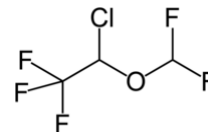


# LABORATORY SAFETY FACT SHEET

## Isoflurane



**Isoflurane (Forane):** A clear, colorless, non-flammable liquid that is part of a class of commonly used halogenated anesthetic gases. In the university research environment it is vaporized and used as an inhalable anesthesia for laboratory animals.

**Potential Hazards:** Exposures can occur when waste anesthetic gas vapors escape during anesthetic procedures. Short term exposure can lead to headaches, nausea, dizziness, fatigue and respiratory irritation. Long term exposure potentially could lead to liver/kidney disease, cancer, sterility, miscarriages and birth defects in offspring.

**Exposure Limits:** The Occupational Safety and Health Administration (OSHA) has no defined permissible exposure limits for isoflurane. The National Institute for Occupational Safety and Health (NIOSH) recommends that the average concentration should not exceed 2 ppm during a one hour time period.

**Engineering Measures:** Must be administered by an approved and calibrated anesthetic gas machine with a scavenging system in a well ventilated room or within a certified fume hood. Users must be trained and certified in proper vaporizer operating techniques by DLAM Vet Services or Lab Animal Coordinator. Active scavenging with local ventilation (chemical fume hood, ducted BSC or snorkel) or vacuum is preferred but passive scavenging is also employed. The use of charcoal absorber canisters as passive scavengers must be closely monitored. Manufacturer recommendations regarding canister use time and proper weight of canisters must be closely followed (*see back of fact sheet for more specifics regarding passive scavenging*).

**Personal Protective Equipment (PPE):** Laboratory personnel must always wear safety glasses or goggles, gloves and lab coats to prevent contact with liquid isoflurane.

**Emergency Procedures:** Contact the University Employee Occupational Health Clinic (919-966-9119) during work hours or 911 after hours. If a spill occurs, personnel should immediately evacuate the area and call EHS (919-962-5507) or 911 depending on severity.

For more information about isoflurane see the [EHS Isoflurane SOP](#).

Environment, Health & Safety

1120 Estes Drive Extension  
Campus Box 1650  
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## Highlight on Passive Scavenging: Capture of waste anesthetic gas using charcoal canisters.

This method relies on positive pressure from the anesthetic gas delivery system and/or the exhalation effort of the animal to drive waste gas through a specially designed activated charcoal canister (such as F/Air). Charcoal canisters can only be used for *halogenated* waste anesthetic gases (isoflurane, sevoflurane). They should not be used for nitrous oxide gas!

The charcoal canister will absorb and remove the waste halogenated gas before being discharged back into the room. Charcoal canisters have a finite effective life span, which can be monitored by weight.

- ◆ The weight of each new canister should be recorded before its first use.
- ◆ Before each subsequent use, the weight should be checked and recorded.

Anesthetic Gas Charcoal Canister Weight Tracking Form

Start Date / Date Used	Lot # Canister	Canister #	Start Weight (g)	Weight After Use (g)	Canister Replaced?	User Initials



- ◆ If the total increase is close to manufacturer specified limits (**for F/Air canisters this is 50 g**), it should be replaced, or monitored closely during use by weighing between animals.
- ◆ To function appropriately, the carbon canister must be at a level below that of the vaporizer and in the upright/vertical position, to assist in passive scavenging.
- ◆ To ensure adequate air flow, the holes on the bottom (F/Air canister) or top of canister (VaporGuard) must not be blocked.

**Disposal of Spent Canisters**—Used canisters should be sealed in a bag, labeled and an EHS [online waste pickup request](#) should be completed. Do not accumulate multiple used canisters in your lab, submit disposal request as soon as possible.

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