**Guidelines for Manual Sanitization of Caging and Equipment Used with Research Animals**

1. **Purpose**

This document outlines the procedures for manual sanitization of caging and equipment that is used in animal research and cannot be sanitized in the cagewash. This includes equipment that animals have contact with during performance of behavioral testing, experimental testing or survival surgeries.

1. **Scope**

IUB LAR Core Animal Research Facilities, Investigator laboratories, and satellite facilities where animal procedures are conducted on the IUB campus.

1. **Definitions**
2. **ATP Testing**- Adenosine Triphosphate, or ATP, is the energy molecule found in all living things, making it a perfect indicator when trying to determine if a surface is clean or not. Companies use ATP systems to rapidly verify surfaces have been cleaned thoroughly in food manufacturing and healthcare applications, and to ensure that biofilms are not developing on the surface that could affect quality.
3. **Hygiena™**- an ATP hygiene monitoring system, (or sometimes referred to as - an ATP sanitation monitoring system). ATP is brought into contact with Hygiena's unique liquid-stable reagent in the test device. Light is then emitted in direct proportion to the amount of ATP present in the sample, providing information on the level of contamination in seconds.
4. **Cleaning-** physical removal of litter, dust, feed, excreta to reduce the overall bioburden facing the disinfection step; critical component of cleaning and sanitation program by ensuring the disinfectant can reach its intended target and not be deactivated. Common cleaners include dish soap, detergents, or others with the word “all-purpose cleaner” in the title.
5. **Disinfection-** the process of killing (inactivating) harmful and objectionable bacteria, cysts, and other microorganisms (pathogenic) by various agents such as chemicals, heat, ultraviolet light, ultrasonic waves or radiation.
6. **Sanitization-** the act or process of making something completely clean and free of bacteria or other pathogens.
7. **Procedures**
8. General Considerations
   * 1. Researchers, staff and students working with animals must adhere to all expiration dates of sanitizing chemicals (cleaners and disinfectants) used.
     2. If chemical solutions are prepared in a separate container for use over multiple days, the container must be labeled with:
        1. Chemical name
        2. Concentration
        3. Occupational hazards (e.g., respiratory irritant, skin irritant, corrosive)
        4. Expiration date
     3. If chemical solutions are prepared in a separate container for a single use and then discarded, the container must be labeled with:
        1. Chemical name
        2. Date
     4. Any sanitizing chemicals used will need to be added to the laboratory’s chemical inventory in their chemical hygiene plan.
     5. Ensure that all cleaning supplies are present and in good working order. If they are not, replace them with new.
     6. Ensure that all cages are in good working order. If they are not, discontinue use until repaired or replaced with new.
9. Considerations for Equipment Requiring Manual Sanitization

(e.g., behavioral apparatus, anesthetic equipment/chambers, laboratory equipment/tools)

* + 1. If possible, place an absorbent material (e.g., paper towel, clean drape) between contact surfaces and animal to minimize soiling of equipment when animals are present.
    2. Change absorbent material between animals.
    3. If gross debris is present, wipe down surfaces in between animals with a cleaner (dilute chlorhexidine is good to use during the course of an experiment).

(e.g., between animals in/on behavioral equipment, in anesthetic chambers, in restrainers, etc.)

* + 1. Sanitizing between experiments

1. Consult with the veterinarian for specified guidance as this is often based on frequency, length of use, and difficulty in cleaning caging and equipment.
2. First, ensure all surfaces are free of gross debris by cleaning with a cleaner using some force to remove dirt and debris prior to sanitizing with a recommended or approved product.
3. Abide by the manufacturer recommended contact times and specifications unless otherwise directed by the attending veterinarian.
4. For caging and equipment that may be sensitive to abrasions or unable to be disconnected from electronics, sanitizing wipes may be better suited to achieve adequate sanitization after removing gross debris.
5. Concentrations suggested are routinely used by LAR husbandry staff and may need adjusted depending on the situation and type of caging or equipment in use.
6. Testing Sanitation Procedures
   * 1. Items requiring hand-washing or manual sanitization will be tested for cleanliness standards using the procedure outlined under SOP #503 for ATP Sanitation Validation.
     2. Items that do not meet initial cleanliness standards upon testing will be assessed by the veterinarian then cleaned by the lab as advised prior to retesting.
7. Validation Maintenance Measures
   * 1. Once cleaning regimen has been established and ATP validation has passed for an item(s) subsequent annual testing will be coordinated with researchers to maintain an ongoing validation program of the items.
     2. Researchers with questions should reach out to the attending veterinarian to discuss cleaning and validation of items used in their animal research project(s).
8. **Suggested Cleaning and Sanitizing Products**
   * + - 1. Rescue
   1. Please reference table at the end of the SOP.
   2. Per manufacturer direction for use: <https://rescuedisinfectants.com/wp-content/uploads/2021/01/7936_Virox_Rescue-RefSheet_Con_05_IN-TRANSITION.pdf>
      1. Thoroughly clean all surfaces by removing visible soils with this product using the 1:256 dilution (0.5oz of product per gallon of water) or an all-purpose cleaner.
      2. Saturate all surfaces (floor, walls, cages, and other washable hard, non-porous environmental surfaces) by spraying with the use solution until thoroughly wet.
      3. To disinfect, all surfaces must remain visibly wet for 5 minutes when using a 1:16 (8.0oz per gallon of water) dilution for bactericidal, fungicidal, and \*virucidal efficacy.
      4. If using a 1:64 (2.0oz per gallon of water) dilution, allow 5 minutes for \*viruses and 10 minutes for bacteria.
         * 1. Chlorhexidine
         1. Dilute one (1) (2 tablespoons) of chlorhexidine solution per gallon of clean water.
            1. Cleaners – 409 spray, or others with the word “all-purpose cleaner” in the title.
9. **References**
   1. <https://rescuedisinfectants.com/product-info/#concentrate>
   2. <https://rescuedisinfectants.com/wp-content/uploads/2021/01/7936_Virox_Rescue-RefSheet_Con_05_IN-TRANSITION.pdf>
   3. <https://www.vedco.com/images/SDS/VINV-CLOR-SOLN.pdf>
   4. <https://info.virox.com/hubfs/VAH_Resources_/PDFs/Disinfectant_Chemistry_-_Chlorhexidine_March2016.pdf>
   5. https://www.drugs.com/mtm/chlorhexidine-topical.html

Suggested Sanitizing Products

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sanitizing Product** | **Vendor** | **REF #** | **Size** | **Recommended Dilution(s)** | **Suggested Contact Times** | **Expiration Date** | **Rough Cost Estimate (subject to change)** |
| **Rescue™**  Disinfecting Liquid Concentrate | Covetrus | 058023 | Gallon | Procedural Spaces   * 1:64 dilution (2oz. product to 1 gal. water) * 1:16 dilution   (8oz. product to 1 gal. water)  Surgical Spaces   * 1:16 dilution   (8oz. product to 1 gal. water) | 1:64 for 10 min.  1:16 for 5 min. | 90 days past dilution | $34.37/gal. |
| **Rescue™**  Ready to Use Liquid Disinfectant | Covetrus | 058281 | 32oz. bottle | Ready to Use @ 1:16 dilution | 1:16 for 5 min. | Provided by manufacturer on product | $7.91/32oz. bottle |
| **Rescue™**  Ready to Use Liquid Disinfectant | Covetrus | 058282 | Gallon | Ready to Use @ 1:16 dilution | 1:16 for 5 min. | Provided by manufacturer on product | $12.15/gal. |
| **Rescue™**  Ready to Use Wipes | Covetrus | 2 Sizes   * 058517-6”x 7” wipes * 072349-11”x 12” wipes   Refill   * 072350-11”x 12” wipes | 2 sizes  (160 ct.)   * 6”x 7” in cannister * 11”x 12” in bucket | Ready to Use @ 1:16 dilution | 1:16 for 1 min. | Provided by manufacturer on product | * $12.78/canister * $41.24/bucket   Refill   * $35.83/bucket |
| 2% Chlorhexidine  Concentrate | Covetrus | 055167 | Gallon | 1 oz. (2 tablespoons) per 1 gallon of water | 30sec. to 2min. and per manufacturer guidelines | Per manufacturer or 6 months after dilution | $24.42/gallon |
| Common “all-purpose" cleaners (i.e., dish soaps, detergents) for  cleaning of gross debris | local stores or online | n/a | n/a | Per manufacturer guidelines | Per manufacturer guidelines | Per manufacturer guidelines | Varies by store/product |

Per Rescue Manufacturer Directions for Use:

(<https://rescuedisinfectants.com/wp-content/uploads/2021/01/7936_Virox_Rescue-RefSheet_Con_05_IN-TRANSITION.pdf>)

* Thoroughly clean all surfaces by removing visible soils with an “all-purpose cleaner” and rinse with water.
* Saturate all surfaces (floor, cage walls and other washable hard, non-porous environmental surfaces) by spraying with use solution until thoroughly wet.
* To disinfect, all surfaces must remain visibly wet for the duration of the recommended contact time for the product.