

Guideline for Disinfecting Research Equipment That is Used with Laboratory Animals and Requires Hand Washing

STANFORD UNIVERSITY The Administrative Panel on Laboratory Animal Care (APLAC)

DIRECTIONS: Review the following material. Keep copies of guidelines with applicable protocols. You may find it helpful to post a copy of these guidelines in your laboratory. Questions should be forwarded to the APLAC office (aplacordinator@stanford.edu).

BACKGROUND INFORMATION: In order to provide a healthy environment for the animals, it is important to establish procedures for the effective disinfection of equipment used for research to order to prevent microbial agents that may cause sub-clinical and clinical diseases that could jeopardize the health of the animals and personnel.

The Guide for the Care and Use of Laboratory Animals, 8th edition indicates that, "The frequency and intensity of cleaning and disinfection should depend on what is needed to provide a healthy environment for an animal" (Pg. 69). The goal of these guidelines is to ensure that equipment to which animals are exposed are disinfected appropriately prior to and after animal use, in order to minimize pathogenic organisms in the animal environment.

Responsibility

It is the responsibility of the individuals to properly clean and disinfect all equipment and work surfaces that may come into contact with animals prior to and after each use. This responsibility pertains to common procedural area or core facility as well as laboratory space. If an alternative method not listed below is utilized, additional testing may be required to validate the effectiveness of disinfection.

Scope

Disinfection of equipment used with research animals (e.g., behavioral equipment, metabolism cages, small euthanasia chambers, anesthesia induction chambers, rodent restraint devices, etc.). NOTE: These guidelines recommend processes to disinfect items and surfaces. These processes will *not* provide sterilization of these items. Upon inspection, all actively used behavioral equipment must be visibly clean.

Procedures

- 1. Equipment:** All equipment (e.g., behavioral equipment, metabolism cages, small euthanasia chambers, anesthesia induction chambers, rodent restraint devices, etc.) used for animal research are required to be cleaned and disinfected on a routine basis. It is recommended that all chambers be cleaned (removal of gross material) at least daily when actively being used with animals and disinfected not less than weekly during this period. Documentation of the cleaning/disinfecting methods should be kept in the lab and available for review during inspections. Disinfected equipment must be stored in a method that maintains its cleanliness and equipment that is not actively being used should be stored in a separate location.
- 2. Disinfection:** Chemical disinfection requires first a physical cleaning and then application of an appropriate disinfectant to all surfaces that require disinfection. There are several products (e.g., Virkon, bleach, ethanol, etc.) that may be used for disinfection of items that are not able to withstand 180 degrees in the cagewasher, either because of size or the incompatibility of the material. When using these substances, you must pay attention to the instructions regarding contact time in order to ensure appropriate disinfection. Additionally, all organic material (feces, urine, dirt, etc.) should be removed with basic washing before disinfecting as this can interfere with the effectiveness of these protocols. If equipment cannot be disinfected (i.e., Styrofoam, cardboard materials), it should be replaced when it becomes soiled.
 - A brief list of products is below. Please contact the VSC and/or EH&S for recommendation of specific disinfectants to be used in each area. The [EH&S Biosafety page on decontamination](#) and the VSC approved [disinfectant SOP](#) are also useful resources.
 - Appropriate Personal Protective Equipment (PPE) must be worn when handling disinfectants.
 - Read and become familiar with all applicable Material Safety Data Sheets (MSDS). These should be kept within your lab for reference.

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Validated Cleaning Methods				
Disinfectant	Manufacturer	Description	Contact Time	Appropriate surfaces
Virkon® S	DuPont	Peroxygen, surfactant	10 minutes	Safe on metals Safe on plastics, may cause swelling with certain polymers with extended use
Bleach	N/A	10% v/v final dilution of household bleach Approximately 0.5% final concentration sodium hypochlorite	10-60 minutes	Avoid metal, copper, or stainless steel Safe on plastics
Alcohol	N/A	70% Ethanol	2-10 minutes	Can degrade plastics over time Safe on metals

For more information about disinfection products, please refer to the Stanford EH&S Biosafety website on disinfection, or the manufacturer's information on appropriate contact times and surfaces.

REFERENCES:

1. Jo, H., West, A.M., Teska, P.J. et al. Assessment of early onset surface damage from accelerated disinfection protocol. [Antimicrob Resist Infect Control 8, 24 \(2019\).](#)
2. Ríos-Castillo AG, González-Rivas F, Rodríguez-Jerez JJ. Bactericidal Efficacy of Hydrogen Peroxide-Based Disinfectants Against Gram-Positive and Gram-Negative Bacteria on Stainless Steel Surfaces. J Food Sci. 2017 Oct;82(10):2351-2356. doi: 10.1111/1750-3841.13790. Epub 2017 Aug 23. PMID: 28833105.
3. Song X, Vossebein L, Zille A. Efficacy of disinfectant-impregnated wipes used for surface disinfection in hospitals: a review. Antimicrob Resist Infect Control. 2019;8:139. Published 2019 Aug 19. doi:10.1186/s13756-019-0595-2
4. <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html>
5. https://virkon.us/wp-content/uploads/sites/15/2017/11/EPA-39967-137_Virkon-S_10lb_20170513.pdf

Contact: [APLAC Administrator](#)

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