CLINICAL RESEARCH - USE OF BIOLOGICAL SAFETY CABINET

PROCEDURE ©

DOCUMENT SUMMARY/KEY POINTS

- The purpose of this procedure is to ensure the standardised and safe use of BSC(s) by clinical research personnel.
- The procedure must be followed by all personnel using BSCs for clinical research.

CHANGE SUMMARY

- Not applicable – New Sydney Children's Hospitals Network Procedure.

READ ACKNOWLEDGEMENT

- Training/Assessment Required – Personnel using BSC(s) for clinical research.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1st March 2019	**Review Period**: 3 years
Team Leader:	Clinical Trials Program Manager	**Area/Dept**: Kids Research Institute

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Purpose/Scope

The purpose of this procedure is to ensure the standardised and safe use of BSCs by clinical research personnel.

The procedure must be followed by all personnel involved in the conduct of clinical research involving the use of BSCs.

Background

When appropriate usage practices and procedures are followed, BSCs provide an enclosed, ventilated laboratory workspace that limits the exposure of the user, materials and environment to biological substances.

SCHN has a variety of BSCs available for clinical research use, including a Class 2 Cabinet in the Clinical Research Centre, Kid's Research.

The following procedure for operation is common to all BSCs. Users must also refer to the manufacturer's instructions to obtain the details of operating requirements for specific models.

There are 3 classes of BSC, distinguished by the level of protection they provide to the user, materials and the environment, as described below.

Class I

Class I cabinets provide user and environmental protection but do not protect the materials. They are commonly used to enclose specific equipment (e.g. centrifuges) or procedures (e.g. aerating cultures) that potentially generate aerosols.

Class I cabinets are either ducted (connected to the building exhaust system) or un-ducted (recirculating filtered exhaust back into the laboratory).

Class II

Class II cabinets provide user, material and environmental protection. This is the most common class of biosafety cabinet used in biomedical and microbiological laboratories for clinical research purposes.

Class II cabinets work by drawing air flow from the room into the front grille of the cabinet and through the downward laminar flow of HEPA-filtered air. As the cabinet air has passed through the exhaust HEPA filter, it is contaminant-free, providing environmental protection, and may be recirculated back into the laboratory (Class II Type A) or ducted out of the building (Class II Type B).

Class III

Class III cabinets are most suitable for work with bio-hazardous agents with a biosafety level of 3 or 4. Class III cabinets offer the highest degree of user, material and environmental protection from infectious aerosols. The Class III cabinet is completely enclosed and HEPA filter-ventilated with glove ports and decontamination capabilities for the entry and exit of materials.

Equipment and Supplies

- BSC
- Gloves
- Goggles
- Lab coat or gown
- Spill kit
- Waste Receptacle(s) incl. Sharps Bin (if applicable)

Procedure

The incorrect use of BSCs can pose a risk to the user, others and the surroundings. All clinical research personnel are required to receive training/assessment prior to any use of BSCs, documented in accordance with SCHN Procedure – Clinical Research - Personnel Qualifications and Training Records [DRAFT].

Safe Work Practice(s) are posted in the area(s) where BSCs are located for easy-reference by users.

Use of BSC(s)

- Don PPE including lab coat or gown, gloves, goggles and enclosed footwear and ensure hair is tied back if long;
- Access and review applicable SDS for any materials to be used, noting any precautions;
- **Note:** Do not use constant flames within the BSC or any flammable substances with flash points below 25° C;
- Identify a BSC suitable for the intended use;
- Inspect the BSC to confirm it is clean and in working order. If anomalies are identified, report the issue immediately to the Research Operations Manager or Delegate. Do not attempt any repairs.
- Ensure that there is adequate space available inside the BSC to safety perform the tasks intended to be performed and that it is kept free of unnecessary materials and/or equipment that could impede air flow;
- Complete the Log located next to the BSC with the details of your usage (if required);
- Remove the guard and/or lift the sash to the recommended height;
- Switch on the BSC including the fan/blower and light(s);
- Allow air to circulate for ~10 minutes prior to commencing use to ensure adequate air filtration;

- Check the air intake and exhaust portals are functioning and are not obstructed;
- If the BSC is equipped with an alarm, test the alarm and ensure it is switched on during use;
- Retrieve any materials to be used during processing;
- Decontaminate the BSC surface and any materials and/or equipment to be placed inside the BSC using 70% ethanol alcohol wipes before placement;
- Ensure any materials and/or equipment stored in the BSC during processing are placed to avoid any disruption to the air curtain and laminar flow (e.g. not obscuring the intake grilles);
- Use of aseptic technique, maintaining a separation between clean and contaminated work spaces at all times;
- Minimise the movement of materials and/or equipment in and out of the BSC once placed;
- Do not leave the BSC unattended during operation;
- If the alarm activates during operation, cease activity within the BSC immediately and notify the Research Operations Manager or Delegate;
- Decontaminate the BSC surface and any materials and/or equipment placed inside the BSC using 70% ethanol alcohol wipes prior to removal;
- Switch off the BSC including the fan/blower and light(s);
- Replace the guard and/or lower the sash;
- Turn on the UV light(s) (if applicable) for the automated timeframe or alternatively, set the timer for ~20 minutes to enable sterilisation prior to next use;
- Discard any waste in the Clinical waste receptacle and/or sharps bin provided (as appropriate);

Spills

If a spill occurs during use of the BSC :

- Alert other occupants of the area;
- Leave the BSC switched on;
- Access the appropriate spill kit and apply to the affected work surfaces;
- Discard any waste in the appropriate waste receptacle(s);
- Ensure the Research Operations Manager or Delegate is notified;

Abbreviations and Definitions

BSC	Biological Safety Cabinet
C	Celsius

HEPA	High-Efficiency Particulate Air
NSW	New South Wales
PD	Policy Directive
PPE	Personal Protective Equipment
SCHN	Sydney Children's Hospitals Network
SDS	Safety Data Sheet
UV	Ultraviolet

Related Documents

1. NSW Health PD2017_026 - Clinical and Related Waste Management for Health Services - http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017_026.pdf
2. NSW Health PD2017_013 - Infection Prevention and Control Policy - http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017_013.pdf
3. NSW Health PD2007_052 - Sharps Injuries - Prevention in the NSW Public Health System - http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2007_052.pdf
4. SCHN Policy - Clinical Research [DRAFT]
5. SCHN Policy – Clinical Research - Use of Laboratory Facilities [DRAFT]
6. SCHN Policy 2014-9061 - Sharps Injuries - Prevention in the NSW Public Health System - http://webapps.schn.health.nsw.gov.au/epolicy/policy/3295
7. SCHN Policy 2015-9070 – Waste Management - http://webapps.schn.health.nsw.gov.au/epolicy/policy/3649/
   SCHN Practice Guideline 2016-9029 - Personal Protective Equipment for Infection Control - http://webapps.schn.health.nsw.gov.au/epolicy/policy/2609
8. SCHN Procedure – Clinical Research - Bio Specimen Collection, Processing and Shipment [DRAFT]
9. SCHN Procedure – Clinical Research - Equipment and Supplies – Maintenance and Calibration [DRAFT]
10. SCHN Procedure - Clinical Research - Personnel Qualifications and Training Records [DRAFT]
11. SCHN Procedure - Clinical Research – Personnel Roles and Responsibilities [DRAFT]
12. SCHN Procedure – Clinical Research - Record Keeping [DRAFT]