

Standard Operating Procedure

Task/Activity/Equipment: Biological spills clean-up and reporting procedures	
Purpose: To outline the procedures for clean-up and reporting of biological spills under two different circumstances: 1) Spills occurring within a biological safety cabinet 2) Spills occurring outside of a biological safety cabinet	
Location: On-campus	Reference Number: IBC-SOP-29 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

Infectious substances	Chemical disinfectants (various)
Risk group 1 or 2 microorganisms	Flammable substances (e.g., ethanol)
Genetically modified organisms	
Diagnostic specimens	

2. TERMS & ACRONYMS

BSC	Biological Safety Cabinet
GMO	Genetically modified organism
PC	Physical containment
BC	Biosecurity containment

3. RELEVANT LEGISLATION, GUIDELINES & STANDARDS

- *Gene Technology Act 2000*
- *Gene Technology Regulations 2001*
- OGTR Guidelines for Certification of a Physical Containment Facility (PC1, PC2)
- *Australian/New Zealand Standard 2243.3 Microbiological Safety and Containment*
- *Biosecurity Act 2015*
- Approved Arrangement Biosecurity Conditions (BC1, BC2)

4. SWP SCOPE AND COVERAGE

Research within containment facilities may involve the use of biohazard material including but not limited to GMO microorganisms, viral vectors, risk group 2 microorganisms, tissues and fluids from animals and humans which may contain pathogenic microorganisms, or environmental samples that may contain pathogenic microorganisms. The purpose of this SOP is to outline procedures for dealing with spills involving such biohazardous materials.

The procedures define four spill scenarios, as follows:

1. Small spills **inside** of a BSC (< 1 mL).
2. Larger spills **inside** of a BSC.
3. Low risk spills **outside** of a BSC.
4. Spills **outside** of a BSC that should be cleaned up by a dedicated spills clean-up team.

5. PRE-ACTIVITY CHECKS

All persons accessing containment facilities must be aware of the biological spill and unintentional release procedures provided within each suite and must familiarise themselves with the location of the nearest emergency exit.

Ensure you have completed mandatory training and inductions to be allowed to enter and work within containment facilities and with hazardous biological goods.

Ensure that the facility is equipped with a supply of disinfectants suitable for the types of biohazardous materials that may be used within the facility. It is recommended that each PC and BC facility have a small spills kit available, comprising suitable chemical disinfectants, paper towel or absorbent material, disposable gloves, tweezers, or tongs (for picking up any sharps) and any other items required.

Ensure that all chemical disinfectants are within expiry date, are labelled appropriately and are suitable for the intended use.

Ensure that a supply of clean Personal Protective Equipment (PPE), including gown and disposable gloves, is available near the entry of each PC/BC facility.

Ensure that you are wearing required personal protective equipment (PPE), including but not limited to latex or nitrile gloves, a long-sleeved laboratory gown, and enclosed shoes.

6. WORK HEALTH AND SAFETY CONSIDERATIONS

Refer to risk assessments, Safe Work Method Statements for chemicals, processes, and plant equipment where appropriate. All projects must have an accompanying Risk Assessment signed by the project and facility supervisor. All Notifiable Low Risk Dealings must have a risk assessment approved by the Institutional Biosafety Committee.

Personal Protective Equipment

The following PPE located at the entrance of each anteroom must be worn when entering animal containment suites of the facility:

- Enclosed shoes
- Long-sleeved laboratory gown
- Gloves

Personnel involved in spill clean-up may be required to wear a fitted N95 or P2 mask where indicated in the procedures below.

Choice of disinfectant(s)

Choice of chemical disinfectant will be determined by two factors:

1. Ability of the chosen disinfectant to render pathogens of concern non-viable.
2. Compatibility of the equipment needing to be decontaminated with the chosen disinfectant, noting that some disinfectants may cause corrosion of metal surfaces, or deterioration of plastics.

In general, 4% bleach will be the disinfectant of choice for biological spills, however specific alternative disinfectants may be indicated in some scenarios (e.g., for spills involving microorganisms that produce spores, a sporicidal disinfectant may be required, in animal facilities, F10 disinfectant is preferred). For spills involving microorganisms, including GMO microorganisms or viral vectors, check the associated IBC approval for details of approved disinfectants.

Bleach is corrosive to stainless steel surfaces. If bleach is used as a chemical disinfectant on such surfaces, then the surfaces must be wiped down with either 80% v/v ethanol or sterile water following bleach treatment.

7. PROCEDURES FOR SPILLS INSIDE OF A BIOSAFETY CABINET

Small spills inside of a BSC (< 1 mL)

- 1 Small spills (< 1 mL) inside of a BSC shall be wiped up using disinfectant-soaked absorbent material (e.g., paper towel).
- 2 No incident report or notification to the IBC is required.

Larger spills inside of a BSC

- 1 Keep the BSC running whilst you undertake spill clean-up.
- 2 Apply disinfectant-soaked absorbent material (e.g., paper towel) over the spill. Leave for 10 minutes.
- 3 Disinfect gloved hands and move away from the cabinet. If you have spilt any material on your gown, remove. Remove gloves and wash hands and arms at hand basin. Replace gloves.
- 4 Surface disinfect any items that were sitting near the front of the cabinet which may have been exposed to any infectious material escaping from the front of the cabinet.
- 5 After initial disinfection of the spill, remove absorbent material and dispose as biohazard waste. Collect any sharps (e.g., broken glass) present in the spill zone using tweezers or forceps and dispose in sharps container. Surface decontaminate any items remaining in the BSC with disinfectant before removing from the cabinet.
- 6 Wipe down all accessible areas of the cabinet with disinfectant-soaked paper towel. This includes the work zone, air intake and rear grilles, sides and back of the cabinet, and the inside of the front sash.
- 7 If the spilt material has collected in the sump of the cabinet, add disinfectant to cover the sump floor and leave for 10 minutes before cleaning up with absorbent material.
- 8 Disinfect gloved hands in the BSC, then move away from the cabinet, remove gloves and wash hands and arms.
- 9 Report spill to the IBC to determine whether gas or vapour decontamination of the cabinet may also be required.

8. PROCEDURES FOR SPILLS OUTSIDE OF A BIOSAFETY CABINET

Low risk spills (PC1 material, PC2 material < 10 mL and not infectious via the respiratory pathway)

- 1 Contain any samples or organisms you are working with.
- 2 Remove any PPE suspected to be contaminated and place in a biohazard waste bag for later disinfection. If shoes are suspected to be contaminated, thoroughly wet with an appropriate disinfectant, and wipe all potentially contaminated surfaces then repeat with fresh disinfectant.
- 3 Put on new gloves and PPE (including eye protection) before carrying out remainder of the clean-up. Collect materials required for remainder of clean-up (additional disinfectant, absorbent material, biohazard waste bags, forceps, or tweezers).
- 4 Thoroughly wet absorbent material (e.g., paper towel) with a suitable disinfectant and place to cover the spill area. Allow approximately 10 minutes for disinfection to occur.
- 5 After disinfecting spill for 10 min, use a pair of forceps or tweezers to remove and discard any contaminated sharps or broken glassware into sharps container.
- 6 Carefully mop up the spill using fresh absorbent material. Place contaminated absorbent material into biohazard waste bag for disposal.
- 7 Wipe the spill area, including any equipment or furniture in the area that may have become contaminated, with disinfectant-soaked paper towel.
- 8 Mop floor using fresh disinfectant. Add additional disinfectant to the mop water and allow to sit for 30 min to disinfect before disposing of mop water.
- 9 Remove PPE and gloves, and wash hands with soap and water.
- 10 Notify the IBC of the incident (ph. 08201 5277; email: ibcadmin@flinders.edu.au) and complete a [FlinSafe](#) report.

Spills that should be cleaned up by a dedicated spills clean-up team (PC2 material infectious via the respiratory pathway or PC2 material > 10 mL)

Remove contaminated clothing

Exit the area

Stop others entering

Phone for help – colleagues in the lab and/or supervisor

Organise clean-up with colleagues and/or supervisor

NO RUSH

Decontaminate the area

1	Contain any samples or organisms you are working with by closing containers or placing animals, insects, etc. in cage.
2	Move away from the spill and notify others in the room to exit.
3	Remove potentially contaminated laboratory gown, shoes, and any other PPE or external contaminated clothing and place on the floor away from the spill as you exit the facility.
4	Evacuate the room for 30 min and warn others to keep out of the area. Place a 'DO NOT ENTER' sign on the door. Notify security or facility staff if assistance is required to keep people out of the area.
5	If the worker has minor contamination only, wash skin and use an eyewash station if the eyes or face have been exposed. If spill has soaked through clothing, take a complete body shower in a regular shower cubicle in a changeroom. DO NOT USE SAFETY SHOWERS for biological spills
6	Notify the facility supervisor/manager.
7	Assemble a clean-up team consisting of three people – one to observe and two to clean-up
8	After 30 min, put on gloves and full PPE (including eye protection and N95 or P2 face mask) before carrying out remainder of the clean-up. Collect materials required for clean-up (disinfectant, absorbent material, biohazard waste bags, forceps, or tweezers).
9	Determine the extent of contamination.
10	Thoroughly wet absorbent material (e.g., paper towel) with a suitable disinfectant and place to cover the spill area. Allow approximately 10 minutes for disinfection to occur.
11	After disinfecting spill for 10 min, use a pair of forceps or tweezers to remove and discard any contaminated sharps or broken glassware into sharps container. Remove any contaminated materials (e.g., cardboard boxes) and dispose as biohazard waste, or decontaminate reusable items.
12	Carefully mop up the spill using fresh absorbent material. Place contaminated absorbent material into biohazard waste bag for disposal.
13	Wipe the spill area, including any equipment or furniture in the area that may have become contaminated, with disinfectant-soaked paper towel.
14	Mop floor using fresh disinfectant. Add additional disinfectant to the mop water and allow to sit for 30 min to disinfect before disposing of mop water.
15	Remove all PPE and either dispose as biohazard waste or decontaminate. Wash hands with soap and water.
16	Notify people that the area is safe for them to return to work.
17	Notify the IBC of the incident (ph. 08201 5277; email: ibcadmin@flinders.edu.au) and complete a FlinSafe report.

9. FORBIDDEN ACTIVITIES

Unless there is a medical emergency, do not leave without ensuring that the spill is cleaned up, or notifying others in the area that a spill has occurred and that you are seeking assistance to clean the spill up. It is important to ensure that others are aware of the hazard and are not exposed to the spill

Do not clean up a biological spill without first applying required PPE.

Decontamination MUST NOT be performed using:

- decontamination equipment that is defective or faulty
- any heat-based decontamination equipment for which the results of each month's biological indicator tests and the results of each year's calibration are not available (records must be retained for 18 months)
- chemical decontamination agents that are past their expiry date or have an unknown expiry date
- any method that has not been validated as effective for the decontamination of the microorganisms.

10. APPLICABILITY

These procedures are applicable to any person working with biologically hazardous materials, including GMOs.

11. CONTACTS

Biosafety Officer	Belinda Cox	ibcadmin@flinders.edu.au ph. (08) 8201 3436
-------------------	-------------	--

12. DEFINITIONS

<i>N95 or P2 mask</i>	A respirator face mask designed to achieve a very close facial fit and used to protect the wearer from particles or from liquid contaminating the face, and to provide high efficiency filtration of airborne particles.
-----------------------	--