

Anesthesia Machine Maintenance and Certification

Performance Standard:

Active delivery of inhalation agents for animals used at the University of Missouri – Kansas City will be provided with properly functioning anesthetic equipment.

Background:

Properly functioning anesthetic machines are essential in delivering appropriate anesthetic gases to animal research subjects to assist in ensuring animals receive adequate pain relief during painful procedures and to ensure the safety of personnel operating the equipment.

Roles:

Personnel must be trained in the proper use of anesthetic machines prior to operation.

Protective Postures Required:

Personnel Protective Equipment (PPE) routinely required for normal activity in the animal room, operating space or laboratory is required when individuals are providing anesthesia. Scavenging of waste gases is absolutely necessary for the safety of personnel working with and around the anesthetics.

Policy:

Each piece of equipment involved in the delivery of inhalant anesthetics, and removal of waste gases must be evaluated regularly to assure its proper function and integrity.

1. Anesthesia machines and vaporizers: Anesthesia machines must be maintained in good working condition to assure optimal agent delivery in a safe manner and appropriate plane of anesthesia.
 - a. Anesthetic machines must be validated annually or any time the vaporizer has not been in service for more than a year. If the verified delivery is +/- 10% out of calibration, the unit should be serviced.
 - b. All anesthetic vaporizers should be verified by qualified trained personnel.
 - c. Discoloration (yellowish-brown) in the “Fill” sight glass of a vaporizer may be an indicator for the need for service. Other indicators might include cracked or damaged hoses, sticking valves or knobs, animals not responding (as anticipated) to the level of anesthesia provided.

2. Waste Gas Scavenging Systems: Scavenging equipment must be maintained in good working order to ensure a safe working environment. An effective mechanism of waste gas scavenging is required for inhalant anesthesia for animal work at UMKC. Waste anesthetic gases may adversely affect liver, kidney and the central nervous system of chronically exposed personnel. Care should be taken to ensure the scavenging system does not compromise anesthetic delivery to the animal or contamination of the procedure area (aseptic conditions must be maintained for survival surgery of any species).
 - a. Dedicated Exhaust: A dedicated exhaust or zone capture exhaust is preferred for removal of waste gases from the surgical theater or procedure space. These

- could include an active ‘vacuum’ waste gas line or an ‘elephant’ trunk exhaust.
- b. Fume Hoods: The use of a fume hood to capture the waste gas is acceptable. If an anesthesia machine is being used, then placement of the exhaust gas line inside of the fume hood is appropriate.
 - c. Charcoal canisters may be used to absorb waste gases. Charcoal canisters should be weighed when initially placed into service and the initial weight recorded on the side of the canister. Canister life involves weighing the canister after each use and discarding the canister when there is a 50 gm increase in the initial weight. Charcoal canisters must be used vertically (do not lay them on their side while in use) and suspended off of the table top or floor (the exhaust ports are in the bottom of the canister)
3. Documentation of Equipment Verification/Service:
 - a. Vaporizers must have the date of each verification date affixed after each evaluation
 - b. Servicing information may be obtained through LARC.
 4. Other components of the anesthesia circuit tubing and hoses should be serviced / replaced as per manufacturer’s guidelines or when needed.

Applicable To:

All UMKC faculty, staff, employees and students involved in the care or use of animals owned by the UMKC.

Revisions to the Policy:

This policy is intended to be flexible and readily adaptable to changes in regulatory requirements. The UMKC IACUC has the authority to amend this policy as needed. The UMKC Institutional Animal Care and Use Committee has reviewed and approved this policy.