2-Chloro-1,1,1-trifluoroethane (FC133a) is a low molecular weight halogenated hydrocarbon. It is an intermediate in the synthesis of halothane, a commonly used general anesthetic. It is present as a contaminant in halothane, and is a volatile metabolite of halothane. Exposure is likely to occur to workers engaged in the production of halothane, to health care workers in areas where halothane is used, and to patients administered halothane as an anesthetic.

2-Chloro-1,1,1-trifluoroethane passed the animal data screen, underwent a preliminary toxicological evaluation, and is being brought to the Carcinogen Identification Committee for consultation. This is a compilation of the relevant data identified during the preliminary toxicological evaluation.

Epidemiological data

No cancer epidemiology studies were identified.

Animal carcinogenicity studies

- Long-term gavage studies in rats
  - Studies in male and female SPF Alpk/Ap (Wistar-derived) rats: Longstaff et al. (1984)

Other relevant data

- Genotoxicity

- Structure activity considerations
  - Other low molecular weight halogenated hydrocarbons that are Proposition 65 carcinogens include: bromodichloromethane, bromoethane, chloroethane, 1,2-dibromoethane (ethylene dibromide), 1,1-dichloroethane, 1,2-dichloroethane (ethylene dichloride), dichloromethane, hexachloroethane, 1,1,2,2-tetrachloroethane, and 1,2,3-trichloropropene.
  - Several of these Proposition 65 carcinogens caused tumors at estrogen-responsive sites:
    - Chloroethane induced a high incidence of uterine carcinomas of endometrial origin in mice (control, 0/49; exposed, 43/50): NTP (1989a).
• 1,1-Dichloroethane induced uterine tumors in mice, and mammary tumors in female rats: NTP (1978a)
• 1,2-Dichloroethane induced uterine tumors in mice and mammary tumors in female rats and mice: NTP (1978b)
• 1,2,3-Trichloropropane induced uterine tumors in mice and mammary tumors in female rats: NTP (1993)
• 1,2-Dibromoethane induced mammary tumors in female rats and mice: NTP (1982)

• Metabolism
  o Metabolic dehalogenation of 2-chloro-1,1,1-trifluoroethane is expected to be similar to chloroethane and bromoethane (Salmon et al., 1981; 1985).

Reviews

• IARC (1986, 1999)

References


National Toxicology Program (NTP, 1982). *Carcinogenesis Bioassay of 1,2-Dibromoethane (CAS No. 106-93-4) in F344 Rats and B6C3F1 Mice (Inhalation Study).*

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1 Copies of these listed references, as either the abstract, the relevant sections of the publication, or the complete publication, have been provided to members of the Carcinogen Identification Committee. These references have been provided in the order in which they are discussed in this document.


National Toxicology Program (NTP, 1993). *Toxicology and Carcinogenesis of 1,2,3-Trichloropropane (CAS No. 96-18-4) in F344/N Rats and B6C3F1 Mice (Gavage Studies).* NTP Technical Report No. 384. U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, Research Triangle Park, NC.
