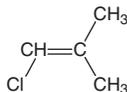


Dimethylvinyl Chloride

CAS No. 513-37-1

Reasonably anticipated to be a human carcinogen
First Listed in the *Sixth Annual Report on Carcinogens* (1991)



Carcinogenicity

Dimethylvinyl chloride (1-chloro-2-methyl-1-propene) is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (NTP 1986). When administered by gavage, dimethylvinyl chloride increased the incidences of adenocarcinomas and carcinomas of the nasal cavity and squamous cell papillomas or carcinomas of the oral cavity, esophagus, and forestomach in rats of both sexes. When administered by gavage, the compound increased the incidences of squamous cell carcinomas of the forestomach in mice of both sexes and squamous cell carcinomas of the preputial gland (NTP 1986).

No data were available to evaluate the carcinogenicity of dimethylvinyl chloride in humans (IARC 1995).

Properties

Dimethylvinyl chloride is a colorless to brown liquid that is extremely volatile and flammable at room temperature. It is soluble in water, chloroform, acetone, ethanol, and diethyl ether. When heated to decomposition, dimethylvinyl chloride emits highly toxic fumes of hydrochloric acid and other chlorinated compounds (IARC 1995, HSDB 2001).

Use

Dimethylvinyl chloride is not used commercially, but it is used for research purposes. It has been used in organic syntheses and as a chemical intermediate for the production of isobutylene compounds for laboratory use (IARC 1995, HSDB 2001).

Production

Dimethylvinyl chloride is not produced for commercial use in the United States (HSDB 2001). It is produced in small quantities for research purposes by one company in Germany; however, it occurs as a by-product from the synthesis of 3-chloro-2-methylpropene (methallyl chloride) from isobutylene (IARC 1995). One current U.S. supplier was identified (Chem Sources 2001).

Exposure

The primary route of potential human exposure to dimethylvinyl chloride is inhalation. It has been detected at concentrations ranging from 90 to 670 $\mu\text{g}/\text{m}^3$ in ambient air samples collected near industrial complexes and chemical waste disposal sites (IARC 1995). Occupational exposure to dimethylvinyl chloride may occur during the production of 3-chloro-2-methylpropene. The EPA estimated that only 8 to 12 workers were potentially exposed to dimethylvinyl chloride (noncontinuously) during the production of 3-chloro-2-methylpropene (EPA 1985). Dimethylvinyl chloride was not listed in the National Occupational Exposure Survey or the National Occupational Hazard Survey conducted by NIOSH.

Regulations and Guidelines

No specific regulations or guidelines relevant to reduction of exposure to dimethylvinyl chloride were identified.

REFERENCES

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IARC. 1995. Dry Cleaning, Some Chlorinated Solvents and Other Industrial Chemicals. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, vol. 63. Lyon, France: International Agency for Research on Cancer. 558 pp.
NTP. 1986. Toxicology and Carcinogenesis Studies of Dimethylvinyl Chloride (1-Chloro-2-methylpropene) (CAS No. 513-37-1) in F344/N Rats and B6C31F Mice (Gavage Studies). Technical Report Series No 316. NIH Publication No. 86-2572. Research Triangle Park, NC and Bethesda, MD: National Toxicology Program. 238 pp.