COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Isoflurane

FAQ Sheet

Isoflurane, the most commonly used halogenated anesthetic in animal research, is a colorless, volatile liquid at room temperature. Researchers may be exposed via inhalation when vapors escape into the work environment during the administration of anesthesia.

Exposure

Isoflurane exposure can occur when anesthetic gas is unintentionally released into the surrounding environment. There are two main types of exposure:

- Acute exposure refers to short-term, high-level exposure that occurs suddenly or over a brief period.
- Chronic exposure involves repeated or continuous low-level exposure over an extended period.

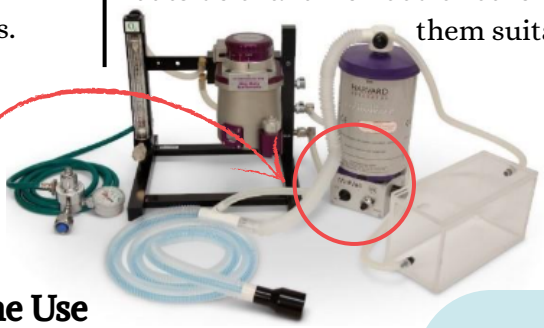
Common causes of exposure include leaking or unsealed anesthetic systems, nose cones that do not form a tight seal, and anesthesia machines that are irregularly serviced or poorly maintained. Certain procedures also increase the risk of exposure, such as refilling vaporizers or opening an active induction chamber to retrieve animals.
Acute exposure to isoflurane can lead to symptoms such as headaches, dizziness, nausea, vomiting, impaired judgment or coordination, and in some cases, fainting. Chronic exposure is more serious and may result in long-term health effects, including liver and kidney disease, as well as reproductive issues.

Controls

All work involving isoflurane must be done using one of two types of anesthetic gas scavenging systems. Both systems rely on charcoal canisters which must be weighed and tracked regularly. Once saturated, they must be disposed of as hazardous waste through EH&S.

Passive scavenging relies on the pressure from the anesthesia system to direct waste gases into a charcoal canister. Passive systems must be used inside a fume hood, ducted biosafety cabinet, or another ventilated enclosure to ensure proper removal of waste gases.

Active scavenging ***(recommended)*** uses mechanical suction to actively remove waste anesthetic gases from the work area. Active systems can typically be used outside of a fume hood or other enclosed system, making them suitable for open workspaces.



Both systems utilize the same core components—canisters, nose cones, and vaporizers. The key difference is the vacuum pump, which drives the active scavenging system.

Administrative Requirements for Isoflurane Use

If your lab is using isoflurane for animal procedures, you are required to submit an Appendix E1 as part of your protocol. Additionally, all personnel working with isoflurane must complete the Waste Anesthetic Gas Training (TC6850) to ensure proper handling and safety practices.

For questions, assistance, or to request exposure monitoring, please contact Environmental Health & Safety (EH&S).

Fun FAQ!

To ensure researcher safety, bell jar anesthesia administration must only be performed within a functioning chemical fume hood.

Have more questions? Reach out to EH&S at Labsafety@columbia.edu or give us a call

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QR Code: Columbia EH&S Use of Isoflurane as an Anesthetic in Animal Protocols.