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1.0 PURPOSE

This Standard Operating Procedure (SOP) specifies the institutional policies and criteria to be followed when changing the bedding of rodents that have been exposed to chemical hazardous substances.

2.0 SCOPE

The SOP applies to all USC DAR employees and research personnel who are responsible for changing cages of animals treated with chemical hazard substances.

3.0 ROLES AND RESPONSIBILITIES**Department of Animal Resources (DAR)**

The animal facility manager and supervisors must ensure that animal husbandry technicians and researchers working with animals (animal researchers) are properly trained in performing bedding changes in cages where animals administered with chemical agents were kept (chemical hazard bedding changes).

Environmental Health and Safety (EH&S)

EH&S office will ensure that DAR technicians and animal researchers are maintaining the minimal cage changing requirements and safety regulations as outlined in the appropriate SOPs.

Principal Investigators (PI)

PIs will ensure that research lab managers and animal researchers are adequately trained in performing chemical hazard bedding changes.

Researchers

Researchers will follow the appropriate SOPs and safe handling practices when performing chemical hazard bedding change

4.0 DEFINITIONS

Cage Change

Replacement of the cage bottom and bedding

Hazard

Potential source of harm for both humans and animals

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Disposable lab gown
- Head cover
- Shoe covers
- Surgical Mask
- Safety Glasses (if animals handled outside of a biosafety cabinet (BSC) or ventilated cage-changing station)
- Gloves

6.0 TOOLS/EQUIPMENT/INSTRUMENTS

- Certified Biosafety Cabinet (BSC) or Cage Changing Stations
- Clean Cages and clean bedding
- Forceps
- Spatula
- Chemical waste container lined with clear bags and labeled with chemical hazard
- Clear waste bags for chemical waste
- Disinfectants

7.0 SAFETY PRECAUTIONS

- Prior to working with contaminated beddings, all workers must be trained in proper animal handling, chemical hazard waste management, and disposal techniques.
- The primary hazard is potential exposure to particles from the contaminated beddings
- Bedding should be changed inside a certified (BSC) in a manner that reduces exposure to physical and aerosolized waste materials.
- Animals that have been administered chemical hazards may excrete or secrete the hazard during the first 72 hours after dosing.
- Bedding contaminated with chemical hazardous substances require special care, such as hazardous waste collection under the EH&S Hazardous Waste Disposal requirements

8.0 GENERAL CONSIDERATIONS

- BSCs must be certified annually by an approved vendor.
- Only keep required equipment and materials inside the BSC.
- The BSC blower must be turned on and the sash must be placed to the proper height for protection while working in the cabinet.
- BSC surface area should be divided into clean, working, and dirty zones. Movement inside the BSC should be unilateral (from clean to working to dirty zone) to avoid cross-contamination
- Immediately notify the lab manager if any malfunctions are suspected.

- Avoid using a Bunsen burner or other **flame producing devices** inside the BSC. Bunsen burners disrupt the laminar flow inside BSC.

9.0 PROCEDURES

- Bring clean cage sets (cages, tops, wires, bottles) into the room.
- Turn “ON” the BSC or change station, disinfect it using Bleach-Rite and allow it to stabilize (refer to BSC preparation and decontamination SOP).
- Prepare the necessary items.
 - Chemical waste container clear bags, forceps, Bleach-Rite solution, feed, and water bottle.
- Place the items needed for cage change inside the BSC
- Verify that cage is properly labeled with chemical hazard name, initial and final date of administration (Blue Cage Card)
- Transport one (1) cage from rack to the BSC or the change station
 - Check for sick and/or dead animals inside cage
 - Fill out a sick animal report if you find any sick animals. If the sick animal is suffering and in need of urgent care, the cage should be returned to the rack and the incident reported as soon as possible to DAR.
- Open the lid and use forceps to move the animals to the clean cage.
 - Forceps are used to pick up mice by its tail.
- Close the lid and transport the cage containing the mice back to the rack.
 - Disinfect forceps and working surface between cage changes.
- Place the bedding from the dirty cage into the chemical waste container inside the BSC.
 - Use the spatula to scoop the bedding stuck on the inner surface of the cage
 - Wipe the inside of the dirty cage with Bleach Rite.
- Place the cage inside a Nalgene tray and place them on the transport cart.
 - Continue changing cages and stack them on the Nalgene tray.
- Replace PPE before leaving the room.

DAR personnel

- Transport the dirty cages to the washroom.
- Remove PPE and place it in the biohazardous waste container before leaving the facility.

10.0 EMERGENCY

For general emergencies, follow the steps below.

1. Call DPS immediately. UPC 213.742.4321, HSC 323.442.1000
2. Call EH&S. Dial 323.442.2200
3. Supply name; call back number; nature of the emergency and location.
4. Report the emergency to the supervisor, lab manager, or principal investigator.

Refer to EH&S’ “Emergency Notification” Fact Sheet

(http://adminopsnet.usc.edu/sites/default/files/all_departments/EHS/ehs%20fact%20sheet-emergency%20notification-1.pdf) for details.

11.0 SPILL AND ACCIDENT PROCEDURES**In case of spill inside of biosafety cabinet:**

- Immediately notify others around you.
- Contaminated personal protective equipment (PPE), such as gloves, lab coat, and safety glasses, should be removed and disposed of as biohazardous waste or set aside for disinfection.
- Don/replace appropriate PPE.
- Use forceps to remove any broken glass or other sharp items; sharps should be placed into biohazard sharps containers.
- Cover the spill with paper towels or other absorbent materials.
- Apply 10% bleach directly around and onto the paper towels covering the spill.
- Allow 15-minute contact time before cleaning, starting at the perimeter and working inwards towards the center
- Dispose of materials into biohazard bins
- Disinfect all surfaces of the biosafety cabinet with freshly prepared 10% bleach with a 15 minute contact time, followed by a wipe down with 70% ethanol to reduce corrosion
- Allow biosafety cabinet to run for at least 10 minutes before resuming work or turning off
- For large spills, you may contact the EH&S office for assistance at (323)442-2200
- Any chemical decontamination method (formaldehyde, hydrogen peroxide, and others) requires the involvement of personnel who have been trained in this procedure. The Biosafety Officer shall coordinate the process with the authorized vendors. Decontamination using chemical gases might take 12-15 hours in some cases.

12.0 KEY REFERENCE

The Guide for the Care and Use of the Laboratory Animals 8th edition, NRC 2011 California Code of Regulations

13.0 SOP REVIEW/REVISION

Date prepared: 06-27-2022 By: *EH&S Biosafety Team*

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