

# 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113); CASRN 76-13-1

Human health assessment information on a chemical substance is included in the IRIS database only after a comprehensive review of toxicity data, as outlined in the [IRIS assessment development process](#). Sections I (Health Hazard Assessments for Noncarcinogenic Effects) and II (Carcinogenicity Assessment for Lifetime Exposure) present the conclusions that were reached during the assessment development process. Supporting information and explanations of the methods used to derive the values given in IRIS are provided in the [guidance documents located on the IRIS website](#).

## STATUS OF DATA FOR CFC-113

File First On-Line 01/31/1987

Category (section)	Assessment Available?	Last Revised
Oral RfD (I.A.)	yes	04/06/1987
Inhalation RfC (I.B.)	not evaluated	
Carcinogenicity Assessment (II.)	not evaluated	

## I. Chronic Health Hazard Assessments for Noncarcinogenic Effects

### I.A. Reference Dose for Chronic Oral Exposure (RfD)

Substance Name — 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)

CASRN — 76-13-1

Last Revised — 04/06/1987

The oral Reference Dose (RfD) is based on the assumption that thresholds exist for certain toxic effects such as cellular necrosis. It is expressed in units of mg/kg-day. In general, the RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Please refer to the Background Document for an

elaboration of these concepts. RfDs can also be derived for the noncarcinogenic health effects of substances that are also carcinogens. Therefore, it is essential to refer to other sources of information concerning the carcinogenicity of this substance. If the U.S. EPA has evaluated this substance for potential human carcinogenicity, a summary of that evaluation will be contained in Section II of this file.

NOTE: The Oral RfD for 1,1,2-trichloro-1,2,2-trifluoroethane may change in the near future pending the outcome of a further review now being conducted by the Oral RfD Work Group.

### I.A.1. Oral RfD Summary

Critical Effect	Experimental Doses*	UF	MF	RfD
<b>Psychomotor impairment</b>  <b>Epidemiologic Study:</b> <b>Human Occupational Exposure</b>  <b>Imbus and Adkins, 1972</b>	NOAEL: 5358 mg/cu.m converted to 273 mg/kg/day	10	1	3E+1 mg/kg/day

\*Conversion Factors: 10 cu.m/day (8-hour human breathing volume), 5 days/7 days, 0.5 absorption factor, 70 kg bw; thus, 5358 mg/cu.m x 10 cu.m/day x 5 days/7 days x 0.5/70 kg = 273 mg/kg/day

### I.A.2. Principal and Supporting Studies (Oral RfD)

Imbus, H.R. and C. Adkins. 1972. Physical examination of workers exposed to trichlorotrifluoroethane. Arch. Environ. Health. 24(4): 257-261.

Several animal inhalation studies reported negative results in dogs, rabbits, and rats chronically exposed to very high concentrations of trichlorotrifluoroethane (U.S. EPA, 1983). No apparent adverse effects have been reported in humans occupationally exposed to trichlorotrifluoroethane at either 500 mg/cu.m levels for 11 years or 5358 mg/cu.m levels for 2.77 years (Imbus and Adkins, 1972).

Slight impairment of psychomotor performance was reported in male volunteers exposed to trichlorotrifluoroethane concentrations of 19,161 mg/cu.m for 2.75 hours (Stoppa and

McLaughlin, 1967). This exposure period was too brief to consider a NOAEL for chronic exposure. Therefore, the RfD of 30 mg/kg/day is considered protective.

### **I.A.3. Uncertainty and Modifying Factors (Oral RfD)**

UF — The uncertainty factor of 10 accounts for the expected interhuman variability to the toxicity of this chemical in lieu of specific data.

MF — None

### **I.A.4. Additional Studies/Comments (Oral RfD)**

None.

### **I.A.5. Confidence in the Oral RfD**

Study — Low  
Database — Low  
RfD — Low

Confidence in the chosen study, database, and RfD are all considered low. Despite the fact that the chosen study describes human data and the fact that several chronic studies in animals are supportive, uncertainties in both the exposure levels and route extrapolation preclude higher confidence ratings.

### **I.A.6. EPA Documentation and Review of the Oral RfD**

Source Docuemnt -- U.S. EPA, 1983

Other EPA Documentation — None

Agency Work Group Review — 06/24/1985, 07/08/1985

Verification Date — 07/08/1985

Screening-Level Literature Review Findings — A screening-level review conducted by an EPA contractor of the more recent toxicology literature pertinent to the RfD for 1,1,2-Trichloro-1,2,2-trifluoroethane conducted in September 2002 did not identify any critical new studies. IRIS users who know of important new studies may provide that information to the IRIS Hotline at [hotline.iris@epa.gov](mailto:hotline.iris@epa.gov) or (202)566-1676.

### **I.A.7. EPA Contacts (Oral RfD)**

Please contact the IRIS Hotline for all questions concerning this assessment or IRIS, in general, at (202)566-1676 (phone), (202)566-1749 (FAX) or [hotline.iris@epa.gov](mailto:hotline.iris@epa.gov) (internet address).

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### **I.B. Reference Concentration for Chronic Inhalation Exposure (RfC)**

Substance Name — 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)  
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Not available at this time.

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## **II. Carcinogenicity Assessment for Lifetime Exposure**

Substance Name — 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)  
CASRN — 76-13-1

Not available at this time.

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**III. [reserved]**

**IV. [reserved]**

**V. [reserved]**

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## **VI. Bibliography**

Substance Name — 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)  
CASRN — 76-13-1

### **VI.A. Oral RfD References**

Imbus, H.R. and C. Adkins. 1972. Physical examination of workers exposed to trichlorotrifluoroethane. *Arch. Environ. Health*. 24(4): 257-261.

Stopps, G.J. and M. McLaughlin. 1967. Psychophysiological testing of human subjects exposed to solvent vapors. *Amer. Ind. Hyg. Assoc. J.* 28: 43-50.

U.S. EPA. 1983. Health Assessment Document for 1,1,2-trichloro-1,2,2- trifluoroethane (chlorofluorocarbon CFC 113). Office of Air Quality Planning and Standards, Research Triangle Park, NC. EPA-600/8-82-002F. NTIS PB84- 118843. (Final Report)

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### **VI.B. Inhalation RfC References**

None

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### **VI.C. Carcinogenicity Assessment References**

None

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## VII. Revision History

Substance Name — 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)

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Date	Section	Description
04/06/1987	I.A.1.	RfD corrected
12/03/2002	I.A.6.	Screening-Level Literature Review Findings message has been added.

## VIII. Synonyms

Substance Name — 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)

CASRN — 76-13-1

Last Revised — 01/31/1987

- 76-13-1
- ARCTON 63
- ARKLONE P
- CFC-113
- DAIFLON S 3
- ETHANE, 1,1,2-TRICHLORO-1,2,2-TRIFLUORO-
- FLUOROCARBON 113
- FREON 113
- FREON 113TR-T
- FREON F113
- FREON TF
- FRIGEN 113a
- FRIGEN 113 TR-T
- GENETRON 113
- HALOCARBON 113
- ISCEON 113
- KHLADON 113
- R 113
- REFRIGERANT 113
- TRICHLOROTRIFLUOROETHANE
- 1,1,2-Trichloro-1,2,2-trifluoroethane

- Trichloro-1,2,2-trifluoroethane, 1,1,2-
- 1,1,2-TRIFLUORO-1,2,2- TRICHLOROETHANE
- UCON 113
- UCON 113/HALOCARBON 113
- UCON FLUOROCARBON 113