


Health and Safety Risk Assessment

Activity / Task / Location: Biol ExpFest / Labs / MSW225 CAL	Reviewed / Approved By: Karl Hassan Signature and Date:  2/5/2023
Risk Assessment Developed by: Geoffry De Iuliis	Date: 30/04/2023

Risk Matrix

Likelihood

N.B. For more details regarding use of this matrix / definitions refer to final page of this document

Consequence

	Rare	Unlikely	Possible	Likely	Almost Certain
Severe <i>Eg. Potential Fatality or Injury or Illness with permanent disability</i>	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
Major <i>Eg. Potential Lost Time Injury (but non-permanent disability)</i>	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate <i>Eg. Potential Medical Treatment injury or illness (but no lost time)</i>	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor <i>Eg. Potential First Aid injury</i>	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal <i>Eg. Hazard or near miss requiring reporting and follow up action</i>	LOW	LOW	LOW	LOW	LOW

Actions required based on Risk Assessment

Extreme	An "extreme" risk requires immediate assessment and senior staff consideration is required; a detailed mitigation plan must be developed, and consideration should be given to ceasing the activity unless the risk can be reduced to a level of high or less; regular monitoring and reported on to the relevant management/steering committee; Target resolution should be within 1 month.
High	A "high" risk may also require immediate assessment and senior staff consideration; a mitigation plan must be developed; regular monitoring and reported on to the relevant management/steering committee. Target resolution (ideally reduction to medium or low level of risk) should be within 3 months.
Medium	A mitigation plan must be developed; existing controls need to be reviewed. Target resolution (ideally reduction to low level of risk) should be within 1 year.
Low	Risk is tolerable; manage by well established, routine processes/procedures and be mindful of changes to nature of risks.

Health and Safety Risk Assessment

Hazard Identification and initial Risk Rating			Control measures and Residual Risk Rating		Remaining Hazards	Actions required
What are the steps of the activity / items of equipment?	What are the potential hazards?	Risk Rating based on Risk Matrix	What control methods or measures will be used to reduce the likelihood and/or the consequence of an illness or injury from those hazards?	Residual Risk Rating based on Risk Matrix	What hazard remains?	What additional actions are required (by who and in what timeframe) to raise the level of control?
General Safety Precautions	Both laboratories use some chemicals that are potentially harmful.	Low	Always wear a lab coat and additional safety-wear (safety glasses, latex gloves etc, when necessary) when in the lab. Always pay attention to advice from demonstrators/tech staff on the handling of specific reagents. Report any accidents, or potential exposures IMMEDIATELY to a demonstrator or technician.	Low	Students ignore instructions & are removed from lab.	Clear written and verbal instruction will be provided before and during the laboratory classes.
Food and Drink	Due to the potentially harmful materials present in a laboratory, no food or drink should be consumed in them.	Low	Food or drinks cannot be brought into the laboratory. Extra bags should be stored on the side bench in the laboratory. Keep only materials on the desktop, which are to be used for the experiment.	Low	Students ignore instructions & are removed from lab.	Clear written and verbal instruction will be provided before and during the laboratory classes.
DNA gels contain SYBR Safe	SYBR Safe will replace Ethidium bromide (potential carcinogen) as the DNA stain used in the electrophoresis	Low	Only demonstrators will handle gels. Wear a lab coat and protective gloves.	Low	Students ignore instructions & are removed from lab.	Clear written and verbal instruction will be provided before and during the laboratory classes.
Sample prep	Household detergent in eye	Low	Safety glasses, eyewash station handy	Low	Students ignore	Lab induction

Health and Safety Risk Assessment

					instructions and PPE requirements	Clear written and verbal instruction will be provided before and during the laboratory classes.
Eye strain	Use if microscopes for up to 40 minutes	Low	Regular breaks are scheduled in the manual with a pair or 3 students sharing the observations over that time period.	Low	Students do not take breaks and may become dizzy	Clear written instruction and verbal reminders
Centrifugation		Low	Low speed benchtop microfuges may be used. Ensure centrifuges are balanced and set appropriately by demonstrator before use.	Low	Students grossly over balance and may tip over. Contents are non-hazardous salt solutions with animal cells.	Clear written and verbal instruction will be provided before and during the laboratory classes.

Summary of Requirements based on Risk Assessment		Review Period / Date
Personal Protective Equipment	Gloves, Lab coats & Glasses	Semester 1, 2023
Other Equipment and Equipment Protection	None required	Semester 1, 2023
Training Requirements	Lab induction/overview provided for all classes. Verbal advice delivered via teaching staff	Semester 1, 2023
Procedures, SOPs etc	All SOP's are available in the lab. Procedures are captured within the lab manuals.	Semester 1, 2023
Relevant Legislation etc.	WHS Act 2011 (NSW) & Regulations / Codes of Practice	

Health and Safety Risk Assessment

Questions to ask in order to determine the hazards relating to the task:

<p>A Could people be injured or made sick by things such as:</p> <ul style="list-style-type: none"> • Noise • Light • Radiation • Toxicity • Infection • High or low temperatures • Electricity • Moving or falling things (or people) • Flammable or explosive materials • Things under tension or pressure (compressed gas or liquid; springs) • Any other energy sources or stresses • Biohazardous material • Laser 	<p>D What could go wrong?</p> <ul style="list-style-type: none"> • What if equipment is misused? • What might people do that they shouldn't • How could someone be killed? • How could people be injured? • What may make people ill? • Are there any special emergency procedures required?
<p>B Can workplace practices cause injury or sickness?</p> <ul style="list-style-type: none"> • Are there heavy or awkward lifting jobs? • Can people work in a comfortable posture? • If the work is repetitive, can people take breaks? • Are people properly trained? • Do people follow correct work practices? • Are there adequate facilities for the work being performed? • Are universal safety precautions for biohazards followed? • Is there poor housekeeping? Look out for clutter • Torn or slippery flooring • Sharp objects sticking out • Obstacles 	<p>E Are procedures or organisational systems missing or not being followed?</p> <ul style="list-style-type: none"> • Standard Operating Procedures? • Risk Assessments? • Induction or training? • Management of change? • Safety Inspections? • Hazard reporting? • Contractor Management?
<p>C Imagine that a child was to enter your work area?</p> <ul style="list-style-type: none"> • What would you warn them to be extra careful of? • What would do to reduce the harm to them? 	<p>F What kinds of injuries could possibly occur?</p> <ul style="list-style-type: none"> • Broken bones • Eye damage • Hearing problems • Strains or sprains • Cuts or abrasions • Bruises • Burns • Lung problems including inhalation injury/ infection • Skin contact • Poisoning • Needle-stick injury • Psychological illness or injury

Health and Safety Risk Assessment

How to Assess Risk

Step 1 – Consider the Consequences		Step 2 – Consider the Likelihood		Step 3 – Calculate the Risk Rating						
<p>What are the potential consequences of an incident occurring? Consider what could reasonably happen as well as what may actually happen.</p> <p>Look at the descriptions and choose the most suitable Consequence.</p>		<p>What is the likelihood of the consequence identified in step 1 happening? Consider this with the current controls in place.</p> <p>Look at the descriptions and choose the most suitable Likelihood.</p>		<p>A. Take Step 1 rating and select the correct column.</p> <p>B. Take Step 2 Rating and select the correct line.</p> <p>C. The calculated risk rating is where the two ratings cross</p>						
Consequence		Likelihood		LIKELIHOOD						
					Rare	Unlikely	Possibly	Likely	Almost Certain	
Serious	Potential Fatality or Injury or Illness with permanent disability	Almost Certain	The event could be expected to occur in most circumstances: "This is a common problem here".	CONSEQUENCE	Serious	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
Major	Potential Lost Time Injury requiring time off work (but non-permanent disability)	Likely	The event has a reasonable chance of occurring in usual conditions: "It has happened here before".		Major	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate	Potential medical treatment Injury or Illness but no lost time	Possible	The event might occur occasionally, has occurred sometime: "Has infrequently happened here before".		Moderate	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor	Potential First Aid Injury	Unlikely	The event has a small chance of occurring. "It has not happened here but has occurred elsewhere".		Minor	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal	No injury but hazard exists or near miss occurred requiring reporting and follow up action	Rare	Very unlikely to occur. "It would be extremely rare for it to occur here".		Minimal	LOW	LOW	LOW	LOW	LOW

Controlling the Risk: Risk control is a method of managing the risk with the primary emphasis on controlling the hazards at source. For a risk that is assessed as "extreme" or "high", steps should be taken immediately to minimize risk of injury. The method of ensuring that risks are controlled effectively is by using the "hierarchy of controls". The Hierarchy of Controls are:

Control Type	Example
Eliminate	Removing the hazard, eg taking a hazardous piece of equipment out of service.
Substitute	Replacing a hazardous substance or process with a less hazardous one, eg substituting a hazardous substance with a non-hazardous substance.
Engineering	Redesign a process or piece of equipment to make it less hazardous, Isolating the hazard from the person at risk, eg using a guard or barrier, or containing the hazard in an enclosure.
Administrative	Adopting safe work practices or providing appropriate training, instruction or information.
Personal Protective Equipment (PPE)	The use of personal protective equipment could include using gloves, glasses, earmuffs, aprons, safety footwear, dust masks. NOTE: This is a last resort control and should be used in conjunction with higher level controls.