

Risk Management Biological Hazard Edition March 2015

Introduction

Monash University's Victorian campuses are all governed by the Victorian OHS Act 2004 and its subordinate regulations and codes of compliance. An inherent part of all OHS legislation is the requirement for workplaces to control the hazards its activities may pose to the health and safety of staff, visitors, contractors and students.

This version of the Risk Management Program is designed to assist users identify hazards, assess the risk and determine the controls to reduce the risk associated with biological hazards. For general risk assessments, please see the Risk Management Program.

The occupational health and safety risks must be identified and eliminated where possible or otherwise minimized. When the hazard cannot be eliminated, a combination of primary and secondary controls provides the safest option for reducing the risk of exposure to a hazard. Reduction of risk is best done following the Hierarchy of Controls.

Primary controls are those which make the environment safer by controlling or restricting the impact of the hazard on those associated with the work

activity. Primary controls are described in the top section of the hierarchy and include Substitution, Isolation and Engineering.

Secondary controls assist the worker to be safer, in the case of Administrative controls or act as the last layer of protection to those exposed to the hazard in the case of Personal Protective Equipment. These are less reliable than primary controls, but still improve safety.

There are many mandatory controls required by legislation and standards for research with biological material. These controls are provided for your convenience.

The primary aim of the risk assessment process is to ensure the safety of all tasks in the workplace. The end result of a risk assessment is the implementation and maintenance of appropriate risk controls.

When to do a risk assessment at Monash

A risk assessment must be undertaken for all activities that involve biological hazards.

How to do a risk assessment at Monash

If the risk you are assessing is a common risk at Monash University there may be a pre-existing risk assessment available to use as guidance.

To do a Risk Assessment, this step by step process should be followed:

1. Establish what process is being assessed. If there is a Standard Operating Procedure for the task, make it available.
2. Involve people that know about the process and the hazards associated with it.
3. Print out or open an electronic copy of the Risk Assessment Worksheet.
4. Fill in the details of at the top of the worksheet, and enter the names of the people involved as the Risk Assessment Team.
5. Identify what hazards, in addition to biological, are associated with the process. There are many hazards listed on the worksheet, but there may be additional hazards. Take into account hazards associated with:
 - a. Installation;
 - b. Operation;
 - c. Waste generation;

- d. Associated equipment, tasks or activities that may need to occur as part of the process; and
- e. Decommissioning.

Enter the hazard in column 1 of the second page of the Risk Assessment Worksheet and the identified hazards in column 2. More rows can be added as required.

6. Seek information on the hazards identified. Some examples of places to look are your Risk Assessment Team, Supervisor, Safety Officer, knowledgeable colleagues, Monash OH&S website, [OHS Consultant/Advisor](#), other organisations with similar operations, Victorian WorkCover Authority, Safe Work Australia, Australian Standards, and the internet.

7. Determine consequences of biological hazard from the following table.

Consequences				
Insignificant	Minor	Moderate	Major	Catastrophic
Negligible infection	Minor infection	Medical treatment no long term effects	Infection/disease with long term health implications	Death/permanent incapacity / shortened life

8. Determine the probability of infection from the following table.

		Likelihood of Exposure resulting in Clinical Infection			
		Inhalation of aerosols	Ingestion (via splash to face or touching mouth with contaminated hands)	Splash to mucosal surface (e.g. eyes)	Needle Stick Damaged Skin (Direct exposure into blood)
Activity	Work involving sharps (phlebotomy, injections, surgery)	Unlikely	Unlikely	Possible	Almost Certain
	Work involving animal models (rodents, non-human primates)	Possible	Likely	Likely	Almost Certain
	Work involving large volumes of sample or culture	Almost certain	Likely	Likely	Rare
	Work involving small volumes (pipetting, subculturing)	Unlikely	Possible	Unlikely	Rare

9. Determine what controls are currently in place, record these in column 2. Reduce the consequences and likelihood in line with existing controls and record the value for the likelihood in column 3 and the consequences in column 4.

10. Assess the risk using the risk matrix. Enter this value in column 5.

		Consequences				
		Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	Almost Certain	Medium	High	High	Extreme	Extreme
	Likely	Medium	Medium	High	High	Extreme
	Possible	Low	Medium	Medium	High	High
	Unlikely	Low	Low	Medium	Medium	High
	Rare	Low	Low	Low	Medium	Medium

11. List the proposed controls on column 6 of the risk assessment worksheet. Here are the controls mandated based on the type of organism risk group as classified in AS/NZS 2243.3 (2010) Safety in laboratories - Microbiological safety and containment.

Organism group	Risk Group 4	Work must be carried out in Physical Containment Level 4 (PC4) certified facilities. Monash University does not have any PC4 facilities on any of its campuses. There are however two PC4 facilities in Victoria, these are: Animal Health Laboratories in Geelong and VIDRL in North Melbourne.
	Risk Group 3	<p>Work with Risk group 3 organisms must be carried out in facilities that meet the requirements of AS/NZS 2982 and AS/NZS 2243.3 and all work must be conducted in a Class II Biosafety cabinet. PC3 work practices must be adhered to at all times. Access to PC3 laboratories must be restricted to appropriately trained staff.</p> <p>Steam sterilizer (autoclave) must be located within PC3 facility for processing of infectious waste. Training to include Monash Biosafety, Pathogen specific training, Emergency training including spill management. Processes <u>without isolation of hazard</u>: high level of supervision and buddy system is required. Processes <u>with isolation of hazard</u>: moderate supervision required. Health surveillance where indicated, of those exposed to a potential hazard.</p> <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Respiratory protection fit tested for the individual.</p> <p>Centrifuges that are used for diagnostic samples or infectious microorganisms shall be fitted with either a sealed rotor or removable buckets, for easy decontamination in the event of a spill and samples must be placed in sealable tubes. A secondary unbreakable container which can be readily decontaminated must be used for the transport of microorganisms/GMOs between facilities. General waste and infectious waste must be segregated.</p> <p>Food or drink are not to be consumed or stored in area. If food/drink is to be used for research purposes, it must be clearly labeled "Not for human consumption". Safe Work Procedures/Safe Work Instructions for all procedures must be developed.</p> <p>Minimum PPE to be worn at all times:</p> <ul style="list-style-type: none"> • laboratory coat/gown, • safety eyewear, • fully enclosed footwear, • long hair tied back or hair net. <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Refer to Ansell Glove chart</p>

Risk Group 2	Low	Medium & High
	<p>Work with Risk group 2 organisms must be carried out in facilities that meet the requirements of AS/NZS 2982 and AS/NZS 2243.3.</p> <p>Only work that has been assessed to have a low aerosol risk may be conducted on the bench.</p> <p>Training to include Monash Biosafety training and all relevant vaccination(s) e.g. Hepatitis B, Q-fever. Suitable disinfectant must be available at all times for regular decontamination of work benches e.g. sodium hypochlorite, ethanol. All potentially infectious waste must be steam sterilised before leaving the building or a medical waste contractor must be engaged for infectious waste disposal. Safe work instructions for all procedures including spill cleanup procedures must be developed. Moderate level of supervision is required.</p> <p>Minimum PPE to be worn at all times:</p> <ul style="list-style-type: none"> • laboratory coat/gown, • safety eyewear, • fully enclosed footwear, • long hair tied back or hair net. <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Refer to Ansell Glove chart</p>	<p>Work with Risk group 2 organisms must be carried out in facilities that meet the requirements of AS/NZS 2982 and AS/NZS 2243.3</p> <p>All work must be conducted in a Class II Biosafety cabinet.</p> <p>Centrifuges that are used for diagnostic samples or infectious microorganisms shall be fitted with either a sealed rotor or removable buckets, for easy decontamination in the event of a spill and samples must be placed in sealable tubes. A secondary unbreakable container which can be readily decontaminated must be used for the transport of microorganisms between facilities. General waste and infectious waste must be segregated</p> <p>Food or drink are not to be consumed or stored in area. If food/drink is to be used for research purposes, it must be clearly labeled "Not for human consumption".</p> <p>Safe Work Procedures/Safe Work Instructions for all procedures must be developed. Minimum PPE to be worn at all times:</p> <ul style="list-style-type: none"> • laboratory coat/gown, • safety eyewear, • fully enclosed footwear, • long hair tied back or hair net. <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Refer to Ansell Glove chart</p>

	Risk Group 1	<p>Work with Risk group 1 organisms must be carried out in facilities that meet the requirements of AS/NZS 2982 and AS/NZS 2243.3.</p> <p>General waste and infectious waste must be segregated.</p> <p>Food or drink are not to be consumed or stored in area.</p> <p>If food/drink is to be used for research purposes, it must be clearly labelled "Not for human consumption".</p> <p>Safe Work Procedures/Safe Work Instructions for all procedures must be developed</p>
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<p>Diagnostic Specimens from animals/humans (blood, bodily fluids, tissue)</p>	<p>Work with diagnostic specimens must be carried out in facilities that meet the requirements of AS/NZS 2982 and AS/NZS 2243.3</p> <p>All work must be conducted in a Class II Biosafety cabinet.</p> <p>Centrifuges that are used for diagnostic samples or infectious microorganisms shall be fitted with either a sealed rotor or removable buckets, for easy decontamination in the event of a spill and samples must be placed in sealable tubes. A secondary unbreakable container that can be readily decontaminated must be used for the transport of microorganisms between facilities.</p> <p>General waste and infectious waste must be segregated.</p> <p>Food or drink are not to be consumed or stored in area.</p> <p>Safe Work Procedures/Safe Work Instructions for all procedures must be developed.</p> <p>Minimum PPE to be worn at all times:</p> <ul style="list-style-type: none"> • laboratory coat/gown, • safety eyewear, • fully enclosed footwear, • long hair tied back or hair net. <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Refer to Ansell Glove chart</p>
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GMOs - DIR - DNIR - PC2 NLRD; 12 categories as listed in GT Act	Low	Medium & High
	<p>Work with PC2 NLRDs, DNIRs and DIRs must be carried out in facilities that have been certified as PC2 by the OGTR.</p> <p>IBC approval must be sought prior to commencing work with PC2 NLRDs. An OGTR license must be obtained prior to commencing work with DNIRs and DIRs Access to PC2 laboratories should be restricted to appropriately trained staff</p> <p>Only work that has been assessed to have a low aerosol risk may be conducted on the bench.</p> <p>Training to include Monash Biosafety training and all relevant vaccination(s) e.g. Hepatitis B, Q-fever Suitable disinfectant must be available at all times for regular decontamination of work benches e.g. sodium hypochlorite, ethanol.</p> <p>All potentially infectious waste must be steam sterilised before leaving the building or a medical waste contractor must be engaged for infectious waste disposal.</p> <p>Safe work instructions for all procedures including spill cleanup procedures must be developed.</p> <p>Moderate level of supervision is required.</p> <p>Minimum PPE to be worn at all times:</p> <ul style="list-style-type: none"> • laboratory coat/gown, • safety eyewear, • fully enclosed footwear, • long hair tied back or hair net. <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Refer to Ansell Glove chart</p>	<p>Work with PC2 NLRDs, DNIRs and DIRs must be carried out in facilities that have been certified as PC2 by the OGTR.</p> <p>IBC approval must be sought prior to commencing work with PC2 NLRDs. An OGTR license must be obtained prior to commencing work with DNIRs and DIRs Access to PC2 laboratories should be restricted to appropriately trained staff</p> <p>All work must be conducted in a Class II Biosafety cabinet.</p> <p>Centrifuges that are used for diagnostic samples or infectious microorganisms shall be fitted with either a sealed rotor or removable buckets, for easy decontamination in the event of a spill and samples must be placed in sealable tubes. A secondary unbreakable container which can be readily decontaminated must be used for the transport of microorganisms/GMOs between facilities.</p> <p>General waste and infectious waste must be segregated.</p> <p>Food or drink are not to be consumed or stored in area</p> <p>If food/drink is to be used for research purposes, it must be clearly labeled “Not for human consumption”. Safe Work Procedures/Safe Work Instructions for all procedures must be developed</p> <p>Minimum PPE to be worn at all times:</p> <ul style="list-style-type: none"> • laboratory coat/gown, • safety eyewear, • fully enclosed footwear, • long hair tied back or hair net. <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Refer to Ansell Glove chart</p>

GMOs PC1 NLRD; 3 categories as listed in GT Act	Low	Medium & High
	<p>Work with Exempt dealings and PC1 NLRDs must be carried out in facilities that have been certified as PC1 by the OGTR for exempt dealings, written Institutional Biosafety Committee (IBC) approval must be sought within 6 months of commencing work. For PC1 NLRDs written IBC approval must be sought prior to commencing work.</p> <p>General waste and infectious waste must be segregated</p> <p>Food or drink are not to be consumed or stored in area</p> <p>If food/drink is to be used for research purposes, it must be clearly labeled "Not for human consumption".</p> <p>Safe Work Procedures/Safe Work Instructions for all procedures must be developed</p>	<p>Work with Exempt dealings and PC1 NLRDs must be carried out in facilities that have been certified as PC1 by the OGTR for exempt dealings, written Institutional Biosafety Committee (IBC) approval must be sought within 6 months of commencing work. For PC1 NLRDs written IBC approval must be sought prior to commencing work.</p> <p>All work must be conducted in a Class II Biosafety cabinet.</p> <p>Centrifuges that are used for diagnostic samples or infectious microorganisms shall be fitted with either a sealed rotor or removable buckets, for easy decontamination in the event of a spill and samples must be placed in sealable tubes. A secondary unbreakable container which can be readily decontaminated must be used for the transport of microorganisms/GMOs between facilities.</p> <p>General waste and infectious waste must be segregated</p> <p>Food or drink are not to be consumed or stored in area</p> <p>If food/drink is to be used for research purposes, it must be clearly labeled "Not for human consumption".</p> <p>Safe Work Procedures/Safe Work Instructions for all procedures must be developed</p> <p>Minimum PPE to be worn at all times:</p> <ul style="list-style-type: none"> • laboratory coat/gown, • safety eyewear, • fully enclosed footwear, • long hair tied back or hair net. <p>Appropriate gloves able to protect against biological as well as any chemicals used for procedure must be worn. Refer to Ansell Glove chart</p>

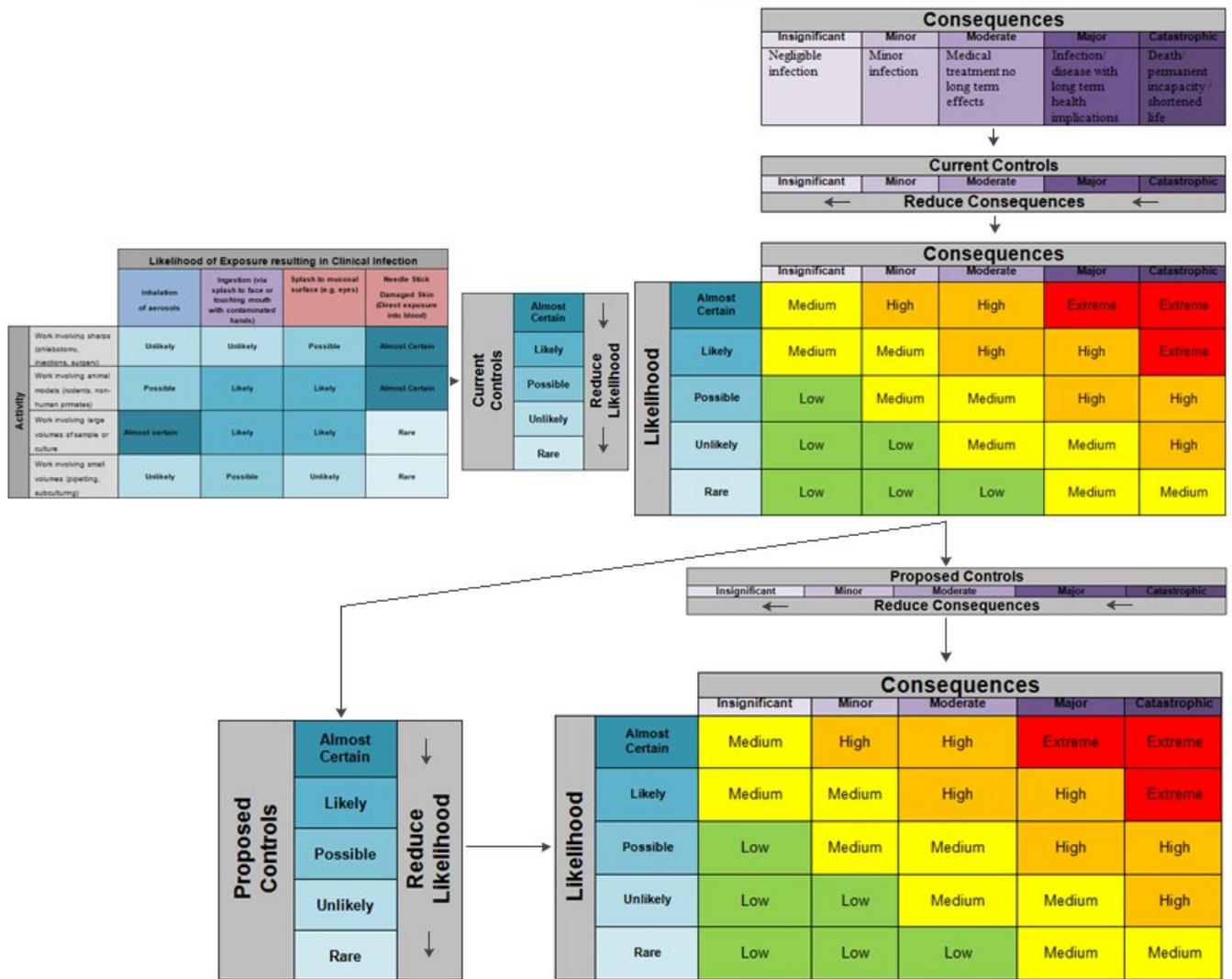
GMOs Exempt dealings, i.e. exempt host- vector system, < 10L	<p>Work with Exempt dealings and PC1 NLRDs must be carried out in facilities that have been certified as PC1 by the OGTR for exempt dealings, written Institutional Biosafety Committee (IBC) approval must be sought within 6 months of commencing work. For PC1 NLRDs written IBC approval must be sought prior to commencing work.</p> <p>General waste and infectious waste must be segregated.</p> <p>Food or drink are not to be consumed or stored in area.</p> <p>If food/drink is to be used for research purposes, it must be clearly labeled "Not for human consumption".</p> <p>Safe Work Procedures/Safe Work Instructions for all procedures must be developed.</p>
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12. Nominate a person to implement each control. Enter the responsible person in column 7.
13. Estimate the reduction in likelihood (record on column 8) and consequences (record on column 9) provided by the controls, and record the value (high, medium or low) on column 10.

		Consequences				
		Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	Almost Certain	Medium	High	High	Extreme	Extreme
	Likely	Medium	Medium	High	High	Extreme
	Possible	Low	Medium	Medium	High	High
	Unlikely	Low	Low	Medium	Medium	High
	Rare	Low	Low	Low	Medium	Medium

14. Once the risk assessment worksheet is completed, you can give it to your supervisor, Health and Safety Representative or Safety Officer for review.
15. After taking their comments into consideration give it to your supervisor for authorisation.
16. All OHS controls and the method for maintaining the controls must be included in the documentation for the process being assessed.

Summary



The Hierarchy of Control

<i>Primary Controls</i>	
Elimination	Regulations supporting the <i>OHS Act</i> require the elimination of risks as the first step in risk control.
Substitution	Substitution of a less hazardous alternative.
Isolation	Enclosing or isolating the hazard from the people.
Engineering Controls	Changing processes, equipment or tools e.g.: <ul style="list-style-type: none"> • Machinery guards • Ventilation • Mechanical aids
If risk remains above acceptable levels, then administrative controls should be applied. If these are still not adequate, then personal protective clothing and equipment should be worn. Secondary control should be used in conjunction with primary controls, and should not be relied upon.	
<i>Secondary Controls</i>	
Administrative Controls	Information, training and procedures e.g.: <ul style="list-style-type: none"> • Job rotation • Limiting access • Permit systems • Safe operating procedures • Training • Signage
Personal Protective Equipment	Laboratory coat, safety glasses, closed shoes/steel capped boots, hearing protection.

RISK ASSESSMENT WORKSHEET

Risk Assessment Title:				
Details of Process:				
Risk Register:			Risk Assessment Number:	
Campus		Faculty/Division		School/Department/Centre
Building		Room No.		Assessment Date

Risk Assessment Team						
Name	Signature	Date		Name	Signature	Date

Hazard Categories applicable to this Risk Assessment

Animal/Insect/Vegetation <input type="checkbox"/>	Equipment/Machinery/Vehicles <input type="checkbox"/>	Manual Handling/Ergonomics <input type="checkbox"/>
Biological <input type="checkbox"/>	Outdoor Hazards <input type="checkbox"/>	Psychological/Social <input type="checkbox"/>
Chemical <input type="checkbox"/>	Water/Gases/Liquids <input type="checkbox"/>	Physical Hazards <input type="checkbox"/>
Hazardous Areas <input type="checkbox"/>	Radiation <input type="checkbox"/>	Other <input type="checkbox"/>

Approval Supervisor

Name:	
Signed:	Date:

INSERT PHOTO or DIAGRAM

AS APPROPRIATE

