BioEscalator Laboratory Safety Policy 0001: **Disinfection policy**

Cross reference to University Policy Statements: Biological Health & Safety S5/09

Contents of Policy

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1) Scope of Policy

This policy gives guidance on different types of disinfectant that should be used and describes the associated risks that will be encountered when using these disinfectants. The policy also details the typical applications within the where disinfectants will need to be used, outlines which disinfectants should be used in which application. It is not exhaustive however, and should there be a need to use alternative disinfectants, this must be cleared by the BioEscalator Biological Safety Officer (BSO).

2) Introduction

Disinfection is the reduction of microorganisms to an acceptable level. It is the policy of the BioEscalator department that all areas likely to become infected with microorganisms must be routinely disinfected. There are many chemicals that are available, but depending upon their particular active agent and the material to disinfect, there may be variable degrees of disinfection. Therefore, it is University's policy that all departments should have a clear disinfection policy indicating suitable concentrations, contact times and applications for the typical disinfection requirements of each individual department.

Several disinfectant agents are recommended for particular uses within the shared BioEscalator facilities: 1-3% Virkon, Chemgene, 70% ethanol, 70% isopropanol, formaldehyde.

3) 1-3% Virkon

Activity

Virkon contains a number of peroxygen compounds that work synergistically to attack key structures within an organism, resulting in destruction of the organism. The components of Virkon have limited health hazards and are compatible with a range of materials. Virkon has also been proven to have a wide range of bactericidal, viricidal and fungicidal activity. Taking into account all these factors therefore, Virkon can be used for the majority of activities where disinfection is required.

Safety Precautions

Although a 1% Working Solution of Virkon has been identified as non-hazardous, care should be taken when handling the powdered form, as it is classified as an irritant.

Preparation of 1% Virkon Working Solution (multiply concentration as required).

Into a suitable container, i.e. bucket or beaker, add the required volume (X ml) of tepid water. Add to this the required amount of Virkon (X ml/100) and stir until the powder has fully dissolved to a clear pink solution. This solution can then be dispensed into smaller containers, such as wash bottles, if required.

The pink colour indicates suitable activity of the disinfectant. Therefore if at any time this pink colour is lost, then the solution should be discarded and a fresh solution made. If the colour is lost immediately on making up the solution, this indicates that the containers are contaminated in some way. Again, the solution should be discarded and all vessels washed out with water and a new solution made.

Disposal requirements

All Virkon solutions can be poured directly down sinks into the drainage system. Contaminated paper, gloves and other waste solid materials, should be collected in autoclave bags and disposed of as biological laboratory waste.

4) Guidelines on the Application of Virkon

Application	Concentration/instructions	Contact time
Hard surfaces, benches, floors etc.	A solution containing 1% Virkon	1 hour
Metal parts	A solution containing 1% Virkon	10mins
Safety cabinets	1% Virkon, followed by 70% alcohol	10mins
Discard jars, plastic tissue culture flasks, glassware	A solution containing 1% Virkon. Ensure all surfaces are in contact with the disinfectant.	1 hour
Supernatants, used tissue culture media, body fluids	For level 1 bacteria in culture broth: - 2% Virkon diluted 1:1 in broth. For level 2 tissue culture medium or other buffered system: - 3% Virkon diluted 2:1 in culture medium.	1 hour
Spillages	Virkon powder directly onto spill, Scrape mixture into yellow bag for incineration. Swab area with 1% solution	Until liquid is absorbed
Skin spillages	A solution containing 1% Virkon, then rinse well with water.	As required
Contaminated clothing	Where autoclaving is not possible/appropriate soak in 1% Virkon (test small area for colour fastness).	1 hour

5) Chemgene HLD4L

Activity
This product contains a number of active ingredients that work synergistically to attack the organism resulting in cell death. It can be supplied at working concentration so is ready-to-use. Therefore this disinfectant again is recommended for a majority of activities, particularly in surface decontamination as it has a wide range of bactericidal, viricidal and fungicidal activity.

Safety Precautions
Chemgene is non-toxic, non-carcinogenic, non-hazardous and non-corrosive. However it can burn skin and eyes especially when undiluted therefore it is recommended to wear lab coat, gloves and eye protection when using the product.

Use of the Solution
Chemgene is supplied in two formats, a concentrate and a 1/20 ready-to-use spray. For the majority of surface disinfection required, the spray should be used. Where cultures are to be disinfected a recommended amount of concentrated Chemgene must be added to produce a final volume of 1:20, the same dilution of 1:20 is used to disinfect blood. For general cleaning a dilution of 1:100 is recommended

Disposal Requirements
Chemgene is biodegradable so all waste solutions can be poured directly down sinks into the drainage system. Contaminated paper, gloves and other waste solid materials should be collected in autoclave bags and disposed of as biological laboratory waste.

6) 70% Ethanol or 70% Isopropanol or 70% Industrial methylated spirit (IMS)

Activity
70% ethanol can only be used to disinfect a physically clean surface as it poorly penetrates organic material. It does provide good bactericidal and fungicidal activity, but is non-sporicidal and is less or in some cases non-effective against viruses. Taking into account all these factors 70% Ethanol or Isopropanol should only be used where surfaces are relatively clean and where 1% Virkon would not be acceptable i.e. electrical equipment.

Safety Precautions

Both absolute Ethanol & Isopropanol are highly flammable and must be handled within a fume cupboard and away from ignition sources. At 70% these solutions are still deemed flammable, therefore their usage should be minimised and care must be taken at all times to avoid ignition sources. In particular electrical items of equipment should be disconnected from a power source before disinfection can commence.

Preparation of 70% Alcohol Working Solution

The following details the procedure to make up 500mls of 70% Alcohol, which is sufficient to fill an average size wash bottle. Working within a fume cupboard, measure out 350ml of Ethanol or Isopropanol or IMS into a measuring cylinder or bottle. Make this up to 500ml with water, cover the top of the cylinder with Parafilm or cap, and very carefully invert to mix. Pour contents into a wash bottle for use.

Disposal Requirements

Excess 70% Alcohol can be carefully poured down sinks into the drainage system, and water ran to flush system. Contaminated paper, gloves and other waste solid materials, should be collected in autoclave bags and disposed of as Miscellaneous Laboratory Waste, as described above.