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**1. PURPOSE**

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This Standard Operating Procedure (SOP) describes the procedures for housing and caring for rodents exposed to pathogens requiring containment level 2 (CL2).

**2. RESPONSIBILITY**

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Principal investigator and their research staff, facility manager, veterinary care and animal care staff.

**3. CONSIDERATIONS**

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Human and animal pathogens are categorized into four risk groups (RG) based on the risk to the individual/animal and the risk to the community.

There exist four containment levels. Each level has specific operational practices and a core subset of physical containment requirements designed to isolate biological agents in a laboratory facility. In general, the containment level and risk group of the pathogen are the same (e.g., RG2 pathogens are handled at CL2); however, there are exceptions, and not all biological material will fall perfectly into a given risk group or containment level following a risk assessment.

The appropriate containment level and any additional requirements to work with certain animal pathogens are determined by the Canadian Food Inspection Agency (CFIA) and the Public Health Agency of Canada (PHAC) through a pathogen risk assessment and containment level assessment.

The PHAC produces Pathogen Safety Data Sheets (PSDS) as educational and information resources for laboratory personnel working with infectious substances. PSDS are technical documents that describe the hazardous properties of a human or animal pathogen and provide recommendations for work involving these agents in a laboratory setting. All individuals working with a specific pathogen should review the corresponding PSDS.

Access to the CL2 rooms is limited only to authorized personnel who have completed the training requirements.

**4. MATERIALS**

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- 4.1. Personal protective equipment: disposable gown, gloves, sleeve covers, shoe covers, bonnet, mask, goggles or safety glasses.
- 4.2. Biological safety cabinet (BSC)
- 4.3. Microisolator cages
- 4.4. Pathogen Safety Data Sheet (PSDS)
- 4.5. Biohazard signage
- 4.6. Biohazard waste containers/ autoclavable bags
- 4.7. CSA-approved sharps disposal container
- 4.8. Disinfectant effective against selected biohazard (see PSDS).

**5. PROCEDURES**

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- 5.1. Wear adequate attire to enter the room. This includes long pants, socks, and closed shoes.
- 5.2. Personal protective equipment (PPE)
  - 5.2.1. The following PPE must be worn at all times when handling infectious materials or animals:
    - 5.2.1.1. Nitrile gloves: should be inspected for tears frequently and changed as needed. Stretch gloves over the cuff of the gown to cover any exposed skin. Wear double gloves at all times.
    - 5.2.1.2. Disposable gown: only use disposable gowns. Tie the gown in the back. Gowns are single-use only and should be disposed of when leaving the room.

- 5.2.1.3. Mask: must cover the mouth and nose at all times
- 5.2.1.4. Bonnet: must cover all the hair.
- 5.2.1.5. Disposable sleeve covers: must extend over the gloves by at least one inch. Disposable sleeve covers are single-use only and should be disposed of when leaving the room.
- 5.2.1.6. Shoe covers
- 5.2.1.7. Protective eyewear: where there is a risk of exposure to splashes.
- 5.2.2. PPE should be donned and doffed in a manner which limits contamination with potentially infectious materials.
- 5.3. Animal room
  - 5.3.1. Set the room relative pressure as negative inward directional air flow compared to corridor and/or anteroom.
  - 5.3.2. Doors to animal rooms must remain closed when infected animals are present.
  - 5.3.3. Ensure appropriate biohazard warning signage is present, including the name of all pathogens present.
  - 5.3.4. Ensure PSDS for all pathogens in the room is available.
- 5.4. Do not drink, eat, or store food for human consumption in animal rooms.
- 5.5. Do not touch your face, mask, or bonnet while working in the CL2 rooms.
- 5.6. Animal transfers into the BCL2 rooms need not be approved by CMARC. However, animals should never be transferred out from the BCL2 housing rooms to regular housing rooms, unless specifically approved by CMARC.
- 5.7. Use materials and equipment dedicated for the CL2 rooms, this includes notebooks, cage cards, pens, ear punchers, instruments, etc. When storing equipment and materials in the CL2 rooms, these must be kept in closed, labeled storage containers.
- 5.8. House animals in microisolator cages with solid lids on ventilated Positive/Negative Control racks set to negative pressure.
- 5.9. Label all cages with a biohazard sign (including biohazard symbol) and indicate the name of the biohazard used and the date of administration.
- 5.10. Perform all procedures in a BSC (changing cages, handling animals, infecting animals, necropsy, etc.).
- 5.11. Do not recap needles. Dispose in a CSA-approved puncture-resistant sharps container immediately after use.
- 5.12. Report exposures or spills to your supervisor. A McGill University [Accident, Incident & Occupational Disease Report form](#) must be completed.
- 5.13. Working in the BSC:
  - 5.13.1. Keep the BSC neat, clean, and free of materials or equipment that are not pertinent to the work.
  - 5.13.2. Place cages away from the front grill of the BSC. Keep the rear vents of the BSC clear.
  - 5.13.3. Only open one cage of mice at a time.
  - 5.13.4. Minimize creation of aerosols during all procedures.
  - 5.13.5. Spray hands with disinfectant after touching potentially infected cages, material, equipment, or animals.
  - 5.13.6. Outer gloves must be removed, discarded, and replaced if there has been contact with infectious materials, animals, or tissues.
- 5.14. Changing cages:
  - 5.14.1. Change cages inside the BSC.
  - 5.14.2. Dispose of soiled cages as complete units with their solid lids in place. Dispose of feed within the cage.
  - 5.14.3. Dispose of soiled water valves and water bottles in the designated bins.
  - 5.14.4. Bag dirty cages in a single autoclavable bag. Place a maximum of 3 complete cages, including lids, one on top of another, per bag. Never place a soiled cage without a lid inside bag.
  - 5.14.5. Close autoclavable bag using a single elastic band, do not twist the elastic band.
  - 5.14.6. Spray the bag with disinfectant.

- 5.14.1. Autoclave the soiled equipment in a certified autoclave and ensure proper steam penetration. Perform regular autoclave monitoring.
- 5.14.2. After autoclaving, dispose of the bedding as regular waste and process equipment as non-hazardous.
- 5.15. Decontaminate work surfaces after use or after a spill using the appropriate disinfectant.
- 5.16. Wash or sanitize your hands after handling infectious material or animals, before leaving the room. Wearing gloves does not dispense from the need to wash hands.
- 5.17. Waste disposal
  - 5.17.1. Place all disposable components in an autoclavable bag for decontamination by autoclaving.
  - 5.17.2. Dispose of infectious waste and animal carcasses by incineration.

## 6. REFERENCES

- 6.1. [Canadian Biosafety Standard](#) (CBS) Third Edition, April 1, 2023.
- 6.2. [Canadian biosafety guidelines](#), March 31, 2023.
- 6.3. Public Health Agency of Canada (PHAC) [Pathogen Safety Data Sheets](#) (PSDSs)
- 6.4. US [Centers for Disease Control and Prevention](#)

## SOP REVISION HISTORY

DATE	NEW VERSION
2016.03.01	4.2. The following personal protective equipment must be worn at all times when handling infectious materials or animals: 4.2.1. Bonnet: must cover all the hair. 4.2.2. Mask: must cover the mouth and nose at all times 4.2.3. Gown: only use disposable gowns. Tie the gown in the back. Disposable gowns are single-use only and should be disposed of when leaving the room. 4.2.4. Gloves: should be inspected for tears frequently and changed as needed. Stretch gloves over the cuff of the gown to cover any exposed skin. Wear double gloves at all times. 4.2.5. Disposable sleeve covers: must extend over the gloves by at least one inch. Disposable sleeve covers are single-use only and should be disposed of when leaving the room. 4.2.6. Protective eyewear: we recommended that you wear protective eyewear at all times.
2016.03.01	4.3. Use dedicated materials and equipment (notebooks, cage cards, pens, ear punchers, instruments).
2016.03.01	4.13.5. Securely seal the second bag with autoclavable elastic bands or twist ties and spray with disinfectant.
2018.11.14	3.7. <b>CSA-approved sharps disposal</b> container
2023.06.09	STANDARD OPERATING PROCEDURE SOP #705 ANIMAL <del>BIOSAFETY</del> CONTAINMENT LEVEL 2 – RODENTS
2023.06.09	1. PURPOSE This Standard Operating Procedure (SOP) describes the procedures for housing and caring for rodents exposed to biosafety level 2 (BSL2) biohazards pathogens requiring containment level 2 (CL2). <del>It ensures that the biohazards are contained and the risk of exposure for the people and other animals is lowered to an acceptable level.</del>
2023.06.09	2. RESPONSIBILITY <del>2.1. Principal investigator and their research staff: 2.1.1. Provide relevant information on biohazard in the Animal Use Protocol (AUP). 2.1.2. Provide a copy of biosafety certificate to the Facility Supervisor. 2.1.3. Ensure research staff is appropriately trained before conducting BSL2 experiments.</del> 2.2. Facility manager: 2.2.1. Ensure the animal room and equipment is suitable for BSL2 experiment. 2.2.2. Supply necessary material. 2.2.3. Ensure animal care staff and users are properly trained. 2.2.4. Post relevant information for risk identification. 2.3. Research veterinary care and animal care staff: 2.3.1. Follow procedures minimizing risks as described in this SOP.
2023.06.09	3. CONSIDERATIONS Human and animal pathogens are categorized into four risk groups (RG) based on the risk to the individual/animal and the risk to the community. There exist four containment levels. Each level has specific operational practices and a core subset of physical containment requirements designed to isolate biological agents in a laboratory facility. In general, the containment level and risk group of the pathogen are the same (e.g., RG2 pathogens are handled at CL2); however, there are exceptions, and not all biological material will fall perfectly into a given risk group or containment level following a risk assessment. The appropriate containment level and any additional requirements to work with certain animal pathogens are determined by the Canadian Food Inspection Agency (CFIA) and the Public Health Agency of Canada (PHAC) through a pathogen risk assessment and containment level assessment. The PHAC produces Pathogen Safety Data Sheets (PSDS) as educational and information resources for laboratory personnel working with infectious substances. PSDSs are technical documents that describe the hazardous properties of a human or animal pathogen and provide recommendations for work involving these agents in a laboratory setting. All individuals working with a specific pathogen should review the corresponding PSDS. Access to the CL2 rooms is limited only to authorized personnel who have completed the training requirements.
2023.06.09	4.4. <del>Biohazard MSDS</del> Pathogen Safety Data Sheet (PSDS)

2023.06.09	4.5. Biohazard <del>door sign</del> <b>contact signage</b>
2023.06.09	4.8. Disinfectant effective against selected biohazard (see <b>MSDS PSDS</b> ).
2023.06.09	5.2.1.1. <b>Nitrile</b> gloves: should be inspected for tears frequently and changed as needed. Stretch gloves over the cuff of the gown to cover any exposed skin. Wear double gloves at all times.
2023.06.09	<b>5.2.1.7. Shoe covers</b>
2023.06.09	5.2.1.8. Protective eyewear: <del>we recommended that you wear protective eyewear at all times where there is a risk of exposure to splashes.</del>
2023.06.09	<b>5.2.2. PPE should be donned and doffed in a manner which limits contamination with potentially infectious materials.</b>
2023.06.09	5.3. Animal room: 5.3.1. Set the room relative pressure as negative inward directional air flow compared to corridor and/or anteroom. 5.3.2. Doors to animal rooms must remain closed when infected animals are present. <del>5.3.3. Restrict access to BSL2 animal rooms to authorized personnel and users.</del> <del>5.3.4. Facility manager:</del> <del>5.3.4.1. Post biohazard sign on the animal room door with the following information:</del> <del>5.3.4.1.1. Name of biohazard present</del> <del>5.3.4.1.2. Medical requirements if applicable (e.g., vaccination)</del> <del>5.3.4.1.3. Name and phone number of resource people (e.g., PI and contact, facility supervisor)</del> <del>5.3.4.1.4. Requirements for personal protective equipment</del> 5.3.2.2. Ensure that personnel and users have received proper information on the biohazard and procedures. <b>5.3.3. Ensure appropriate biohazard warning signage is present, including the name of all pathogens present.</b> <b>5.3.4. Ensure PSDS for all pathogens in the room is available.</b>
2023.06.09	<b>5.5. Do not touch your face, mask, or bonnet while working in the CL2 rooms.</b>
2023.06.09	<b>5.5. Animal transfers into the BCL2 rooms need not be approved by CMARC. Animals should never be transferred out from the BCL2 housing rooms to regular housing rooms, unless specifically approved by CMARC.</b>
2023.06.09	5.7. Use <del>dedicated</del> materials and equipment <b>dedicated for the CL2 rooms, this includes</b> {notebooks, cage cards, pens, ear punchers, instruments}, <b>etc. When storing equipment and materials in the CL2 rooms, these must be kept in closed, labeled storage containers.</b>
2023.06.09	5.8. House animals in microisolator cages ( <del>ventilated or static</del> ) or <del>isolators</del> with solid lids on ventilated <b>Positive/Negative Control racks set to negative pressure.</b>
2023.06.09	5.11. Do not recap needles. Dispose in a <b>CSA-approved puncture-resistant sharps container immediately after use.</b>
2023.06.09	<del>5.1.4 Vermin control program must be in place in BSL2 animal rooms and the rest of the facility.</del>
2023.06.09	<b>5.12. Report exposures or spills to your supervisor. A McGill University Accident, Incident &amp; Occupational Disease Report form must be completed.</b>
2023.06.09	<b>5.13. Working in the BSC:</b> <b>5.13.1. Keep the BSC neat, clean, and free of materials or equipment that are not pertinent to the work.</b> <b>5.13.2. Place cages away from the front grill of the BSC. Keep the rear vents of the BSC clear.</b> <b>5.13.3 Only open one cage of mice at a time.</b> <b>5.13.4. Minimize creation of aerosols during all procedures.</b> <b>5.13.5. Spray hands with disinfectant after touching potentially infected cages, material, equipment, or animals.</b> <b>5.13.6. Outer gloves must be removed, discarded, and replaced if there has been contact with infectious materials, animals, or tissues.</b>
2023.06.09	5.14.2. <b>Dispose of soiled cages as complete units with their solid lids in place. When necessary, Dispose of feed and water with the dirty bedding within the cage.</b>
2023.06.09	<b>5.14.3. Dispose of soiled water valves and water bottles in the designated bins.</b>
2023.06.09	5.14.4. Bag dirty cages in <del>an</del> a single autoclavable bag <del>under the BSC. Place a maximum of 3 complete cages, including lids, one on top of another, per bag. Never place a soiled cage without a lid inside bag.</del>
2023.06.09	5.14.5. Close <del>biohazard autoclavable bag by twisting one turn and securing with one blue using a single elastic band, do not twist the elastic band. There</del> <b>Securely seal the bag with autoclavable elastic bands or twist ties prior to removal from the BSC.</b>
2023.06.09	5.14.6. Spray the bag with disinfectant <del>before moving out of the BSC into a second autoclavable bag.</del> <del>5.14.7. Securely seal the second bag with autoclavable elastic bands or twist ties and spray with disinfectant.</del>
2023.06.09	5.14.7. Autoclave <del>the dirty soiled equipment</del> in a certified autoclave and ensure proper steam penetration. <b>Perform regular autoclave monitoring.</b> <del>5.14.7. Wait for Biological indicator results once weekly.</del> 5.14.8. After autoclaving, dispose of the bedding as regular waste and <del>wash process cages equipment according to SOP as non-hazardous.</del>
2023.06.09	<b>5.17. Waste disposal</b> <b>5.17.1. Place all disposable components in an autoclavable bag for decontamination by autoclaving.</b> <b>5.17.2. Dispose of infectious waste and animal carcasses in double biohazard bags or containers by incineration.</b>
2023.06.09	<b>6. REFERENCES</b> <b>6.1. Canadian Biosafety Standard (CBS) Third Edition, April 1, 2023.</b> <b>6.2. Canadian biosafety guidelines, March 31, 2023.</b> <b>6.3. Public Health Agency of Canada (PHAC) Pathogen Safety Data Sheets (PSDS)</b> <b>6.4. US Centers for Disease Control and Prevention</b>