

Standard Operating Procedure

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| Task/Activity/Equipment: Use of sharps when working with biological materials | |
| Purpose: To outline the conditions applying to the use of sharps, and safe sharps handling, when working with infectious or potentially infectious samples. | |
| Location: PC1, PC2, BC1 and BC2 facilities at Flinders University | Reference Number: IBC-SOP-24 Version: 1.0 |
| Written by: Dr Jess Hall, Biosafety Specialist | Reviewed by: Institutional Biosafety Committee |
| Approved by: Belinda Cox, Biosafety Officer | |
| IBC approval date: February 2023 | Revision required date: February 2028 |
| Replaces the version: Not applicable (1 st version) | |
| Changes to the last approved version: Not applicable (1 st version) | |

1. POTENTIAL HAZARDS

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| Infectious substances | Sharps injury |
| Risk group 1 or 2 microorganisms | |
| Genetically modified organisms | |
| Diagnostic specimens | |

2. TERMS & ACRONYMS

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| AS/NZS | Australian/New Zealand Standard |
| BBFE | Blood and Bodily Fluid Exposure |
| WHS | Work Health and Safety |

3. RELEVANT LEGISLATION, GUIDELINES & STANDARDS

- *Australian/New Zealand Standard 2243.3 Microbiological Safety and Containment*
- University's Blood, and Bodily Fluid Exposure (BBFE) Management Flowchart:
<https://staff.flinders.edu.au/content/dam/staff/documents/whs/bbfe-flow-chart-flinders-university.pdf>

4. SWP SCOPE AND COVERAGE

Sharps pose a risk of injury and infection to laboratory workers and require special consideration and control within a biological containment facility. Such items can be contaminated with a variety of microorganisms, and all sharps, unless known to be sterile, should be treated as though they are contaminated.

For this document, sharps are defined as an item that can cut or puncture skin, and include syringes, needles, scalpels, lancets, razor blades, broken glass, or any other sharp implement with the potential to cause a penetrating injury if handled in an unsafe manner.

5. SAFE HANDLING PRACTICES AND PRECAUTIONS

Sharps reduction

- Wherever possible, the use of sharps should be minimised or avoided within a biological containment laboratory.

- Where sharps are used, an assessment must be periodically undertaken to determine whether an alternative method or device is available to perform the procedure without the use of sharps – alternative devices are becoming available over time, and the reduction in use of sharps, or the use of safer sharps devices is now possible in many situations.
- Where removal or replacement is not possible, a risk assessment must be undertaken, and the control measures outlined below must also be implemented.

Handling needles and syringes

- Do not recap or re-sheath needles. Any variation to this requirement must be risk assessed, approved by Work Health and Safety, and must be undertaken following the one-handed scoop technique.
- Do not re-use needles contaminated with blood, bodily fluids, or infectious agents. Needles are disposable items and should not be re-used or sterilised for re-use.
- Do not bend or break needles, including before disposing of them.
- Remember that when working with GMOs or risk group 2 microorganisms, a syringe with a Luer lock fitting must be used when working with needles.
- Avoid using syringes with needles attached as 'specimen containers'. Where this is necessary, ensure that the syringe is placed into a puncture-resistant, leakproof container to safely transport the syringe, and ensure that the syringe can be removed from the container safely (e.g., a container where the needle can be placed facing downwards). Do not leave the sharps in this manner for storage – use or decant the sample as soon as possible.

Handling scalpels

- Wherever possible, use disposable safety scalpels where the blade is affixed to a disposable (plastic) handle. These eliminate the need to remove a blade.
- Where a reusable scalpel is required, best practice is to use a handle and blade that is designed to allow you to enclose the blade before removal. Where this is not possible, forceps must be used to remove the blade.
- Do not use scalpel blades without a handle.
- Do not bend scalpels or apply excessive pressure to the scalpel as this may cause the blade to snap, creating aerosols and a 'flying' sharps hazard. Where stronger cutting action is required, use a knife.

Work environment safety

- Do not leave any exposed sharps lying on bench tops, even temporarily.
- Surgical trays should be used when placing needles, syringes, or scalpels on the bench to ensure that all in the area are aware of the risk. Always ensure that sharps are pointed away from the handler and any receiving personnel.
- Do not place sharp devices in your lab coat pockets.
- Ensure that a sharps disposal container is available in the work area, preferably within arm's reach, for disposal of sharps immediately after use. Do not have personnel working in the area between yourself and the sharps disposal container. Avoid walking around the facility carrying contaminated sharps for disposal.
- Keep your work area clear and free of clutter to prevent accidents such as knocking over items whilst handling sharps – such accidents can lead to sharps injuries if the person is trying to manage situations in the work area whilst holding a sharp item.
- Ensure that others in the area are aware that you are working with sharps – refer to 'working with others' below for further details.
- If another person is assisting with a tissue collection process, have one person in control of the sharp device and the assisting person keep their hands away from the cutting area. The use of cut-resistant gloves is recommended in these cases.

Working with others in the work area when handling sharps

- Passing sharp items (e.g., uncapped needles or scalpels) from one person to another is a common example of lab-based sharps injury. Never pass a sharp item directly to a co-worker.
- When working in a manner that requires passing of sharps, adopt a technique that does not require direct passing. For example, person 1 may place the sharp item sharps-downward within a 50 mL tube placed in a tube rack so that the person 2 can then pick up the item safely.
- Ensure that there is clear communication between co-workers about the presence of sharps and sharps workflows.
- Work in a clear and clutter-free work zone and adopt a workflow where personnel do not have to reach across each other to access everything required to do the work. This includes for required access to the sharps disposal container.

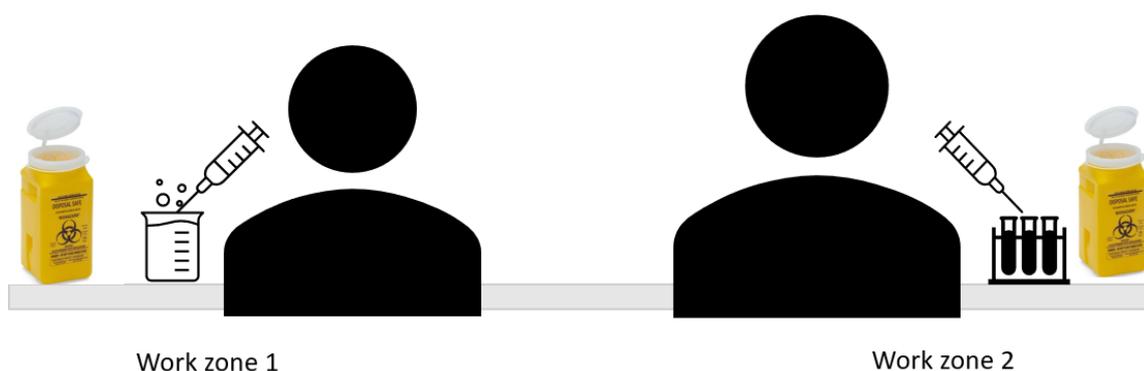


Figure 1: Example of work zone management where each person working with sharps in the area has their own workspace and setup, including access to a sharps disposal container. Avoid placing a single sharps container between the two work zones to prevent sharps injury if the two persons reach to dispose of sharps at the same time.

Training

Many sharps injuries arise from improper handling and poor technique (e.g., inexperience in performing administration procedures in animal models). Ensure that all personnel receive training in the safe use of sharps. Depending on the techniques involved, this training may be provided by the project supervisor or senior researchers in the lab, the Animal Welfare Officer or senior animal technician, as part of training for OGTR-licence conditions from the licence holder and the Biosafety Officer, or general sharps safety training provided by the College Senior WHS Officer.

6. INJURY MANAGEMENT

If a person sustains a needlestick or sharps injury, the University's Blood, and Bodily Fluid Exposure (BBFE) Management Flowchart conditions should be followed. Where the incident involves exposure to materials approved under an IBC approval (GMOs or risk group 2 microbiological samples), the IBC must be notified in addition to all required notifications to WHS.

The BBFE protocol is summarised below for needlestick and sharps injury in a laboratory or containment facility setting, and is available in full online:

<https://staff.flinders.edu.au/content/dam/staff/documents/whs/bbfe-flow-chart-flinders-university.pdf>

- Where skin penetration has occurred, if safe to do so remove any needles, sharps or other embedded foreign material and allow wound to bleed freely.
- Wash affected area with soap and running water; if water is not immediately available use saline, hand-wipes, or alcohol hand sanitiser.
- Apply antiseptic solution such as Povidone Iodine and if required apply a sterile dressing.
- Injured person to report exposure to supervisor/manager as soon as possible.
- If a high-risk exposure has occurred (known or suspected presence of infectious microorganisms transmissible by skin, blood, or wound exposure – e.g., HIV, Hepatitis, Dengue virus) the exposed

person shall be referred to the nearest emergency department for urgent testing/treatment and the Infectious Disease Consultant will be contacted by the health professional.

- In all cases other than high-risk exposure (outlined above), consult a health professional who will advise on testing and management. This should occur as soon as possible following exposure.

Health professionals for consultation

- Health Counselling and Disability Services, Flinders University
 - 8:45 am – 5 pm Monday – Friday 8201 2118
 - Level 3, Student Services Centre next to Sports Centre
 - Your local GP
 - Health Direct after-hours GP helpline 1800 022 222
 - If urgent consultation is required, contact FMC Infectious Disease Consultant for advice 8204 5511
- The health professionals will assess the level of risk to determine further medical management and the requirement for treatment or further serology testing.
 - The risk of tetanus must also be assessed and the requirement for tetanus immunoglobulin or a tetanus booster be considered.
 - Exposed person to report the injury/exposure on FlinSafe within 24 hours, with assistance from Supervisor/Manager.
 - Where the incident involves exposure to materials approved under an IBC approval (GMOs or risk group 2 microbiological samples) the IBC must also be notified within the 24-hour timeframe. Where exposure to GMOs has occurred, the IBC will be required to make a notification to the OGTR.
 - Exposed person to arrange follow-up serology testing where recommended by the health professional.
 - Flinders University WHS Unit to undertake investigation of incident and to advise on any applicable worker's compensation applications.

7. SHARPS DISPOSAL

- Do not use makeshift containers for the storage or disposal of sharps such as needles and scalpels – e.g., tubes, beakers. They may be disposed of incorrectly or remain unnoticed causing a sharps injury to others in the lab.
- Dispose of all sharps into a puncture-proof sharps disposal container that complies with AS/NZS 4261 and displays the biohazard symbol. Disposal should occur immediately after you have finished using the sharp item.
- Do not try to remove items from a sharps disposal container under any circumstances.
- Do not overfill sharps disposal containers. Fill to a maximum of $\frac{3}{4}$ full, or to the maximum fill line (where indicated) and not beyond. Do not press sharps down to make more room.
- Once a container is full, seal the lid tightly using the closure mechanism prior to disposal via the biohazard/clinical (yellow) waste stream.
- Do not place sharps containers on floors, windowsills, or above shoulder height. They should be stored above knee height and below shoulder height.
- Do not carry open sharps containers across a facility. Carry sharps containers by the handle and away from the body.
- Where a sharps container is damaged or perforated, place it inside a larger sharps container, seal and dispose via the biohazard/clinical waste stream.

8. APPLICABILITY

These procedures are applicable to any person who handles sharps within a containment facility or in association with biological materials.

9. CONTACTS

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| Flinders University WHS Unit | https://staff.flinders.edu.au/workplace-support/whs/contact-whs | |
| Biosafety Officer | Belinda Cox | ibcadmin@flinders.edu.au ph. (08) 82013436 |

10. DEFINITIONS

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| <i>Blood and bodily fluid exposure</i> | An incident or injury involving exposure to blood or other human material. |
| <i>Sharps</i> | An item that can cut or puncture skin, and include syringes, needles, scalpels, lancets, razor blades, broken glass, or any other sharp implement with the potential to cause a penetrating injury if handled in an unsafe manner. |