LABORATORY SURFACES AND EQUIPMENT DECONTAMINATION FROM *Trichinella* spp. LARVAE

STANDARD OPERATING PROCEDURE

SUMMARY

SCOPE

This document describes the methods that can be used for routine laboratory decontamination of surfaces and equipments after the artificial digestion of muscle samples infected with *Trichinella* spp. larvae or in all other cases of live *Trichinella* larva manipulation.

1. INTRODUCTION

The effectiveness of disinfectants depends upon the organism populations present on the surfaces, the concentration of both organisms and disinfectant, and the duration of contact. Common laboratory disinfectants with a broad antimicrobial efficacy are working solutions of 70% ethanol and 10% sodium hypochlorite (bleach). It should not be assumed that these or any other common disinfectant are effective against all laboratory pathogens. Prior to selecting a disinfectant for the laboratory, it is important to check the susceptibility and the recommended contact time of the target pathogen (species and strain) you are working with.

2. REFERENCES

Commission Implementing Regulation (EU) 2015/1375 of 10 August 2015 laying down specific rules on official controls for *Trichinella* in meat. Official Journal of the European Union, L212, 7-34.

Guidelines for the decontamination of clinical/biological waste and spill management, University of Sydney (http://sydney.edu.au/whs/guidelines/biosafety/decontamination_guidelines.shtml).

3. DEFINITIONS

Disinfectant	an agent, such as heat, radiation, or a chemical, which destroys, neutralizes, or inhibits the growth of disease-carrying microorganisms.
Contact time	is the length of time a disinfectant must remain in contact with a surface in order to achieve efficacy; this time is determined through laboratory testing.

4. EQUIPMENT

Not applicable

5. REAGENTS

5.1. **Alcohols.** Ethanol (denatured ethanol, methylated spirits) at a dilution of 80% v/v, is generally used to disinfect work surfaces of laboratory benches and to soak small instruments. Alcohols are volatile and flammable and must not be used near open flames. Working solutions should be stored in closed containers to avoid evaporation. Recommended ethanol dilution to inactivate *Trichinella* larvae is of at least 75% v/v, for 10 minutes contact time. The major advantage of an aqueous solution of alcohols is that they do not leave any residue on treated items.

5.2. **Chlorine.** Sodium hypochlorite solutions (i.e., bleach) are used in many areas where control of pathogens is required. Bleach, either stock or working solutions must be stored in well ventilated dark areas. Storage of stock or working solutions in open containers releases chlorine gas and weakens their antimicrobial potential. Bleach can be used as a general purpose disinfectant and for soaking contaminated materials that do not contain non-ferrous metals; it is highly alkaline and will corrode non-ferrous metal. It is safe to use on stainless steel. Recommended concentration to inactivate *Trichinella* larvae is 10% dilution of 14-15% active chlorine liquid bleach; the required contact time is 15 minutes.

5.3. **Virkon.** Virkon is a multi-purpose disinfectant. It contains oxone (potassium peroxymonosulfate), sodium dodecylbenzenesulfonate, sulfamic acid, and inorganic buffers. It is typically used for cleaning up hazardous spills, disinfecting surfaces and soaking equipment. The solution is used anywhere control of pathogens is required. Recommended Virkon solution to inactivate *Trichinella* larvae is of 1% w/v, the required contact time is 10 minutes. Virkon 1% solutions are stable for up to 7 days.

5.4. **Heat.** Heat treatment is the most effective routine mean to destroy the infectivity of all microorganisms. Washing or incubation with hot water has the advantage to not leave any residue on treated items. Recommended minimum water temperature to inactivate *Trichinella* larvae is 80 °C, the required contact time is 10 minutes. Heat treatment cannot be used to decontaminate bench and other large surfaces.

6. PROCEDURE

In case of positive results after artificial digestion of meat samples, all material in contact with infected meat (blender bowl and blade, beaker, stirring rod, temperature sensor, etc.) as well as with live larvae (funnel, sieve, separatory funnel, cylinder/centrifuge tube, etc.) must be carefully decontaminated by incubating the apparatuses in hot water or in one of the disinfectant solutions reported above for no less than the minimum required time. When using a disinfectant solution to inactivate the larvae, it is recommended, after the decontamination, to thoroughly rinse with water each piece of the equipments to remove any trace of chemicals. To inactivate *Trichinella* larvae in fluids (e.g. digestive juice, supernatant fluid, washings), the concentrations of chemicals are intended as the final concentrations in the fluid to be decontaminated. In case of fluid decontamination, the required contact time must be increased to 30 minutes after thorough mixing.

7. SAFETY MEASURES

The potential safety risks for routine laboratory disinfection are:

- Creation of infectious aerosols;
- Exposure to respiratory, eye and cute irritants.

Laboratory staff performing the procedure, shall wear disposable gloves, mask and lab coat.