

STANDARD OPERATING PROCEDURES
DIVISION OF COMPARATIVE MEDICINE
UNIVERSITY OF SOUTH FLORIDA

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TITLE:	Decontamination of Common Procedural Areas
SCOPE:	All Animal Program Personnel
RESPONSIBILITY:	Facility Manager, Animal Program and Research Personnel
PURPOSE:	To Outline the Proper Maintenance of Common Areas in Animal Facilities.

I. PURPOSE

1. To describe decontamination procedures to prevent the spread of microbial agents that may cause sub-clinical and clinical diseases that could jeopardize the validity and reproducibility of research data, or complicate its interpretation, or cause zoonotic concerns.

II. RESPONSIBILITY

1. The Facility Manager or designee ensures that common areas, corridors, animal procedural areas, core facilities, and equipment located in their facility are cleaned regularly, disinfected appropriately, the efficacy of sanitation documented, and available to research personnel as requested.
2. It is the responsibility of the individual(s) using a common procedural area or core facility to disinfect all equipment and work surfaces that may come in contact with animals prior to and after each use as described below.
3. The Facility Manager or designee assigns personnel and intervals of sanitation to maintain common areas, corridors, animal procedural, and core facilities areas as appropriate for the area/equipment and frequency of use.
4. The Facility Manager or designee ensures implementation of all procedures.

III. GENERAL DECONTAMINATION PROCEDURES

1. All portable and fixed equipment as well as surfaces that come in contact with animals must be decontaminated prior to and after each episode of use by the personnel using the equipment and/or procedural areas (e.g., ultrasound, bioluminescence, MRI, gamma irradiator, X-ray, behavioral testing apparatus, anesthetic chambers, irradiation pie cages, animal restrainers, countertops and work surfaces).
2. All portable and fixed equipment as well as work surfaces must also be disinfected between procedures performed on animals from different cohorts (e.g., animals from different cages, from different rooms, from different rack sides, or animals of different health status).
3. Disinfectants approved for use include:

a. **Decon-Spore 200 Plus-**

Active ingredient - peroxyacetic and hydrogen peroxide solution
Preparation – 6.0 ml/gal water
Safety - strong oxidizer and corrosive-use in a well ventilated area
PPE - gloves and eye protection when handling/mixing concentrate
Uses - sanitizing floors throughout the animal facility
Specific uses- Mopping floors and floor machine
Efficacy - Staphylococcus aureus, Enterobacter aerogenes, Escherichia coli, Listeria monocytogenes, Salmonella typhimurium, Psuedomonus aeruginosa, and Saccharomyces cerevisiae
Contact time - 5 minutes at ambient temperature.

b. **Sporicidin**

Active ingredient - phenol solution
Preparation -used undiluted
Safety – may cause eye irritation; avoid contact with skin or clothing
PPE – gloves and eye protection recommended
Uses - general disinfectant and deodorizer for hard non-porous **surfaces that do not come in contact with animals.** If used on surfaces that come in contact with animals, surface must be rinsed with alcohol and allowed to dry prior to animal contact.
Specific Uses- medical equipment, countertops, carts, and walls
Efficacy - germicidal including vegetative organisms, passes AOAC efficacy standards for institutional and hospital disinfection
Contact time – 5 minutes viruses, 10 minutes bacteria

c. **Clidox S**

Active ingredient -chlorine dioxide solution
Preparation - diluted 1 part base: 18 parts water: 1 part activator
Safety – corrosive, avoid contact with eyes and skin
PPE – gloves and eye protection when handling/mixing concentrate
Uses -general disinfectant for hard non-porous surfaces in laboratory animal procedural areas and for **surfaces that come in contact with animals.** Corrosive however rinsing will reduce the possibility of corrosion
Specific uses- gloved hand-dipping between handling animals, animal restrainers/containers used in imaging (e.g., irradiator pie cages, anesthetic chambers/nose cones, MRI/Xenogen chambers, behavioral equipment)
Efficacy -germicidal including vegetative organisms
Contact time - 5 minutes at 20°C/68°F

d. **Chlorhexidine**

Active ingredient –chlorhexidine gluconate solution
Preparation - diluted 1 oz: 1 gallon water
Safety – corrosive, avoid contact with eyes and skin
PPE – gloves and eye protection when handling/mixing concentrate
Uses - bacteriostatic and bactericidal, general disinfectant for use on rubber and surgical equipment.
Specific uses- anesthesia breathing hoses, bellows, flutter valves and hard non-porous surfaces of surgical monitoring equipment.

Efficacy - broad-spectrum biocide effective against Gram-positive bacteria, Gram-negative bacteria and fungi. Effective against many viruses.

Contact time - 1 minute

e. **Oxivir**

Active ingredient –accelerated hydrogen peroxide solution

Preparation – Oxivir Tb and Oxivir wipes are ready to use. Oxivir Five 16 concentrate is diluted 1 part concentrate: 16 parts water

Safety – excellent safety, avoid contact with eyes and skin

PPE – gloves and eye protection when handling/mixing concentrate

Uses -general disinfectant for hard non-porous surfaces in laboratory animal procedural areas and for **surfaces that come in contact with animals.**

Specific uses- forceps or gloved hand-dipping between handling animals, biosafety cabinet chambers, animal restrainers/containers used in imaging (e.g., irradiator pie cages, anesthetic chambers/nose cones, MRI/Xenogen chambers, behavioral equipment)

Efficacy – virucide, bactericide, fungicide, mildewcide.

Contact time - Disinfects in 1 minute; Tuberculocidal in 5 minutes

NOTE- Personnel handling disinfectants should be familiar with product directions and MSDS

4. Sporidicin use can be followed by an alcohol rinse/wipe to remove surface residue after the required three minute contact time. An alcohol rinse/wipe should also be used on surfaces with the potential to corrode after using Clidox S the required five minute contact time. **Do not use alcohol and/or products containing alcohol on Plexiglas as they may craze/damage this material** (e.g., anesthetic chambers, rodent restrainers, etc.).
5. Animal care staff is assigned to specific common procedural and core facility areas and are responsible for ensuring the cleaning, disinfection, and documentation of efficacy of sanitation of their assigned areas at intervals specified by this procedure. This procedure describes minimum requirements, **additional duties and frequencies are at the Facility Manager's discretion.**
6. Floors are swept and sanitized with **Decon-Spore 200 Plus** and trash is emptied.
7. Surfaces that come in contact with animals are disinfected with Oxivir Tb or **Clidox-S**.
8. Surfaces unlikely to come in contact with animals (e.g., counter tops, HVAC ducts, fixed equipment, carts, walls, and fixtures are wiped clean using Oxivir Tb or **Sporidicin**.
9. Air filters, when present, are changed as required by monthly checks to ensure a dust and debris-free environment.
10. Mop heads and buckets are rinsed after each use and mop heads are cleaned/sanitized in the rack washer **at least weekly**. At the CAMLS, mop-heads are hand washed, rinsed, and sanitized by hand.

11. Efficacy of sanitation is confirmed quarterly following **SOP #1010** entitled ***Microbiological Monitoring of Sanitation Procedures*** and **SOP #1139** entitled ***Charm Sciences novaLum Luminometer***.
12. A ***Decontamination of Common Procedural Areas Log*** is maintained to indicate:
 - a. Room number of area being cleaned/sanitized
 - b. Item/equipment cleaned /sanitized
 - c. Date cleaning/sanitation took place
 - d. Initials of the individual responsible for performing the cleaning/sanitation
13. Corridors are kept clean and **corridor floors sanitized using Decon-Spore 200 Plus** as often as necessary to maintain sanitary conditions but **not less than twice weekly**. Corridor walls and ceilings are sanitized using Oxivir Tb every 6 months.
14. Procedural areas and core facility (e.g., rodent surgical, behavioral, imaging, necropsy, irradiating, including class II A hoods and changing stations) surfaces are cleaned and sanitized using Oxivir Tb or Sporidicin and floors sanitized using Decon-Spore 200 Plus as often as necessary to maintain sanitary conditions but **not less than after each day of use**. In these areas, all surfaces that have the potential for animal contact must be sanitized using Oxivir Tb or Clidox-S each day after use.
15. Facilities for aseptic (i.e., survival) surgery involving non-rodent USDA species are cleaned and decontaminated per **SOP #003** entitled ***“Facilities for Aseptic Surgery for Non-rodent USDA Species”***. Operating rooms and support areas are cleaned and decontaminated prior to each use. The operating table, operating light, utility boom and anesthetic/monitoring equipment are wiped clean with an appropriate disinfectant as described in **Item #3** above. The floor in the vicinity of the operative station is swept and mopped using Decon Spore 200 Plus. Ceilings, HVAC ducts and exposed fixtures are kept free of dust and debris. Adequacy of cleaning and decontamination of the operating room and support areas prior to aseptic survival surgical procedures involving non-rodent USDA regulated species is documented per **SOP #1010** entitled ***“Microbiological Monitoring of Sanitation Procedures.”***
16. Water tanks used in behavioral testing (e.g., Morris water maze) are drained, cleaned, and sanitized with Oxivir Tb or Clidox S (1:18:1) between studies of animal cohorts (e.g., animals from different cages, from different rooms, from different rack sides, or of different health status) at the discretion of the Core Manager and/or PI, but must be cleaned and sanitized at an interval that ensures an acceptable level of sanitation.
17. Additional procedures (i.e., Bioquell decontamination in accordance with **SOP #1016 *Hydrogen Peroxide Decontamination***) and/or frequencies of decontamination of procedural areas/equipment used for animals of questionable/different health status will be determined on an individual basis, and is based on the animal's health history, the health history of the originating facility. Standardized biannual schedules are implemented facility-wide to provide comprehensive sanitation and decontamination of all commonly used procedural areas.

IV. EQUIPMENT DECONTAMINATION PROCEDURES

1. Xenogen-

- a. **Imaging chamber floor** is sanitized with Oxivir Tb or Sporicidin wipes followed with alcohol wipes after 3 minutes and **paper liners** that come in contact with animal(s) are changed before and after each cage of animals is imaged.
- b. Anesthesia chamber is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is anesthetized.

2. X-ray irradiator-

- a. **Chamber floor** is wiped clean and sanitized with Oxivir wipes or Sporicidin wipes followed with alcohol wipes after 3 minutes and **absorbent liners** that come in contact with animal(s) are changed before and after each cage of animals are exposed.

3. MRI-

- a. **Animal holder/restrainer** is cleaned and sanitized with Oxivir wipes or Sporicidin wipes followed with alcohol wipes after 3 minutes before and after each cage of animals is imaged.
- b. **Anesthesia chamber** is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is anesthetized.
- c. **Rectal probe, pneumatic respiration pillow sensor, and invasive blood transducer**, are sanitized with Oxivir Tb or Clidox S (1:18:1) followed by alcohol rinse/wipe before and after each animal.

4. Gamma Irradiator-

- a. **Irradiator pie plates** are cleaned and sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is irradiated.

5. Ultrasound-

- a. **Probe and stage** area are sanitized with Oxivir Tb or Sporicidin followed by wiping with alcohol wipes after 3 minutes after each cage of animals.
- b. **Anesthesia chamber** is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is anesthetized.

6. Biological Safety Cabinets (BSC)-

- a. **BSCs** are sanitized with Oxivir Tb or Sporicidin followed with alcohol after 3 minutes paper liners that come in contact with animal(s) are changed before and after each cage of animals.
- b. **BSCs** used for biohazard containment are sanitized with Oxivir Tb or 10% Bleach or Clidox S (1:5:1) followed by alcohol after 5 minutes and paper liners that come in contact with animal(s) are changed before and after each use.

7. Necropsy-

- a. Necropsy **tables and sinks** are cleaned and sanitized with Oxivir Tb or Sporicidin followed with alcohol after 3 minutes after each interval of use.

8. Anesthesia machines-

- a. **Anesthesia chamber(s) and nose cones** are sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is anesthetized.
- b. **Hoses** are checked and cleaned with Oxivir wipes or with dilute chlorhexidine solution as appropriate after use.

- c. Unit is wiped down with Oxivir wipes or with dilute chlorhexidine solution before survival surgery.

9. Behavioral Apparatus-

- a. Behavioral apparatus are sanitized with Oxivir Tb or Clidox S (1:18:1) between cohorts of animals from different investigators and after use each day.
- b. Behavioral apparatus are also disinfected with Oxivir wipes or alcohol spray or wipes, preferably after each animal is tested (since the scent of another animal may complicate the interpretation of data), but at least after every cage of animals tested.

10. Laser Doppler-

- a. **Counter** is sanitized with Oxivir wipes or Sporicidin wipes followed by wiping with alcohol wipes after 3 minutes and black **paper liners** that come in contact with animal(s) are changed before and after each cage of animals is imaged.

11. Olympus IV 100 Scanning Microscope-

- a. **Stage** is wiped clean and sanitized with Oxivir wipes or Sporicidin wipes followed by wiping with alcohol wipes after 3 minutes and paper liners that come in contact with animal(s) are changed before and after each cage of animals are exposed.
- b. **Micro Probe lenses** that come in contact with animals should be cleaned/ disinfected after each animal with **alcohol only**. Objective lenses that happen to come in contact with animals should also be disinfected after each animal with **alcohol only**.
- c. **Anesthesia nose cone** is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is anesthetized.

12. CODA non-invasive blood pressure system-

- a. **Occlusion cuffs** can be gently rinsed with water and cleaned with germicidal or antiseptic soap and water before and after each cage of animals. Do not use solvents or alcohol to clean cuffs.
- b. Since cuffs cannot be adequately sanitized, they will be dispensed for use on an investigator's own animals to minimize the spread of infectious agents throughout a facility.

13. Confocal and Multiphoton Microscopes-

- a. **Stage** is wiped clean and sanitized with Oxivir wipes or Sporicidin wipes followed by wiping with alcohol wipes after 3 minutes before and after each cage of animals are exposed.
- b. **Anesthesia nose cone** is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is anesthetized.

14. PET/SPECT/CT

- a. **Animal holder/restrainer with heating pad** is cleaned and sanitized with Oxivir wipes or Sporicidin wipes followed with alcohol wipes after 3 minutes before and after each cage of animals is imaged.
- b. **Anesthesia chamber and nose cone** is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals is anesthetized.
- c. **Rectal probe, pneumatic respiration pillow sensor, and invasive blood transducer**, are sanitized with Oxivir Tb or Clidox S (1:18:1) followed by alcohol rinse/wipe before and after each animal.

15. **Beta Imager**

- a. A different **animal stage** is used for each animal imaged. Once Radiation Safety has verified that radiation levels are at background levels, the stage is cleaned and sanitized with Oxivir Tb or Clidox S (1:18:1) followed with alcohol wipes after 5 minutes. Beta imaging chamber shield is sanitized with Sporicidin followed by alcohol wipes after 3 minutes.
- b. **Anesthesia chamber and nose cone** is sanitized with Oxivir Tb or Clidox S (1:18:1) before use and after radiation safety has verified that radiation levels are at background levels.
- c. **Tail cuff** is sanitized with Oxivir Tb or Clidox S 1:18:1) followed by alcohol rinse/wipe after Radiation Safety has verified radiation levels are at background levels.

16. **Optix MX3**

- a. Remove **stage** and decontaminate with Oxivir Tb or Clidox S (1:18:1). After 5 minutes wipe stage with alcohol wipes prior to replacing stage on unit. **Do Not spray Clidox S or any solvents or alcohols near or into the Optix MX3 unit.**
- b. Anesthesia Chamber and nose cone is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals anesthetized.

17. **FMT 2500LX**

- a. Two **glass plates** are rinsed with water. **Do not use solvents or alcohol** to clean glass plates. Handle glass plates carefully to avoid damaging when drying/handling.
- b. **Anesthesia Chamber and nose cone** is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals anesthetized.

18. **LT-9 PANSEE Panoramic Imaging System**

- a. **Imaging chamber floor** is sanitized with Oxivir wipes or Sporicidin wipes followed by alcohol wipes after 3 minutes and **paper liners** that come in contact with animal(s) are changed before and after each animal is imaged.
- b. **Anesthesia Chamber and nose cone** is sanitized with Oxivir Tb or Clidox S (1:18:1) before and after each cage of animals anesthetized.

19. **SurgiVet Advisor Vital Signs Monitor**

- a. Clean unit and sensors prior to each use by wiping with a mild soap solution (e.g., dilute chlorhexidine 1 oz/gal water) and soft cloth.
- b. Disinfect surfaces (**but not the screen**) prior to survival procedures by wiping with isopropyl alcohol.

Approved:

Date: