



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL

## **Periodic Servicing and Maintenance of Anesthetic Vaporizers Used in Studies Involving Research Animals**

At UNC-Chapel Hill a number of investigators use vaporizers to deliver controlled inhalational anesthesia in research animals. There is a wide variety of anesthetic vaporizers and delivery systems available from different manufacturers. To maintain safe and effective operation, all anesthetic vaporizers must periodically be serviced by a trained professional. Service and maintenance should be performed on an established schedule, consistent with the manufacturer's recommendations. The manufacturer of your vaporizer should have recommended intervals for calibration and maintenance.

Please keep a copy of the manufacturer's service and maintenance recommendations with your vaporizer available to the IACUC for review. If no such recommendation exists, or can be documented, vaporizers must be evaluated every two years. It is the investigator's responsibility to provide the IACUC with the manufacturer's specifications for calibration frequency. All calibrations should be documented and readily available during IACUC laboratory inspections. A sticker applied to the vaporizer by the servicing agent will document any service or calibration to a precision vaporizer. The certification label should contain the name of the servicing agent and the date of service.

Additional indications of the need for vaporizer service includes the following:

1. Discoloration (yellowish brown) in the "Fill" sight glass of a vaporizer
2. Sticking valves or knobs
3. Subjects not responding (as anticipated) to the level of anesthesia provided

[Note: There is a difference between services performed on-site and sending the vaporizer to the manufacturer for preventive maintenance.. During most on-site calibrations, the vaporizer is checked to ensure it is delivering the amount of anesthetic as reflected by the setting. When vaporizers are sent in for preventive maintenance, a detailed maintenance is performed that includes cleaning and replacement of worn gaskets and other parts. The frequency of these types of services depends on the usage, type of vaporizer and anesthetic being used. For example, a precision vaporizer using halothane requires more frequent calibration and maintenance due to the buildup of thymol (a preservative used in halothane) residues within the vaporizer. Other volatile anesthetics, such as isoflurane and enflurane, do not contain thymol and do not require as an intensive calibration and maintenance schedule. Note that NIOSH (Health Care Workers Guidelines/Chap5) states that all anesthetic equipment must be regularly monitored for leakage, improper design, or defects. This includes the anesthesia machine as well as the vaporizer since anesthetic machines can develop improperly functioning components such as flutter valves, gaskets, and scavenging equipment.]