

USING BIOLOGICALS AND ANIMALS AT MONASH UNIVERSITY

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1. PURPOSE

The purpose of this document is to provide guidance to staff, students, visitors and contractors who use biological materials at Monash University in accordance with the requirements of the Occupational Health and Safety Act (2004) and associated regulations and with AS/NZS 4801:2001 *Occupational Health & Safety Management Systems – specifications with guidance for use*.

2. SCOPE

The guidance, procedures and processes outlined in this document are available on the Australian campuses of Monash University and for Monash controlled entities.

3. ABBREVIATIONS

AQIS	Australian quarantine inspection services
DNA	Deoxyribonucleic acid
GMO	Genetically modified organism
GT	Gene Technology
IBC	Institutional Biosafety Committee
MSDS	Material Safety data sheet
OGTR	Office of the Gene Technology Regulator
OHS	Occupational health and safety
OHSE	Occupational Health, Safety and Environment Unit
PC2 & 3	Physical Containment Levels 2 & 3
QAP	Quarantine Approved Premises
SWI	Safe work instructions

4. DEFINITIONS

4.1 BIOLOGICALS

For the purposes of this document, the definition of a biological will include, but not limited to blood, blood products, tissue, body fluids (eg urine, faeces, semen, vaginal secretions, pericardial fluid, cerebrospinal fluid, synovial fluid, pleural fluid, amniotic fluid, saliva, mucus, any fluid with visible blood) and any derivatives produced by chemical or physical means (e.g. protein, enzyme or blood fractions). In addition, it is intended to cover micro-organisms (bacterium, virus, parasites, fungi, prions) wildtype or mutant and plants and plant material. It is not intended to include live animals in this definition.

4.2 BIOLOGICAL WASTES

These are legally known as “clinical and related” wastes and include the following waste types:

- discarded sharps
- laboratory and associated wastes directly involved in specimen processing
- human and animal tissue, including materials or solutions containing or contaminated with blood or body fluids
- cytotoxic wastes
- pharmaceutical wastes and chemical wastes

4.3 GENE TECHNOLOGY

For the purpose of this document gene technology is defined as any technique for the modification of genes or other genetic material, but does not include sexual

reproduction, homologous recombination or any other techniques specified in the Office of the Gene Technology Regulator (OGTR) regulations.

4.4 GENETICALLY MODIFIED ORGANISM

For the purpose of this document a genetically modified organism (GMO) is defined as:

- an organism that has been modified by gene technology; or
- an organism that has inherited traits from an organism (the initial organism), being traits that occurred in the initial organism because of gene technology; or
- anything declared by the regulations to be a genetically modified organism, or that belongs to a class of things declared by the Regulations to be genetically modified organisms ; but does not include:
- a human being, if the human being is covered by paragraph (a) only because the human being has undergone somatic cell gene therapy; or
- an organism declared by the Regulations not to be a genetically modified organism, or that belongs to a class of organism declared by the Regulations not to be genetically modified organisms.

4.5 HEAD OF ACADEMIC/ADMINISTRATIVE UNIT

Head of academic/administrative unit is used to denote the head of the area that is undertaking the activity. For academic areas, this term includes head of faculty, school, department, institute or centre. For administrative areas, the term includes head of division, branch, centre or unit.

4.6 HIERARCHY OF CONTROL

The hierarchy of control ranks OHS risk control measures in decreasing order of desirability and effectiveness. These are:

- *Elimination*
Regulations supporting the OHS Act require the elimination of risks as the first step in risk control.
- *Substitution*
- *Isolation*
- *Engineering controls*
- If a risk to workplace health and safety remains after the above control measures have been used, *administrative controls* (information, training and procedures) should be applied or, if these are still not adequate, *personal protective clothing and equipment* worn. These methods of risk control are not preferred because the source of the risk is not eliminated or reduced.

4.7 MATERIAL SAFETY DATA SHEET

A material safety data sheet is a document prepared by the manufacturer or importer of a biological which describes uses, chemical and physical properties, health hazard information, precautions for use, safe handling and emergency information.

4.8 MONASH CONTROLLED ENTITY

Monash controlled entities (eg companies) include entities where Monash can control decision making, directly or indirectly, in relation to the financial and operating policies so as to enable the entity to operate with it in pursuing the objectives of Monash University.

For the remainder of this policy, a Monash controlled entity will be referred to as a controlled entity.

4.9 OHS HAZARD

An OHS hazard is a situation with the potential to cause injury or illness to people or damage to property and the environment.

4.10 OHS RISK

An OHS risk is the likelihood that exposure to a hazard will result in injury or illness to people or damage to property and the environment.

4.11 OHS RISK CONTROL

OHS risk control is action taken to eliminate or reduce the likelihood that exposure to a hazard will result in injury or illness to people or damage to property and the environment.

4.12 OHS RISK MANAGEMENT

OHS Risk management is the process of hazard identification, risk assessment, and risk control with the aim of providing healthy and safe conditions for staff, students, visitors and contractors at Monash University.

4.13 ORGANISM

For the purpose of this document an organism is defined as a biological entity that is viable, capable of reproduction or capable of transferring genetic material.

4.14 SAFE WORK INSTRUCTIONS

Safe work instructions are written instructions for tasks that outline the preferred method of undertaking a task whilst emphasising ways to minimise any risk(s) of harm.

4.15 SUPERVISOR

4.15.1 Supervisors are those who are responsible for overseeing:

- the work program of other staff;
- the study program of honours and postgraduate students; and
- undergraduate students in lectures, tutorial and practical classes and on field trips.

4.15.2 The supervisor of staff or students has a particular responsibility for safeguarding the occupational health and safety of those in their charge. The supervisor can delegate the supervision or training of a staff member or student to a suitably qualified and/or experienced person, as appropriate for the task. The supervisor is, however, responsible for ensuring that the staff member or student has received appropriate training and has gained sufficient competence to undertake the task.

5. SPECIFIC RESPONSIBILITIES

5.1 OHSE

The responsibilities of OHSE include:

- development, maintenance, review and audit of the university's policies, procedures and systems related to biological safety management;
- advising on appropriate immunisation;
- providing information, instruction and training on biological safety management.

5.2 RESEARCH OFFICE

It is the responsibility of the Research Office to administer all matters relating to the Gene Technology Act and its discharge.

5.3 HEADS OF ACADEMIC/ADMINISTRATIVE UNITS OR CONTROLLED ENTITIES

It is the responsibility of the head of academic/administrative unit or controlled entity to ensure that procedures and systems are in place in their unit or entity to manage biologicals effectively to ensure:

- a healthy and safe environment for staff, students, visitors and contractors;
- that local standards and practices comply with legislative requirements and university policy;
- that staff and students undertake recommended OHS training in the use of biologicals.

5.4 SUPERVISORS

It is the responsibility of supervisors to ensure that procedures and systems are in place in the areas of their responsibility to manage biologicals effectively to ensure:

- a healthy and safe environment for staff, students, visitors and contractors;
- that local standards and practices comply with legislative requirements and university policy;
- that staff and students undertake recommended OHS training in biological safety.

5.5 BIOSAFETY OFFICERS

It is the responsibility of the Biosafety Officer to

- serve as principal source of expertise to the unit/entity regarding appropriate equipment, facilities, and work practices for protecting laboratories, staff, and the environment from contamination and infectious organisms;
- serve as principal source of expertise to the unit/entity regarding OGTR matters, including requirements for licensing, certification of facilities and classification of activities under the Gene Technology Act 2001;
- act as primary contact for OHSE and the university OGTR Compliance Officer in matters relating to biosafety and OGTR matters;
- assist in new staff (local) induction with regards to biosafety matters;
- monitor unit/entity teaching and research activities involving the use and disposal of hazardous biological materials and recombinant DNA molecules for compliance with appropriate regulations, policies, procedures, and best practices;
- monitor the attendance of staff and students at biosafety education and training for those who work with or have potential for exposure to biological pathogenic agents;
- monitor the need and advise staff of availability and procedures for immunisation against potential biohazards;
- ensuring the biosafety information in the unit/entity safety manual is accurate and up to date;
- participate in workplace inspections of research and teaching facilities for compliance with regulations and guidelines pertaining to the use, handling, and disposal of potential biohazards and recombinant DNA;
- assist in the review and investigation of all biosafety accidents occurring within the department, and develop corrective action plans;
- develop and implement emergency response procedures for incidents involving biohazardous agents and materials;

- respond to biohazardous materials incidents as appropriate;
- report any breach of compliance to Institutional Biosafety Committee (IBC) and OHSE;
- provide researchers advice/assistance on document preparation , classification of work for OGTR applications.

5.6 STAFF AND STUDENTS

Staff using biologicals must comply with OHS instructions, policies and procedures using control measures and/or personal protective equipment to ensure their own health and safety as well as the health and safety of others.

6. INFORMATION REGARDING THE USE OF BIOLOGICALS & ANIMALS

6.1 SAFETY INFORMATION

- Reference material, as well as practical safety information, is included in the on-line safety manual which is available at the OHSE website (<http://www.adm.monash.edu.au/ohse/>).
- For more detailed information, contact your biosafety officer or the OHSE consultant of the area (<http://www.adm.monash.edu.au/ohse/contacts>).

6.2 BIOLOGICAL SAFETY DOCUMENTS

OHSE has developed a range of biological safety documents that also need to be consulted and understood by users of biologicals and animals, which are available at the OHSE website (<http://www.adm.monash.edu.au/ohse/documents>). These include:

- Immunisation policy
- Policy on first aid
- Policy on the use of human body fluids, cells, tissues, excreta and related products in teaching and research
- Procedures for immunization
- OHS procedures for work and study during times when emergency response is limited
- Procedures for the health and safety of students undertaking studies in laboratories, studios, workshops or clinical activities
- Guidelines for the development of safe work instructions
- Waste management plan for autoclaved waste generated at Clayton Campus
- Hazard Alert - Eye Injury from a Shattering Pasteur Pipette
- Hazard Alert - Fire in Pharmacology Laboratory
- Hazard Alert - Overheating of Ovens and Other Heating Devices
- Hazard Alert - Glass pipettes - a source of common laboratory injuries
- Hazard Alert - Plumbing of Natural Gas Supply to Safety Cabinets
- Hazard Alert - Recent Hydrofluoric Acid Fatality in Perth
- Hazard Alert – Risk of asphyxiation with liquid nitrogen
- Dangerous goods in laboratories
- General chemical storage guidelines
- Use of chemicals balance
- Weighing hazardous substances
- Chemical Spill Kit assessment for laboratories

7. COMMENCING NEW WORK/STUDY OR MODIFYING EXISTING PRACTICES

Before commencing work with biologicals, staff and students should address the following points.

7.1 Complete biosafety and animal welfare training courses

See 18. Training

7.2 Complete a new risk assessment or review and update an existing risk assessment

See 16. OHS risk management

7.3 Complete immunisation, if appropriate

See 12. Immunisation

7.4 Ensure suitability of facilities for handling and storage

See 8. Facilities & safe work practices suitable for work with biologicals

7.5 Consult your biosafety officer

Contact your biosafety officer to ensure all university and regulatory requirements are met.

7.6 Develop new safe work instructions and safe handling practices, if necessary

See 8. Facilities & safe work practices suitable for work with biologicals
See 17. Safe work instructions

8. FACILITIES & SAFE WORK PRACTICES SUITABLE FOR WORK WITH BIOLOGICALS

8.1 GENERAL FACILITIES

8.1.1 Facilities for the use of biologicals is defined by three different pieces of legislation, Gene Technology Act, Australian Quarantine Act and Australian standards for laboratory design and construction series (AS/NZS 2982) and Safety in the laboratory (AS/NZS 2243).

8.1.2 Facilities certified by the OGTR for research involving recombinant DNA technology are signed with OGTR stickers denoting the containment level. Facilities certified by AQIS for research with imported materials are signed with Quarantine Approved Premises sticker. PC1 – PC4 facilities as defined by AS/NZS 2243.3 are not signed.

8.1.3 AS/NZS 2243.3 defines levels of physical containment for working with biologicals. At Monash University we have facilities that are classified into three such physical containment levels; PC1, PC2 and PC3. PC1 is the minimal level and describes most general laboratory areas including most teaching laboratories whereas PC3 is the highest level at Monash as is required for work involving infectious pathogens.

8.2 PC1

8.2.1 Laboratory facilities

- Emergency drench showers and eyewash stations shall be available at a distance of no more than 10 metres from any position in the laboratory. Where these facilities are not available alternate

arrangements should be made in consultation with the OHSE consultant of the area.

- Bench tops shall be able to withstand heat generated by general laboratory procedures.
- Chairs/stools shall be ergonomically suitable for the tasks and adjustable to work with the heights of benches and other equipment. The material shall be smooth and impervious to water to facilitate cleaning.
- Wash basins with hot and cold water shall be provided inside each laboratory near the exit.
- Open spaces between and under benches, cabinets and equipment shall be accessible for cleaning.
- Write up areas must be separated from work/study areas to minimise the chance of reading and writing materials being contaminated or damaged.

8.2.2 **Personal protective clothing and equipment**

- Laboratory staff shall wear protective clothing when performing procedures in the laboratory. The use of long sleeved cotton or polyester wrap around gowns or laboratory coats is recommended.
- Protective eyewear shall be worn by staff when entering the laboratory. Some procedures may require full face protection which will be assessed when performing risk assessments of the procedure.
- Closed footwear shall be worn by staff when entering the laboratory.
- The above three items are the minimum personal protective equipment requirements for a laboratory unless lesser requirements can be justified by a risk assessment. Contact your OHSE consultant for assistance in assessing such risk (<http://www.adm.monash.edu.au/ohse/contacts/#consultant>).

8.2.3 **Work practices**

- Eating, drinking, shaving and the application of cosmetics is prohibited in laboratories.
- Food and drink for consumption must not be stored in laboratories or laboratory refrigerators or freezers.
- Long hair shall be tied back.
- All hazardous work must be identified, assessed for their risk and controls implemented where necessary.

8.3 **PC2**

The conditions for PC2 laboratories listed below are in conjunction with those for PC1 laboratories.

8.3.1 **Laboratory facilities**

- The ceilings, walls and floors shall be smooth, easy to clean and impermeable to liquids, and resistant to commonly used reagents and disinfectants.
- Hand wash basins shall be fitted with hands-free operation type mixers.
- A pressure steam sterilizer shall be provided where steam sterilizing of infections waste is required.
- Suitable coat hooks shall be provided near the entry/exit of the laboratory.
- A supply of clearly labelled disinfectants for decontamination purpose shall be available.

8.3.2 Containment equipment

- Biological safety cabinets shall be used when working with specimens containing micro-organisms transmissible by the respiratory route or when work produces a significant risk from aerosol production.
- Centrifuges that are used for human samples or infectious micro-organism shall be fitted with either a sealed rotor or safety buckets. Samples should also be placed in sealable tubes.

8.3.3 Personal protective equipment

- Suitable gloves shall be worn when handling human blood, body fluids or tissue, or micro-organism or when working in biological safety cabinets.

8.3.4 Work practices

- Access to PC2 laboratories should be restricted to the appropriately trained staff.
- Staff shall receive instruction and training appropriate to the specimens handled.
- Staff should attend general biosafety training run through OHSE (<http://www.adm.monash.edu.au/ohse/training/index.html>).
- Particular care should be taken when handling and disposing of any sharps to avoid accidental self inoculation.
- All clinical samples shall be treated as infectious.
- All visitors to the laboratory including Facilities & Services staff should be made aware of any special hazards and the area.
- Any procedure which may produce aerosols of potentially infectious material should be performed in a biological safety cabinet.
- A container of viable micro-organisms shall be transported between facilities or to steam sterilizers in a secondary unbreakable container which can be readily decontaminated.
- All potentially contaminated equipment shall be either steam sterilized or chemically disinfected after use.
- Separate report writing and long-term write up areas should be provided outside the laboratory.

8.4 PC3

The conditions for PC3 laboratories listed below are in conjunction with those for PC1 and PC2 laboratories.

8.4.1 Laboratory facilities

- The laboratory must be separated from all other areas and should not be accessible by the general public.
- Entry to the laboratory shall only be through a double door airlock system. Doors shall be self closing, open outwards with the outer door being lockable. Both doors shall be fitted with seals to limit air leakage. Doors shall contain glass viewing panels so that observation of the laboratory occupants may be possible.
- All equipment used in a PC3 laboratory shall be decontaminated prior to maintenance, service or removal.
- An emergency two-way communication system, or an alarm system, shall be provided in addition to the telephone.
- A pressure steam sterilizer for decontamination of laboratory wastes shall be available located within the laboratory.

- Liquid effluents shall be discharged in a manner appropriate to the type of waste and as determined by the risk assessment and in compliance with trade waste agreements.
- Laboratory ventilation shall be set up to ensure a graduated negative pressure with the directional airflow moving inwards to the laboratory working area. The air handling shall be set up by specialist air handling engineers.

8.4.2 Containment equipment

- Where a central reticulated vacuum system or portable pumps are used a 0.2 µm hydrophobic membrane-type filters, and liquid disinfectant traps shall be installed at the point of use.
- Where required a class III biological safety cabinet shall be made available.

8.4.3 Work practices

- Staff must be trained in handling the specific pathogens used in the laboratory.
- Laboratory door must be locked when unoccupied.
- All work with risk group 3 organisms shall be conducted in a biological safety cabinet.
- No one shall enter the laboratory for cleaning, servicing of equipment, repairs or other activities before relevant potentially contaminated laboratory surfaces have been disinfected and authorization have been obtained from the safety or biosafety officer.
- Protective clothing shall not be worn outside of the laboratory and sterilized before laundering.
- Outer clothing and personal effects shall not be taken into the laboratory.
- An emergency evacuation plan shall be devised and made available to all staff working in the facility, OHSE and Monash Security staff.

9. HUMAN CLINICAL SAMPLES

9.1 Human clinical samples are to be treated as potentially infectious unless categorically known to be otherwise. For that reason all clinical samples are to be used in facilities that meet PC2 facility and procedural requirements as described in section 6. However, if organisms from a higher risk group are isolated or suspected to be found in a clinical sample then the sample should be treated as per that risk group and used in a higher containment facility.

9.2 Procedures that will create significant aerosols must be performed in biological safety cabinets.

9.3 For more detailed information, contact your local biosafety officer or the OHSE consultant of the area (<http://www.adm.monash.edu.au/ohse/contacts>).

10. MICRO-ORGANISMS

10.1 RISK GROUPS

- Micro-organisms are divided into risk groups based on their risk to health and safety.

- A list of risk group 2 and 3 organisms can be found in appendix I and II (Sections 24 & 25).
- The risk group classification has been established to match the physical containment level of the facility where the work is to be conducted, eg risk group 2 organisms must be handled in a PC2 facility.

10.2 FACILITIES

Facilities where work with micro-organisms is to be performed must meet the building requirements and procedural requirements for the physical containment level (section 6) corresponding to the appropriate physical containment level of that micro-organism.

10.3 INFORMATION

For more detailed information, contact your local biosafety officer or the OHSE consultant of the area (<http://www.adm.monash.edu.au/ohse/contacts>)

11. ANIMALS

The use of animals at Monash University must comply with the relevant Victorian and federal government legislation.

11.1 ANIMAL ETHICS

All ethical matters relating to the use of animals for research are managed by the Research Office (<http://www.monash.edu.au/research/ethics/animal/index.html>).

11.2 TRANSGENIC OR KNOCK OUT ANIMALS

The use of transgenic or knock out animals must meet the requirements of the OGTR as must the facilities where they are housed. General information regarding the use of GMOs and appropriate approval can be obtained from the OGTR website (<http://www.ogtr.gov.au>)

11.3 ALLERGY

- Researchers working with animals are exposed to animal allergens (proteins) and some may go onto develop allergies.
- The importance of minimising exposure through safe work practices, appropriate animal husbandry and use of appropriate PPE (including respiratory protection such as a disposable P2 dust mask) should be encouraged.
- Anyone who is concerned about allergies to animals should contact their Biosafety Officer or Occupational Health Physician on 9905 1014.

11.4 ZONOSIS

- Researchers working with animals may be exposed to micro organisms carried by the animals which may also be able to infect humans under the right conditions.
- The passage of the micro organisms to researchers may occur via scratches, bites, urine or through aerosols generated by further manipulation of tissue harvested from animals.
- The appropriate animal husbandry skills in conjunction with using appropriate PPE will reduce the risk of cross infection. In addition, adopting standard PC2 precautions and restricting processes likely to create aerosols to biosafety cabinets will also reduce the risk of zoonotic infection.

- The Monash University Animal Welfare Committee course, Training Course in Animal Care and Use is a prerequisite for animal ethics approval for honours and graduate students and inexperienced staff. information about the course is available at the research office web site (<http://www.monash.edu.au/research/ethics/animal/moreinfo/training.html>).

12. IMMUNISATION

As part of their work or study, Monash University staff and students may be at risk of exposure to infectious diseases including those which are vaccine preventable. Staff and students should be offered such vaccines, if available, where the risk assessments demonstrate a need. Procedures relating to immunisation are available at the OHSE website (<http://www.adm.monash.edu.au/ohse/documents>).

13. IMPORTATION OF BIOLOGICALS

13.1 QUARANTINE REQUIREMENTS

All biological material brought into Australia directly by Monash staff is subject to quarantine requirements as set out in the quarantine act and regulations. General information regarding the importation of biologicals is provided on the Department of Agriculture, Fisheries and Forestry website by following the Quarantine and Export service link (<http://www.affa.gov.au/index.cfm>).

13.2 PURCHASE OF BIOLOGICALS

Before purchasing new biologicals, check with your biosafety officer regarding:

- requirements for licenses, permits or notification to use the biologicals;
- the physical containment requirements (PC or Quarantine Approved Premise (QAP) classification) for use and storage of the biological;
- the availability of appropriate handling conditions for the biological, eg biological safety cabinets;
- the availability of appropriate emergency facilities and procedures required for the biological;
- the appropriate waste disposal procedures required for the biological.

13.3 PERMITS

Before importing biologicals from overseas Monash staff must obtain the appropriate importation permit through AQIS.

13.4 FACILITIES

13.4.1 In certain circumstances AQIS may require that all work to be conducted with specific imported biologicals must be performed within a QAP premise. Such premises must be of a physical containment level specified by AQIS and inspected and certified prior to the importation of biologicals.

13.4.2 For more detailed information, contact your local biosafety officer or the OHSE consultant of the area (<http://www.adm.monash.edu.au/ohse/contacts>).

14. GENETICALLY MODIFIED ORGANISMS

14.1 WORK/STUDY WITH GMO

- 14.1.1 All work/study utilising recombinant DNA technology is controlled through the Office of the Gene Technology Regulator. All Monash matters concerning gene technology are handled by the Research Office. More information can be obtained at <http://www.monash.edu.au/research/ethics/biosafety/index.html>.
- 14.1.2 General information regarding the use of GMOs and appropriate approval can be obtained from the OGTR website (<http://www.ogtr.gov.au>)

14.2 FACILITIES

- 14.2.1 Facilities to be used for GMO work must comply with the requirements set out by the OGTR.
- Facilities must be of the appropriate physical containment level matching the type of GMO dealing being conducted.
 - PC2 and PC3 facilities must meet the OGTR's guidelines for such facilities and be certified.
 - PC2 facilities must be inspected and certified by two members of the Institutional Biosafety Committee (IBC) while PC3 facilities must be inspected by the OGTR.
- 14.2.2 No GMO work can commence until the appropriate approval has been sort and the facility where the work is to be conducted has been certified by OGTR.
- 14.2.3 For more detailed information, contact your local biosafety officer or the research office <http://www.monash.edu.au/research/ethics/biosafety/index.html>.

15. MSDS

- 15.1 When purchasing biologicals, verify that the MSDS for the biological is already present in the university ChemWatch MSDS database (<http://max.chemwatch.net/integnov29/>). If the MSDS is not already held, the MSDS must be requested from the supplier, manufacturer or importer.
- 15.2 For purchases completed via SAP, a statement is already included in the order terms and conditions, which states:
19. HAZARDOUS MATERIAL
Additional terms and conditions and material safety data sheets will be supplied for hazardous materials where this order specifies such hazardous materials.
- 15.3 A copy of all MSDS not currently held in the university ChemWatch MSDS database must be forwarded to OHSE to be included.

16. RISK MANAGEMENT

Risk management must be completed on all processes/procedures/activities that involve biologicals (See *OHS Risk Management at Monash University*, <http://www.adm.monash.edu.au/ohse/documents>).

16.1 RISK MANAGEMENT MUST BE COMPLETED

- before activities using biologicals commence;
- before the introduction of new procedures, processes or equipment that use biologicals;
- when procedures or processes or equipment that use biologicals are modified.

16.2 RISK MANAGEMENT TOOLS

A range of tools has been developed for staff and students to undertake risk management at the university. At Monash, the emphasis of these processes is to ensure that identified risks are controlled effectively.

16.2.1 Risk control program (<http://www.adm.monash.edu.au/ohse/documents>)

16.2.1.1 The risk control program has been designed to allow assessment teams in each unit to quickly and comprehensively:

- identify and assess the hazards in the workplace;
- rank them in terms of priority; and
- provide guidance for the development of appropriate risk control measures.

16.2.1.2 Biological risk management

- Hazards associated with exposure to micro organisms are covered in *Reference sheet 4.1. Biological Hazards – Microbiological exposure hazards.*
- Hazards associated with exposure to animals/insects/plants are covered in *Reference sheet 4.2 Biological Hazards – animals/inspects/plants*

16.2.2 Job safety analysis (<http://www.adm.monash.edu.au/ohse/documents>)

16.2.2.1 The job safety analysis (JSA) tool has been developed to assist Facilities & Services staff to assess and control the risks of their activities that may impact the health and safety of staff, students, visitors and contractors.

16.2.2.2 When entering a laboratory area which uses biological materials, discussion with the local biosafety officer regarding any biological hazards should take place. The JSA should include any controls necessary to remove any risk to Facilities & Services staff.

16.3 ACTIONS TO BE TAKEN FOLLOWING ASSESSMENT OF RISK

16.3.1 Risks assessed as extreme:

- do not proceed or, if commenced, stop the activity/process immediately;
- consult with your biosafety officer, safety officer or OHSE consultant to determine appropriate risk control measures to decrease the risk;
- implement risk controls;
Implementation of the risk controls must decrease the risk of the activity to medium or low. If not, contact your supervisor or safety officer before commencing the activity.
- record and date actions taken on the risk control worksheets.

16.3.2 Risks assessed as medium or high:

- review the activity/process to determine appropriate measures to decrease the risk;
- consult with your biosafety officer, safety officer or OHSE consultant to determine appropriate risk control measures if necessary;
- implement risk controls;
Implementation of the risk controls must decrease the risk of the activity to medium or low. If not, contact your supervisor or safety officer before commencing the activity.
- record and date actions taken on the risk control worksheets;
- develop safe work instructions (guidelines are provided by OHSE at <http://www.adm.monash.edu.au/ohse/documents>).

16.3.3 Risks assessed as low:

- further risk control measures are not required, but if additional control measures will decrease the risk, these should be implemented;
- record and date actions taken on the risk control worksheets;
- develop safe work instructions (guidelines are provided by OHSE at <http://www.adm.monash.edu.au/ohse/documents>).

16.4 CONTROLLING RISKS

16.4.1 The OHS Act 2004 requires risk control measures to be selected based on the hierarchy of control.

16.4.2 Throughout the risk control program, examples of control measures based on the hierarchy of control are provided following the assessment table for each hazard type.

16.4.3 The hierarchy of control ranks risk control measures in decreasing order of desirability and effectiveness with the preferred control measures being elimination, substitution *or* engineering controls.

The hierarchy of control includes:

Elimination

Regulations supporting the OHS Act 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.

Engineering controls

Changing processes, equipment or tools, eg:

Use of biological safety cabinet
Mechanical aids

If a risk to workplace health and safety remains after the above methods have been used, administrative controls should be applied or, if these are still not adequate, personal protective clothing and equipment worn. These methods of risk control are not preferred because the source of the risk is not eliminated or reduced.

Administrative controls

Information, training and procedures, eg
Limiting access
Laboratory manuals
Training
Signage

Personal protective equipment, eg

Laboratory coat, safety glasses, closed shoes/boots, hearing protection

16.5 RISK ASSESSMENTS

16.5.1 Risk assessments must include assessment of:

- the effects on the local environment such as other processes, personnel or external environmental impacts;
- types and quantities of wastes generated and their storage, handling, treatment and disposal methods;
- emergency situations which may arise from the task, procedure or equipment, eg from a spill, a fire or an explosion;
- the level of risk associated with the task, procedure or equipment outside of the normal operating hours of the unit, ie during times when the immediate emergency response, eg first aid, is limited. Examples of recommended conditions for work or study at these times are provided in *OHS procedures for work and study during times when emergency response is limited*, which is available at <http://www.adm.monash.edu.au/ohse/documents> .

16.5.2 Generic tasks, procedures and equipment

16.5.2.1 Generic risk assessments may be developed for tasks, procedures and equipment:

- at more than one work place, or
- at more than one work area within a workplace.

16.5.2.2 Generic risk assessments must include modifications specific to each work area.

16.5.2.3 Where used, a copy of the generic risk assessment must be available to staff and students of the unit/entity.

16.6 UPDATE AND REVIEW OF RISK ASSESSMENTS

16.6.1 Risk assessments must be reviewed:

- when significant changes are made to the task, procedure; or equipment that use chemicals; or
- at least every 5 years.

16.6.2 Units/entities that undertake research using biologicals may need to update their risk assessments frequently, even daily, to ensure that their biological risk assessments are up to date.

17. SAFE WORK INSTRUCTIONS

17.1 Following risk management of biological procedures, processes or equipment that uses biologicals, safe work instructions must be developed by supervisors of laboratories/studios/workshops or incorporated into laboratory procedures or safety manuals. Safe work instructions should include training, appropriate personal protective equipment, the need for immunisation and first aid and emergency procedures.

17.2 OHSE has developed *Guidelines for the development of safe work instructions*, which are available at the OHSE web site (<http://www.adm.monash.edu.au/ohse/documents>) to provide guidance and a template for use by areas.

18. TRAINING

(See *OHS Induction & training at Monash University*, <http://www.adm.monash.edu.au/ohse/documents>).

18.1 RISK MANAGEMENT

- 18.1.1 Training in the use of the risk control program and the job safety analysis is provided by OHSE both centrally and in work areas.
- 18.1.2 Information regarding the content and scheduling of OHSE courses offered at Monash University is:
- provided at the OHSE web site; (<http://www.adm.monash.edu.au/ohse/training/>), and
 - in the OHSE Training Course booklet, which is available from OHSE(9905 1016, ohsehelpline@adm.monash.edu.au).

18.2 BIOLOGICAL SAFETY

Training in the use of biologicals must be provided at a range of levels, including by laboratory/studio/workshop supervisors, safety personnel and OHSE.

18.2.1 Supervisors at a local laboratory/studio/workshop level

Supervisors of each must provide induction and training in the use of biologicals in the laboratory/studio/workshop that they supervise. This training must include:

- Identification of biological hazards in the area and the nature of the hazard including exposure routes.
- the location of risk assessments and safe work instructions for the biologicals held and used in the area;
- the use and location of personal protective and emergency equipment for the use with biologicals;
- local procedures, processes or equipment that use biologicals especially those resulting in the generation of aerosols.
- Immunisation requirements for working with local biologicals.
- Biologicals waste handling, storage and disposal procedures

18.2.2 Safety personnel and experts at a unit/entity level

18.2.2.1 In faculties/divisions/entities with a range of similar risks, training in biological use can be provided at faculty/divisional level by local safety personnel, experts and/or the local OHSE consultant.

18.2.2.2 Unit/entity OHS training in biological use can be provided by local safety personnel or experts with specific knowledge of the biological uses in the area.

18.2.3 OHSE at a university level

18.2.3.1 OHSE conducts training courses on biological safety for staff, for postgraduate and honours students across all campuses and centres.

18.2.3.2 Information regarding the content and scheduling of OHSE courses offered at Monash University is:

- provided at the OHSE web site; (<http://www.adm.monash.edu.au/ohse/training/>), and

- in the OHSE Training Course booklet, which is available from OHSE(9905 1016, ohsehelpline@adm.monash.edu.au).

18.3 ANIMAL CARE AND USE

The Monash University Animal Welfare Committee course, Training Course in Animal Care and Use is a prerequisite for animal ethics approval for honours and graduate students and inexperienced staff. information about the course is available at the research office web site (<http://www.monash.edu.au/research/ethics/animal/moreinfo/training.html>).

18.4 TRAINING RECORDS

18.4.1 In order for units/centres and supervisors to demonstrate effectively that they have provided comprehensive OHS training for the staff and students that they supervise, the training in biological use that they undertake must be recorded.

18.4.2 OHSE has a developed a proforma to use to record attendance at OHS training in each unit/entity, which is available at the OHSE web site (<http://www.adm.monash.edu.au/ohse/documents>).

18.4.3 A short description of the points covered in the training should also be documented for all biological training provided in the unit/entity. The description will act as both a reminder regarding the areas that should be covered in the training and as a record of the areas covered in the training.

18.4.4 OHS training by supervisors

- When a supervisor provides training in procedures using biologicals, the completion of the training should be recorded.
- Records of training should be maintained in a folder in each area, eg laboratory/workshop/studio where training is provided.
- The student or staff member being trained should be able to demonstrate competence in the task(s) before the supervisor completes the record of training.

19. HEALTH SURVEILLANCE AT MONASH UNIVERSITY

Details of the Monash University health surveillance program are outlined in the document Health surveillance at Monash University, which is available at the OHSE web site (<http://www.adm.monash.edu.au/ohse/documents>).

20. WASTE DISPOSAL

20.1 Correct biological waste management involves a structured program to ensure that any wastes generated are correctly identified in terms of their potential hazard to the environment and to any staff handling them.

20.2 Any material that is designated as a waste and which could be harmful to health and/or the environment due to its properties either currently or in the future (eg. biohazardous waste, infectious, cytotoxic) must be:

20.2.1 handled by staff with knowledge and access to appropriate personal protective equipment;

20.2.2 segregated according to the particular hazards, treatment methods and recycling or re-use opportunities associated with the waste type;

20.2.3 packaged to ensure that::

- the waste materials cannot escape the container at any time;
 - are fit for transport; and
 - will not pose risks to personnel handling the wastes such as cleaning staff and waste disposal contractors
- 20.2.4 clearly labelled identifying:
- the type of waste material;
 - the major contaminant or risk associated with the waste;
 - the unit/entity who generated the waste and their contact details, eg phone number;
 - date of generation;
- 20.2.5 stored in a secure site/area specifically designated for the waste type and for the unit/entity generating the waste, refrigerated , if required. The waste store must be in compliance with Environment Protection Agency (EPA) bunding guidelines to ensure spills will not cause pollution or pose an environmental hazard.
- 20.2.6 collected by a licensed Environment Protection Agency-prescribed waste contractor;
- 20.2.7 transported in such a manner to ensure that the health of staff, students, visitors to the university, and/or the environment is not compromised and in accordance with Victorian Environment Protection Authority requirements and the Australian Code for the Transport of Dangerous Goods by Road and Rail.
- 20.2.8 There are specific procedures developed for the autoclave waste disposal and disposal of syringes, needles and syringe barrels. These are available in the documents *Monash Autoclave Waste Management Plan* and *Syringes, Needles and Syringe Barrels*, which are available at the OHSE web site (<http://www.adm.monash.edu.au/ohse/documents>).

21. EMERGENCIES INVOLVING BIOLOGICALS AND ANIMALS

21.1 INCIDENT AND EMERGENCY RESPONSE

- 21.1.1 Emergency procedures for a biohazard spill are contained in the emergency procedures booklet located near every telephone on all campuses.
- 21.1.2 Contact OHSE by phone on 9905 1016 or by email on ohsehelpline@adm.monash.edu.au to obtain further copies of the emergency booklet for your campus.
- 21.1.3 Details regarding assessment and management of incidents involving biologicals and animals are outlined in the on-line safety manual which is available at the OHSE website (<http://www.adm.monash.edu.au/ohse/safety-topics>).
- 21.1.4 The Procedures for hazard and incident reporting, investigation and recording (<http://www.adm.monash.edu.au/ohse/documents/>) outline the procedures for reporting incidents involving biologicals and animals.

21.2 CRISIS MANAGEMENT

- 21.2.1 Monash University has invested considerable resources on planning crisis management and recovery. This planning includes consideration regarding crises involving chemicals.

21.2.2 Further details and the crisis management plan are located at the Crisis Management and Recovery web site (<http://www.adm.monash.edu.au/sss/crisis-management>).

22. RECORDS

<u>Record to be kept by</u> Academic/administrative unit/ controlled entity	<u>Records</u>	<u>To be kept for:</u>
	Risk assessments	5 years
	OHS training records of training provided by unit/entity, including: <ul style="list-style-type: none">Attendees;Short description of training content	Indefinitely
	OGTR dealings	Indefinitely
	EPA waste disposal transport certificates	5 years
Research Office	OGTR dealings	Indefinitely
	PC2/PC3 lab inspection reports	Indefinitely
	IBC minutes	Indefinitely
	PC2 training records	Indefinitely
OHSE	OHS training records of training provided by OHSE, including: <ul style="list-style-type: none">AttendeesShort description of training content	Indefinitely
	Course evaluation sheets	5 years
OHSE health team (confidential files)	Health surveillance results	Indefinitely
	Immunisation histories	Indefinitely

23. REFERENCES

23.1 LEGISLATION

Australian Dangerous Goods Code
Quarantine Act 1908
Quarantine Regulations 2000
Occupational Health and Safety Act 2004 (Vic)
Occupational Health and Safety (Hazardous Substances) Regulations 1999 (Vic)
Gene Technology Act 2000

23.2 MONASH UNIVERSITY OHS DOCUMENTS

(<http://www.adm.monash.edu.au/ohse/documents/#policies>)

Guidelines for the development of safe work instructions
Health surveillance at Monash University
Job Safety Analysis
OHS risk management at Monash University
OHS induction and training at Monash University
OHSE training course booklet
OHSE training calendar and enrolment forms
Risk Control Program

Training records

23.3 AUSTRALIAN STANDARDS

AS/NZS 4801:2001 Occupational Health & Safety Management Systems – specifications with guidance for use.

AS/NZS 2982: 1997 Laboratory design and construction

AS/NZS 2243. 3:2002 Safety in laboratories Part 3: Microbiological aspects and containment facilities.

23.4 OTHER DOCUMENTS

Guidance notes for the transport of Class 6.2 (infectious substances) dangerous goods 1997

24. APPENDIX I – RISK GROUP 2 ORGANISMS

Examples of bacteria in Risk Group 2

Abiotrophia spp.
Acidovorax spp.
Acinetobacter spp.
Actinobacillus spp.
Actinomyces pyogenes
Aeromonas hydrophila
Afipia spp.
Arcanobacterium haemolyticum
Bacillus cereus
Bartonella henselae, *B. quintana*, *B. vinsonii*, *B. elizabethiae*, *B. weisii*
Bordetella pertussis
Brucella ovis
Burkholderia spp. (except *B. mallei* and *B. pseudomallei*)†
Campylobacter coli, *C. fetus*, *C. jejuni*
Capnocytophaga canimorsus
Chlamydia spp. (except avian strains of *C. psittaci*)
Clostridium spp. (except those known to be nonpathogenic)†
Corynebacterium diphtheriae†, *C. renale*, *C. pseudotuberculosis*
Dermatophilus congolensis
Edwardsiella tarda
Eikenella corrodens
Enterococcus spp. (Vancomycin-resistant strains)
Erysipelothrix rhusiopathiae
Pathogenic *Escherichia coli* (except Verocytotoxin-producing (VTEC) strains† and genetically crippled strains‡)
Fusobacterium spp.
Gardnerella vaginalis
Gordona spp.
Haemophilus influenzae, *H. ducreyi*
Helicobacter pylori
Kingella kingae
Klebsiella spp.
Legionella spp.
Listeria spp.†
Moraxella spp.
Mycobacterium spp.†
Mycoplasma pneumoniae, *M. fermentans*
Neisseria gonorrhoeae, *N. meningitidis*†
Nocardia spp.
Oligella spp.
Pasteurella spp.
Rhodococcus equi
Salmonella serovar†
Shigella spp.†
Sphaerophorus necrophorus
Staphylococcus aureus
Stenotrophomonas maltophilia
Streptobacillus moniliformis
Streptococcus pyogenes, *S. pneumoniae*
Ureaplasma ureolyticum
Vibrio cholerae, *V. parahaemolyticus*, *V. vulnificus*
Yersinia spp. (except *Y. pestis*)

Bacteria of Risk Group 2 requiring special precautions

Borrelia (mammalian) spp.
Burkholderia pseudomallei
Clostridium botulinum
Clostridium tetani
Corynebacterium diphtheriae
Coxiella burnetii (smears and serology from samples)
Escherichia coli Vero cytotoxin-producing strains, e.g. 0157, 0111
Leptospira interrogans (all serovars)
Listeria monocytogenes
Mycobacterium spp. other than *M. tuberculosis* complex
Mycobacterium tuberculosis complex (except multi-drug resistant strains)
Neisseria meningitidis (except for Serogroup B)

Neisseria meningitidis (Serogroup B)
Salmonella Typhi
Shigella dysenteriae Type 1
Treponema pallidum
Treponema pertenue

Examples of parasites of Risk Group 2 (infective stages only)

Ancylostoma duodenale
Ascaris lumbricoides
Babesia divergens
Babesia microti
Brugia spp.
Cryptosporidium spp.
Echinococcus spp.
Entamoeba histolytica
Giardia duodenalis (also known as *Giardia lamblia* and *Giardia intestinalis*)
Hymenolepis diminuta
Hymenolepis nana (human origin)
Leishmania (mammalian) spp.
Loa loa
Naegleria fowleri
Necator americanus
Opisthorchis spp. (including *Clonorchis sinensis*)
Plasmodium (human and simian)
Strongyloides stercoralis
Taenia saginata
Taenia solium
Toxocara canis
Toxoplasma gondii
Trichinella spiralis
Trypanosoma brucei subsp.
Trypanosoma cruzi
Wuchereria bancrofti

Examples of fungi of Risk Group 2

Aspergillus fumigatus and *A. flavus*
Candida albicans
Cryptococcus neoformans
Epidermophyton floccosum
Microsporum spp.
Sporothrix schenckii

Examples of viruses and prions of Risk Group 2

Adenoviridae
Adenovirus
Arenaviridae
Arenavirus
Lymphocytic choriomeningitis (LCM) non-neurotropic strains
Tacaribe virus complex
Caliciviridae
Feline calicivirus
Norwalk-like
Sapporo-like
Largovirus
Rabbit haemorrhagic disease
Coronaviridae
Coronavirus
Flaviviridae
Flavivirus
Dengue 1, 2, 3 and 4
Japanese encephalitis (Nakayama strain)
Kokobera
Kunjin
Murray Valley encephalitis
Sarafend
Saumarez Reef
Yellow fever (strain 17D)
Hepacivirus

- Hepatitis C
- Hepadnaviridae*
 - Duck hepatitis B
 - Hepatitis B
- Herpesviridae*
 - Alphaherpesvirinae
 - Simplex
 - Varicella
 - Betaherpesvirinae
 - Cytomegalovirus
 - Gammaherpesvirinae
 - Herpes 6 and 7
 - Lymphocryptovirus (EB-like viruses)
- Orthomyxoviridae*
 - Influenza (except those in Table 3.10)
- Paramyxoviridae*
 - Paramyxovirinae
 - Morbillivirus
 - Measles
 - Rubulavirus
 - Menangle
 - Mumps
 - Newcastle disease virus (non-virulent endemic strains)
 - Pneumovirus
 - Respiratory syncytial virus
 - Respirovirus
 - Parainfluenza 1, 2, 3 and 4
- Parvoviridae*
 - Human parvovirus
- Picornaviridae*
 - Encephalomyocarditis
 - Encephalomyocarditis virus
 - Enterovirus
 - Coxsackie
 - Echo
 - Entero
 - Parecho
 - Polio 1, 2 and 3 (see Clause 3.4.5)
 - Rhinovirus
 - Hepatovirus
 - Hepatitis A
- Poxviridae*
 - Orthopoxvirus
 - Vaccinia
 - Parapoxvirus
 - Orf
- Prions
 - Gerstmann-Sträussler syndrome,
 - Kuru and Creutzfeldt-Jakob agents (See Note 1 and Clause 3.5)
- Reoviridae*
 - Orbivirus
 - Bluetongue viruses (endemic strains)
 - Epizootic haemorrhagic disease viruses of deer (endemic strains)
 - Rotavirus
 - Rotavirus
- Retroviridae (serology, other tests on samples)
 - Oncovirinae
 - Human lymphotropic virus 1
 - Human lymphotropic virus 2
 - Lentivirinae
 - Human immunodeficiency virus
- Togaviridae*
 - Alphavirus
 - Barmah Forest
 - Ross River

Semliki Forest
Arterivirus
Equine viral arteritis
Rubivirus
Rubella

Hepatitis D
Hepatitis E

25. APPENDIX II – RISK GROUP 3 ORGANISMS.

Bacteria of Risk Group 3

Bacillus anthracis
Bartonella bacilliformis
Burkholderia mallei
Brucella spp. (except *B. ovis*)
Chlamydia psittaci (avian strains)
Coxiella burnetii (cultures, animal work and concentrates)
Francisella tularensis (type A)
Multi-drug resistant Mycobacterium tuberculosis complex
Rickettsia spp.
Yersinia pestis

Fungi of Risk Group 3

Aphanomyces astaci
Blastomyces dermatitidis
Ceratomyces ulmi
Coccidioides immitis
Histoplasma spp.
Paracoccidioides brasiliensis
Phytophthora cinnamomi

Viruses of Risk Group 3

Arenaviridae
Arenavirus
Lymphochoriomeningitis (LCM) neurotropic strains

Bunyaviridae
Group C
Oropouche
Phlebovirus
Hantavirus
Hantaan and related viruses

Flaviviridae
Flavivirus
Japanese encephalitis
St Louis encephalitis
Tick-borne viruses
West Nile
Yellow fever

Paramyxoviridae
Rubulavirus
Mapuera
Newcastle disease (exotic strains)

Retroviridae (from cultures and concentrates)
Oncovirinae
Human lymphotropic virus 1
Human lymphotropic virus 2
Lentivirinae
Human immunodeficiency virus

Rhabdoviridae
Lyssavirus
Australian bat lyssavirus
Rabies fixed strain (CVS II)

Togaviridae
Alphavirus
Eastern equine encephalitis
Western equine encephalitis
Venezuelan equine encephalitis