HIRAC Report

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1. Hazard Management Details – General	
This form relates to OHS Procedure – *Hazard Identification, Risk Assessment and Control (HIRAC)*	
School / Work Location:	**Ballarat Tech School (Fed College)**
Name of Person(s):	Liam Mudge
Date Conducted:	14/02/2025
Last Reviewed:	22/04/2024
Next Review Due:	February 2026

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Description of Use:	Summary of Key Risks: (Refer to appropriate subsections)
The Ballarat Tech School (BTS) delivers a range of STEM curriculum projects, some of these activities may be hazardous to user's health if safety procedures and lab etiquette are not followed. The laboratory space is rated as a maximum PC1 laboratory for microbiological purposes as specified by AS/NZS 2243.3-2022 Experimentation activities include: • Chemistry • Microbiology • Experimentation	• ENTANGLEMENT • CONDITION OF EQUIPMENT • IMPACT & CUTTING • ELECTRICITY • ERGONOMICS • SHEARING • SLIPS / TRIPS / FALS • SPILLS & CLEAN UP • STORAGE • FIRE & EXPLOSION • TEMPERATURE / MOISTURE • STORAGE AND DISPOSAL • CONTAMINATION OR INFECTION

Risk Assessment Matrix

SEVERITY	LIKELIHOOD: Very Unlikely – Could happen, but probably never will	Unlikely – Could happen, but very rarely	Likely – Could happen sometime	Very likely – Could happen any time
Death or permanent disability	MEDIUM	HIGH	EXTREME	EXTREME
Long-term illness or serious injury	LOW	MEDIUM	HIGH	EXTREME
Medical attention and short-term incapacity	VERY LOW	LOW	MEDIUM	HIGH
First aid needed	VERY LOW	VERY LOW	LOW	MEDIUM

Assessing OHS Risks

Risk assessments in matters of Occupational Health and Safety*

are based on 2 key factors:

- The severity of any injury/illness resulting from the hazard(s),and
- The likelihood that the injury/illness will actually occur.

**Assessment of risk level based on likely severity and probability of harm*

2. Documentation		
Relevant Legislation/Standards	**Y / N**	**Comments**
Key reference material:		• AS/NZS 3760:2022 In service safety inspection and testing of electrical equipment. • AS/NZS 2243.3-2022 Safety in Laboratories • American Chemical Society, 'Identifying and evaluating hazards in research laboratories' The Association of Independent Schools of New South Wales Ltd 'Science and Technology Work Health and Safety Risk management and assessment for practical activities'. • Safe Work Australia 'MANAGING RISKS OF HAZARDOUS CHEMICALS IN THE WORKPLACE Code of Practice June 2023' • Guidelines for best practice for microbiology in Australian schools – ASSIST 2017 • Chemical Management Handbook for Australian schools – ASSIST 2016 • DET School Operations Chemical Management, Guidance Sheet 3: Prohibited and Restricted Chemical" https://www2.education.vic.gov.au/pal/chemical-management/procedure/4-prohibited-and-restricted-chemicals

3. Hazards				
Hazards Inspected	**Initial Risk**	**Description of Risk**	**Control Measures**	**Residual Risk**
ENTANGLEMENT Can anyone's hair, clothing, gloves, cleaning brushes, tools, rags or other materials become entangled with moving parts of the tools or materials?	Medium	• Long hair, loose clothing, rags, cleaning brushes and jewellery could become entangled in the moving parts of the equipment, knock over equipment/vessels or become contaminated.	• Ensure hair, loose clothing, rags and jewellery is kept clear of moving parts when in use. • PPE (lab coats, safety glasses and gloves) • Hair ties/hair nets can be used to secure long hair. • Ensure inappropriate jewellery and accessories (e.g. bracelets) are not worn when operating equipment.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
CONDITION OF EQUIPMENT Is a hazard likely due to the age and condition of the experimentation equipment or materials?	Medium	• Damaged experimental equipment or storage vessels may result in spills, cuts, burns (both thermal and chemical) or contamination.	• All equipment set up, cleaned and stored appropriately by trained personnel. • All equipment maintained and inspected on an appropriate preventative maintenance schedule by appropriately trained personnel.	Low
IMPACT & CUTTING INJURIES Can anyone be crushed/cut/struck etc. due to: • Broken/sharp glass. • Uncontrolled/unexpected movement of tools /workspace	Medium	• Broken glassware can cause lacerations if contact with infectious microorganism or hazardous chemical, can cause severe infection with a potential of hospitalisation. • Unintended exposure to chemical/biological agents.	• Adequate sharp waste disposal kit, • Appropriate training in sharp decontamination. • Adequate PPE per OHS guidelines. • Ensure adequate space to complete work tasks. • Ensure all persons instructed in proper techniques for setting up/operating in a workspace.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
ELECTRICITY Can anyone be injured or burnt due to: • Access to electricity • Damaged or poorly maintained electrical leads, cables or switches • Water near electrical equipment	Medium	• Some experimentations may involve the production of electrical energy, via chemical or electromotive interactions. • Damaged or frayed electrical cords pose an electrical hazard. • Power supplies used for scientific equipment may require energising in the presence of water and other liquids.	• Ensure equipment is regularly inspected, serviced, tested and tagged (if not hardwired) and appropriate isolation procedures (e.g. lock out tags) are in place. • Ensure only the minimum amount of fluid used to successfully achieve outcomes. • Isolate power and mop up any spills as soon as practicable.	Low

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Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
ERGONOMICS Can anyone be injured due to: • Constrained body posture or the need for excessive effort? • Inadequate or poorly placed lighting?	Medium	• Design of workstation does not allow for adequate space to perform tasks. • Some equipment may require forcible action to setup/operate. • Sudden/unexpected movement of workstation • Inadequate lighting may result in incorrect/improper experimental or preparation activities.	• Allow adequate work area for user to avoid collision with another person/object. • Users should avoid prolonged application of force, reassess appropriateness of tool/equipment. • Ensure adequate lighting to perform task. Additional lighting may be required if ambient/room lighting is insufficient.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
SLIPS / TRIPS / FALLS Can anyone using the tool, or in the vicinity of the plant, slip, trip or fall due to: • Uneven, slippery or steep work surfaces • Poor housekeeping, e.g. spillage in the vicinity • Obstacles being placed in the vicinity of the tool.	Medium	• Inappropriate placement of objects (e.g. spare materials, bags etc.) in the immediate vicinity of the plant equipment may result in trip hazard. • Poor housekeeping practices allowing the build-up of waste materials or failure to immediately clean up spills could result in a slip hazard. • Trip hazards posed by bags, chairs etc	• Access to cleaning materials appropriate for a range of spill situations. • Ensure appropriate cleaning and housekeeping practices are maintained to minimise the risk of slips/trips. • Floors and walkways kept clear of all bags etc.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
SPILLS & CLEAN UP Can anyone be injured or suffer ill-health from spills or clean up	Medium	• Infection, contamination and/or exposure occurring due to spills/inadequate clean-up procedures.	• Adequate chemical cleaning agents and absorbent materials readily available for decontamination/clean-up. • All equipment maintained and inspected on a preventative maintenance schedule by appropriately trained personnel. • Clean-up and decontamination of work site to be completed by the participant/student after conducting experimentation. • • Experimentation equipment to be cleaned with appropriate cleaning devices/substances and sterilised where applicable.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
DISPOSAL OF CHEMICAL/BIOLOGICAL AGENTS	Medium	• Inappropriate disposal of chemical agents • Spill of chemical agent. • Laboratory cleaning staff • • Spills of chemical agents may induce increased hazard greater than that of a normal slip/trip/fall.	• Disposal of excess and waste chemicals done in accordance with their MSDS and EPA requirements. • Appropriate chemical isolation and spill clean-up measures in place prior to experiment. Informed by MSDS and experiment HIRAC. • All staff involved with the clean-up of the laboratory to be inducted into the space and made aware of intrinsic hazards. • Cleaning staff to have contact details of appropriate BTS staff in case of laboratory accident.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
EXPERIMENTATION Can anyone be injured or suffer ill-health from undertaking experimentation	Medium	• Handling of chemical agents. • Use of experimental apparatus. • Unexpected energetic activity	• Setup and supervision of experimentations done by appropriately trained personnel • Use of relevant PPE as determined by MSDSs. • Laboratory activity supervised by appropriately trained personnel. • Use of all equipment and experimental procedures provided. • Experimentation conducted under supervision of appropriately trained personnel.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
STORAGE AND DISPOSAL Can anyone be injured or suffer ill-health from improper storage/disposal of chemical/biological agents	Medium	• Unintended/inappropriate access and use of chemical agents. • Unintended mixing of incompatible materials • Excess of chemical agents. • Improper storage or disposal may result in undesired growth/reactions leading to infection, harm, contamination etc	• Ensure appropriate labelling of all chemical vessels is maintained. • Ensure quantities of chemicals are kept to a minimum. • Regular inspection of stored chemicals to ensure there are no leaks or spills. • Store chemicals as per MSDS compatibility notes. • Ensure appropriate ventilation in storage area to avoid build-up of hazardous gasses. • Microbial organisms correctly labelled and stored. • Appropriate storage and disposal of all waste chemicals and completed experimentations, including biological waste in accordance with EPA policy and organism specific HIRAC.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
EXPLOSION Can anyone be injured by explosion of gases, vapours, liquids, dusts, or other substances?	Medium	• Some chemical reactions may be volatile resulting in explosion or fire. • Experimental equipment or materials may become a source of ignition if left unattended or equipment/experimentation active for excessive length of time. • Use of flames (Bunsen burners etc.) in some experimentation activities.	• Setup and induction into equipment use & experimentation methods by appropriately trained personnel. • Use of appropriate PPE • Ensure access to appropriate fire suppression methods. • Ensure Bunsen burners etc are properly connected and maintained prior and post use. • Activities involving explosive vapours only conducted in well-ventilated spaces so as not to trap/pool vapour pockets.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
TEMPERATURE / MOISTURE Can anyone come into contact with objects at high or low temperatures? Can anyone be injured or suffer ill-health due to exposure to moisture?	Medium	• Some equipment and processes may produce temperatures at a level that could cause harm if contact made with persons. • Some chemical reactions may be endo/exothermic resulting in objects/surfaces becoming cold or hot. Moisture in the form of condensation may result.	• Setup and induction into equipment use & experimentation methods by appropriately trained personnel. • Appropriate signage to indicate hot surface. • Use of appropriate PPE • Setup and induction into equipment use & experimentation methods by appropriately trained personnel.	Low
Hazards Inspected	**Initial Risk**	**Description of Risk**	**Control Measures**	**Residual Risk**

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
MICROBIAL HAZARDS Can anyone be injured or suffer ill-health from exposure to biological agents	Medium	• Personnel working with microbial agents may become contaminated/infected if proper laboratory etiquette is not maintained.	• Risk Assessment to be completed on each microorganism used in experimentation to inform personnel of correct clean-up procedures. • Only microorganism classed as no higher than "Risk Group 1" are to be used in the laboratory. • Review MSDS for all chemicals being used in experiment prior to any experimentation. • Induction and supervision of personnel by appropriately trained person. • Limit use to DET approved chemicals/agents. • All equipment is wiped down with 70% ethanol at the end of each session	Low

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Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
CHEMICAL AGENTS Can anyone be injured or suffer ill-health from exposure to chemicals.	Medium	• Possible for chemical spills could occur during normal use. • Exposure to some chemical agents (pure elements, compounds, solutions, suspensions or any combination of the above.) May pose a risk to health and safety if chemicals come into contact with users or other chemical agents, or if resultant fumes are inhaled. • Skin corrosion • Irritation • Eye damage • Organ toxicity	• Provide appropriate storage of chemicals. • Provide training and guideline when working with dry chemical, Fungi spore, microorganisms. • Obtain and review Material Safety Data Sheet (MSDS)s for all chemicals/materials used prior to undertaking laboratory activity. • Use of relevant PPE as determined by MSDSs. • Ensure appropriate ventilation in activity workspace. • Storage, set-up experiments and disposal undertaken by appropriately trained personnel. • Limit use to DET approved chemicals/agents	Low
INHALATION Can anyone be injured or suffer ill-health from inhalation of Toxic gases, vapours fumes, dust or spores.	Medium	• Inhalation of the chemical gases • Some chemical reactions may result in the production of harmful gasses.	• Use fume hood when conducting experiments requiring high ventilation. • Maintain proper ventilation of the laboratory.	Low

Hazards Inspected	Initial Risk	Description of Risk	Control Measures	Residual Risk
CONTAMINATION OR INFECTION Can anyone be injured or suffer ill-health from exposure to chemical/biological agents	Medium	• Pre-existing cuts/abrasions may pose a contamination risk. • Food or drink brought into the laboratory may introduce or become contaminated by microbial agents. • Infection of microbial agents may result in illness.	• Any pre-existing cuts must be properly covered and kept dry to reduce the risk of infection. • No food or drink is to be brought into or consumed in the laboratory. • All personnel conducting experimentation to thoroughly wash hands at completion of activity. • Use of PPE to limit contact with microbial agents. • Biological hazard labels will be fitted to the trolley housing the workstation tubs to warn users of the potential presence of biohazardous material on items in each tub.	Low

4. Risk Assessment Signoff		
Authorised By: Damon Minotti Associate Director, Ballarat Tech School	Signature: 	Date: 24/03/2025