SOP Number: C-005  Last revised: 1Apr2019

SOP Title: IVC Cage Changing

Purpose: To maintain facility hygiene and minimize load of potential infectious agents in the facility according to risk on individual areas.

Responsibility: Technicians, Laboratory Assistants/Attendants

Related SOP: C-002 Special Observation Notifications
O-003 Use of Animal Transfer Station and Biosafety Cabinet
O-024 Routine Animal Husbandry in Animal Rooms

Written by: Dr. Siva Tsang, Manager (Animal Facility)  Approved by: Dr. Anthony James, Director

1. General Notes

1.1. Use of sleeve covers
a. A pair of clean sleeve covers are put on
b. Used sleeve covers are returned to designated location for sterilization and reused.

1.2. Hand (gloved) disinfection is required
a. after touching items inside a cage, and before touching all other clean items outside the cage (to avoid deposition of infectious agents, potentially originated from an infected cage, on clean materials), and
b. after moving hands from outside the ATS into the ATS, before touching clean materials or items inside cages (to exclude infectious agent in unprotected area being introduced into the ATS)

1.3. The concerned gloved hand(s) are disinfected by spraying with disinfectant and rubbing to distribute over the hands thoroughly. Care is taken not to spray on the opened IVC, i.e. not on the animals.

1.4. Forceps after using to pick mice are rinsed in Virkon solution in Bottle A (to remove soiling sticking on the forceps) then submersed in disinfectant in Bottle B (for surface disinfection) until they are used again for picking mice in another cage.

2. Preparation

2.1. Right after leaving the gowning room entering the barrier, before entering any rooms in the barrier, the following resources are obtained from the Clean Material Room.
 a. An empty transportation trolley (TT) for soiled cages (soiled cage TT),
 b. Clean cage TT containing the appropriate number of clean cages
   i. if integral cage changing is scheduled, assembled cages are obtained.
ii. if partial cage changing is scheduled, stacked cage based are obtained.

c. Clean empty bottles A and B for forceps disinfection

2.2. Prepare the ATS as described in SOP O-003 Use of Animal Transfer Station and Biosafety Cabinet.
   a. Clean materials, e.g. diet and enrichment items are put on the right hand side of the ATS working surface.
   b. On the right-hand side of the working surface set up Bottle A and Bottle B (section 1.4) with Virkon solution.

2.3. The clean cage TT is brought to the right-hand side (RHS) close to the ATS. Covers are opened for the supply of clean cages.

2.4. The soiled cage TT is brought to the left-hand side (LHS) close to the ATS. Covers are opened for the entries of soiled cages.

3. Partial Cage Changing
   3.1. A clean cage base is transferred from the right TT to the RHS of the ATS working surface.
   3.2. A soiled cage is transferred from the IVC rack to the LHS of the ATS working surface, right next to the clean cage.
   3.3. Gloved hands of the operator are disinfected by spraying with the disinfectant on one hand and rub against another hand to distribute the disinfectant thoroughly.
   3.4. The cage top of the soiled cage is opened and lean on the opposite sash of the ATS.
   3.5. Move the wire lid from the soiled cage to the new cage.
   3.6. If required, replenish the diet hopper.
   3.7. Using a pair of forceps, which have been immersed in bottle B (section 1.4), to transfer the mice from the soiled cage to the new cage gently, by holding the base of the tail.
   3.8. Check briefly any health abnormality on the mice.
   3.9. If the old nest is in a good condition and clean, move the old nest to the new cage.
   3.10. If required, add an additional piece of nestlet into the new cage (which already containing one piece of nestlet during autoclaving).
   3.11. After transferring all mice into the new cage, check if there is still any mice/carcass left beneath the beddings and enrichments, using the pair of forceps.
   3.12. Cover the new cage with the cage top.
   3.13. Report any abnormality as described in section 3.3 in SOP O-024 Routine Animal Husbandry in Animal Rooms (for LAs) or SOP C-002 Special Observation Notifications which ever appropriate.
   3.14. Transfer the cage card with the cardholder from the soiled cage to the new cage.
   3.15. Move the soiled cage to the left soiled cage TT and putting on each other in stacks.
   3.16. Disinfect both hands and return the newly changed cage to the original cage slot on the IVC rack.
4. **Integral Cage Changing**

4.1. A clean assembled cage is transferred from the clean cage TT to the RHS of the ATS working surface.

4.2. A soiled cage is transferred from the IVC rack to the LHS of the ATS working surface, right next to the clean cage.

4.3. Gloved hands of the operator are disinfected by spraying with the disinfectant on one hand and rub against another hand to distribute the disinfectant thoroughly.

4.4. The cage top of both cages are opened and lean on the opposite sash of the ATS.

4.5. Move the wire lid from the soiled cage to the new cage.

4.6. If required, replenish the diet hopper.

4.7. Using a pair of forceps, which have been immersed in Bottle B (Section 1.4), to transfer the mice from the soiled cage to the new cage gently, by holding the base of the tail.

4.8. Check briefly any health abnormality on the mice.

4.9. If the old nest is in a good condition and clean, move the old nest to the new cage.

4.10. If required, add an additional piece of nestlet into the new cage (which already containing one piece of nestlet during autoclaving).

4.11. After transferring all mice into the new cage, check if there is still any mice/carcass left beneath the beddings and enrichments, using the pair of forceps.

4.12. Cover both cages with their respective cage top.

4.13. Report any abnormality as described in section 3.3 in SOP O-024 Routine Animal Husbandry in Animal Rooms (for LAs) or SOP C-002 Special Observation Notifications which ever appropriate.

4.14. Transfer the cage card with the cardholder from the soiled cage to the new cage.

4.15. Move the soiled cage to the left soiled cage TT on the top of each other.

4.16. Disinfect both hands and return the newly changed cage to the original cage slot on the IVC rack.

5. **Inspecting the drinking valves on the auto-watering system**

5.1. Every time after taking a soiled cage from the IVC rack supported by the auto-watering system, the valve of the nozzle are visually check for the presence of water drop.

5.2. If no water drop is observed, the operator will disinfect his finger with disinfectant and slightly tap on the lever on the nozzle to see if water comes out.

5.3. If no water comes out from the nozzle, the nozzle will be replaced and passed to the technician in charge for following up.

5.4. The new nozzle will be put on the rack and test operating before putting the cage back.

6. **Soiled material arrangement**

6.1. Used forceps are wiped clean to remove soiling, disinfected using Virkon and kept in a designated container.

6.2. Bottle A and B and all other soiled materials are put into the soiled cage TT.
6.3. The cover of the soiled cage TT is zipped closed and transferred to the Washing Areas for washing.

6.4. The cover of the clean cage TT is zipped closed and be handled as one of the following options.
   a. Transfer out to the Decontamination Room for reusing.
   b. Keeping it for reusing in a room with the same or lower microbiological health status as soiled cage TT.

7. **Occupational Safety and Animal Welfare Measures**
   7.1. Both hands must be used in holding, lifting and transferring a cage.
   7.2. Operator must wear the appropriate personal protective equipment (PPE; i.e. designated disposable gown and gloves, etc.) to provide protection from exposure to disinfectant and allergens.