HRP13: Biological Safety

Section 1 - Purpose and Scope

(1) The purpose of this Procedure is to ensure Southern Cross University (SCU) management, employees, students and others are aware of the risks associated with biological materials in the workplace and relevant management strategies and to provide advice on the risk mitigation process.

(2) All employees, students, and others must follow this Procedure.

(3) This Procedure applies to all SCU Work Units and sites.

Section 2 - Definitions

Biological materials	Any biological agent, substance, or material (whether alive or not) present in or arising from living organisms.
Biological hazards	The generally-agreed group of specific substances and organisms that carry risk to human, plant, or animal health, such as microorganisms, animal or human blood, tissues, body fluids, or faeces, materials that have been contaminated with infectious microorganisms, imported biological materials, any substance that could be toxic, allergenic or generally hazardous.
Biosecurity Infrastructure Manager	Manages the infrastructure and facilities regarding compliance, safety, audits, communication with Department of Agriculture, Fisheries and Forestry (DAFF), etc.
Biosecurity Working Group	The Biosecurity Working Group assesses research proposals and work involving biosecurity and develops and approves University policy and training in these areas (for domestic and international work). The working group also has visibility of all permits and PMS/AA applications.
Genetically modified organism (GMO)	A genetically modified organism is an organism that has been modified by gene technology or an organism that has inherited particular traits from an organism (the initial organism), traits that occurred in the initial organism because of gene technology, or anything declared by the Gene Technology Regulations (2001) to be a genetically modified organism, or that belongs to a class of organisms declared by the Regulations to be genetically modified.
Institutional Biosafety Committee(IBC)	IBCs are integral to compliance with Australia's national gene technology regulatory scheme laws. IBCs evaluate low-risk contained dealings that do not require case-by-case consideration by the Regulator. They also provide a quality assurance mechanism by reviewing the information applicants submit to the Regulator. IBCs are not responsible for the conduct of organisations that they assist. They help identify and manage risks with GMOs without attracting liability for damages. Accredited organisations may have multiple IBCs specialising in different fields of expertise. Organisations may also seek advice from IBCs established by another organisation.
Microorganism	An organism that can be seen only through a microscope. Microorganisms include bacteria, protozoa, algae, and fungi.
Pathogen	A microorganism capable of causing disease in a host.
Biosecurity Biological Material	A biological material under the Department of Agriculture, Fisheries and Forsrerty (DAFF) requirements needs an import permit and other special treatment (e.g., a certain level of risk management and biosecurity-approved facility storage and handling).

Section 3 - General Principles

Risk Management Process

(4) SCU will follow the risk management process outlined in WHSMP02: Hazard Identification, Risk and Opportunity Management Procedure. This process includes:

a. Hazard identification.
b. Risk assessment.
c. Risk Control.
d. Review of control measures.

Consultation

(5) Consultation is critical for effective risk management and is outlined in WHSMP07: Consultation, Communication and Participation.

Part A - Hazard Identification

(6) Each work unit (e.g., academic work unit, administrative unit, health clinic, or research centre) must assess infection control risks related to their activities.

(7) During the planning stage of any experiment or teaching practical using animal or human material that has a risk of infection, the identification of all possible hazards and a documented assessment of the associated risks must be undertaken.

(8) All possible hazards must be identified. A documented assessment must be made of the risks associated with the hazards undertaken during the planning stage of any experiment or teaching practical using animal or human material with a risk of infection. The work group keeps the documented assessment.

Biological Materials (Context)

(9) Biological materials are encountered in and around SCU premises. Although biological materials are not technically a hazard, they are the transmitting/vector mechanism for biological hazards such as viruses, bacteria, toxins, spores, bioactive substances, and fungi.

(10) There are a range of SCU roles that may be exposed to biological materials of a hazardous nature – some more obvious than others. Some of the potential exposures to biological hazards include the following:

a. Moulds, spores, and pathogenic microorganisms within the air-conditioning system.
b. Blood, tissues, saliva, mucous, faeces, and urine from patients in healthcare settings.
c. Viruses and other infectious diseases through contact with live animals or animal products (blood, tissues, milk, and eggs).
d. Cell cultures and live pathogens in laboratory settings.
e. Landscaping and garden maintenance tasks where organic dust, clay, and plant materials may harbour biological hazards.
f. Construction work and associated trades (e.g., plumbing repairs) where human waste products may be accidentally touched, inhaled, or ingested.

(11) Exposure to biological hazards is widespread, and contamination or infection risks must be managed appropriately.

Part B - Risk Assessment

(12) Employees and students using potentially infective material must:

a. Be informed of the identified hazards and the control measures before commencing the activity. The effectiveness of the control measures must be reviewed regularly and improved, if necessary, before repeating that activity.
b. Consider the potential for infection and the quantity of contaminated material that may be generated.
c. Consider the probability of employees being exposed to the effects of an infectious or communicable disease or infected material.
d. Identify the routes of transmission and the possibility of multiple exposures.
e. Consider the likelihood of an accident/incident occurring and the potential consequences.
f. Consider the effect an accident/incident may have on the University community or business.
g. Complete the University's site-specific inductions to ensure they are fully informed of their responsibilities and the potential risks.

(13) Do not enter standing bodies of water with open lacerations or abrasions, unless a risk assessment has been conducted and controls (bandages, waders) are applied.

Part C - Risk Control

Applying the Hierarchy of Controls

(14) Where high-risk hazards are identified, controls must be established using the hierarchy of controls to minimise such risks. The Workplace Health and Safety Team can provide advice on this process.

Immunisation/Vaccination Requirements

(15) The vaccination procedure (see HRP23: Infectious disease and blood-borne pathogens – preventable by vaccination) outlines the implementation of the vaccination program.

General Work Practices

(16) All biological material or tasks that may reasonably be expected to result in exposure to biological materials must be regarded as potentially hazardous.

(17) Therefore, the following work practices will apply in addition to standard WHS risk management activities and processes when biological material exposure is possible:

a. Avoid all contact with the face, eyes, mouth, or exposed skin areas through inadvertent touching.
b. Appropriate face, eye, and hand protection to prevent splashes, sprays, and skin exposure.
c. Aerosols are not to be produced or kept to a minimum.
d. Organic dust suppression practices to manage the risk of inhaling airborne organic pathogens (e.g., wetting soils, storing and moving mulches to reduce dispersion).
e. High standard of housekeeping before and after work (e.g., safely removing excess biological materials, disinfecting, wiping, and cleaning benches and equipment).
f. Appropriate storage and/or disposal of biological waste and applicable protective equipment (e.g., gloves, masks, laboratory coats).
g. All biological materials must be clearly labelled, sealed when not used, and stored in line with the manufacturer's instructions or safe work requirements.

h. All spills or workplace incidents involving hazardous biological materials must be reported immediately, and appropriate support from suitably qualified and trained staff engaged.

(18) Do not enter standing bodies of water with an open laceration or abrasions unless a risk assessment has been conducted and SCU supplied, waterproof bandages and waders are worn.

Working with Microorganisms

(19) Microorganisms are divided into four risk groups, and each risk group has corresponding safe work practices as follows:

a. Risk Group 1 (low individual and community risk). Unlikely to cause disease in humans, plants, or animals and may be used in a Physical Containment 1 facility. Work may be conducted on open benches with standard laboratory safe working practices and low-risk levels maintained at all times.
b. Risk Group 2 (moderate individual risk, low community risk). Potential to cause disease in humans, plants, or animals but are unlikely to pose a serious threat (i.e., adequate preventative controls and mitigation/treatments are available). It may be used in Physical Containment 2 facilities. Work may be done on open benches provided safe microbiological working practices are used; however, a biosafety cabinet may be required to manage the risk of airborne contaminants.
c. Risk Group 3 (high individual risk, moderate community risk). Likely to cause serious human or animal disease and may present some risk to the community, but there are usually adequate preventative controls and mitigation/treatments available). It may be used in Physical Containment 3 facilities.
d. Risk Group 4 (high individual and community risk). Likely to cause life-threatening human or animal disease and pose a serious threat to laboratory personnel due to no or limited preventative controls and mitigation/treatments available). It may be used in Physical Containment 4 facilities.

(20) For specific technical requirements and specifications for working with microorganisms, please refer to AS/NZS 2243.3:2022

Genetic Manipulation and Working with GMOs

(21) The SCU Blood-Borne Pathogens Procedure has been developed to regulate all teaching and research proposals of work involving the use of GMOs on behalf of the Regulator and the University to ensure that the Act, Regulations, and guidelines are followed.

(22) Laboratories conducting genetic manipulation must be classified according to the physical containment levels outlined in AS/NZS 2243.3 and be certified by the Office of the Gene Technolgy Regulator (OGTR)

(23) All work involving GMOs must comply with OGTR guidelines and adhere to detailed operating instructions specified in Australia's Handbook of Regulation of Gene Technology. All genetic manipulation and work with GMOs must be approved by the Institutional Biosafety Committee (IBC).

Approvals (Prior to Commencement)

(24) Work involving any of the following must not commence without written approval from the respective Head of Work Unit, which will include an appropriate risk assessment using WHSMP02 - FOR - 01 Hazard Identification, Risk Assessment and Control Tool and identification of safe work practice(s):

a. Genetically modified organisms.
b. Microorganisms of up to risk group 2.
c. Whole microorganisms.
d. Imported biological products should have appropriate import permits in place before importation.

e. Specimens of human origin.
f. Cytotoxic substances.
g. Any other potentially infectious or hazardous substances (e.g., animal blood or tissues).

Importing Biosecurity Biological Material

(25) To ensure exotic diseases and pests are not brought into Australia, biological materials must be assessed to determine if they require an Import Permit from the Department of Agriculture, Forestry and Fisheries. The online BICON system will inform you if an Import Permit is required and the requirements for use and handling.

(26) Biosecurity Import Conditions system (BICON).

(27) Materials requiring an import permit will generally be required to be contained in an Approved Arrangement facility.

(28) For specific biological materials and those deemed a Biosecurity risk, an import permit is required, and OGTR guidelines should be observed, e.g.:

a. Animal issues, extracts, fluids, blood, serum (including antibodies), or plasma.
b. Animal or microbiologically derived enzymes, hormones, or proteins.
c. Non-human genetic material.
d. Microorganisms.
e. Cell lines and any derived human/non-human products.
f. Cultural media containing animal, plant, human, or microbial materials.
g. Experimental and unreleased vaccines.
h. Human faeces.
i. Biological materials are known to be infected with a pathogenic organism.
j. Records must be kept for all necessary biological materials as follows:
k. Date the material was received.
l. Biosecurity entry number.
m. Name of the supplier.
n. Import permit number.
o. Description of material.
p. Batch number.
q. Proposed research and analysis details.
r. Details of any special treatments.
s. Date when research or analysis was completed.
t. Methods and dates of disposal.
u. The Import Permit will specify if other records are required to be kept.
v. All Biosecurity risk materials must be kept and stored separately from other biological and low-risk materials using appropriate biosecurity measures (e.g., physical barriers, locks, labels, signs).

Approved Arrangements

(29) Facilities that are used for biosecurity risk materials must be registered with DAFF as Approved Arrangements (AA)

(30) Details on the requirements for AA's are listed at:

a. https://www.agriculture.gov.au/biosecurity-trade/import/arrival/arrangements

(31) All AA must:

a. Be certified and registered with DAFF.
b. Obtain in vivo approval from DAFF to use imported biological material in non-laboratory animals and plants before the commencement of work.
c. Comply with AS/NZS 2243.3:2022 - Safety in Laboratories – Microbiological aspects and containment facilities.
d. Ensure that all high-risk biological waste is disposed of appropriately.
e. Comply with the conditions and requirements of the approval.

(32) All AAs must keep on the premises a facility manual that includes the following topics as a minimum standard:

a. Import permits.
b. Training records.
c. Contact details.
d. An import permit requires local procedures.
e. Details (identity, quantity, location) of all biosecurity materials and derivatives.
f. Movement details for biosecurity material, including removal and disposal by an approved method.
g. Other relevant documents according to permit requirements.
h. Auditing requirements

Blood, Body Fluids, and Tissues (Human or Animal)

(33) All blood, body fluid, and tissue (human or animal) materials must be handled using the Standard Precautions outlined by the National Code of Practice for the Control of Work-related Exposure to Hepatitis and HIV (Blood-borne) Viruses (NOHSC: 2010(2003)) and the following procedures:

a. Any research-based educational activity that requires students to deal with human body fluids should have prior approval from the University's Human Research Ethics Committee.
b. Employees or post-graduate students who plan to collect human blood for research must complete an accredited course in blood collection. Blood collection devices that minimise the risk of contact with blood must always be used. Standard precautions must be followed wherever there is a risk of contact with human blood or body fluids.
c. All body fluids and tissues should be handled as if they are infectious. Students should use their own blood or body fluids whenever possible during laboratory classes. However, if outside sources of human blood or tissue are required, they should be screened for the presence of infectious diseases before use in class.
d. All employees and students must wash their hands before and after removing gloves. This ensures that viruses that can penetrate gloves due to their size do not further contaminate the user.
e. All laboratory personnel with human body fluids and sharps must wear enclosed footwear, gloves, eye protection, and lab coats.
f. People (not necessarily in a laboratory) who may come into contact with body fluids during work must wear the protective equipment described above.
g. The person who used them should dispose of sharps immediately after being put into a container at the site of use. Sharps should not be carried from one area of use to another for disposal.
h. To prevent cross-infection, all disposable equipment supplied is for single use only.
i. Any waste materials contaminated with body fluids or tissues should be disposed of in a contaminated waste container.

j. Each laboratory must display and provide printed guidelines on Biohazard Safety.

Zoonotic Disease and Virus

(34) Each faculty must maintain a detailed faculty risk assessment that identifies expected zoonotic viruses, their locations, and potential risks to employees and students. This risk assessment should include recommended controls for all identified risks and must be kept up-to-date to ensure the information remains complete, correct, and current.

(35) SCU must ensure the faculty risk assessment is easily accessible to all employees and students. Before entering any premises, employees and students must review the evaluation and follow the recommended controls outlined to maintain a safe environment.

Incidents Involving Exposure

(36) If human body fluids come in contact with another person's mucous membranes or a break in the skin, the affected area should be rinsed immediately with water or saline. The affected person should immediately see their medical officer for appropriate testing, prophylactic therapy, and monitoring. An Incident, Accident, and Hazard Report must be completed per WHSMP17: Incident Management, Reporting and Investigation Procedure.

(37) If a needle-stick injury has occurred, the affected person should:

a. Immediately wash the site with soap and water.
b. Report the incident to the First Aid Officer.
c. Attend a doctor's surgery immediately for a blood test, which will confirm their antibody status at the time of the injury.
d. Complete an Incident, Accident, and Hazard Report as per WHSMP17: Incident Management, Reporting, and Investigation Procedure.
e. Have a follow-up blood test after the recommended time to determine if they have contracted a disease. Prophylactic therapy may sometimes reduce the risk of contracting a blood-borne infectious illness. The affected person must attend a doctor's surgery within hours of exposure to ensure that they are eligible for this option.

(38) Counselling is available at both pre-testing and post-testing, especially when a positive result is likely or is returned. The University will provide contact details for Department of Health and Aged Care resources and other support services that offer testing and counselling by professionally trained counsellors who work with infected individuals.

Managing blood or body substance spills

(39) Equipment to manage spills of this nature should be according to AS/NZS 2243.3:2022 and specific substances. The basic principles to be followed for managing blood or body substance spills are:

a. standard precautions apply where there is a risk of contact with blood or body substances;
b. spills should be cleaned up before the area is disinfected and
c. the creation of aerosols from spilled material should be avoided.

Disposal of Biological Waste

(40) All biological waste materials must be rendered safe before disposal (i.e. before it leaves the place of work).

Biosecurity biological waste material

(41) Biosecurity biological waste material must be kept separate from all other biological waste material. Biosecurity biological waste material must be kept in double bags held securely within rigid, sealed, pest-proof, appropriately labeled containers. Once autoclaving has been completed, Biosecurity biological waste material can be disposed of in line with regular biological waste requirements.

Loss of Containment Events (Spills/Unintended Release)

(42) Loss of containment events (e.g., spills, unintended release of pathogens) must be dealt with immediately to reduce the risks of infection and contamination.

(43) As required, Areas working with biological materials must have appropriate spill kits specific to the substances being handled or worked on/with. If identified as necessary, task-specific emergency procedures must also be locally developed and, if in place, must be followed instead of the generic procedures listed here.

(44) Generic emergency response - low risk of aerosol or droplets:

a. Wear suitable disposable gloves.
b. Barricade the spill and warn other people in the area.
c. Soak absorbent material such as paper towels in disinfectant and place them over the spill area.
d. Clean the spill area with fresh absorbent material soaked in disinfectant and wait at least 10 minutes.
e. Place used materials in yellow labelled plastic bags as biological waste for disposal (note – do not autoclave materials soaked in sodium hypochlorite).
f. Wash hands and other areas potentially exposed (e.g., forearms, face) thoroughly.
g. Generic emergency response – high risk of aerosol or droplets
h. Wear appropriate disposable gloves.
i. Wear additional Personal Protective Equipment from the spill kit or emergency response kit.
j. Attend to injured or contaminated persons and remove them from exposure if safe.
k. Prevent the spread of the contamination.
l. Warn other people in the area and erect suitable signage and barriers.
m. Barricade the area and wait at least 30 minutes for aerosols to settle.
n. Isolate ventilation system.
o. Cover the spill with a suitable absorbent material, such as paper towels.
p. Pour a suitable disinfectant around the edges of the spill and then into the centre of the spill, avoiding splashing.
q. Clean the spill area with fresh absorbent material soaked in disinfectant and wait at least 10 minutes.
r. Place used materials in yellow labelled plastic bags as biological waste for disposal (note – do not autoclave materials soaked in sodium hypochlorite).
s. Wash hands and other areas potentially exposed (e.g., forearms, face) thoroughly.

Suitable disinfectants

(45) A list of suitable disinfectants for Biosecurity facilities and Approved Arrangements is available at:

a. https://www.agriculture.gov.au/sites/default/files/documents/disinfectants-classes-5-6-7_1.pdf

b. https://www.agriculture.gov.au/biosecurity-trade/import/arrival/arrangements/requirements/disinfectants

Disinfectant	Usage	Notes
Sodium hypochlorite	0.5-1% solution for microorganisms for 10 minutes. 0.06% solution for contaminated work surface for 10 minutes.	It may be corrosive to metals.
70% ethanol	Must be in contact for 20 minutes.	Industrial methylated spirits are an alternative.
Iodophore solution	Must be in contact for 20 minutes.	Follow the manufacturer's directions.

Incident Reporting

(46) Emergency events, including spills, must be reported to laboratory or work area staff immediately, and an SCU Incident, Accident, and Hazard Report Form must be completed, with a copy of the report sent to the applicable Head of Unit.

Part D - Review of Control Measures

(47) SCU will regularly monitor and review all control measures and this procedure for effectiveness and ongoing suitability, in accordance with WHSMP15: Audit and Assurance.

Section 4 - Roles and Responsibilities

(48) Refer to WHSMP13: Responsibility and Accountability Statement.

Section 5 - Records of Documentation

(49) All relevant documentation will be recorded and kept following WHS Legislation and other legislative obligations, including:

a. Approvals from the IBC.
b. Approvals from the Human Research Ethics Committee.
c. Risk Assessments.
d. Training Records.
e. Inspection Records.
f. Health Surveillance Records include vaccination records.
g. Consultation Records.
h. Import and Export Documentation subject to Biosecurity regulations.
i. Biosecurity Records.
j. Waste Disposal Records.
k. Gene Technology Licenses.
l. Containment, transportation, and disposal of GMO.
m. Exposure Incident reports of exposure to blood-borne viruses.

Section 6 - Revision and approval history

(50) This procedure will be reviewed as per nominated review dates or because of other events, such as:

a. Internal and external audit outcomes.
b. Legislative changes.
c. Outcomes from management reviews.
d. Incidents.

Section 7 - References

Work Health and Safety Act (in the applicable jurisdiction that SCU operates)
Work Health and Safety Regulation (in the applicable jurisdiction that SCU operates)
Department of Agriculture, Fisheries and Forestry
Australian Standard AS/NZS 2243.3:2022 Microbiological safety and containment
Gene Technology Act 2000
Gene Technology Regulations 2002
Handbook on the Regulation of Gene Technology in Australia
OGTR Guidelines
National Code of Practice for the Control of Work-related Exposure to Hepatitis and HIV (Blood-borne) Viruses [NOHSC:2010(2003)]

Section 8 - Related Documents

WHSMP13: Responsibility and Accountability Statement
WHSMP02 - FOR - 01 Hazard Identification, Risk Assessment and Control

Status and Details

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Responsible Executive	Kim Franks Vice President (People and Culture)
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