Biological Risk Management and Containment

Benchtop/Surface Decontamination

Cleaning and Decontamination

Containment Laboratory Guidelines

Version 2.1 - July 2023

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This document was originally Version 1 which was extensively reviewed and approved in February 2021.

Record of Amendments to Version 2.1

Date	Page number	Nature of amendment
May 2023	5	Correction of disinfectant names
May 2023	5	Minor changes to dilutions and holding times, to match manufacturer recommendations.
May 2023	7	Corrections to definitions
May 2023	all	University Logo updated

Contents

1. Who are these guidelines for?

These guidelines are intended for **principal investigators (PIs), designated persons in charge, designated laboratory persons (DLPs),** technical staff and students trained in the safe use of **risk biologicals** in appropriate containment facilities.

2. When should I decontaminate my benchtop?

When you are working with "risk biologicals" (such as bacteria, viruses and fungi) in the laboratory, it is good practice to decontaminate your working surfaces routinely and regularly, using an approved decontamination agent. Bench surfaces shall be decontaminated at least daily.

3. When should I clean/sanitise my benchtop?

Note that cleaning or sanitising surfaces is a different process than decontamination. In addition to regular decontamination, you should also regularly clean/sanitise your bench surfaces with 70% ethanol before you start work and when you have completed the work. Depending on the nature of the work and the level of risk involved, you may need to sanitise your benchtop with 70% ethanol more often –before you leave the laboratory for lunch, for example.

4. What is an approved decontamination agent?

An approved decontamination agent is one that is proven to be effective by the US Environmental Protection Agency (EPA), European Standard or ASTM* Standard tests, or peer reviewed journals using standard testing procedures. See Appendix 1 for the differing types of European standard tests and Appendix 2 for more information about the test methodology.

*An international standards organisation that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.

5. Which decontamination agent should I use?

There are four approved agents used in containment facilities at the University: Trigene Advance, Chemgene HLD_4L and Accel Prevail. Which one you use will depend on the nature of your work – check with the designated laboratory person (DLP).

We do not recommend sodium hypochlorite for laboratory surfaces (especially stainless steel) as it is corrosive.

Although 70% ethanol is an effective cleaning/sanitising agent, please do not use it as a surface disinfectant. It is not effective as a decontaminant because it evaporates rapidly and therefore does not have sufficient contact time (ten minutes).

6. How to use approved decontamination agents

6.1 Tristel Jet

Apply Tristel Jet directly from a dispenser. Contact time for proven efficacy is one minute.

6.2 Trigene Advance /Sterigene

Apply Trigene at the following dilutions and leave five minutes.

General use	1:100*
Heavy soilage, Risk Group 2 non-enveloped viruses	1:50*
Fungi/yeast cultures, blood and body spills	1:10*
*Follow manufacturer guidelines for stability of diluted solutions	

6.3 Chemgene HLD_4L

Apply Chemgene HLD_4L at the following dilutions and leave five minutes.

General use	1:100*
Heavy soilage and Risk Group 2 non-enveloped viruses	1:50*
Blood, bacterial spores, heavy tissue load	1:10*
*Follow manufacturer guidelines for stability of diluted solutions	

6.4 Accel Prevail (Ready-to-Use and Concentrate)

Use Accel Prevail Concentrate (7% AHP) at the following dilutions and leave on the surface for five minutes. Please note Accel is corrosive on metal surfaces.

All use	1:40 dilution of concentrate*
*Follow manufacturer guidelines for stability of diluted solutions	

6.5 Precautions

- Use all stocks of liquid decontaminating agents within the manufacturer's expiry dates, as they will not be effective after this date.
- Do not store diluted solutions for longer than the manufacturer recommended stability times.

6.6 Verifiable outcomes

1. Use only approved decontamination agents.
2. Ensure the directions for use are posted in the laboratory.
3. Label all containers with the identity of the decontamination agent, its concentration, and the expiry date.
4. Ensure all laboratory users understand how to use these agents.

7. Definitions

Risk biologicals are New Organisms, Unwanted Organisms, genetically modified organisms (GMOs), biological materials that present a potential biosecurity risk and micro-organisms with a risk classification of Risk Group 2 or higher, as defined by the United States National Institute of Health "Guidelines for Research Involving Recombinant DNA Molecules".

Designated laboratory person (DLP) means the trained person in each research group who has been given the authority to receive purchase requests made in SciTrack and to make a formal request for a purchase order via the Shared Transaction Centre. In containment and transitional facilities DLPs will have additional training to enable them to scrutinise documentation for restricted items and provide support to researchers.

Designated person in charge means a staff member in any of the following roles: sector manager, facility manager, floor manager, technical manager or an appointed delegate.

Principal Investigator (PI): In the context of hazard containment and transitional facilities, a principal investigator is the holder of an independent grant administered by the University and the lead researcher for the grant project, usually in the sciences, such as a laboratory study or a clinical trial. The phrase is also often used as a synonym for "head of the laboratory" or "research group leader." The PI is responsible for assuring compliance with applicable University standards and procedures, and for the oversight of the research study and the informed consent process. Although the PI may delegate tasks, they retain responsibility for the conduct of the study.

8. Appendix 1: Efficacy of Approved Benchtop Decontamination Agents

Tristel Jet – a chlorine dioxide-based disinfectant surface formulation that is applied directly from a dispenser. It is effective in both Phase 2, Step 1 and Phase 2, Step 2 European standardised tests (see Appendix 1) against a range of gram positive and gram-negative bacteria on hard surfaces.

Trigene Advance – a halogenated tertiary amine composed of chlorides, amines and sulfamic acids, which is proven effective against a wide range of bacteria after five minutes' contact time. Trigene has passed EN13697 and EN1276 for a variety of gram positive and gram-negative bacteria and Candida albicans. However, it is less likely to be effective against non-enveloped viruses such as Adeno-associated virus and does not meet the requirements of a high-level disinfectant. Trigene Advance is safe for use on metals.

Chemgene HLD$_4$L – a halogenated tertiary amine composed of chlorides, amines and sulfamic acids. HLD$_4$L has passed EN13697 and EN1276 for a variety of gram positive and gram-negative bacteria and fungi. HLD$_4$L is safe for use on metals. Contact time for proven efficacy is five minutes.

Accel Prevail (Ready-to-Use and Concentrate): These are accelerated hydrogen peroxide formulations, blended with anionic surfactants, non-ionic surfactants, sequestering agents (for chelating ions like calcium that reduce cleaning effectiveness) and stabilisers, which are high level disinfection agents effective against a wide range of bacteria and viruses. Accel Prevail Ready to Use spray is a US EPA-approved disinfectant for hard surfaces. EPA has approved claims that Accel Prevail is effective after one minute as a sanitiser and five minutes as a disinfectant.

9. Appendix 2: European standard testing protocols

Protocols developed under CEN TC216 are classified according to the test objective and are divided into three stages:

1) Primary testing and screening
2) Laboratory testing simulating real-life situations
3) Field testing

The European standard protocols follow this three-stage classification: In phase 1, only suspension tests are considered. In Phase 2, conditions simulating possible applications are tested. Phase 2, Step 1 refers to more advanced suspension tests that include parameters such as water hardness and soiling. Phase 2, Step 2 is a test method for surface disinfection.

Test stage	Phase	Aim	Example of European tests
Preliminary test	Phase 1	Primary testing and screening	EN1040 (basic bactericidal activity) EN1275 (basic fungicidal activity)
In vitro tests	Phase 2	Simulate the conditions encountered for the possible application	
	Phase 2 Step 1	Advanced suspension test	EN1656 and EN1276 (bactericidal suspension test) EN1650 (fungicidal suspension test)
	Phase 2 Step 2	Advanced surface test	EN13697 (bactericidal and fungicidal surface test) EN13624 (medical instruments, disinfectants – bactericidal activity) EN1499 (hygienic hand-wash) EN1500 (hygienic hand rub)
In situ test	Phase 3	Testing in real-life conditions	No standard antimicrobial test available

10. Appendix 3: Test methods for efficacy of surface disinfectants in European standard protocols: Phase 2, Step 2 testing

EN 13697: Quantitative surface test for the evaluation of bactericidal or fungicidal activity

Test organisms	Purpose of test	Typical performance criteria (requirements may vary by claim)
Staphylococcus aureus *Pseudomonas aeruginosa* *Enterococcus hirae* *Escherichia coli* *Candida albicans* *Aspergillus brasiliensis*	Carrier-based study formally used to evaluate bactericidal and fungicidal activity on non-porous surfaces.	4 log reduction of bacteria in ≤5 minutes and 3 log reduction of fungi in ≤15 minutes