

Policy on Calibration and Certification of Gas Anesthetic Equipment and Waste Gas Scavenging

This document establishes the policy of the IACUC regarding the calibration and certification of gas anesthesia equipment and requirements for effective removal of waste gasses at the University of Kentucky. Specific research requirements that deviate from this document must receive IACUC approval prior to initiating.

Policy

All personnel using anesthetic equipment are responsible for maintaining the equipment in proper operating condition. Investigators are responsible for ensuring that their units are inspected, calibrated, and certified by qualified service center personnel either according to the manufacturer's written recommendations or at least every two years (if manufacturer's recommendations are not available). Investigators are responsible for ensuring staff who work with anesthetic equipment are trained before use. The IACUC is responsible for verifying that all anesthetic units are calibrated and certified as a component of the semiannual facilities inspection.

An effective mechanism for waste gas scavenging must be in place to reduce exposure from potentially harmful waste gases.

Open drop anesthesia techniques conducted indoors must be conducted within a fume hood or like exhausted enclosure that has been certified by Environmental Health and Safety. If conducted outdoors, ensure all individuals are positioned upwind from the point of application.

Researchers using gas anesthetic equipment must adhere to the following:

- Before using an anesthetic machine, all parts and components must be inspected, and the machine tested for proper functionality.
- If the equipment has been out of service for more than one year, it must be certified before putting it back in service. Heavily used units may require more frequent calibration and service.
- Calibration and certification must be done by qualified personnel or an authorized service center. Anesthetic machines and vaporizers must have documentation of the date of inspection.
- Active scavenging can be done by use of dedicated evacuation systems exhausted directly outside the building to the atmosphere (preferred method).
- If a charcoal canister is used, a log indicating both the hours used and the initial starting weight of the canister must be kept on the canister or on a record sheet affixed to or near the anesthesia unit. The total hours of use and net weight gain should not exceed the manufacturer's recommendations. The use of a monitor in the scavenging system

eliminates the need to weigh the canisters and provides additional safeguards.

- Absorbers should be changed after 8 hours of use or sooner if a purple color is seen. Record the date changed on the absorber and on the record sheet affixed to the anesthesia machine

Additional Information

The Division of Laboratory Animal Resources (DLAR) maintains a number of anesthetic units in experimental surgery for use by investigators on a fee for use basis.

DLAR units are serviced on a regular basis and Investigators may elect to have their units similarly calibrated and certified at that time.

Environmental Health and Safety performs random checks to assure that passive and active scavenger systems maintain safe exposure levels for personnel. Concerns regarding the effectiveness of anesthetic waste scavenging systems should be directed to Environmental Health and Safety who can assess the levels of waste anesthetic gas exposure and potential risk to personnel using the systems.

References

Institute of Laboratory Animal Resources (U.S.). 2011. Guide for the Care and Use of Laboratory Animals. Washington, D.C.: National Academy Press.

Animal Welfare Regulations, Code of Federal Regulations, Title 9 - Animals and Animal Products, Chapter 1 – Animal and Plant Health Inspection Service, Subchapter A – Animal Welfare

Occupational Health and Safety in the Care and Use of Research Animals, Institute of Laboratory Animal Resources, National Academy Press, Washington, D.C., 1997.

Hazard Communication Standards, Code of Federal Regulations, Title 29, Part 1910.1200 - Occupational Safety and Health Standards, Subpart Z - Toxic and Hazardous Substances.

Occupational Exposure to Hazardous Chemicals in Laboratories, Title 29, Part 1910.1450 - Occupational Safety and Health Standards, Subpart Z - Toxic and Hazardous Substances.

Criteria for a recommended standard occupational exposure to waste anesthetic gases and vapors; DHEW Pub. No. (NIOSH) 77-140, March 1977.
<https://www.cdc.gov/niosh/docs/77-140/>

Approved and Adopted by the IACUC
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