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**1. PURPOSE**

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This Standard Operating Procedure (SOP) describes waste anesthetic gas scavenging systems and safety precautions.

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**2. RESPONSIBILITY**

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Principal investigator (PI) and their research staff, veterinary care staff.

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**3. PROCEDURES**

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- 3.1. Maintain equipment in good working order and have it inspected/certified yearly to ensure optimal performance, delivery of the correct anesthetic concentration, and absence of leaks. Equipment certification records must be maintained and provided upon request to the Facility Animal Care Committee (FACC).
- 3.2. Adequate scavenging of waste anesthetic gases and personnel protection is the responsibility of the anesthetic equipment owner.
- 3.3. Verify equipment before each use to ensure all components such as tubing, flow meters, valves, gaskets, scavenging system, etc. are correctly set up and functioning properly without any leaks in the system.
- 3.4. To eliminate waste anesthetic gases from the work area and minimize exposure of personnel, follow these guidelines:
  - 3.4.1. Work in a well-ventilated area, ideally under a fume hood or a hard-ducted biosafety cabinet (which vents directly to the outside without recirculation within the building).
  - 3.4.2. Maintain a reasonable distance from the source of the gas.
  - 3.4.3. Use an appropriately sized anesthetic mask to ensure a tight seal around the animal's face and prevent leaks.
  - 3.4.4. Clean the induction chambers with soap and water immediately after each use to avoid residual anesthetic waste release into the environment. Waste anesthetic gases can continue to be released for up to 3 hours.
  - 3.4.5. Use an appropriate scavenging option (see section 3.5).
- 3.5. Scavenging system options:
  - 3.5.1. Direct the exhaust from the anesthetic circuit to a fume hood, a hard-ducted biosafety cabinet or to the room exhaust if it is evacuated directly outside the building without recirculation. Ensure a minimum room ventilation air exchange is maintained (10–15 air changes per hour).
  - 3.5.2. Perform procedures under a certified fume hood when using an induction chamber to capture the gas escaping the chamber when the lid is opened or use an anesthetic gas scavenging system.
  - 3.5.3. Activated charcoal filter canisters:
    - 3.5.3.1. Activated charcoal filter canisters only absorb halogenated anesthetics (e.g., isoflurane, halothane).
    - 3.5.3.2. Weigh the canister before the initial use.
    - 3.5.3.3. Follow the manufacturer's instructions for use. Do not occlude filter exhaust ports during use.
    - 3.5.3.4. Weigh the canister before and after each use to evaluate the remaining absorption capacity, record the weight on the canister in the space provided.
    - 3.5.3.5. Shake canister briefly before replacing to evenly redistribute contents.
    - 3.5.3.6. Discard the canisters according to the manufacturer's instructions.
  - 3.5.4. Passive systems that vent gases to the floor level and rely on inhalant anesthetic gases being heavier than air are prohibited.

3.6. Measure human exposure to waste anesthetic gases whenever:

3.6.1. Anesthetic gas can be smelled.

3.6.2. Personnel report fatigue or headaches when using the anesthetic equipment.

#### SOP REVISION HISTORY

| DATE       | NEW VERSION                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 2023.09.14 | 3.2. Adequate scavenging of waste anesthetic gases and personnel protection is the responsibility of the anesthetic equipment owner. |