

# Decontamination of Laboratory Equipment

## SCOPE

This document provides the required procedures for decontamination of laboratory equipment used by UBC researchers working with biological substances.

A procedure specific for the required decontamination of Biological Safety Cabinets prior to maintenance, relocation or disposal is also provided.

The Safe Use of a Class II Biological Safety Cabinet is detailed in the UBC Biosafety Committee Standard Operating Procedure IBC-SOP-002.

Treatment and disposal of RG1/RG2 Biohazardous waste, including microorganisms, tissue culture waste or other materials contaminated with these biological substances will follow the UBC Procedures for Treatment & Disposal of Biohazardous Waste as per UBC's waste delisting permit from the Ministry of the Environment.

## PURPOSE

To provide a consistent, institutional standard for the decontamination of equipment used for work with biological substances prior to maintenance, relocation or disposal.

## BACKGROUND

In the spirit of universal precautions, equipment must be assumed to become contaminated during the course of regular, appropriate use of equipment in biological laboratories. Due diligence requires that all equipment must be suitably decontaminated prior to removal from service for the purposes of maintenance, relocation or disposal to prevent exposure of non-laboratory personnel to any contamination that may be present.

## RESPONSIBILITY

Individual Biosafety Permit Holders bear responsibility for:

- ensuring adequate decontamination of equipment prior to removal from containment;
- ensuring all members of their study teams abide by the procedures outlined in section 8; and
- Procurement and use of materials, PPE and services listed in sections 6, 7 and 8 as necessary to comply with the procedures in section 8.

## REFERENCES AND DEFINITIONS

**Biological Material:** Pathogenic and non-pathogenic bacteria, viruses, fungi, prions, toxins, genetically engineered organisms, nucleic acids, tissue samples, toxins, diagnostic specimens, live vaccines and isolates.

**Biological Safety Cabinet (BSC):** A Primary Containment Device that provides protection for personnel, the environment and the product (depending on Class) when working with biological material.

**Containment:** The combination of physical space delineation and operational practices that protect personnel, the immediate work environment, and the community from exposure to biological material.

**Contamination:** the undesired presence of infectious material or toxins on a surface or within materials.

**Decontamination:** The process by which materials and surfaces are rendered safe to handle and reasonably free of microorganisms, toxins or prions; this may be accomplished through disinfection, inactivation, or sterilization.

**Disinfectant:** A chemical used for the decontamination of surfaces and equipment that cannot be autoclaved. Correct selection and use of disinfectants is critical for effective decontamination.

**Disinfection:** Process that eliminates most forms of living microorganisms. The effectiveness of the disinfection process is affected by a number of factors including the nature and quantity of microorganisms, the amount of organic matter present, the type and state of items being disinfected, and the ambient temperature.

**Exposure:** Contact with, or close proximity to, infectious materials or toxins that may result in infection or intoxication, respectively. Routes of exposure include inhalation, ingestion, inoculation and absorption.

**Genetically Engineered (GE):** An organism is considered genetically engineered if it was modified using techniques that permit the direct transfer or removal of genes in that organism. Such techniques are also called recombinant DNA or rDNA techniques.

**Gross Contamination:** The accumulation of organic material on a surface that can be removed by physical methods such as scraping, wiping and brushing.

**Laboratory:** An area within a facility or the facility itself where biological material is handled for scientific or teaching purposes.

**Sterilization:** Process that eliminates all living microorganisms, including spores.

## MATERIALS/EQUIPMENT

Freshly made disinfectant

Paper towel or rags

Waste bag

Label tape

Lab Equipment Clearance Form LAB-SWP-003

## PERSONAL PROTECTIVE EQUIPMENT (PPE)

Nitrile gloves or equivalent suitable for use with the disinfectant chosen

Minimum PPE – lab coat, long pants, & fully covering shoes

## PROCEDURE

A. Decontamination of equipment other than Biological Safety Cabinets.

1. Removal of Gross Contamination: using disinfectant soaked rags, remove all visible contamination from accessible surfaces of the equipment. Discard rags into a waste bag.
2. Reapply disinfectant to all surfaces and leave for the contact time recommended by the disinfectant manufacturer.
3. At the end of the contact time duration, wipe down surfaces.
4. If disinfectant used is corrosive (eg. Bleach, Sodium hypochlorite, Virkon), wipe down surfaces with clean water followed by 20% isopropanol or ethanol to prevent corrosion.
5. Label equipment as “Decontaminated.” If the equipment is to be moved or repaired by Building Operations, complete and attach the Laboratory Equipment Clearance Form LAB-SWP-003.
6. Move equipment to a location out of service away from all work with biological or hazardous substances.
7. Dispose of cleaning materials in waste bin.

Note if you mix the disinfectant soaked rags into a waste bag with other biological waste allow at least 48 hours before processing waste in the autoclave to prevent combustion or explosion from the fresh disinfectant.

#### B. Decontamination of Biological Safety Cabinets

1. If operable, turn cabinet fan on for the duration of surface decontamination.
2. Removal of Gross Contamination: using disinfectant soaked rags, remove all visible contamination from accessible surfaces of the equipment. Discard rags into a waste bag.
3. Reapply disinfectant to the cabinet interior, including under the work surface, and leave for the contact time recommended by the disinfectant manufacturer.
4. At the end of the contact time duration, wipe down surfaces.
5. If disinfectant used is corrosive (eg. Bleach, Sodium hypochlorite, Virkon), wipe down surfaces with clean water followed by 20% isopropanol or ethanol to prevent corrosion.
6. Dispose of cleaning materials in a waste bin.

Note if you mix the disinfectant soaked rags into a waste bag with other biological waste allow at least 48 hours before processing waste in the autoclave to prevent combustion or explosion from the fresh disinfectant.

7. Label the BSC as "Surface Decontaminated for Servicing: Do not Use"
8. Contact HEPA Filter Services to have the cabinet bagged and fully decontaminated.
9. Obtain written confirmation of full decontamination from HEPA Filter Services.
10. Post a copy of the decontamination confirmation on the biosafety cabinet until the unit is reinstalled and recertified.

## REVIEW AND RETENTION

This SOP is reviewed annually or whenever deemed necessary by the UBC Biosafety Committee or the UBC Biosafety Office.