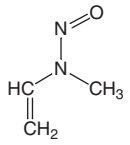
N-Nitrosomethylvinylamine
CAS No. 4549-40-0

Reasonably anticipated to be a human carcinogen
First Listed in the *Second Annual Report on Carcinogens* (1981)



Carcinogenicity

N-Nitrosomethylvinylamine *is reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (IARC 1978, 1982). When administered in the drinking water, *N*-nitrosomethylvinylamine induced papillomas and squamous cell carcinomas of the esophagus, carcinomas of the tongue, and carcinomas of the pharynx in rats. When administered by inhalation, *N*-nitrosomethylvinylamine induced carcinomas and cholesteatomas of the nasal cavity, squamous cell carcinomas, and esophageal papillomas in rats (IARC 1978).

No adequate human studies of the relationship between exposure to *N*-nitrosomethylvinylamine and human cancer have been reported (IARC 1978).

Properties

N-Nitrosomethylvinylamine is a yellow liquid that is very volatile. Its molecular weight is 86.1, and it has boiling point of 47°C to 48°C. It is soluble in water, organic solvents, and lipids, and is relatively unstable in aqueous solutions. When heated to decomposition, it emits toxic fumes of nitrogen oxides (IARC 1978, HSDB 2001).

Use

N-nitrosomethylvinylamine is used as a research chemical; no other uses were identified (IARC 1978, HSDB 2001).

Production

There is no evidence that *N*-nitrosomethylvinylamine has ever been produced commercially (IARC 1978, HSDB 2001). Synthetic production of nitrosamines is limited to small quantities, produced primarily as research chemicals (HEEP 1980). No chemical suppliers were listed for *N*-nitrosomethylvinylamine (Chem Sources 2001).

Exposure

Exposure to *N*-nitrosomethylvinylamine is primarily limited to the researchers using the compound in scientific research. Exposure may also occur through ingestion of food; *N*-nitroso compounds have been identified in a variety of vegetables, fruits, cheeses, meats, and alcoholic beverages (CHIP 1978). *N*-Nitrosomethylvinylamine has been found in apple brandy (IARC 1978).

Regulations

EPA

Clean Water Act
- Effluent Guidelines: Listed as a Toxic Pollutant (nitrosamines)
- Water Quality Criteria: Based on fish/shellfish and water consumption = 0.0008 µg/L (nitrosamines); based on fish/shellfish consumption only = 1.24 µg/L (nitrosamines)

Comprehensive Environmental Response, Compensation, and Liability Act
- Reportable Quantity (RQ) = 10 lb

Emergency Planning and Community Right-To-Know Act
- Toxics Release Inventory: Listed substance subject to reporting requirements

Resource Conservation and Recovery Act
- Listed Hazardous Waste: Waste codes in which listing is based wholly or partly on substance - P084
- Listed as a Hazardous Constituent of Waste

FDA

Action level for *N*-nitrosamines in rubber baby bottle nipples is 10 ppb

REFERENCES

ChemSources. 2001. Chemical Sources International, Inc. http://www.chemsources.com.

CHIP. 1978. Chemical Hazard Information Profile. *N*-Nitroso Compounds. Washington, D.C.: U.S. Environmental Protection Agency, Office of Pesticide Programs and Toxic Substances.

HEEP. 1980. Health and Environmental Effects Profile. Nitrosamines, No. 137. Washington, D.C.: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.

HSDB. 2001. Hazardous Substances Data Base. National Library of Medicine. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB.

IARC. 1978. Some *N*-Nitroso Compounds. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, vol. 17. Lyon, France: International Agency for Research on Cancer. 365 pp.

IARC. 1982. Chemicals, Industrial Processes and Industries Associated with Cancer in Humans. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans, Supplement 4. Lyon, France: International Agency for Research on Cancer. 292 pp.