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SECTION V - REACTIVITY DATA

Unstable Conditions to Avoid: N/A
Stable

Incompatibility (Materials to Avoid): Reactive metals such as sodium, potassium and finely divided zinc, aluminum and magnesium, especially at high temperature.

Hazardous Decomposition or By-products: Thermal, oxidative decomposition gives halogen acids and carbonyl halides.

Hazardous Polymerization May Occur Will Not Occur
Conditions To Avoid: N/A



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SECTION VI - HEALTH HAZARD DATA

Halothane is an FDA approved general inhalation anesthetic. Health professionals using this anesthetic as prescribed by the drug insert will control handling procedures for medical use.

The anesthetic range begins at about 0.7% but initial induction may be as high as 3% or higher. Acute accidental exposure to large doses may cause dizziness and depress breathing. Continued exposure to higher levels will cause cessation of breathing. If this occurs, give artificial respiration and administer oxygen and obtain immediate medical help from an anesthesiologist if available.

Halothane is essentially nontoxic by single dose ingestion (rat oral LD50: 6.7 g/kg). It is slightly irritating to rabbit eyes but not to skin.

Because of concerns of the health of those operating room personnel exposed to waste anesthetic gases there have been many animal studies on the effects of low levels of anesthetic gases and many epidemiological studies on operating room personnel. These were fully reviewed in 1978 [1] and in 1982 [2] and in part in 1985 [3] and 1990 [4].

The epidemiological studies were seriously challenged [1,2] and after careful review of those studies an eminent group of statisticians and epidemiologists [3] found the studies inconclusive, and stated that, "... prospective cohort studies are needed to determine whether there is a relationship between current levels of occupational exposure to anesthetic gases and adverse outcomes, particularly spontaneous abortion and liver disease".

In 1987 an epidemiological study on veterinary personnel [5] showed that the reproductive outcome for those personnel exposed to anesthetic gases is no different from the general public.

In a comprehensive mortality study among U.S. physicians [6] anesthesiologists had a death rate of only 88% of that of all physicians and less than 66% of U.S. white males as a whole. Thus, anesthesiologists were shown to have above average health.

The 1990 review lists many animal studies showing microscopic changes after prolonged exposures during gestation to small concentrations of halothane. The most significant of the animal studies [7], was on a very large number of animals. It showed that exposures at 500 ppm of halothane for two hours daily to both males and females for nine weeks prior to mating and then to females throughout pregnancy showed no differences from the controls for fertility, reproduction and postnatal survival.

The ACGIH, after reviewing all the studies, has adopted 50 ppm as the acceptable time weighted average (TWA) for workers for a normal 8-hour workday and 40-hour week.



References:

- [1] Ferstandig, L.L., Anesth Analg 1978, 57, 328-345
- [2] Ferstandig, L.L., Acta anaesth scand 1982, Suppl 75, 38-43
- [3] Buring, J.E., Hennekens, C.H., Mayrent, S.L., et al, Anesthesiology 1985, 62, 325-330
- [4] Baeder, C., Albrecht, M., Int Arch Occup Environ Health 1990, 62, 263-271
- [5] Johnson, J.A., Buchan, R.M., Reif, J.S., Am Ind Hyg Assoc J. 1987, 48, 62-66
- [6] Goodman, L.J., Milbank Memorial Fund Quarterly, Summer 1975, 353-375
- [7] Wharton, R.S., Mazze, R.I., Baden, J.M., et al, Anesthesiology 1978, 48, 167-174

Primary routes of entry: Inhalation Skin Eyes Oral

Acute Effects of Overexposure: Anesthesia, dizziness, depressed breathing.

Chronic Effects of Overexposure: Mostly unknown. Liver damage has been reported after repeated anesthetic exposure.

Carcinogenicity listing: NTP IARC OSHA
 Other:

First Aid

Inhalation: Remove to fresh air, give artificial respiration if needed. Get medical help from anesthesiologist.

Skin: Wash with soap and water.

Eye: Wash with copious amounts of water. Seek medical help.

Oral: Induce vomiting and contact physician.

Medical Conditions Generally Aggravated by Exposure: None known.

Other Health Hazards: None known.



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SECTION VII - PROTECTION INFORMATION

Respiratory: None normally needed.

Ventilation: Provide adequate ventilation to meet the ACGIH TWA of 50 ppm.

Eye and Face: Safety glasses or goggles.

Gloves: Impervious gloves.

Other equipment: None normally needed.

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SECTION VIII - SPILL, LEAK AND DISPOSAL PROCEDURES

Spill, Leak, or Release: Allow small spills to dissipate with good ventilation. For large spills wear self-contained breathing apparatus and absorb on vermiculite and place in closed container.

Waste Disposal: Allow small amounts to evaporate in well ventilated area. Observe all federal, state and local regulations.

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SECTION IX - OTHER INFORMATION

1. Hazardous Materials/Dangerous Goods Shipping Regulations

Anesthetics are classified as Dangerous Goods/Hazardous Materials when shipped by air. U.S. and international shipping regulations require that any person(s) shipping Dangerous Goods be properly trained and certified. Shipping Dangerous Goods without meeting these requirements is a violation of U.S. law and the shipper could be subject to fines and/or imprisonment. Anesthetics cannot be shipped by U.S. Mail.

U.S.

(49 CFR): N/A (regulated by Air Only)

IATA: Proper Shipping Name: Aviation Regulated Liquid, N.O.S.
(2-BROMO-2-CHLORO-1,1,1-TRIFLUOROETHANE)
Hazard Class: 9; ID No.: UN 3334
Packaging Group: N/A

IMDG: N/A (Regulated By Air Only)

2. Other Information:

HMIS Labeling Information: H 1; F 0; R 0; P B

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