Anesthesia Machines

Anesthesia Machine/Vaporizer Calibration and Maintenance Guidelines

**Purpose**
The purpose of this document is to provide guidelines regarding recommended scheduling for anesthesia machine/vaporizer calibration and maintenance. All users are advised to follow the manufacturer’s recommendations if they differ from this document.

**Background**
Anesthesia machines and vaporizers must be in good working condition to reduce anesthetic gas leaks, to ensure the best performance of scavenging equipment, and provide the appropriate percentage of anesthetic delivery. Personnel must be trained in the proper use of anesthetic machines and vaporizers prior to operation.

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

**Guidelines**

1. **Vaporizer Service:**
   Accuracy of anesthetic agent delivery must be verified annually or any time the vaporizer has not been in service for more than a year. If the verified delivery is +/- 15% out of calibration, the unit should be serviced by an authorized service center.
   All anesthetic vaporizers should be serviced by qualified personnel (authorized service center) as recommended by the manufacturer. Manufacturer recommendations range from one to three years depending on the model.

   Discoloration (yellowish-brown) in the “Fill” sight glass of a vaporizer is an indication of need for service by an authorized service center.

2. **Waste Gas Scavenging Systems:**
   Anesthetic machines must have an effective mechanism of waste gas scavenging because waste anesthetic gases may adversely affect liver, kidney, or the central nervous system of chronically exposed personnel and animals. Scavenging systems may be active or passive and could include the use of an absorber.
   - Charcoal canisters (e.g. F/AIR, ENVIRO-PURE) may be used to absorb halogenated waste gases, but not nitrous oxide. Manufacturer’s guidelines must be followed and usage must be documented
either with a log indicating the hours used or weight of the canister (pre and post use) which must be indicated on the side of the canister.

- CO2 absorbers (e.g. Soda lime, Amsorb plus) should be changed regularly. CO2 absorbers react with water; the pH change when saturated with CO2 will activate a change in the ethylene violet dye indicator contained in these absorbers. These indicators can change back to white-grey if enough time is allowed, but this does not indicate the absorbers are still functional. Therefore the absorbers must be changed as soon as a color change is noted. Most absorbers must be disposed of as chemical waste. Contact Environmental Health and Safety for details on chemical waste disposal.

- Fume hood: Open drop anesthesia techniques must be conducted in a fume hood that has been tested and certified by Physical Plant.

3. **Documentation:**
   Vaporizers must have documentation of a date of delivery test with the initials for the person who performed the test and the test results. Vaporizers must have a certificate of the calibration date affixed after each service.

4. **Services available:**
   Following are a list of services available on campus and through private industry.
   1. **For verification of gas delivery concentration of anesthesia machines/vaporizers:**
      - Campus Veterinary Services
      - Jim Cravotta
      - TRACS Bldg. R-1
      - (530)752-0514
   2. **Qualified Service Centers:**
      - Vet Equip
        - P.O. Box 10785
        - Pleasanton, CA 94588-0785
        - (800) 466-6463
        - (925) 463-1828
        - (925) 463-1943 FAX
      - Highland Medical
        - 26111 Ynez Rd., Suite 15
        - Temecula, CA 92591
        - (800) 826-5951

**References**

- OSHA Health Care Workers Guidelines/Chap5b

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