HSE planning documentation • Review and update radiation risk assessments on a defined schedule and after incidents, near misses or significant process changes	2M

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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
	• Poor integration of radiation controls with other high-risk work (e.g. confined spaces, remote locations, construction activities)			
3. Inventory, Classification & Source Security	• Incomplete or inaccurate inventory of radioactive sources, X-ray equipment, nuclear density gauges and EMF-emitting devices • Unclear source ownership, custodianship and chain-of-responsibility, particularly for mobile industrial radiography units • Loss, theft or unauthorised removal of sealed sources or gauges leading to uncontrolled public exposure • Improper storage of radioactive substances, including inadequate shielding, segregation and security • Failure to classify radiation areas and controlled zones based on potential exposure levels • Inadequate control of temporary or hired radiation sources [illegible] remote or client sites	4A	• Maintain a centralised, controlled inventory sy[illegible]n for all ionisi[illegible] and non-ionising radiation sources, including serial numbers, acti[illegible], location and sta[illegible] • Define and document nominat[illegible] custodians for ea[illegible]iation source and industrial radiography unit with clear responsi[illegible] • Implement [illegible]sical and pr[illegible]edural [illegible]curity [illegible]ntrols for radioactive sources, including locked storage, access contro[illegible]nd key ma[illegible]gement s[illegible] • Clas[illegible] and sig[illegible]os[illegible]adiation areas and controlled zones in accordance with relevant Australian standa[illegible]s[illegible]nd ARP[illegible]NSA codes • Introd[illegible]e a[illegible]ermit-t[illegible]ove system for the transport or relocation of nuclear density gauges, densom[illegible]ers a[illegible]d other[illegible]obile sources • C[illegible]nduc[illegible]regula[illegible]tocktakes and reconciliations of all radiation sources, with discrepancies escalated imme[illegible] [illegible]mplement incident response protocols for loss, theft or suspected tampering with any radiation source, in[illegible]ding regulatory notification	2M
4. Engineering Controls & Facility Design	• Inadequate shieldi[illegible]gn for fixe[illegible] radiography rooms, radiation laboratories or gauge installations • Poor layout resulting in u[illegible]cessary occupancy or through-traffic in higher dose-rate areas • Failure of interlocks, warning systems or shutters on X-ray equipment and nuclear density gauges • Insufficient segregation between radiation sources and general work areas or public access zones • Lack of engineered controls for EMF exposure from non-ionising radiation sources	4A	[redacted]	2M

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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
	• Inadequate provision for safe storage, transport and docking of mobile radiation sources			
5. Radiation Monitoring, Dosimetry & Exposure Tracking	• Lack of systematic monitoring of ionising radiation levels in work areas and controlled zones • Failure to issue or correctly manage personal dosimeters for workers who handle radioactive substances or perform industrial radiography work • Inadequate monitoring of EMF for workers using or working near non-ionising radiation sources • Delayed or poor-quality analysis of dosimetry results leading to unrecognised over-exposures • No formal process for investigating elevated or anomalous dose readings • Inaccurate or incomplete dose record for employees, contractors and visiting workers	4A	[redacted]	2M
6. Procurement, Selection & Maintenance of Radiation Equipment	• Purchase of radiation equipment or radioactive sources without appropriate safety features or certification • Inadequate technical specifications for shielding, interlocks and safety systems at the procurement stage • Lack of preventative maintenance and calibration programs for nuclear density gauges, industrial radiography units and monitoring instruments • Use of defective or out-of-calibration survey meters and dosimetry readers leading to incorrect exposure assessments • Poor lifecycle management, including unsafe storage of obsolete sources or delayed decommissioning	3H	[redacted]	1L

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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
7. Training, Competency & Authorisation of Workers	• Workers handling radioactive substances or operating industrial radiography equipment without appropriate training or licences • Lack of competency assessment for personnel using nuclear density gauges, densometers or working in controlled radiation areas • Inadequate awareness of EMF risks and controls for workers near non-ionising radiation sources • No formal authorisation process for radiation work, leading to unqualified personnel accessing radiation areas • Failure to provide refresher training and updates following regulatory or procedural changes	4A	[redacted]	2M
8. Work Authorisation, Access Control & Permit Systems	• Uncontrolled access to radiation area by untrained or unauthorised persons • Commencement of industrial radiography work or high-dose tasks without formal approval or coordination • Failure to coordinate simultaneous operations (SIMOPS) where other workers are present near active radiation sources • Inadequate lock-out or tag-out procedures for radiation-emitting equipment during maintenance or non-use • Temporary works or construction activities altering shielding effectiveness or access pathways without review	3H	[redacted]	1L
9. Contractor, Supplier & Client Interface Management	• Contractor industrial radiography teams operating under inconsistent or lower radiation safety standards • Suppliers of nuclear density gauges or other devices failing to provide adequate technical and safety information	3H	[redacted]	2M

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SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	• Misalignment between client site requirements and the organisation's radiation management procedures • Poor communication of radiation hazards, controlled areas and exposure limits to visiting workers • Inadequate oversight of third-party maintenance or calibration activities on radiation sources		[redacted]	
10. Health Surveillance, Fitness for Work & Dose Management	• Lack of health surveillance for designated radiation workers with potential for significant exposure • Failure to identify individual workers approaching dose constraints or regulatory dose limits • Inadequate assessment of medical conditions, pregnancy or medications that may affect radiation risk • Poor integration of fatig management and ro design for workers undertakin industrial radiography at nig or in rem as • Absence of procedu for tempora removal from radiation work followin elevated dose or medical advice		[redacted]	2M
11. Emergency Preparedness, Incident Response & Reporting	• Unpreparedness for radiation emergencies such as source loss, damage, fire, vehicle accidents involving gauges, or uncontrolled exposure events • Lack of clear criteria for classifying and escalating radiation incidents and near misses • Inadequate training and drills for emergency response teams regarding radiation hazards and contamination control	4A	[redacted]	2M

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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
	• Failure to notify regulators and affected persons in accordance with statutory requirements after a radiation incident • Poor post-incident investigation leading to recurrence of systemic failures		[redacted]	
12. Information, Consultation & Worker Engagement	• Workers not adequately informed about radiation risks, exposure pathways and available control measures • Limited consultation with health and safety representatives (HSRs) on radiation safety decisions and changes • Lack of clear communication about radiation signage, area classifications and access restrictions • Worker reluctance to report radiation concerns, near misses or early warning signs of system failure • Inadequate involvement of workers in the review of radiation procedures and risk assessments	3H	[redacted]	1L
13. Documentation, Records Management & Audit	• Incomplete or outdated radiation procedures, manuals and work instructions • Poor control of critical records such as licences, dosimetry reports, maintenance logs and calibration certificates • Inconsistent document versions across multiple sites leading to confusion and non-compliance • Lack of systematic internal audit of radiation safety practices and records • Inability to demonstrate compliance during regulatory inspections or client audits	3H	[redacted]	1L
14. Remote Operations, Transport & Field Work with Radiation Sources	• Inadequate control of radiation exposure when conducting industrial radiography or gauge use in remote or temporary locations	4A	[redacted]	2M

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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
	• Transport of radioactive sources without compliant packaging, labelling and security arrangements • Loss or damage to nuclear density gauges or densometers during vehicle accidents or unsecured transport • Limited communication and emergency support for field crews working with radiation sources in isolated areas • Failure to conduct site-specific assessments for EMF and radiation when deploying temporary equipment on client sites		[redacted]	

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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

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