Subject: Vaporizer Equipment Monitoring and Maintenance Standards

BACKGROUND

This Standard Operating Procedure (SOP) describes standards to be followed to monitor the function of an inhalational anesthesia vaporizer and equipment used to capture waste anesthetic gases.

Standards

The effective use of precision anesthetic vaporizers depends upon proper calibration to ensure that the desired anesthetic dose is correctly delivered to the animal. As calibration can drift over time, manufacturers recommend that vaporizers be serviced annually to ensure proper function.

Waste anesthetic gases (WAG) present a risk to personnel working with animals and inhaled anesthetics like isoflurane and sevoflurane. While maximum occupational exposure levels are not strictly defined for these compounds, know adverse impacts associated with similar anesthetics warrant caution. The principle of ALARA – As Low As Reasonably Possible – is employed to minimize the exposure of personnel to this hazard. Capture of WAG can be successfully achieved using a fume hood, Class II/B2 biosafety cabinet, downdraft table, active anesthetic scavenging system, or charcoal canister. Please note that many biosafety cabinets recirculate air within the hood and/or exhaust HEPA filtered air into the room. These will not protect the user or others in the room from WAG exposure and should not be used for exposure prevention.

IACUC Anesthetic Machine and WAG Capture SOP

At each use:
All anesthetic machines with vaporizers and other components such as tubing, flow meters, valves, gaskets, scavenging system, etc. should be inspected by the user before each use to ensure that all components are correctly set up and functioning properly without any leaks in the system. Weigh and record the weight in grams on the side of the charcoal canister. Each canister will vary but in general the average canister becomes saturated when it gains 50 grams relative to the initial weight and should be changed. If you are using a passive system (mask with a charcoal canister), ensure that there is an airtight seal between the edge of the mask and the animal’s face.

Once annually:
Vaporizers must be inspected by a certified technician to validate proper function. A sticker must be placed on the vaporizer to document the date of the test. Please contact the DLAR Veterinary Technical Services (DLARVTS@wayne.edu) for assistance.

Once every 3 years or as often as needed:
Vaporizers typically require manufacturer recalibration every three years. The need for recalibration will be determined during the annual evaluation by a certified technician. A sticker must be placed on the vaporizer to document the date of the test. Please contact the DLAR Veterinary Technical Services (DLARVTS@wayne.edu) for assistance.