

**TECHNICAL AND PROFESSIONAL STAFF PATHOGEN EXPOSURE**

**RISK ASSESSMENT FORM**

**IBC-7.3**

**INSTITUTIONAL BIOSAFETY COMMITTEE**

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| **Purpose of This Risk Assessment** |
| **This form IBC-7 is for the risk assessment and governance of vaccination processes for technical and professional staff at risk of occupational exposure to hazardous biological material,**  **And**  **Who otherwise are not covered by an IBC risk assessment of research and teaching processes involving hazardous biological material or genetically modified organisms (Forms IBC-2, IBC-3, IBC-4, and IBC-5)**  This form is *not* intended to be used to assess the need for travel vaccination, student placement vaccination nor biological researcher vaccination. These vaccination processes are covered under their own schedules. This form is to be used to assess the risk of occupational exposure to pathogens and the likely recommended vaccinations, for technical and professional staff only.  It is recommended by the Institutional Biosafety Committee (IBC) that this form, IBC-7, be completed and submitted by Facility/Operations Managers when new technical and professional staff working in Physical Containment Level 2 biocontainment facilities are inducted into the University and be reviewed on a regular basis.  Facility/Operations Managers should ensure an electronic copy of the final set of reports and documents is kept on file within their Academic Unit, Institute or Centre.  If the risk group rating of the microorganisms (potential or actual) to which technical or professional staff are exposed is Risk Group 2 or above, the completed form should be submitted to the Institutional Biosafety Committee ([biosafety@unisa.edu.au](mailto:biosafety@unisa.edu.au)) for their consideration and recommendations.  The IBC will work with the Facility/Operations Managers to determine what vaccinations, if any, are recommended to protect the staff from infectious diseases. |
| **Background** |
| The University of South Australia recognises its responsibility to make available appropriate immunisation to employees potentially at risk of exposure to vaccine-preventable diseases. The Institutional Biosafety Committee supports the NHMRC immunisation guidelines, The Australian Immunisation Handbook and the Australian and New Zealand Standards for Microbiological Safety and Containment, AS/NZS 2243.3.  For the purposes of these guidelines, communicable diseases include those that are potentially caused by exposure to hazardous biological material. Not all biological material is hazardous to humans, animals, plants or the environment.  Hazardous biological material is defined by [Safe Work Australia, National Hazard Exposure Surveillance](https://www.safeworkaustralia.gov.au/resources-and-publications/reports/national-hazard-exposure-worker-surveillance-exposure-biological-hazards-and-provision-controls-against-biological-hazards-australian-workplaces) as:  “Biological hazards are organic substances that pose a threat to the health of humans and other living organisms. Biological hazards include pathogenic micro-organisms, viruses, toxins (from biological sources), spores, fungi and bio-active substances. Biological hazards can also be considered to include biological vectors or transmitters of disease.”  Hazardous biological material can be categorised into seven board groups:   1. **Human body matter** that may contain viral or bacterial disease: blood, tissues, vomit, urine, faeces, saliva, breast milk, semen, lung aspirates, skin etc. 2. **Microorganisms which are pathogenic, allergenic, toxic or pests** including viruses, zoonoses, bacteria, prions, spores, fungi, moulds, yeast, algae, etc., including those that have been genetically modified. 3. **Living animals** including cattle, sheep, poultry, aquatic animals, invertebrates, wild animals, and their urine, faeces, etc., reproductively active eggs, larvae, etc., including those that have been genetically modified. 4. **Animal products** including raw and cooked meat not fit for human consumption, body fluids and material, milk, eggs and toxins etc. 5. **Laboratory cultures including pathogenic, allergenic, toxic or pest** animal and human tissue, bacterial, viral, cellular, both genetically modified or wild type cultures, etc. 6. **Environmental material** including pest plants, soil, plants which may contain pathogens or act as allergens, organic dusts, toxins from biological sources, rubbish, unaged compost, wastewater, sewerage, food which is not fit for human consumption etc. 7. **Genetic material which produces** **pathogenic, allergenic, toxic or pests which are biologically active substances or organisms.**   All personnel must be advised of the risk of occupational exposure to microorganisms to which they may not be immune. Advice must be given during both facility and project induction.  In addition, notification must be given to personnel sharing facilities and equipment, used for Risk Group 2 microorganisms, genetically modified microorganisms or primary samples which potentially could contain infectious microorganisms. The University recommends that all employees, students and others at risk of exposure are aware of their immune status.  When considering the level of risk, a Facility/Operations Managers needs to consider the not only the type of pathogens being handled but the likelihood of exposure. This will be unique to each facility and process.  Immunisation should only be against pathogens:  a) that are used in the facility and  b) for which it has been assessed that occupational exposure is unlikely but possible, likely or highly likely. |
| **Facility/Operations Managers Responsibilities** |
| Most Physical Containment Level 2 laboratory procedures expose technical and professional staff at the  Very Unlikely or Unlikely level. See Appendix 1 for the definition of likelihood.  Facility/Operations Managers are responsible for ensuring the technical and professional staff under their direct supervision are vaccinated against immunisable pathogens and toxins.  Payment for vaccinations of staff directly under their supervision and who are deemed at significant risk of occupation exposure to infectious diseases, are invoiced against facility funding.  Induction records must include a note that the inductee is aware of recommended vaccination, and they understand the risks of occupational exposure to the listed pathogens.  The list of recommended vaccines must be presented to personnel before work commences. |
| **Where Personnel Can Be Vaccinated** |
| Personnel can be vaccinated at:   * UniSA Health Medical Centre * General Practitioner or Travel Doctor   Since the UniSA Health Medical Centre will bill the University directly, most people prefer to access the UniSA Health Medical Centre. However, if personnel find it difficult to attend the UniSA Health Medical Centre they can consult with a General Practitioner or Travel Doctor. |
| **Payment** |
| Vaccination funding for professional/technical/facility staff should be covered by Academic Unit/Institute/Centre.  Personnel who choose to be vaccinated at the University Health and Medical Centre should be given a FS32 form to submit to the clinic. The clinic will charge the Academic Unit/Institute/Centre account directly.  Personnel who choose to be vaccinated at their GP clinic will need to pay for the vaccination themselves and then seek reimbursement from the Facility/Operations Manager. The Facility/Operations Manager will need to organise reimbursement through ProMaster.  Most vaccinations require one dose, but some require three. |
| **Forms** |
| The IBC-8\_UniSA\_Vaccination\_Form is used to:   * give personnel being vaccinated authorisation to be immunised. * set a date for completion of vaccination. * record the cost code for payment. * give authourisation for Safety & Wellbeing Team, Operations Manager, and Institutional Biosafety Committee to access vaccination records as required. * record immunisation or incomplete/declined vaccination. * record Facility/Operations Manager’s declaration of understanding and agreeance to act ethically.   Forms to be given to personnel attending the University Health and Medical Centre:  • IBC-8\_UniSA\_Vaccination\_Form   * FS32 Finance Form   Forms to be given to personnel using a GP:   * IBC-8\_UniSA\_Vaccination\_Form |
| **Declining Vaccination** |
| The University respects the rights of personnel to decline vaccination.  There are a number of reasons why people would be medically advised or personally decide to decline vaccination. For example, whilst there is no universal contraindication for vaccination during pregnancy or breastfeeding, certain vaccines are contraindicated in these circumstances. Persons considering vaccination should consult a Medical Practitioner before deciding to accept or decline vaccination.  The reason for declining vaccination will be held in confidence by the consulting doctor, unless required by law. To maintain confidentiality, the IBC-8\_Vaccination\_Form requires doctors to simply declare that they have discussed vaccination with the person and that vaccination is incomplete or declined: the reason for declination will be recorded on the IBC-8 form.  The management of non-vaccination may include any of the following:  • Prohibiting non-vaccinated person from being involved in that project or working in the facility.  • Permit non-vaccinated person to work on the specific project or facility, under the standard operating procedures.  • Permit non-vaccinated person to work on the specific project or facility with altered or limited work practices.  • Offer the non-vaccinating person counselling.  **If vaccination is declined for temporary reasons, Facility/Operations Managers must offer vaccinations again in a timely manner.** |
| **Failure to Complete Vaccination Schedule** |
| Failure to complete a vaccination schedule should be reported to SafetyWellbeing@unisa.edu.au and biosafety@unisa.edu.au. |

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| **Risk Assessment** | |
| **Technical/Professional Staff Member’s Details** | |
| **Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **UniSA Academic Unit/Institute/Centre** ­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Room Number, Building, Campus** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **Line Manager’s Details** | |
| **Line Manager’s Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **UniSA Academic Unit/Institute/Centre** ­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Room Number, Building, Campus** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Phone Number** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Email** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **Initial Risk Assessment** | |
| The presence of a pathogen or toxin (potential or actual) does not automatically determine a requirement for vaccination. In determining the need for immunisation the Line Manager should conduct a risk assessment based on the following:  • Risk Group level of the microorganisms or toxins is 2 or above (potential or actual).  • Minimum infectious/harmful dose  • Concentration and volume of pathogen or toxin used, transported, stored or disposed within the facility  • Transmission route of infection  • Risk generating procedures   * Risk reduction strategies   • Likelihood of harm  • Consequences and seriousness of harm  • the Australian Immunisation Handbook  • UniSA Guidelines on Infectious and Communicable Diseases  For further information contact biosafety@unisa.edu.au. | |
| Pathogens or toxins (actual or potential) used in the facility are Risk Group two or above  *For risk group rating, the* [*ABSA database*](https://my.absa.org/riskgroups) *is recommended.* |  |
| Human blood or bodily fluids handled by technical or professional staff in the facility | Yes  No |
| Wild animals, wild animal carcasses or blood or bodily fluids handled by technical or professional staff in the facility | Yes  No  Animal or animal products handled:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Maximum concentration and volume of each pathogen, blood or bodily fluids or toxin used, transported, stored or disposed within the facility |  |
| Transmission route of infection | Aerosol  Ingestion  Inoculation |
| Risk generating procedures which the person will be **directly** involved | Pipetting  Vortexing  Sonicating  Homogenizing  Dropping cultures of high-titre material  Decanting of cultures  Pouring off spent media  Centrifuging  Removing a needle from a rubber seal  Grinding  Vigorous shaking or mixing  Weighing on the open bench  Cleaning of spills  Opening containers of infectious material whose internal pressure may be different from ambient pressure, such as opening thawing vials stored in LN2  Intranasal, injection or inoculation of animals  Spraying hazardous biological material  Sampling blood, faeces, sputum or other tissues from humans or animals  Harvesting of pathogen infected tissues from animals and eggs  Cutting glass in the presence of hazardous biological material  Working with glass vacuum apparatus, glass tubes or glass Pasteur pipettes, needles, or scalpels  Centrifuging hazardous biological material or genetically modified organisms in any medium and high speed centrifuges  Undertaking procedures where there is a risk of surface contamination or hand contamination to mouth  Working with wild animals or their excrement  Working directly with non-laboratory/farm animals or their excrement  Other |
| Risk management resources and procedures which may reduce the risk | Personal Protective equipment provided, including gloves, gowns, P2 face masks, full face masks and safety glasses  Storage or hanging provision of PPE which allows PPE to be stored in such a way as to not cross contaminate the inside of other PPE.  Lab Coats  • Worn when working with Risk Group 2 or GMOs.  • Submitted for laundering at appropriate intervals (or disposable lab coats used.)  • Potentially contaminated lab coats removed before leaving the laboratory and stored in such a way as to not contaminate the inside of the coat (or disposed after use.)  • Only clean lab coats worn in service corridors and lifts.  Long term write-up area separate from laboratory  Pipette aid  Gloves worn when working with infectious or toxic substances  Potentially contaminated gloves disposed before exiting the facility  Hands free washbasin or other antiseptic gel  Eye wash equipment (either a plumbed eyewash or single use packs of sterile eye irrigation fluids)  Closed footwear mandated  Dedicated facility footwear or overshoes worn and removed before leaving the facility  Class II Biological Safety cabinet (BSCII) used for bacterial culture manipulation, human and animal cell lines, any respiratory infectious microorganism or human blood, serum or other body fluids and any Risk Group 2 genetically modified organism.  Class II Biological Safety cabinet (BSCII) tested annually for compliance  Sharps containers, rigid and puncture-proof  Dedicated, labelled 37oC incubators for bacterial culture and CO2 incubator for cell culture.  A designated fridge used for storage of biological hazards.  Risk Group 2 microorganisms are:  • transported in sealed, unbreakable primary and secondary container,  • labelled as containing biological hazards and/or GMOs  • and enough absorbent material between the primary and secondary container to absorb any spill.  Within the building and between certified facilities, when transporting Risk Group 2 microorganisms  • Outer packaging decontaminated before leaving a facility  • Gloves removed and hands washed.  • If gloves are required during transport, clean gloves are donned and worn in the corridors and lifts.  • Only service corridors and service lifts are used to transport samples within the building.  The Biohazard symbol will be displayed on all equipment outside of the PC2 facility.  Sealed biocontainment centrifuge buckets for centrifugation of infectious material  Sealed centrifuge rotors  Loading and unloading of tubes, buckets and rotors of medium and high speed centrifuges used for hazardous biological material and GMOs, is conducted inside a Biological Safety Cabinet Level II or Cytotoxic Cabinet  Work benches and equipment decontaminated after working with infectious or toxic substances  Sturdy biohazard waste bins with lockable lids for disposal of solid waste by incineration  Solid waste transported outside of the building, double bagged with both inner bag and outer bag sealed during transport.  Sealed primary bag, placed inside a wheeled bin with a lid that is secured so that it would not fall open if the bin tipped over  Sealed primary container (e.g. sharps container) placed in a secondary sealable, unbreakable container for transport  Pest controls enacted  Waste segregated into general, biohazardous, radioactive, chemical and sharps  Pass-through autoclave for decontamination of reusable culture vessels  Any autoclave within the building which is used for decontamination, is monitored monthly for effectiveness and calibrated annually  All viable microorganisms or samples and media containing viable microorganism will be decontaminated prior to disposal, unless the method of disposal is also a method of decontamination.  Liquid waste inactivated within the laboratory before disposal (e.g. Virkon disinfection of liquid waste before disposal down sink)  Expiry date of chemical disinfectant is checked regularly  Liquid waste being transported for decontamination in another facility, and which has substantive amount of liquid containing infectious material, and will give rise to aerosols containing infectious material during transport, contained in two unbreakable containers, at least one of which is sealed  Waste incinerated at high temperature in EPA approved incinerator  Spill kits containing suitable decontaminating agent place both in laboratories and in storage facilities outside of PC2 facilities  Spill procedures documented and personnel trained  Sealable transport container for transporting biologicals outside of facilities  Food and drink will be prohibited in the laboratory  No mouth pipetting will be allowed  Cultures of infectious microorganisms clearly labelled  Induction training  Completing the online Biosafety 1 training module  When a new project commences, or new information is obtained, personnel trained in handling infectious  Training includes:  a) Nature and mode of transmission of infectious microorganisms used  b) Vaccination requirements  c) Personal Protective Equipment  d) Effective hand washing techniques  e) Aerosol containment  f) Prevention of self-inoculation and sharps procedures  g) Spills and escape procedures  h) Transport  i) Incident reporting  j) Storage methods and inventory  k) Decontamination/Disposal  Refresher training conducted  Method available for Research Group Leaders or Facility/Operations Managers to communicate the risks involved in projects to people not directly involved in the project but sharing facilities or equipment.  Incidents, infections and near misses reported to Safety & Wellbeing and the IBC  Procedures in the PC2-Infectious suite within the Core Animal Facility will be carried out according to SOP-CAF-S-02. Facilities include:   * Individual ventilated cages for housing rodents inoculated with bacteria. * a BSCII for conducting aerosol generating procedures (e.g. inoculation of mice) and opening of rodent cages * Dedicated carcass and waste disposal processes * Animals will be anaesthetised within their holding room, H12-22 and moved to a clean IVC cage. The IVC cage will be placed in a transport box and transported to H12-49 for imaging. Anaesthetised animals will be placed in the imaging machine and immediately imaged. Anaesthetised animals will be then transported back to room H12-22 in the IVC cage and transport box, for recovery. |
| **Risk Assessment Post Risk Mitigation**  The following risk ratings should take into account the above risk reduction strategies which will be enacted.  (Definitions available in Appendix 1) | |
| Likelihood of harm from work conducted with pathogens or toxins, if the above risk mitigation strategies have been enacted | Very Unlikely  Unlikely  Possible  Likely  Very Likely |
| Consequences and seriousness of harm from infection or poisoning by pathogens or toxins, if the above risk mitigation strategies have been enacted | Insignificant  Minor  Moderate  Major  Catastrophic |
| Risk Rating (after risk reduction strategies have been enacted) |  |
| **Line Manager Name**  **Line Manager Signature** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Date of Signing** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **IBC Recommendation**  The IBC recommends financial and administrative support for vaccination.  The IBC recommends medical advice be sought regarding the appropriateness of the following vaccines:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_ \_\_ \_  \_\_\_\_  **Chair of IBC Signature** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Chair of IBC Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Date of Signing** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |

**APPENDIX 1**

**Likelihood**

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| **Likelihood** | **How Likely Is It That Someone Could be Hurt** |
| Very Likely | Frequent exposure to or release outside the laboratory of pathogen, allergen, toxin or biological hazard:   * through the route of transmission * at high concentrations or volume, such as culturing, above infectious dose * infectious at a low infectious dose * infectious by airborne route, used in laboratory activities associated with aerosolization (for example, sonication, homogenisation, centrifugation and pipetting) outside of a Biosafety Cabinet Level II or sealed container * personnel entering area within 48 hours of aerosol contamination with respiratory infectious biological agent, without wearing a respirator * infectious by contact and handled without PPE * infectious by inoculation without sharps controls * infectious by ingestion without procedural controls * transmitted by fomite without protection * which is communicable amongst other laboratory workers or external community contacts without procedural controls * pathogen highly stable in the environment, with no denaturing or decontamination protocols * academic or research staff, cleaning staff and students have low proficiency, experience, understanding or failure to comply with biosafety and biosecurity risk mitigation processes * no vaccination available or undertaken, and no endemicity against an exotic disease * staff or students are immunocompromised * inadequate or poor availability of electrical power, dilapidated laboratory facilities, malfunctioning or damaged equipment. Facilities susceptible to boundary breaches from severe weather and access of insects and rodents to the laboratory. * insect, animal, fish and their ova and sperm, seeds, plants and other organisms transportable or able to escape through a breach of biocontainment.   Large susceptible population within the laboratory |
| Likely | Infrequent exposure to pathogen, allergen, toxin of biological hazard, as above, and infrequent or inadequate use of risk mitigation procedures  Frequent exposure to pathogen, allergen, toxin or biological hazard at low concentrations, and infrequent or inadequate use of risk mitigation procedures |
| Possible | Infrequent exposure to pathogen, allergen, toxin of biological hazard at high concentrations and frequent and proper use of all risk mitigation procedures |
| Unlikely | Rare exposure to pathogen, allergen, toxin or biological hazard, as above, and frequent and proper use of all risk mitigation procedures  Frequent exposure to pathogen, allergen, toxin or biological hazard at low concentrations and frequent and proper use of all risk mitigation procedures |
| Very Unlikely | Exposure to pathogen, allergen, toxin or biological hazard, as above, can happen but probably never will.  Pathogen, allergen, toxin or biological hazard has been inactivated. |

**Consequences**

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| **Consequences** | **How Severely Could Someone be Hurt** |
| Catastrophic | Death or permanent disability |
| Major | Serious injury, hospital treatment required |
| Moderate | Injury requiring medical treatment and some loss of time |
| Minor | First aid only required |
| Insignificant | Injuries not requiring treatment or first aid |

For an indication of severity of injury caused by infection or poisoning, see the “Clinical Features” listed for the disease in the [Australian Immunisation Handbook](https://immunisationhandbook.govcms.gov.au/vaccine-preventable-diseases), or the [Merck Manual](https://www.merckmanuals.com/professional) under the “Prognosis” section for the disease or the [Canadian Government Pathogen Safety Data Sheet](https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment.html).

**Risk Rating**

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|  | **Likelihood** | | | | |
| **Consequences** | **Very Unlikely** | **Unlikely** | **Possible** | **Likely** | **Very Likely** |
| Catastrophic | Moderate | Moderate | High | Critical | Critical |
| Major | Low | Moderate | Moderate | High | Critical |
| Moderate | Low | Moderate | Moderate | Moderate | High |
| Minor | Very Low | Low | Moderate | Moderate | Moderate |
| Insignificant | Very Low | Very Low | Low | Low | Moderate |