Southern Cross University

Critical risk

Biological

Working with biological materials poses a risk of exposure to infectious diseases or viruses.

Cause #	Cause description
1	Conducting work at SCU, in-field or on a placement with exposure to biological hazard (e.g. blood, urine, faecal matter, effluent samples, soil samples) or virus that have the potential to cause a fatality.
2	Conducting work at a private residence with exposure to biological hazard or virus that have the potential to cause a fatality.
3	Conducting work and research in a public place with exposure to biological hazard or virus that have the potential to cause a fatality.
4	SCU employee or student with comorbidities, the existence of which increases the likelihood of a fatality in the event of an exposure to biological hazard or virus.
5	Working with and around animals (e.g. cats, small animals) and animal carcasses.
6	Handling needlesticks and sharps.
7	Exposure to PC2 Lab.

Preventive controls (reducing likelihood)	Critical/non critical	Cause #
(CC01) Risk based vaccination of SCU employees and students dependent upon role.	**Critical**	1 – 6
(CC02) Prohibitive entry into standing water when there are open cuts, unless wearing waterproof bandages and waders.	**Critical**	1, 2
All must take the specified action as per the biological database to ascertain the potential presence of biological hazards or viruses, prior to entering a premises.	Non-Critical	1 – 7
Biosafety Cabinet to be used when working with known hazardous biological materials.	Non-Critical	7
Specialised equipment to be used where biological substances are present must be used, stored, maintained, and tested to Australian Standards.	Non-Critical	7
Containment of infectious materials.	Non-Critical	1, 2, 3, 4, 6, 7
Training and induction on handling potentially infectious materials.	Non-Critical	1 – 7
All PC2 labs are subject to regular building assessments to ensure all fittings and structures comply with Australian Standards.	Non-Critical	7
Mitigating controls (reducing consequence)	**Critical/non critical**	**Cause #**
(CC03) Risk based vaccination of SCU employees and students dependent upon role.	**Critical**	1 – 6

Potential to interact with other fatal risks	
Critical risk	Potential interaction
Confined spaces.	Impacted by an uncontrolled biological material whilst in a confined space.
Occupational violence.	Exposure to biological material while being exposed to occupational violence.

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Critical risk

Emergency Events

Exposure to extreme weather events, including floods, bushfires, and extreme heat.

Cause #	Cause description
1	Extreme heat resulting in heat stroke.
2	Trapped in a bushfire.
3	Drowning in flash flooding.
4	Struck by lightning.
5	Struck by a falling tree.
6	Caught in a severe storm/ cyclone; struck by hail
7	Structure collapse post adverse weather event.
8	Medical emergencies.
9	Search and rescue emergencies.
10	Chemical spills, fire and explosions.
11	Campus wide lockdown.
12	Air contamination.
13	lack of and or inoperable emergency alert system.

Preventive controls (reducing likelihood)	Critical/non critical	Cause #
(CC01) Provision of adequate drinking water and hydration supplements.	**Critical**	1, 2
(CC02) Access to shade/cooling.	**Critical**	1
(CC03) SCU employees must not drive vehicles in, or walk through, flooded water.	**Critical**	3, 6
(CC04) SCU employees must remain in adequate shelter during extreme weather events.	**Critical**	1 – 7
(CC05) Campus tree maintenance and tree audit program, including pre- and post-severe weather events.	**Critical**	5
SCU employees comply with weather alerts and warnings.	Non-Critical	1 – 7, 13
Emergency and Crisis Management Plan for each campus and site, and Student Critical Incident Management (SCIM) when required.	Non-Critical	8, 9, 11, 12
Wearing PPE to mitigate heat exposure in a fire safety incident, including: • Long pants • Long-sleeved breathable shirts • Broad-brimmed hats	Non-Critical	1, 10
Lismore Evacuation Centre Flood Plan.	Non-Critical	3, 6
Use of heat stress calculator to determine task duration, timing and go/no go.	Non-Critical	1
Building maintenance for SCU controlled buildings.	Non-Critical	7
Bushfire management plan (Lismore campus).	Non-Critical	2, 9, 10, 12
Mitigating controls (reducing consequence)	**Critical/non critical**	**Cause #**
Implement post heat stress/stroke restrictions on personnel to allow for adequate recovery.	Non-Critical	1
(CC06) First aid applied as per first aid training.	**Critical**	1 – 8, 13
(CC07) Persons affected placed in cool place and provided hydration.	**Critical**	1
Defibs on each campus.	Non-Critical	8

Potential to interact with other fatal risks	
Critical risk	Potential interaction
Electrical Work.	Downed powerlines as a result of adverse weather events.
Remote and isolated work.	Delay in emergency response due to adverse weather events.
Vehicle operation.	Loss of control of vehicle due to adverse weather events.
OVA.	Lockdown, active attacker.

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Critical risk

Hazardous Substances

Exposure to hazardous substances through inhalation, skin contact, or explosion.

Cause #	Cause description
1	Inhalation or skin exposure of hazardous substance.
2	Inappropriate or incorrect handling, storage, labelling, use, and transport of hazardous substances.
3	Deliberate intent to obtain hazardous substances for ill intent.
4	Mixing of incompatible chemicals causing an explosion or generating toxic gases.
5	Inadequate management of a disclosed medical condition or undisclosed medical condition (e.g. pregnancy).
6	Acute or chronic poisoning via inhalation or skin (including an allergic reaction) .
7	Allergic reaction to a hazardous substance.
8	Exposure to unknown hazardous substances from emerging technologies (e.g., lithium batteries).
9	Explosion or fire due to flammable substances being incorrect handling.
10	Asphyxiation due to exposure to an unbreathable atmosphere.
11	Impacted by an explosive atmosphere including silos, storage facilities.
12	Equipment failure.

Potential to interact with other fatal risks	
Critical risk	Potential interaction
Confined spaces	Impacted by an uncontrolled hazardous substance whilst in a confined space.

Preventive controls (reducing likelihood)	Critical/non critical	Cause #
(CC01) Atmospheric Testing and Monitoring conducted by SCU employees using a calibrated, bump tested device.	**Critical**	1 – 12
(CC02) Respiratory protection worn, in accordance with OEM requirements, where there is the potential to be exposed to a hazardous substance.	**Critical**	1 – 12
(CC03) Mandatory PPE, including: • Disposable coveralls suitable to the task • Face and hand wipes • Boot covers or gumboots suitable to prevent exposure to asbestos when potentially exposed to disturbed asbestos	**Critical**	6
Follow Safety data sheet guidance requirement.	Non-Critical	2
Work areas designed and built for working with hazardous substances with fit for purpose equipment.	Non-Critical	1 – 12
(CC04) Fume cupboards and exhaust ventilation used to prevent exposure to chemicals.	**Critical**	1 – 12
Hazardous Chemicals stored segregated in appropriate storage with appropriate security.	Non-Critical	3
(CC05) Emergency stops and shut off valves installed on equipment (near chemical use or where chemicals are used within).	**Critical**	4, 9, 12
Spill and leak prevention including bunding.	Non-Critical	12
Containment measures including exhaust ventilation.	Non-Critical	4, 9, 11
Review of the database to ascertain the potential presence of hazardous substances before entering a premises, including up to date chemical Safety Data Sheets (SDS).	Non-Critical	1 – 12
Additional controls based on an Occupational hygiene risk assessment.	Non-Critical	1 – 12
Access to external assistance including e.g. police, emergency services, fire.	Non-Critical	1 – 12
Emergency plans, emergency equipment (e.g. eye wash stations, fire extinguishers).	Non-Critical	1 – 12
Mitigating controls (reducing consequence)	**Critical/non critical**	**Cause #**
Emergency plans, emergency equipment (e.g. eye wash stations, fire extinguishers).	Non-Critical	1 – 12

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Critical risk

Lack of oxygen

A lack of oxygen, caused by other gases taking its place.

Cause #	Cause description
1	Failure of ventilation systems.
2	Failure of sensors.
3	Failure of delivery systems, gas fittings, hoses, regulators.
4	Entering an environment where there has been a leak.
5	Working with toxic gases.
6	Entering an environment where oxygen has been displaced.
7	Entering a lift environment where there has been a leak during transportation

Preventive controls (reducing likelihood)	Critical/non critical	Cause #
(CC01) Ventilation systems: Maintenance of integrated ventilation systems in accordance with OEM requirements.	**Critical**	1 – 6
(CC02) Sensors: Installation, and monitoring of low oxygen sensors (Include testing of sensors in performance requirements).	**Critical**	1 – 6
(CC03) Detection Alarms: Installation, and monitoring of detection alarms. (Include testing of alarms in performance requirements).	**Critical**	1 – 6
(CC04) Emergency Shut off valves: Installation, maintenance, use and testing of emergency shut off valves.	**Critical**	3, 4
(CCO5) Use lift override to prevent entry to lift environments while transporting dangerous goods.	**Critical**	7
Signage for all SCU labs.	Non-Critical	1 – 6
Leak tests carried out post-change over of fittings.	Non-Critical	3, 4
Mitigating controls (reducing consequence)	**Critical/non critical**	**Cause #**
(CC06) First aid applied as per first aid training.	**Critical**	1 – 6
Emergency response plans are in place for all SCU campuses.	Non-Critical	1 – 6

Potential to interact with other fatal risks	
Critical risk	Potential interaction
Diving.	Equipment failure.
Boating.	Displacement of oxygen in confined spaces.

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Critical risk

Pressurised gas and stored energy

Uncontrolled release of pressurised gas or stored energy poses a serious risk to nearby workers.

Cause #	Cause description
1	Incorrectly connected mixed gas lines.
2	Uncontrolled release of gas from cylinder damage, faulty equipment.
3	Imploding gas from chemical reaction.
4	Cylinder damage
5	Unattended chemical reactions in closed vessels (when storing and disposing).
6	Explosion of pressurised reaction vessels and other pressurised equipment.
7	Faulty equipment.
8	Transporting pressurised gas in vehicles.
9	Injection of high pressured gas/fluid e.g air guns, hoses.
10	Poisoning (CO, SO2, CO2).
11	Lack of oxygen.
12	Explosion of pressurised reaction vessels.

Preventive controls (reducing likelihood)	Critical/non critical	Cause #
(CC01) Structural integrity: Maintained across containment vessels, delivery lines valves and associated equipment that meet Australian Standard. Inspected according to schedule.	**Critical**	1 – 12
(CC02) Ventilation/fume cabinets: In place in SCU labs as required.	**Critical**	10
(CC03) Sensors and detectors: Installed and monitored with employees responding in the event of the sensor detects a substance above the maximum exposure levels.	**Critical**	1 – 12
(CC04) Isolation: Prior to working on all pressurised gas and stored energy, equipment it must be de-pressurised by isolating and locking out the equipment.	**Critical**	1 – 10
Regulation of poisonous gases (include in hazardous substances).	Non-Critical	1 – 12
Exclusion zones when transporting cylinders.	Non-Critical	8, 2, 3, 4, 5, 6, 7, 11, 12
Airline guns must have protectors and hard covers.	Non-Critical	9
Pressure testing of storage.	Non-Critical	12
Blast shields.	Non-Critical	12
Maintenance of pressure relief valves.	Non-Critical	2
Training/awareness provided to SCU employees.	Non-Critical	1 – 12
Security, and correct storage and handling.	Non-Critical	1 – 12
Ongoing inspection regime.	Non-Critical	7
Mitigating controls (reducing consequence)	**Critical/non critical**	**Cause #**
(CC05) Emergency response procedures.	**Critical**	1 – 12
Fire containment systems.	Non-Critical	6, 7, 12

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Critical risk

Remote and isolated work

Working in remote or isolated environments heightens risks, as isolation exacerbates hazards.

Cause #	Cause description
1	No communication service (mobile, satellite, radio, emergency) in remote and isolated locations.
2	Vehicles with unknown maintenance (resulting in breakdown).
3	Vehicles not suitable for the location, terrain or climate (resulting in breakdown).
4	Lack of suitable 4WD recovery equipment resulting in being stuck in a remote location.
5	Working in unoccupied locations after hours.
6	Emergency occurs whilst working alone.
7	Emergency occurs in a remote location requiring specialist response (including medical) and there is a delay in the emergency response.
8	A delay in an emergency response due to an adverse weather event.

Preventive controls (reducing likelihood)	Critical/non critical	Cause #
(CC01) When conducting remote and isolated work, where there is or may not be network service available, a lone worker device is mandatory (e.g. Personal Location Beacon, EPIRB for water, Garmin InReach, Satellite phone).	**Critical**	1, 2, 3, 4, 7, 8
(CC02) All vehicles doing travelling remotely shall have a suitable workplace portable first aid kit, Off-Road Motoring Kit and 3L of water per person.	**Critical**	3, 4, 6, 7
(CC03) Readily accessible fixed duress alarms with 24 hour real time monitoring for workplaces where there is a risk of OVA.	**Critical**	5
(CC04) All remote journeys shall require a completed risk assessment prior to commencement. A journey management plan, with check in/out will be approved and monitored by the line supervisor.	**Critical**	1, 2, 3, 4, 6, 7, 8
On call persons to check in/check out for all work conducted out of hours.	Non-Critical	6
Mitigating controls (reducing consequence)	**Critical/non critical**	**Cause #**
(CC05) First aid applied as per first aid training.	**Critical**	5 – 8
(CC06) SCU employees shall ensure a Marine Commercial F Scale first aid kit is readily accessible when working on water, and first aid officers hold a current first aid qualification (Marine Order 504).	**Critical**	7

Potential to interact with other fatal risks	
Critical risk	Potential interaction
All.	Work conducted by SCU may be conducted both remotely and isolated, exposing all employees.
Boating.	Boating in remote and isolated locations.
Diving.	Diving in remote and isolated locations.
Vehicle operation.	Commuting in remote and isolated locations.

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Critical risk

Vehicle (driving) operation

Operating vehicles on public roads, off-road and campus risks collisions with people or objects.

Cause #	Cause description
1	Speeding.
2	Distracted (passengers, mobile phones, navigation, looking/observing).
3	Distracted by unfamiliar vehicle (safety devices, controls).
4	Struck by unrestrained items in vehicle; damage to hazardous substances being transported causing release; improper load restraint resulting in overturn.
5	Impact by other vehicles (intoxicated drivers, reckless drivers, other members of public).
6	Poor road or weather conditions including road surfaces, fire, flood, storms.
7	Fatigue (on-call, extended work hours, long-distance driving).
8	Lack of training/experience in driving 4WDs.
9	Use of not fit for purpose vehicles: (off road, recovery points, poor maintenance).
10	Driver impaired by alcohol, drugs, lack of experience or fitness.
11	Failure of critical vehicle components, brakes, steering, tyres.
12	Impact with animals (kangaroos, livestock, camels, etc.).
13	Pedestrian strike.

Preventive controls (reducing likelihood)	Critical/non critical	Cause #
(CC01) Maintenance of critical vehicle systems: SCU fleet vehicles maintained as per OEM maintenance schedule.	**Critical**	9, 11
(CC02) Fatigue Risk Management: Restricted work hours and minimum rest periods are adhered to by all SCU employees and students driving for SCU purposes see HRP 10 and 12 for guidence.	**Critical**	7
(CC03) Fit for purpose fleet vehicles with a ANCAP rating of 5 stars.	**Critical**	1, 2, 5
(CC04) Journey Plan: Employees to complete a journey plan risk assessment for designated journeys and follow the agreed controls as part of the broader project plan (if relevant). Risk assessment and plan to be approved by Head of Work Unit.	**Critical**	6, 7, 8
(CC05) Cargo Restraints: All cargo/equipment/tools to be restrained during transport.	**Critical**	7
Employees to complete monthly vehicle inspection .	Non-Critical	3, 9, 11
All SCU employees and students must complete the University Driver Safety Induction before using a vehicle for SCU purposes.	Non-Critical	1 – 12
Specialist 4WD training for selected employees required to drive 4WDs who are required to work remotely and 4WD.	Non-Critical	6
Vehicle familiarisation induction when SCU employees introduced into a new vehicle type/model.	Non-Critical	3
Where possible, technological facilities such as video-conferencing and teleconferencing are to be considered as an option to reduce travel between campuses.	Non-Critical	1 – 12
Mitigating controls (reducing consequence)	**Critical/non critical**	**Cause #**
(CC06) First aid applied as per first aid training.	**Critical**	1 – 13

Potential to interact with other fatal risks	
Critical risk	Potential interaction
Remote work.	Delay to emergency response.
OVA.	Encountering violent and aggressive drivers.
Animals.	Striking animals when driving.