University of Colorado Denver (CU DENVER)

Subject: **Sanitation of Researcher-Maintained Animal Equipment**

Source: CU Denver | Anschutz Institutional Animal Care and Use Committee (IACUC)
Effective Date: 05/13/2024
Replaces: N/A
Applies to: Research/Teaching/Training studies involving animals
Reference: PHS Policy on Humane Care & Use of Laboratory Animals; Guide for the Care & Use of Laboratory Animals; Care of Mammals in Neuroscience and Behavioral Research

IACUC
05/13/2024

Introduction

The Institutional Animal Care and Use Committee (IACUC) maintains oversight review for federally mandated rules and regulations of animal research for the University of Colorado Denver. The purpose of this policy is to provide direction to researchers for the sanitation of research animal equipment (ex: treadmills, rotarod, operant chambers, mazes, restraint devices, temporary housing cages, etc.) that are in the investigator's laboratory or routinely sanitized by laboratory personnel. In this policy, sanitation will be used in the general sense to include cleaning (removal of gross debris), and disinfection (killing of microorganisms).

Policy Statement

Devices and equipment used with research animals are to be constructed of an impervious material to the greatest extent possible and regularly sanitized when in use. The sanitation procedure and frequency are to be clearly documented. The sanitation procedure requires considerable attention to detail and is based on the equipment's intended purpose, material composition, and rate and extent of soiling. The frequency and intensity of sanitation will depend on what is necessary to provide a healthy environment for the animal and to maintain a high-quality research product. Evaluation of an existing or new sanitation practice is recommended to ensure the effectiveness of the procedure.

Achieving Policy Compliance

1. A written or digital log is to be kept with or near the equipment that identifies the equipment being sanitized and can be provided to the IACUC upon request. Records of sanitation events are to be kept for a minimum of 12 months.
2. A written or digital procedure for sanitation, including the agent(s) used and frequency of sanitation are to be kept and provided to the IACUC upon request.

Policy Position on Sanitation

1. Automation: The use of a mechanical washer for sanitizing lab animal equipment, when possible, is preferred.
2. Hand Sanitation: Equipment that must be sanitized by hand is to be performed with hot water, detergents, and/or chemical disinfectants to achieve sanitation.
    a. Prior to disinfection, gross debris, food, bedding, hair and dander are to be removed by a vacuum or wipe-down with a damp, disposable towel.
    b. Apply disinfectant to all animal contact surfaces and allow the appropriate contact time for disinfection.
    c. Wiping or drying all animal contact surfaces is then performed to remove excess disinfectant and minimize residual residue.
3. Frequency: Animal equipment should be sanitized after each day of use at a minimum, or after each animal if smells or pheromones are a potential concern for animal welfare or research results.
4. Quality Assurance: Quality assurance testing should be performed to validate the effectiveness of the sanitation method or be re-evaluated if there is a change in the sanitation practice. Contact OLAR to schedule a time for testing after use when the equipment is soiled and after cleaning to demonstrate efficacy. OLAR.Admin@cuanschutz.edu

Common Disinfectants, Efficacy, and Considerations [data current 4/2024]

The contact times and efficacies listed below are provided by either the manufacturer, rooted in the literature, or recommended by the Centers for Disease Control, which has demonstrated efficacy. If used as directed validation is not required. Aquatic species are very sensitive to the toxic effects of some disinfectants even if used near or indirectly on adjacent materials. Work with veterinary staff to develop safe disinfectant procedures for lab equipment used with or near aquatic species.

1. **Peroxigard (Ready-to-Use)**: Accelerated Hydrogen Peroxide Disinfectant. Rapid sanitation in 10 sec. for some agents. Disinfection by being bactericidal, virucidal, fungicidal and tuberculocidal for most agents in 1 min. See label for expiration.
2. **Clorox® Multi-Purpose Hydrogen Peroxide Disinfectant**: Accelerated Hydrogen Peroxide Disinfectant. Disinfection by being bactericidal and virucidal in 30-60 sec. Fungicidal and tuberculocidal in 3-4 min. See label for expiration.
3. **Clidox-S** (1:18:1 dilution): Aqueous Chlorine Dioxide Disinfectant. Disinfection by being bactericidal, virucidal, and tuberculocidal for most agents in 5 min. Expires 14 days after dilution.
4. **Vimoba or MB-10 Tablets (200 ppm)**: Aqueous Chlorine Dioxide Disinfectant. Rapid sanitation in 1 min. Disinfection by being bactericidal and virucidal for most agents in 5-10 min. Expires 7 days after dilution.
5. **Alcohol** as a disinfectant:
    a. **70-80% Ethanol**: Ethyl Alcohol. Effective at inactivating vegetative bacteria, fungi, and limited virucidal activity with a contact time of 10 min. Ethanol does not kill non-enveloped viruses or bacterial spores. Long contact times are challenged by evaporation.[2]
    b. **80-90% Ethanol**: Ethyl Alcohol. Disinfection by being bactericidal in 30 sec. and virucidal in 5 min. Ethanol does not kill non-enveloped viruses or bacterial spores. Note: 100% ethanol, in the absence of water, has no bactericidal or virucidal activity.[2]
    c. Note on Expiration: Evaporation of alcohol results in a lower percentage of alcohol, which is less effective at disinfection. In a sealed container to prevent evaporation the shelf life can be indefinite.
6. **CaviCide or CaviWipes™**: Quaternary Ammonium and Isopropanol. Disinfection by being bactericidal and virucidal for most agents in 2 min and tuberculocidal in 3 min. See label for expiration.
7. **Super Sani-Cloth**: Quaternary Ammonium Disinfectant and Isopropanol. Disinfection by being bactericidal and virucidal for most agents in 2 min. and tuberculocidal in 2 min. See label for expiration.
8. Household Disinfectants
    a. **Formula 409®**: Quaternary Ammonium Disinfectant. Kills most vegetative bacteria and enveloped viruses in 30 sec. May require 10 min. contact time depending on the pathogen. See label for expiration.
    b. **Lysol®**: Quaternary Ammonium Disinfectant. Rapid sanitation in 10 sec. for some agents. Disinfection claims for microorganisms in 3 min. See label for expiration.
    c. **Clorox® Non-Bleach Disinfecting Wipes**: Quaternary Ammonium Disinfectant. Rapid sanitation in 15 sec. for some agents. Disinfection claims for microorganisms in 4 min. See label for expiration.
    d. **Diluted Bleach**: 5.25-6.15% Household Sodium hypochlorite. Dilute 5.25% stock bleach 1:10 in water to yield a 0.525% sodium hypochlorite solution. Disinfection in 10-60 min depending on the organism. Bleach decomposes with light and should be in an opaque bottle. Make fresh weekly. Produces a strong smell of chlorine which can be irritating to the respiratory track of humans and animals. It is corrosive to metals including stainless steel.[1]

References:

1. **Rutala WA, Weber DJ, Healthcare Infection Control Practices Advisory Committee (HICPAC)**. Guidelines for Disinfection and Sterlization in Healthcare Facilities, 2008. Center for Disease Control and Prevention.
2. **Sauerbrei A**. 2020. Bactericidal and virucidal activity of ethanol and povidone-iodine. *Microbiologyopen* 9:e1097.

Per regulatory requirements, failure to comply with this policy may result in notification of your funding agency (e.g. NIH) and regulatory agencies (e.g. USDA) that your research has violated federal and/or local policies regarding the humane use of animals. This notification may affect continuous funding of your animal-related research. Further, depending on the violation, you may be required to take additional training and/or your privilege to conduct animal research at CU Denver | Anschutz might be temporarily suspended or even completely revoked.