

8. Biological Laboratory Requirements

The areas where biological specimens are processed need to be designed and maintained as a laboratory, with separate ventilation and air handling systems, a fume cupboard to manage chemical fumes and impervious walls and floor surfaces, restricted access, and security.

A. Access

Access to the laboratory is restricted to those who are trained in the Laboratory entry requirements and protected with appropriate vaccination for their work.

An atrium or separate clean area is identified at the entry point into the laboratory where those entering the laboratory don and doff PPE and keep their personal effects, away from the operational areas and away from biological contamination. A separate hand washing sink and footwear cleaning equipment or material are located within the clean area.

B. Air Handling

Negative pressure is maintained within the laboratory to prevent airborne material from escaping the laboratory. All high-risk work areas have adequate ventilation. A fume cupboard is available where formalin is used, and local exhaust ventilation is available where high risk tasks are performed.

C. Cold rooms, fridge, and Freezers

Biological Specimens are usually stored at extremely low temperatures until they can be processed and preserved. Each fridge and freezer that is used to store biological specimens must have an inventory for its contents and a biological risk sign attached.

Only commercial fridge and freezers should be purchased for the storage of biological specimens because domestic appliances are not designed for exposure to decontamination chemicals or the nature of laboratory use. A freezer that operates at -18 degrees is recommended. A walk-in freezer or refrigerator must have a mechanism to release the door and a bell to call for assistance.

Fridges and freezers that are being used to store biological specimens should also be connected to a power supply that has generator back up. Extended power loss must be anticipated, and the risks from biological specimens become unmanaged if the fridge or freezer is not supplied with power.

Fridges and freezers that are being used to store biological specimens should be monitored to ensure the temperature remains within specification, to ensure that action can be taken should a fault occur.

Emergency procedures should identify response to power loss or freezer failure and the steps to take to store the biological specimens an alternative freezer or organise for a mobile freezer to be supplied.

D. Equipment

All equipment that enters the operational areas of the laboratory must be commercial type and able to be decontaminated. Do not manufacture any items or procure equipment with wooden or porous surfaces. Any computer keyboard or mouse should be covered to allow for regular cleaning, and all equipment leaving operational areas, including contractor equipment should be decontaminated.

Chemical cabinets will be required if significant hazardous chemicals such as flammable liquids (ethanol) or corrosive chemicals (Borax) are stored. Refer to Section 11 Laboratory Equipment for further details.

E. Cleaning processes and chemicals

Normal contract cleaners engaged to clean the building should not clean the laboratory or empty rubbish bins where biological specimens and prepared. Additionally, the cleaners should not, nor be able to access the laboratory that prepares biological specimens and be instructed not to enter the informed about the risks.

Laboratory workers are responsible for cleaning the laboratory regularly and should clean benches and equipment following their use. Surfaces are cleaned with an appropriate antiviral and anti-bacterial cleaning chemicals and in a method described in a Standard Operating Procedure for cleaning activities.

F. Laundering arrangements

Laboratory workers who are processing specimens must wear a laboratory coat to prevent their clothes from becoming contaminated with biological material. Laboratory coats are put on before entry to operational areas and worn during all laboratory activities. Laboratory coats are removed when exiting the operational area. Laboratories often need to use towels or other linen, and these will also be contaminated with biological material.

The laboratory coats and linen must not be taken home for laundering. Domestic laundering equipment is not capable of removing Q Fever or Australian Bat Lyssavirus contaminants. A commercial laundering service that specialises in clinical risk should be engaged to ensure that commercial equipment, chemicals, and high temperatures are used to sterilise laboratory coats and linen. Refer to Section 12 Laboratory Services of the BSP Tool Kit for further details.

G. Waste disposal

Waste that is generated from biological specimen processing and preparation is often contaminated and must be disposed of as hazardous biological waste or clinical waste. This includes the used PPE such as gloves and masks.

H. Emergency

Fire Extinguishers must be installed and serviced, and an Emergency Eyewash and Emergency Shower must be installed if chemicals are used.