#### Requirements for Biocontainment Facilities

|  |
| --- |
| GENERAL FACILITY REQUIREMENTSRequirements 1 - 24 apply General Facility Requirements focus on maintaining a safe and controlled environment for handling low-risk chemicals and biological agents. These guidelines ensure proper waste management, personal protection, and facility hygiene. Common agents in general laboratory facilities include non-hazardous chemicals, non-pathogenic microorganisms, and environmental samples used for basic research or teaching purposes. |
| **Structural Requirements** |
| 1. The facility must be a fully enclosable space (bounded by walls, floors, ceilings, windows, and doors). |
| 1. Floors must be smooth, impermeable, resistant to chemicals used in the laboratory, slip-resistant, and easy to clean. |
| 1. All surfaces, including benches, walls, shelving, and furniture, must be cleanable, easily decontaminated, and resistant to the cleaning agents or disinfectants used in the facility. |
| 1. The facility shall be designed to prevent infestation by vermin. |
| 1. Furniture shall be ergonomically suitable and appropriate for the specific purpose. |
| 1. A safety shower must be accessible within 10 meters of any point in the facility. |
| 1. An eyewash station must be fitted, or single-use fresh eye irrigation fluids made available. |
| 1. The facility must contain a dedicated wash basin or some other means of decontaminating hands (e.g., waterless disinfectant). |
| 1. The floor under benches must be easily accessible for cleaning. |
| **Procedural Requirements** |
| 1. Cardboard boxes must not be stored directly on the floor. |
| 1. PPE worn and used in the facility shall comply with **AS/NZS 2243.3:2022**. |
| 1. Personnel must remove their PPE and decontaminate their hands before leaving the facility. |
| 1. Used PPE must be kept segregated from unused and decontaminated PPE. |
| 1. Chemicals, including gases and gas cylinders, must be stored in accordance with the requirements of the University OHS Unit and relevant Australian Standards. |
| 1. Wastes (solid and liquid) must be properly labelled and safely stored temporarily until they are removed for disposal. |
| 1. Food and drink must not be stored in the facility. |
| 1. No eating, drinking, shaving, or application of cosmetics including the handling of contact lenses is permitted in the facility. (This includes the chewing of gum and inserting items, such as fingers and pens, in the mouth). |
| 1. Documented identification of work hazards, risk assessments, and control measures must be in place. |
| 1. Training records against relevant Standard Operating Procedures (SOPs) must be maintained for all personnel authorised to work in the facility. |
| 1. Mouth pipetting is strictly prohibited. |
| 1. Always use a fume cupboard appropriate to the risk assessment of any work with toxic, volatile, corrosive, or odiferous substances. |
| 1. All microbiological waste shall be disposed of in accordance with **AS/NZS 2243.3:2022**. |
| 1. Personal devices shall not be used in locations where they could become contaminated. This includes mobile phones, personal earphones and earplugs. |
| 1. Where contamination of personal devices occurs or is suspected, decontaminated shall take place prior to removal of the device from the laboratory. |
| PHYSICAL CONTAINMENT LEVEL 1 (PC1) REQUIREMENTSRequirements 1 - 46 apply PC1 Requirements provide protocols for handling low-risk biological agents (Risk-Group 1) that pose minimal threat to human health or the environment. These guidelines emphasise access control, proper waste segregation, and regular decontamination of surfaces. Typical agents include non-infectious strains of *E. coli* and fungi, which are used for teaching and research in educational or general laboratory settings.  **NB:** Points 29, 30, 45 and 46 only apply to the relevant facility types. |
| **Structural Requirements** |
| 1. Each access door to the facility must display a **PC1 sign**, as issued by the Institutional Biosafety Committee (IBC) via the Research Services Office. |
| 1. Hooks for laboratory gowns/coats shall be provided in the facility near the exit door. Personal protective equipment must be removed before leaving the facility. |
| 1. Biological hazard symbols must be displayed on freezers, refrigerators, or other storage units where microorganisms are stored. |
| 1. Backflow prevention for water and gas supplies must be fitted. |
| 1. **Animal Facilities**: Appropriate ventilation and containment systems must be in place to prevent cross-contamination between animal species. |
| 1. **Aquatic Facilities**: Tanks must have secure lids, overflow prevention systems, and containment trays. |
| **Procedural Requirements** |
| 1. Access to the lab is restricted to authorised personnel only. |
| 1. Benches must be kept free of clutter and decontaminated daily with a disinfectant effective against the agents used. |
| 1. Laboratory gowns/coats must be worn when working in the facility and removed before leaving the facility. |
| 1. Laboratory gowns/coats must be stored on the hooks provided when not being worn. |
| 1. Specialised wastes must be segregated (e.g., broken glass, biological waste, radioactive waste) and disposed of in the appropriate method. |
| 1. Closed footwear must be worn when working in the facility. |
| 1. Long hair must be tied back, or a hair net must be worn. |
| 1. Safety glasses, face shields, and gloves must be worn where required or as indicated by risk assessment. |
| 1. Cultures of microorganisms must be clearly labelled (contents, owner, date, etc.), and stored appropriately. |
| 1. Disinfectant appropriate for the agents in use must be available and labelled with content, concentration, and expiry or preparation date. |
| 1. Viable microorganisms must be sterilised by pressure steam sterilization, treated with a chemical disinfectant, or incinerated in an EPA-approved facility before disposal. |
| 1. Documented spill procedures must be in place, and spill kits must be readily available in each facility. |
| 1. Hoses attached to taps must not extend into sinks to prevent contamination of potable water supplies. |
| 1. The transport of microorganisms between facilities (including for disposal) must be conducted in a labelled, secondary, unbreakable container that can be easily decontaminated. |
| 1. **Animal Facilities**: Animal cages and bedding must be decontaminated regularly, and animal waste must be properly disposed of according to ethics and biosecurity protocols. |
| 1. **Aquatic Facilities**: Water quality and filtration systems must be regularly monitored, and wastewater from aquatic tanks must be disposed of in accordance with environmental safety standards. |
| PHYSICAL CONTAINMENT LEVEL 2 (PC2) REQUIREMENTSRequirements 1 - 73 apply PC2 Requirements enforce stricter containment and procedural protocols for moderate-risk biological agents (Risk-Group 2) that can cause disease but are not easily transmissible. These standards include enhanced structural safeguards and the use of Class II Biological Safety Cabinets(BSCII). Common agents in PC2 facilities may include *Salmonella*, *Staphylococcus aureus*, and human bodily fluids, which require safe handling procedures and stringent waste management to ensure the protection of personnel and the environment from infectious exposure.  **NB:** Points 29, 30, 45, 46, 56, 57, 72 and 73 only apply to the relevant facility types. |
| **Structural Requirements** |
| 1. The facility must be fully enclosed and lockable, and each access door must display **PC2 signs**, as issued by the IBC via the Research Services Office. |
| 1. Suitable containers shall be provided for collection, storage, and disposal of infectious material. |
| 1. Protective covers are recommended for keyboards on workbenches. Contaminated keyboards must be decontaminated before disposal. |
| 1. A suitable waste treatment process must be available, such as a pressure steam steriliser (autoclave) or an external waste treatment contractor. Where an autoclave is used to decontaminate GMO’s, it’s effectiveness must be validated/verified monthly and the results maintained for a minimum of 12 months. Where an external contractor is used, adequate secure waste storage must be available. |
| 1. Backflow prevention for gas and water supplies must be fitted. |
| 1. A hands-free operated hand basin or alternative must be available near the exit of each facility. |
| 1. Long-term write-up areas shall not be provided within the PC2 facility boundary. |
| 1. If prions are handled, a BSCII must be used. |
| 1. The facility must be inspected at least once every 12 months by a person with knowledge and skill to enable that person to assess the facility’s compliance. |
| 1. **Animal Facilities**: Rooms housing animals must include species-specific containment, with separate clean and dirty zones to prevent contamination. |
| 1. **Aquatic Facilities**: Tanks for aquatic species must be equipped with appropriate ventilation and secure covers to prevent escape and contamination. |
| **Procedural Requirements** |
| 1. Access must be restricted to authorised personnel. |
| 1. Entrance doors must remain closed while work is in progress. |
| 1. Rear-fastening laboratory gowns must be worn when working in the facility and removed before leaving the facility. |
| 1. Lab books and papers must be stored away from workbenches. |
| 1. Work with specimens that pose an aerosol risk must be conducted in a BSCII. |
| 1. Gloves must be worn when working in a BSCII or handling infectious materials. |
| 1. Infectious waste must be properly labelled and safely stored until treated or removed for disposal. |
| 1. Waste treatment processes that include heat, pressure, chemicals, or a combination of these parameters, to achieve decontamination, shall be periodically validated to ensure ongoing efficacy and records maintained for a minimum of 12 months. |
| 1. When an autoclave is used for decontaminating infectious waste, each load must be monitored to ensure proper sterilisation. The autoclave must undergo monthly spore strip testing to verify its effectiveness, and annual calibration and maintenance to ensure continued reliability. |
| 1. When handling infectious materials, a centrifuge with sealed rotors or buckets must be used to prevent aerosol release. |
| 1. Facility personnel must receive instruction and training in the safe handling of infectious agents, with regular updates to ensure ongoing competency. |
| 1. The use of sharps (needles, syringes, scalpels) must be minimised. All sharps must be disposed of in designated sharps containers. |
| 1. Glassware must be substituted with plasticware where possible. |
| 1. Bacterial cultures must not be sniffed for odours. |
| 1. **Animal Facilities**: Training on the care and handling of animals must be provided for all personnel, and appropriate PPE must be worn during animal handling. |
| 1. **Aquatic Facilities**: Safe handling protocols for aquatic species, including PPE and risk assessment for working with potentially harmful aquatic organisms, must be implemented. |