Isoflurane is a volatile halogenated anesthetic agent frequently used in animal research. It is a clear, non-flammable liquid at standard room temperature and air pressure. It has an ether-like or sweet odor. Exposure to isoflurane has been associated with several health concerns and is a potent greenhouse gas when released into the environment. Research staff should review the SDS and be aware of potential health effects and take precautions to minimize exposure.

**ISOFLURANE HAZARDS:**
- Skin and eye irritation.
- May cause headaches, drowsiness, dizziness and lightheadedness.
- Adverse health effects observed in animal studies include: nerve cell damage, learning and memory impairment, abnormalities in offspring when exposed during pregnancy, and reduced sperm production/impaired sperm health.

**GENERAL WORKPLACE CONTROLS:**

**WORK PRACTICES:**
- Read SDS and label before working with isoflurane.
- Use a “key-fill” to pour anesthetic into vaporizer. (If “key-fill” is not available on vaporizer, use anti-spill adapter for a “tunnel-fill” vaporizer).
- Fill vaporizers under LEVs if pouring from a bottle into a funnel-fill vaporizer.
- Never drain vaporizer in procedure rooms to avoid an unnecessary spill.
- Weigh charcoal canister before use and record weight. Date the side of the canister. Once weight increases by 50g, discard as chemical waste.
- One drop or Bell-Jar Methods should be conducted in a ducted fume hood or similar ventilated enclosure to minimize exposure.
- Position snorkel hood as close as possible. Air intake should be < 6” from isoflurane source.
- Flush induction chamber before opening.

**ENGINEERING CONTROLS:**
- Active Scavenging (within a breathing system): Excess anesthetic gases are actively removed through dedicated suction is required for active scavenging exhaust.
- Passive Scavenging (within a breathing system): Excess anesthetic gases are passively flowing through flexible evacuation tubing and into a charcoal canister.
- Local Exhaust Ventilations (LEVs): Snorkel hood; Portable or desktop LEVs; Ducted fume hood.
- Other Engineering Controls: Consult manufacturer’s recommendation to utilize built-in safety features. Review your protocols to identify ways to minimize exposure.

**PERSONAL PROTECTIVE EQUIPMENT (PPE):**
- Gloves and eye protections should be used during open transfer.
- Respiratory protection is generally not required when using proper engineering controls. Please contact OEHS for a risk assessment if you have any concerns.

---

**OCCUPATIONAL EXPOSURE LIMITS:**
- OSHA: No Permissible Exposure Limit (PEL)
- NIOSH: Ceiling 2 ppm over 1-hour period
- ACGIH: 50 ppm TWA

**ADDITIONAL RESOURCES:**
- NIH Publication: A case report of personal exposure to isoflurane during animal anesthesia procedures
- NIOSH HHE: Evaluation of Waste Anesthetic Gas Exposure and Miscarriages at a Veterinary Hospital
- Sigma-Aldrich: Isoflurane Safety Data Sheet